



SELECTION GUIDE

METDA Overview

Innovative Support

Micro Electronic Technology Development Application Corporation (METDA) was established in 1993 and it is one of China's most comprehensive semiconductor suppliers with large production capacity, strong technical strength and highly integrated specialization. METDA is structured by 9 Specialized Divisions, 7 Research Departments, 5 Pilot Production Lines and 2 Research and Development Centers, 8 High-Tech Self-invested Corporations and Joint Ventures. There are more than 2480 staff in the company, including 1000 technical personnel, 50 Research Fellows, more than 300 Senior Engineers, and 380 Engineers. The total revenue reaches a record volume of \$177million in 2009.

As an experienced high-tech product and solution provider, METDA has been serving customers in wireless, fiber optics, aerospace, avionics, medical and satellite communication industries with high-performance, cost competitive and high reliable products for decades. There are seven core categories that METDA is offering to the market:

GaAs devices and MMIC products

Silicon devices and MMIC products

RF & Microwave Hybrid Integrated Circuits

Microwave & Millimeter-wave components, modules and sub-systems

Optoelectronics and LED applications

MEMS devices and modules

Packaging solutions

In recent years, METDA has been more and more active and involved in the international market supplying cost effective devices and components, customizing modules and subsystems for different requirements. The Overseas Sales Figure is estimated at \$14million in 2010. Staffed by top professionals, equipped by advanced research and manufacturing facilities, supported by reliable quality control system, METDA has been always a leading supplier of innovative technology providing superior quality and excellence to its customers.

Quality and Environment Statement

Shift expectation Inspire the nature

METDA has been an ISO9001 certified organization since 1999, and has been registered to ISO9001–2000 in 2002. It is also awarded as an AAA credit customer by banking system.

Shift the expectations of customers would inspire the future. Quality has more meanings rather than a single term of assurance in METDA; it means promises to life, to faith and which is ensured by both critical test process and strict quality control management system. Through the continuous campaign 'Better Quality from Everyone', commitments are shared all over the company aiming for Improvement and Customer Satisfaction.

Protecting our environment is not only seen as a responsibility, but seen as one of our missions or goals in the continual development strategy. METDA complies with all international and national environmental regulations and codes relating to electronic components industry. We strive to achieve more productivity while making less impact on our environment. METDA is committed to the protection of our community, health and safety of our employees. Furthermore, the environment of the institute was regarded as one of the best 'natural scene courtyard' amongst other manufacturing sites.

METDA has also achieved great achievements in the energy-saving project by employing advanced technology in redesigning and readjusting manufacturing systems and equipments. With our own solar and LED technologies, METDA is the first one changing all the street lights and office lights into energy saving LED lights. Statistically, 31.2% of total energy consumption/production ratio has been reduced comparing to 2008, and 39.3% comparing to 2007.

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GaAs devices and MMIC products

METDA offers a broad range of GaAs Devices and MMIC products which are widely served in wireless communication systems (typical 2.4GHz) and radar markets. Customized products can be offered according to specific request.

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1. GaAs MMIC Products

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- 1.2 Power Amplifiers
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1. GaAs MMIC Products

1.1 Low Noise Amplifier Series

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Input VSWR	Output VSWR	P _{1dB} (dBm)	Power Dissipation (V/mA)
NC1054C-0612	0.6-1.2	29.5*	±0.5	1.5*	1.9*	1.3*	10*	5/48
NC1024C-104	1-4	27*	±1*	≤1.7	≤2.5	≤1.8	12*	5/75
NC1031C-108	1-8	19*	±1.2*	≤1.9	1.8*	1.8*	10*	5/90
NC1061C-108	1-8	26*	±0.5	1.6*	1.8*	1.5*	9*	5/85
NC1025C-108	1-8	28*	±2*	1.8*	≤2.0	≤2.0	13*	5/130
NC1007C-2224	2-2.4	≥28.5	±0.5*	≤1.3	≤2.0	≤1.6	10	5/50
NC1052C-225	2-2.5	≥23.5	±0.4	≤1.4	≤1.8	≤1.6	10*	5/50
NC1064C-206	2-6	13*	±1	1.5*	2.0*	1.7*	16*	5/70
NC1033C-206	2-6	≥24.5	±0.6* (positive Slope)	1.5*	≤1.8	≤1.4	16*	5/80
NC1021C-206	2-6	≥26	±0.75*	≤1.6	≤1.6	≤1.8	13*	5/80
NC1026C-218	2-18	≥11	±1.25*	3.5*	≤2.0	≤1.7	10*	9/70
NC1023C-2328	2.3-2.8	≥33	±0.5*	≤1.2	≤1.3	≤1.5	11*	5/50
NC1022C-2330	2.3-3	≥22	±0.5*	≤1.25	≤1.9	≤1.8	3*	5/30
NC1009C-2330	2.3-3	≥35	±1*	≤1.35	≤1.3	≤2.0	5*	5/30
NC1062C-2540	2.5-4	≥26	±0.3	≤1.5	≤1.8	≤1.5	14*	5/60
NC1045C-2545	2.5-4.5	≥24	±1.0* (positive Slope)	1.3*	1.5*	1.5*	10*	5/45
NC1004C-2838	2.8-3.8	≥21.5	±0.75*	≤1.5	≤1.6	≤1.6	12*	5/42
NC1053C-3843	3.8-4.3	≥32	±0.2	≤1.4	1.5*	1.3*	17*	5/105
NC1034C-408	4-8	25*	±0.2*	1.4*	≤1.6	≤2.0	13*	5/60
NC1030C-5258	5-6	13*	±0.1*	2.1*	≤1.8	≤1.6	≥17	5/80
NC1046C-506	5-6	≥13.5	±0.4*	≤1.9	1.6*	1.6*	≥9	5/35
NC1047C-506	5-6	20.5*	±0.25*	≤1.35	1.5*	1.5*	≥11	5/65
NC1057C-506	5-6	≥24	±0.4*	≤1.2	≤1.6	≤1.6	≥8.6	5/55
NC1048C-506	5-6	30*	±0.5*	≤1.2	1.5*	1.5*	≥12	5/75
NC1058C-506	5-6	40*	±0.6*	≤1.2	1.5*	1.5*	≥0	4/50
NC1049C-506	5-6	40*	±0.5*	≤1.2	1.5*	1.5*	≥10	5/95
NC1005C-5064	5-6.4	≥23	±0.4*	≤1.35	≤1.8	≤2.0	11*	5/48
NC1016C-5258	5.2-5.8	≥23.5	±0.5*	≤1.25	≤1.5	≤1.5	10*	5/48
NC1002C-910	6-11	≥24	±0.25*	≤1.4	≤1.5	≤1.5	10*	5/40
NC1012C-618	6-18	≥15	±0.5*	2.5*	≤1.9	≤1.5	≥7	7/50
NC1019C-618	6-18	≥16	±0.6*	≤2.9	≤1.9	≤1.7	≥5	5/30
NC1035C-519	6-18	20*	±0.5*	2.3*	≤2.0	≤2.0	8*	5/50
NC1041C-618	6-18	≥22	±0.4*	2.0*	≤2.0	≤2.0	≥11	5/80
NC1036C-713(M)	7-13	20*	±0.6* (positive Slope)	≤1.5	≤1.7	≤1.5	9.5*	5/40
NC1037C-713	7-13	24.5*	±1.0* (positive Slope)	≤1.6	≤1.5	≤1.5	11.5*	5/60
NC1001C-812(S)	8-12	≥20	±0.25*	≤1.5	≤1.5	≤1.5	8*	5/40
NC1040C-820	8-20	20*	±2.0* (positive Slope)	2.2*	≤2.0	≤2.0	≥10	5/55
NC1003C-910	9-10	≥24.5	±0.25*	≤1.6	≤1.5	≤1.5	12*	5/60
NC1060C-1218	12-18	29*	±0.5*	≤1.8	1.6*	1.3*	9*	5/65
NC1020C-1418	14-18	≥22	±1*	≤2.2	≤1.7	≤1.6	≥10	5/50
NC1027C-1622	16.5-22.5	≥20	±2*	2.5*	≤2.0	≤1.7	8*	5/50
NC1013C-2025	20-25	≥19	±2*	2.6*	≤2.2	≤2.0	8*	5/55
NC1028C-2030	20-30	≥24	±2*	2.5*	1.8*	2.0*	10*	5/55
NC1029C-2032	20-32	≥19	±1*	2.5*	2.0*	1.5*	8*	5/60
NC1063C-2640	26-40	23*	±1.5*	3.0*	2.0*	2.0*	8*	3/55
NC1043C-3338	33-38	≥20	±1.0*	2.5*	≤2.0	≤2.0	5*	5/55

Note: SMT packed or module products can be provided using MMIC above, *: Typical Specification

1.2 Power Amplifier Series

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Psat (dBm)	P.A.E(%)	Input VSWR	P-1(dBm)	Operating Voltage (V)
NC1121C-203M	2-3	15*	±0.5*	≥28.5	-	2.5*	28*	5~8
NC1106C-218	2-18	6*	±0.7*	11*	-	2.0*	10*	5~8
NC1172C-2426	2.4-2.6	≥30	±0.3*	≥41.8	≥30	≤2.0	-	8
NC1120C-2540	2.5-4	26	±1.0	25*	-	1.7*	24.5*	5~8
NC1173C-2734	2.7-3.4	≥26	±0.5*	≥41.5	≥30	≤2.0	-	8
NC1164C-2742	2.7-4.2	≥25	±0.5*	≥34.5	-	≤1.8	≥33	8
NC1157C-2844	2.8-4.4	≥19	±0.35	≥37	≥30	≤1.7	-	8~9
NC1114C-2945	2.9-4.5	≥20	±0.3*	≥25	-	1.8*	25*	5~8
NC1128C-3045	3-4.5	≥21	±1.5*(positive Slope)	-	-	≤2.2	21	5~8
NC1174C-3846	3.8-4.6	≥22	±0.3*	≥41.5	≥33	≤2.0	-	8
NC1163C-408	4-8	15*	±1.5	33*	30*	2*	-	8
NC1104C-5258	5-6	20*	±0.1*	22*	-	1.4*	21*	8
NC1158C-506	5-6	≥22	≤±0.3	≥37	≥30	≤1.8	-	8~9
NC1113C-613	6-13	≥8.5	±0.75*	10.5*	-	≤2.0	9.5*	5/8
NC1178C-618	6-18	12	±0.75*	22	-	≤2.2	21	7
NC1180C-618	6-18	17*	±1*	34*	≥18	2*	-	8
NC1109C-6510	6.5-10	≥15	±1*	31*	-	2.0*	29*	8
NC1107C-713	7-13	20*	±0.7*	20*	-	≤1.5	19*	5~8
NC1115C-810	7.7-10.7	15*	±2*	≥24.5	-	1.8*	24.5*	8
NC1129C-812	8-12	20*	±1*	23	-	1.5*	21	8
NC1167C-812	8-12	19*	±0.75*	≥18	-	≤1.8	-	8
NC1102C-812	8-12	18*	±0.7*	≥21	-	≤2.0	20*	8
NC1126C-812	8-12	20*	±0.5	≥33	≥30	1.8*	-	8
NC1168C-812	8-12	20*	±0.5	41*	35*	2.0*	-	8
NC1144C-812	8-12	≥27	±0.75	≥26	≥30	2.0*	≥24	8
NC1108C-8511	8.5-11	≥15	±1	31*	-	2.0*	29*	8
NC1169C-8511	8.5-10.5	≥23	±0.5*	≥41	≥35	≤2.0	40*	8
NC1156C-8511	8.5-11.5	≥24	±0.5*	≥41	≥35	≤2.0	40*	8
NC1134C-910	9-10	≥27	±0.3	≥27	≥20	≤1.7	-	8
NC1161C-1112	11.9-12.3	≥23	±0.3	≥40	30*	≤2.0	-	8
NC1177C-1214	12-14	≥14	±0.9	≥31	30*	2.0*	-	8
NC1140C-1418	15-19	19	±1.0	25	-	1.8	23	8
NC1162C-1417	14-17	18*	±0.75	41*	30*	≤2.3	-	8.5
NC1118C-1518	14.5-18	22*	±1.0	31*	25*	2.0*	-	8
NC1175C-1518	15-17.6	≥17	±0.3	≥41	≥25	2.0*	-	8.5
NC1119C-1618	16-18	22*	±0.5	≥22	-	≤2.0	≥19	5
NC1176C-1618	16.5-17.5	≥16	±0.3	41.6*	≥25	2.0*	-	8.5
NC1152C-1617	16.6-17.6	≥17	±1.25	≥36	≥17	2.0*	-	8~9
NC1124C-1826	18-26	16*	±0.8	31*	20*	≤2.0	-	7
NC1122C-1938	19-38	20*	±1.0	22.5*	≥15	2.1*	-	5
NC1123C-2440	24-40	≥14	±1	≥27	≥12	≤2.5	-	5
NC1182C-3436	34-36	≥10	±1.0	≥30	≥15	2.5*	-	6
NC1127C-3436	34-36	19*	±1.0	35*	15*	2.5*	-	7
NC1165C-3136	31.5-35.5	≥14	±1.0	≥35	≥15	2.5*	-	7

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

1.3 Digital Phase Shifter Series

Part Number	Frequency (GHz)	bits (bit)	Insertion Loss (dB)	Phase Error RMS (°)	Input VSWR	Output VSWR	Insertion Loss Variation (dB)	Control Voltage (Complementary Logic) (V)
NC1220C-112	1-1.2	6	4.8*	1*	1.3*	1.4*	±0.15*	0/-5
NC1254C-112	1-1.2	8	6*	1*	1.3*	1.5*	±0.3*	0/-5
NC1252C-1214	1.2-1.4	6	4.8*	1*	1.4*	1.4*	±0.2*	0/-5
NC1213C-1518	1.5-1.8	8	6*	1*	1.5*	1.5*	±0.4*	0/-5
NC1224C-225	2-2.5	6	≤5.5	≤1.5	≤1.7	≤1.7	±0.5	0/-5
NC1226C-203	2-3	6	≤6.8	≤6.8	≤1.5	≤1.7	±0.8	0/-5
NC1217C-206	2-6	5	9*	3.5*	≤2.3	≤2.3	±1.0*	0/-5
NC1218C-2341	2.5-3.7	6	≤8	≤2	2.0*	2.0*	±1	0/-5
NC1214C-2730	2.7-3	6	≤5.5	≤2.0	≤1.5	≤1.4	±0.5	0/-5
NC1221C-2731	2.7-3.1	5	≤4.8	≤2.0	≤1.4	≤1.4	±0.4	0/-5
NC1215C-2735	2.7-3.5	6	≤5.6	≤1.2	≤1.6	≤1.6	±0.35	0/-5
NC1234C-2942	2.9-4.2	6	≤6.2	≤1.6	≤1.8	≤2.1	±0.6	0/-5
NC1232C-3134	3.1-3.4	6	≤5.4	≤1.2	≤1.5	≤1.4	±0.3	0/-5
NC1233C-3840	3.8-4	6	≤5.6	≤0.9	≤1.4	≤1.3	±0.2	0/-5
NC1225C-3845	3.8-4.5	6	≤6.0	≤1.1	≤1.5	≤1.4	±0.4	0/-5
NC1209C-5258	5-6	5	5.8*	≤1.8	≤1.5	≤1.5	±0.25*	0/-5
NC1238C-506	5-6	5	≤5.8	≤1.5	≤1.3	≤1.4	±0.2*	0/-5
NC1235C-506	5-6	6	≤6.3	≤1.6	≤1.4	≤1.4	±0.35	0/-5
NC1212C-5258	5-6	6	≤6.8	≤1.7	≤1.5	≤1.7	±0.45*	0/-5
NC1230C-618	6-18	1	≤2.8	5.0*	≤1.7	≤1.9	±0.75	0/-5
NC1229C-618	6-18	4	≤5.5	≤2.5	≤1.6	≤1.8	±0.5	0/-5
NC1210C-618	6-18	6	10*	4.9*	≤2.1	≤2.1	±1.0*	0/-5
NC1245C-709	7-9	5	≤8.5	1.5*	1.6*	1.7*	±0.6	0/-5
NC1211C-7785	7.7-8.5	4	6.6*	≤2.5	1.3*	1.5*	±0.3	0/-5
NC1241C-811	8-11	5	9*	≤3	1.6*	1.4*	±0.4	0/-5
NC1243C-812	8-12	5	9*	≤4	1.6*	1.5*	±0.4	0/-5
NC1239C-812	8-12	6	8.5*	≤4.2	1.6*	1.7*	±0.9	0/-5
NC1247C-812	8-12	6	8.5*	≤4.2	1.5*	1.5*	±0.7	0/-5
NC1208C-812	8-12	6	8*	≤6.5	1.7*	1.6*	±0.9	0/-5
NC1206C-910	8.5-10.5	5	≤8.5	≤2.5	1.5*	1.6*	±0.75	0/-5
NC1207C-910	8.5-10.5	6	≤8.5	≤2.5	1.6*	1.7*	±0.9	0/-5
NC1250C-9511	9.5-11	6	8.7*	2*	1.4*	1.3*	±0.4	0/-5
NC1231C-1215	12-15	6	10*	3*	1.5*	1.5*	±0.5	0/-5
NC1237C-1518	15-18	5	10*	3*	1.5*	1.5*	±0.4	0/-5
NC1228C-2224	22-24	5	≤13	7*	≤2.0	≤2.0	±1	0/-5
NC1227C-3138	31-38	1	≤2.8	—	≤2.5	≤1.7	—	0/-5
NC1246C-3436	34-36	5	15*	4*	2.0*	2.0*	±1	0/-5
NC1253C-3436	34-36	5	10*	4*	2.3*	2.7*	±1	0/-5

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

1.4 Digital Attenuator Series, Die Form

Part Number	Frequency (GHz)	bits (bit)	Insertion Loss (dB)	Attenuation Range (dB)	Step (dB)	Input VSWR	Output VSWR	Control Voltage (Complementary Logic) (V)
NC1316C-104	DC-4	5	≤2.6	1-31	1	≤1.4	≤1.4	0/-5
NC1317C-104	DC-4	6	≤2.6	0.5-31.5	0.5	≤1.5	≤1.4	0/-5
NC1318C-108	DC-8	1	≤2.0	0/32	—	≤1.4	≤1.4	0/-5
NC1312C-108	DC-8	3	≤1.0	0.8-5.6	0.8	≤1.35	≤1.35	0/-5
NC1314C-108	DC-8	5	≤3.0	1-31	1	≤1.5	≤1.5	0/-5
NC1315C-108	DC-8	6	≤3.0	0.5-31.5	0.5	≤1.5	≤1.5	0/-5
NC1302C-108	DC-8	6	3.7*	1-51	—	1.45*	1.45*	0/-5
NC1357C-108	DC-8	6	2.0*	0.5-31.5	0.5	≤1.5	≤1.5	0/-5
NC1347C-109	DC-9	1	2.0*	32	—	≤1.6	≤1.6	0/-5
NC1349C-109	DC-9	1	≤1.0	25	—	≤1.5	≤1.5	0/-5
NC1310C-110	DC-10	4	1*	0.3-4.5	0.3	≤1.5	≤1.5	0/-5
NC1311C-118	DC-18	1	≤1.6	16/20	—	≤1.5	≤1.5	0/-5
NC1322C-118	DC-18	1	≤1.6	0/16	—	≤1.3	≤1.3	0/-5
NC1323C-118	DC-18	1	≤1.5	0/20	—	≤1.2	≤1.2	0/-5
NC1348C-118	DC-18	1	≤2.0	32	—	≤1.6	≤1.6	0/-5
NC1352C-118	1-18	1	≤0.7	10	—	≤1.3	≤1.3	0/-5
NC1338C-120 (A/B/C/D/E/F/G)	DC-20	immobility	—	11/10/9/6 /3/2/0	—	≤1.3	≤1.3	—
NC1334C-107	0.5-7	3	≤2.0	3-21	3	≤1.6	≤1.6	0/-5
NC1340C-206	0.5-8	—	≥0.8@8GHz	proportion 6dB	—	1.1@8GHz	1.1@8GHz	—
NC1333C-108	0.5-8.5	3	≤1.8	3-21	3	≤1.4	≤1.4	0/-5
NC1341C-118	0.5-18	3	≤3.5	5-35	5	≤1.5	≤1.6	0/-5
NC1325C-118	0.5-18	3	≤2.8	5-35	5	≤1.6	≤1.4	0/-5
NC1326C-118	0.5-18	4	≤1.6	0.25-3.75	0.25	≤1.4	≤1.6	0/-5
NC1307C-618	0.5-18	5	3.3*	0.5-15.5	0.5	≤1.6	≤1.6	0/-5
NC1320C-118	0.5-18	6	≤4.5	0.5-31.5	0.5	≤1.4	≤1.4	0/-5
NC1324C-618	0.5-18	6	≤5.9	0.5-31.5	0.5	≤1.5	≤1.5	0/-5
NC1321C-118	0.5-18	6	≤6.1	1-63	1	≤1.4	≤1.4	0/-5
NC1332C-120	0.5-20	—	≥1.4@20GHz	proportion 14dB	—	1.2@20GHz	1.2@20GHz	—
NC1313C-506	1-10	5	≤1.7	0.5-15.5	0.5	≤1.5	≤1.5	0/-5
NC1308C-506	2-9	1	0.6*	0/22	—	1.25*	1.25*	0/-5
NC1351C-812	8-12	1	1.0*	32*	—	1.5*	1.5*	0/-5
NC1345C-812	8-12	—	≥1.1@12GHz	proportion 3dB	—	1.3@12GHz	1.3@12GHz	—
NC1342C-812	8-12	4	≤2.8	2-30	2	≤1.5	≤1.3	0/-5
NC1346C-812	8-12	6	3.5*	0.5-31.5	0.5	≤1.6	≤1.6	0/-5
NC1305C-910	9-10	5	2.2*	0.5-15.5	0.5	≤1.7	≤1.8	0/-5
NC1344C-3436	34-36	5	≤4.5	0.5-15.5	0.5	≤2.2	≤2.0	0/-5

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

1.5 VCO Series

Part Number	Frequency (GHz)	Tuning Voltage (V)	Output Power (dBm)	SSB Phase Noise @ 10KHz (dBc)	Harmonic Suppression (dBc)	Tuning Sensitivity (MHz/V)	Power Dissipation (V/mA)
NC1402C-306	3-6	0.5-12	13*	-71*	-14*	100*	5/60
NC1403C-408	4-8	0-14	5*	-70*	-14*	6*	5/56
NC1401C-6484	6.4-8.4	1-15	15*	-73*	-13*	20*	5/55
NC1404C-812	8-12.5	0-16	5.5*	-65*	≥-13	16*	5/44

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

1.6 Switches

I) GaAs FET Switch Series

Part Number	Description	Frequency (GHz)	Insertion Loss (dB)	Isolation (dB)	VSWR _ON	VSWR _OFF	Input 1-dB Comp. Point (dBm)	Ton, Toff (ns)	Control Voltage (Complementary Logic) (V)
NC1620C-106	SPDT	DC-6	≤1.0	≥55	1.4*	1.4*	20	10	0/-5
NC1615C-112	SPST	DC-12	≤1.0	35*	≤1.4	≤1.8	23	10	0/-5
NC1603C-110	SPDT	DC-12	≤1.2	50@3GHz 043@10GHz	≤1.5	N/A	26	5	0/-5
NC1604C-112	SP3T	DC-12	≤1.5	50@6GHz 40@12GHz	≤1.5	N/A	23	8	0/-5
NC1605C-112	SP3T	DC-12	≤1.8	50@6GHz 43@12GHz	1.5*	N/A	23	8	0/-5
NC1601C-118	SPST	DC-18	≤1.7	60@10GHz 45@18GHz	≤1.4	≤1.3	26	10	0/-5
NC1602C-118	SPDT	DC-18	≤2.0	60@10GHz 45@18GHz	≤1.5	≤1.5	26	10	0/-5
NC1607C-118	SP3T	DC-18	≤1.5	50@10GHz 35@18GHz	1.4*	N/A	20	8	0/-5
NC1619C-120	ECAL	DC-20	≤3.5	≥40	≤1.5	≤1.5	-	10	0/-5
NC1609C-120	SP4T	DC-20	2@10GHz 3@20GHz	35*	2.0*	N/A	23	10	0/-5
NC1608C-140	SPST	DC-40	0.8*	25*	≤1.5	N/A	N/A	10	0/-5
NC1621C-140	ECAL	DC-40	≤5	≥30	2.0*	2.0*	-	10	0/-5
NC1610C-1830	SPDT	18-30	1.0@25GHz	30*	2.0*	N/A	N/A	10	0/-5
NC1611C-2030	SP3T	20-30	1.5@25GHz	30*	2.0*	N/A	N/A	10	0/-5
NC1616C-2540	SPDT	25-40	1.4*	27*	1.7*	N/A	N/A	10	0/-5

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

II) GaAs PIN Switch Series

Part Number	Description	Frequency (GHz)	Insertion Loss (dB)	Isolation (dB)	VSWR _ON	VSWR _OFF	Maximum Input Power (CW)	Ton, Toff (ns)	Control Voltage (Complementary Logic) (V)
NC1663C-206	SPDT	2-6	≤0.7	≥50	≤1.4	N/A	+30(CW)	20	+5/-5
NC1669C-218	SPST	2-18	≤0.5	≥45	≤1.25	N/A	-	20	+5/-5
NC1670C-218	SPDT	2-18	≤1.0	≥50	≤1.5	N/A	+30(CW)	20	+5/-5
NC1676C-409	SPDT	4-9	0.5*	70*	1.2*	N/A	+30(CW)	20	+5/-5
NC1667C-618	SPDT	6-18	0.6*	≥50	≤1.5	N/A	-	20	+5/-5
NC1668C-812	SPDT	8-12	≤0.6	50*	≤1.4	N/A	-	≤20	+5/-5
NC1675C-812	SPDT	6-12	0.6*	≥60	≤1.4	N/A	+30(CW)	≤20	+5/-5
NC1661C-1218	SPST	12-18	≤0.6	35*	≤1.5	N/A	-	-	+5/-5
NC1666C-1540R	SPST	15-40	≤1.0	40*	≤1.6	N/A	-	20	+5/-5
NC1677C-1830(R)	SPDT	18-30	0.8*	≥40	≤1.6	N/A	-	20	+5/-5
NC1671C-2040	SPST	20-40	≤0.8	≥35	≤1.4	N/A	-	20	+5/-5
NC1672C-2432	SPDT	24-32	≤0.7	≥43	≤1.5	N/A	-	20	+5/-5
NC1673C-2432R	SPDT	24-32	≤0.6	≥25	≤1.4	N/A	-	20	+5/-5
NC1678C-2540(R)	SPDT	25-40	0.8*	≥45	1.3*	N/A	-	20	+5/-5
NC1674C-2838	SPDT	28-38	≤0.6	≥38	≤1.4	N/A	-	20	+5/-5
NC1662C-3036	SPST	30-36	≤0.6	35*	≤1.5	N/A	-	-	+5/-5
NC1660C-3337R	SPDT	33-37	≤0.6	27*	≤1.5	N/A	-	-	+5/-5
NC1665C-3337R	DPDT	33-37	≤1.3	27*	≤1.4	N/A	-	-	+5/-5

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

1.7 Mixer Series

Part Number	Freq. RF&LO (GHz)	IF (GHz)	Frequency Conversion Insert Loss(dB)	LO-RF Isolation (dB)	LO-IF Isolation (dB)	RF-IF Isolation (dB)	Local Oscillator Power (dBm)
NC1707C-0717	0.7-1.7	DC-0.5	≤9.5	≥46	≥41	≥14	13*
NC1706C-1545	1.5-4.5	DC-1.5	≤8.5	≥36	≥31	≥15	13*
NC1702C-1537	1-4	DC-1	≤10	≥40	≥27	≥14	13*
NC1705C-265	2-6.5	DC-2.5	≤9	≥37	≥25	≥12	13*
NC1701C-2570	2.5-7	DC-2.5	≤8.5	≥30	≥23	≥13	13*
NC1704C-410	4-10	DC-4	≤9	≥32	≥21	≥14	13*
NC1703C-7514	7-14	DC-3	≤9	≥28	≥25	≥18	13*

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

1.8 Multiplier/Divider

I) Active Frequency Multiplier MMIC Series

Part Number	Input Signal Frequency (GHz)	Output Signal Frequency (GHz)	Output Power (dBm)	F0 Insertion (dBc)	3F0 Insertion (dBc)	VSWR	Power Dissipation (V/mA)
NC1771-618	3-9	6-18	13*	30*	33*	1.5*	3.5/80

II) Passive Frequency Multiplier MMIC Series

Part Number	Input Frequency (GHz)	Output Frequency (GHz)	Conversion Gain (dB)	F0 Insertion (dBc)	3F0 Insertion (dBc)	4F0 Insertion (dBc)	Input Power (dBm)
NC1772C-1024	1-2.4	2-4.8	-15*	45*	45*	45*	12-18
NC1773C-204	2-4	4-8	-15*	45*	45*	45*	12-18
NC1774C-306	3-6	6-12	-15*	50*	45*	45*	12-18
NC1775C-408	4-8	8-16	-15*	40*	40*	-	12-18
NC1776C-812	8-12	16-24	-15*	30*	-	-	12-18

III) Frequency Divider MMIC Series

Part Number	Frequency (GHz)	Frequency Division Ratio	Operation Voltage (V)	Power Dissipation (mW)	Input Power (dBm)	Output Power@3GHz (dBm)
NC1752C-109	DC-9	2	+5	≤450	>-10	>-2.5
NC1753C-108	DC-8	4	+5	≤450	>-10	>-5.0
NC1754C-108	DC-8	8	+5	≤450	>-10	>-5.0

Note: SMT packed or module products can be provided using MMIC above, * : Typical Specification

1.9 Limiter Series

Part Number	Frequency (GHz)	Insertion Loss (dB)	Input VSWR	Output VSWR	Leakage Power (dBm)	Maximum Input Power (CW) (dBm)
NC1811C-108	1-8	0.35*	≤1.3	≤1.4	15*	40
NC1807C-206	2-6	≤0.5	≤1.5	≤1.5	15*	37
NC1803C-218	2-18	0.6*	≤2.0	≤2.0	15*	36
NC1805C-506	5-6	≤0.6	≤1.5	≤1.5	15*	40
NC1808C-618	6-18	≤0.5	1.4*	1.4*	15*	36
NC1806C-618	6-18	≤0.8	≤2.0	≤2.0	15*	36
NC1810C-812	8-12	≤0.5	≤1.4	≤1.4	15*	40
NC1802C-812	8-12	≤0.6	≤1.5	≤1.5	15*	37

Note: * Typical Specification

1.10 Digital Delay line Chip Series

Part Number	Frequency (GHz)	Bits (bit)	Insertion Loss (dB)	Input VSWR	Output VSWR	Delay Range (ps)
NC1902C-305	3-5	8	≤18	1.5*	1.5*	0-637.5
NC1904C-812	8-12	3	≤13	1.6*	1.6*	100-700
NC1905C-812	8-12	1	≤6	≤1.6	≤1.6	400

1.11 Power Combiner/Splitter Series

I) 90° Lange

Part Number	Frequency (GHz)	Insertion Loss (dB)	Insertion Loss Variation (dB)	VSWR	Amplitude unbalance (dB)	Phase unbalance (°)	Insertion (dB)
NC1951C-506	5-6	≤0.55	±0.1	≤1.3	±0.3	±2	-
NC1953C-812/M	8-12	≤0.45	±0.1	≤1.3	±0.4	±2	≥14
NC1952C-812/M	8-12	≤0.45	±0.1	≤1.3	±0.4	±2	≥14
NC1954C-618/M	6-18	≤0.95	±0.35	≤1.6	±0.9	±4.5	≥12.5

II) 0° Dual Power Combiners

Part Number	Frequency (GHz)	Insertion Loss (dB)	Insertion Loss Variation (dB)	VSWR	Amplitude unbalance (dB)	Phase unbalance (°)	Insertion (dB)
NC1961C-206	2-6	≤0.9	±0.2	≤1.5	-	-	≥17
NC1962C-208	2-8	≤1.1	±0.2	≤1.7	-	-	≥16
NC1963C-618	6-18	≤1.0	±0.2	≤1.6	-	-	≥17

Note : SMT packed or module products can be provided using MMIC above, * : Typical Specification

2. Microwave Packaged Circuits (SMT)

2.1 Low Noise Amplifier Series

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	Input VSWR	Output VSWR	P-1 (dBm)	Power Dissipation (V/mA)
NC3023S-108	1-8	>17	± 1.5	<2.0	>10	<2.0	<2.0	5/90
NC3030S-108	1-8	>19	± 0.8	<2.2	>9	<1.8	<1.8	5/100
NC3029S-206	2-6	>24	± 0.8	<2.1	>11	<2.0	<2.0	5/100
NC3018S-2224	2.2-2.4	>28	± 0.5	<1.5	>9	<2.0	<2.0	5/55
NC3026S-2328	2.3-2.8	>33	± 0.6	<1.6	>10	<1.8	<1.8	5/60
NC3017S-2429	2.4-2.9	>34	± 0.5	<1.2	>5	<1.5	<1.5	5/35
NC3031S-2632	2.6-3.2	>22	± 0.8	<1.6	>12	<1.8	<1.8	5/60
NC3021S-2639	2.6-3.9	>21	± 1.5	<1.5	>10	<1.9	<1.8	5/45
NC3021S-3134	3.1-3.4	>22	± 0.3	<1.4	>12	<1.6	<1.6	5/45
NC3032S-406	4-6	>25	± 0.3	<2.0	>14	<1.9	<2.0	5/80
NC3027S-5258	5-6	>39	± 0.3	<1.4	>11	<1.4	<1.5	5/120
NC3033S-506	5-6	>25	± 0.3	<1.5	>11	<1.6	<1.6	5/60
NC3056S-506	5.2-5.8	>20	± 0.5(Positive Slope)	<1.4	>5	<1.4	<1.4	5/60
NC3057S-506	5.2-5.8	>38	± 0.3	<1.4	>10	<1.6	<1.6	5/90
NC3020S-5258	5.2-5.8	>23	± 0.3	<1.5	>12	<1.6	<1.4	5/60
NC3028S-610	6-10	>21	± 1.3	<2.1	>8	<1.7	<1.8	5/50
NC3034S-812	8-12	>23	± 1.2	<2.2	>11	<1.8	<1.6	5/85

2.2 Wideband Amplifier Series

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	P-1 (dBm)	Input VSWR	Output VSWR	Power Dissipation (V/mA)
NC3045S-115	DC-1.5	19	± 1	3.5*	20*	1.5*	1.5*	5.1/100
NC3043S-103	DC-3	>16	± 1	3.8*	10*	1.3*	1.3*	3.5/34
NC3046S-103	DC-3	>16	± 2	3.8*	12*	1.3*	1.3*	3.4/35
NC3047S-103	DC-3	>15	± 2	3.8*	8*	1.3*	1.3*	3.1/19
NC3042S-105	DC-5	>14	± 1.5	4.2*	14*	1.3*	1.4*	4.9/65
NC3041S-105	DC-5	>17	± 2.5	4.2*	11*	1.5*	1.3*	4.0/41
NC3044S-105	DC-5	>10	± 4.5	4.5*	14*	1.5*	1.5*	4.6/69

2.3 Power Amplifier Series

Part Number	Frequency (GHz)	Gain (dB)	Pout (dBm)	Input VSWR	Output VSWR	PAE(%)	Power Dissipation (V/mA)
NC3108S-2942	2.9-4.2	>20	36(Psat)	1.8*	2.5*	32*	8/2000
NC3109S-2945	2.9-4.5	20*	25*	1.7*	1.8*	—	8/250
NC3105S-2945	2.9-4.5	>25	>24	<1.6	<1.8	—	8/350
NC3104S-810	8-10	>26	>29	<1.8	<2.0	—	5/110, 8/420
NC3101S-812	8-11.5	>28	>16	<1.9	<1.9	—	5/150
NC3111S-8510	8.5-10.5	>22	>39	<2.6	<2.6	35*	8/3800
NC3106S-811	8-11	>20	>30	<2.2	—	—	8/600
NC3112S-1516	15-16	>20	>36	1.6*	1.5*	20*	8/2800

2.4 Microwave Switch Series

Part Number	Function	Frequency (GHz)	Insertion Loss (dB)	Isolation (dB)	Ton, Toff (ns)	Input VSWR	Output VSWR	Control Voltage (V)	Package Size
NC3604S-101	SP4T	DC-1	<1.3	>40	<30	<1.5	<1.5	TTL	SM-37
NC3603S-102	SPDT	DC-3.5	<1.2	>35	<20	<1.3	<1.3	TTL	SM-24
NC3605S-106	SPDT	DC-6	<2.2	>30	<20	<1.8	<1.8	TTL	SM65

2.5 Digital Phase Shifter Series

Part Number	Frequency (GHz)	Bits (bis)	Insertion Loss (dB)	Phase Error RMS(°)	Input VSWR	Output VSWR	Control Voltage (V)	Package Size
NC3201S-112	1-1.2	6	5*	1.5*	1.4*	1.4*	TTL	SM-32
NC3210S-1216	1.2-1.6	6	<5.5	<3	<1.5	<1.5	TTL	SM-55
NC3207S-225B	2-2.5	6	<6.5	<1.8	<1.7	<1.7	TTL	SM-43
NC3204S-2735	2.7-3.5	6	<7	<1.5	<1.9	<1.4	TTL	SM-43
NC3205S-2730	2.7-3	6	<6.5	<2.3	<1.7	<1.4	TTL	SM-43
NC3206S-3134	3.1-3.4	6	<6.8	<0.7	<1.5	<1.3	TTL	SM-43
NC3209S-3842	3.8-4.2	6	6*	2*	<1.5	<1.5	TTL	SM-43
NC3215S-5258	5.2-5.8	6	<8	<2	<1.8	<1.8	TTL/With Serial to Parallel Circuit	QF072A
NC3211S-5258	5.2-5.9	5	<8	<2	<1.8	<1.8	TTL/With Serial to Parallel Circuit	QF072A
NC3216S-5258	2.2-5.8	6	<7.8	<3	<1.8	<1.8	TTL	SM-55
NC3208S-5258	5.2-5.9	5	<8	<1.5	<1.6	<1.6	TTL/With Serial to Parallel Circuit	SM-31
NC3212S-910	9-10	5	<10	2.5*	<1.8	<1.8	TTL/With Serial to Parallel Circuit	QF072A

Note : * : Typical Specification

2.6 Digital Attenuator Series

Part Number	Frequency (GHz)	Bits (bis)	Insertion Loss (dB)	Attenuation Range (dB)	Input VSWR	Output VSWR	Control Voltage (V)	Package Size
NC3306S-102	DC-2	7	<3.1	0.5-63.5	<1.5	<1.6	TTL	SM-55
NC3303S-103	DC-4	6	<3.0	0.5-31.5	<1.6	<1.6	TTL	SM-39
NC3305S-105	DC-5	1	<1.5	9.3	<1.5	<1.5	TTL	SM-39
NC3304S-3134	0.5-4	4	<1.2	0.4-16.7	<1.4	<1.4	TTL	SM-39
NC3302S-3134	0.5-4	3	<1.0	0.8-5.6	<1.4	<1.4	TTL	SM-39
NC3301S-3134	3.1-3.4	2	<0.8	0.5-15.5	<1.25	<1.25	TTL	SM-39

2.7 Multi-functional Circuits

Limiter-Amp-PHS

Part Number	Frequency (GHz)	Bits (bis)	Insertion Loss (dB)	Attenuation Range (dB)	Input VSWR	Output VSWR	Control Voltage (V)	Package Size
NC3521S-5258	5.2-5.8	28dB	5	< 1.5	<1.5	37dBm	5/90	Qf098

Note: Multi-functional circuit can be customized according to request*: Typical Specification

3. Microwave Module

3.1 Broadband Low Noise Amplifier Module Series

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	P-1(dBm)	VSWRin	VSWRout	Operation Current (mA)	Package
NC3038M-102	1-2	>33	± 1	<1.5	>17	<2	<2	<220	SMA-13
NC3014M-108	1-8	>35	± 3	<2.0*	>11	<2.0	<2.0	180	SMA-2
NC3011M-108	1-8	>18	± 1.5	<2.0	>10	<2.0	<2.0	90	SMA-1
NC3002M-118	1-18	>26	± 3.5	<5	>15	<2.5	<2.5	200	SMA-4
NC3003M-118	1-18	>22	± 3.0	<5	>20	<2.5	<2.5	350	SMA-4
NC3004M-118	1-18	>26	± 3.0	<5	>10	<2.5	<2.5	120	SMA-4
NC3039M-204	2-4	>35	± 0.8	1.5*	>12	<2.0	<2.0	160	SMA-11
NC3020M-206	2-6	>22	± 1	<1.6	>10	<1.8	<1.6	90	SMA-1
NC3015M-218	2-18	>13	± 2	2.5*	>6	<2.0	<1.6	50	SMA-1
NC3037M-408	4-8	>40	± 1	1.6*	>12	<2.0	<2.0	200	SMA-10
NC3010M-611	6-11	>47	± 1.0	<1.7	>10	<2.0	<2.0	120	SMA-2
NC3012M-618	6-18	>15	± 1.0	2.5*	>6	<2.0	<1.6	50	SMA-1
NC3013M-618	6-18	>17	± 1.0	4.5*	>14	<2.0	<2.2	80	SMA-1
NC3029M-812	8-12	>40	± 1.5	1.7*	>10	<2.0	<2.0	100	SMA-5

Note : *, Typical Value

3.2 Low Noise Amplifier Module Series

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	P-1 (dBm)	VSWRin	VSWRout	Operation Current (mA)	Package
NC3016M-2224	2.2-2.4	>30	± 0.5	<1.5	>10	<1.5	<1.6	45	SMA-1
NC3017M-2426	2.4-2.6	>35	± 0.5	<1.1	>5	<1.5	<1.5	35	SMA-1
NC3018M-3134	3.1-3.4	>22	± 0.5	<1.3	>12	<1.6	<1.6	45	SMA-1
NC3019M-5258	5.2-5.8	>22	± 0.5	<1.5	>12	<1.5	<1.6	50	SMA-1

3.3 Power Amplifier Module Series

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (dB)	P _{out} (dBm)	VSWRin	VSWRout	Operation Current (mA)	Package
NC3111M-5258	5.2-5.8	30*	± 0.5	>44	—	—	8000	SMA-K
NC3104M-8510	8.5-10.5	20	± 1.0	40*	—	—	5500	SMA-16
NC3102M-811	8-11	>34	± 1.0	>25	<2.0	<2.0	350	SMA-4
NC3105M-1214	12-14	10*	± 1.0	37	—	—	3800	SMA-17
NC3101M-910	9-10	>60	± 0.8	>25	<2.0	<2.0	400	SMA-4
NC3107M-1517	15-17	>33	± 1.0	39*	—	—	5500	SMA-25

3.4 Phase Shifter Module Series

Part Number	Frequency (GHz)	Bit	Insert Loss (dB)	VSWRin	VSWRout	Control Level (V)	Connector	Package
NC3201M-206	2-6	5	<10	<2.2	<2.2	-5/0	SMA	SMA-6
NC3203M-812	10.9-11.56	6	<9.0	<1.8	<1.8	TTL	SMA-K	SMA-9

3.5 Attenuator Module Series

Part Number	Frequency (GHz)	Attenuation Range (dB)	Insert Loss (dB)	VSWRin	VSWRout	Control Level (V)	Connector	Package
NC3304M-118	1-18	0.5-51.5	7*	1.7*	1.7*	TTL	SMA	SMA-9
NC3301M-218	2-18	0.5-31.5	<5.0	<1.6	<1.6	TTL	SMA	SMA-9

3.6 Microwave Switches Module Series

Part Number	Mode	Frequency (GHz)	Insert Loss (dB)	Isolation (dB)	Switching Time (ns)	VSWRon	VSWRoff	Control Level (V)	Connector
NC3603M-018	SPDT	DC-18	<3.5	>32	<10	<1.8	<1.8	TTL	SMA
NC3608M-012	SPDT	DC-12	<2.0	>35	<20	<1.6	<1.6	TTL	SMA

3.7 Multi-functional Circuit Module Series

I) Limiting/Switch/LNA Functional Module Series

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	VSWRin	VSWRout	On-off Ratio (dB)	Maximum Input Power (CW)	Control Level (V)	Package
NC3501M-910A	9-10	>22	<2.6	<1.8	<1.8	>35	10W(Pulse)	TTL	SMA-7

II) Phase Shifting/Attenuation Functional Module

Part Number	Frequency (GHz)	Insert Loss (dB)	VSWRin	VSWRout	Control Level (V)	Connector	Package
NC3502M-618	6-18	<17	<2.5	<2.5	-5/0	SMA	SMA-8

III) Multi-chip Microwave T/R Module Series

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	Image Frequency Rejection (dB)	Switching Isolation (dB)	Attenuation (dB)	Driving Level	IF (MHZ)
NC3509M-811	8-11	>60	<2.5	>20	—	—	—	30
NC3506M-812	8-12	55	<3.5	>45	—	0-55	TTL	<500
NC3508M-910	9.5-10.5	>40	<4.5	>40	>45	0-50	TTL	900
NC3503M-1516	15.2-16.8	>25	<3.5	>40	>45	0-31	TTL	—

IV) Limiting/Attenuation/Low Noise Functional Module

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	VSWRin	VSWRout	Attenuation (dB)	P-1 (dBm)
NC3504M-812	8-12	>17.5	<3.5	<1.9	<1.5	20	>8

V) Digital Switching/Attenuation/Amplifier Functional Series

Part Number	Frequency (GHz)	Gain (dB)	Noise Figure (dB)	VSWRin	VSWRout	On-off Ratio (dB)	Withstanding Power	Control Level (V)	Package
NC3507M-506	5-6	>22	2.9*	<1.8	<1.8	>40	—	TTL	SMA-12

Note : *: Typical Value

VI) Filter and Switch subsystem Series

Part Number	Frequency (GHz)	Insert Loss (dB)	VSWRon	VSWRout	Control Level (V)	Connector
NC3510M-318	3-18	<7	<2.5	—	TTL	SMA

Note: Multi-functional modules and packages can be customized according to request.

4. RF/Digital Circuit

4.1 PIN Driver Series

Part Number	Function	Output Voltage (@ Maximum Drive Current) (V)			Maximum Drive Current (mA)	Quiescent Current (mA)	Switching Speed (ns)	Power Supply	Package Style
		-55°C	+25°C	+125°C					
NC2016-1C/F	Single input, Positive dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±20	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package
NC2017C/F	Single input, Inverter dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±20	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package
NC2018-1C/F	Dual input, 1-state positive output 1-state inverter output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±20	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package
NC2019C/F	Dual input, Positive dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±40	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package
NC2020C/F	Dual input, Inverter dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±40	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package
NC2021-1C/F	Dual input, 1-state positive output 1-state inverter output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±40	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package
NC2022-1C/F	Dual input, Positive dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±60	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package
NC2023-1C/F	Dual input, Inverter dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	±60	<3.5	20~50	±5V	Die or 8 leads Ceramic Flat Package

4.1 PIN Driver Series(Continued)

Part Number	Function	Output Voltage (@ Maximum Drive Current) (V)			Maximum Drive Current (mA)	Quiescent Current (mA)	Switching Speed (ns)	Power Supply	Package Style
		-55°C	+25°C	+125°C					
NC2024-1C/F	Dual input, 1-state								Die or 8 leads Ceramic Flat Package
	positive output 1-state inverter output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	± 60	<3.5	20~50	± 5V	
NC2025-1C/F	Dual input, Positive dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	± 80	<3.5	20~50	± 5V	Die or 8 leads Ceramic Flat Package
NC2026-1C/F	Dual input, Inverter dual output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	± 80	<3.5	20~50	± 5V	Die or 8 leads Ceramic Flat Package
NC2027-1C/F	Dual input, 1-state								Die or 8 leads Ceramic Flat Package
	positive output 1-state inverter output	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	± 80	<3.5	20~50	± 5V	
NC2047C/F	4-to-1 Encoder	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	± 10	<3.5	20~50	± 5	Die or Ceramic Flat Package
NC2048C/F	8-to-1 Encoder	-4.6 / +4.6	-4.5 / +4.5	-4.3 / +4.3	± 10	<3.5	20~50	± 5	Die or Ceramic Flat Package

Notes : TTL Level Input Compatible, Input current less than 1uA.

4.2 Serial to Parallel Converter FET Driver Series

Part Number	Function	Output Voltage (Output Open) (V)		Driving Current (mA)	MMIC Internal Current (mA)	Clock Frequency (MHz)	Package Style
		Low Level	High Level				
NC2044C	8 bit Serial to parallel, Complementary Output	-5	0	± 2*	<3	10*	Die
NC2045C	16 bit Serial to parallel, Complementary Output	-5	0	± 2*	<3	10*	Die
NC2046C	28 bit Serial to parallel, Complementary Output	-5	0	± 2*	<3	10*	Die
NC2044-1C	8 bit Serial to parallel, Complementary Output	-5	0	± 2*	<3	10*	Die
NC2054C	16 bit Serial to parallel, Include 2 independent Bits	-5	0	± 2*	<6	10*	Die
NC2057C	20 bit Serial to parallel, Include 4 independent Bits	-5	0	± 2*	<6	10*	Die

Notes: TTL Level Input Compatible, Input Current Less Than 1uA., -5V Power Supply, *: Typical Value

4.3 FET Driver Series

Part Number	Function	Output Voltage (@ Maximum Drive Current) (V)			Maximum Drive Current (mA)	Quiescent Current (mA)	Switching Speed (ns)	Power Supply	Package Style
		-55°C	+25°C	+125°C					
NC2034C/F	1 input, Complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 8 leads Ceramic Flat Package
NC2035C/F	2 input, complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 8 leads Ceramic Flat Package
NC2036C/F	3 input, complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 16 leads Ceramic Flat Package
NC2037C/F	4 input, complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 16 leads Ceramic Flat Package
NC2038C/F	2 input, 4-to-1 ENCoder, complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 16 leads Ceramic Flat Package
NC2039C/F	5 input, complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 20 leads Ceramic Flat Package
NC2040C/F	6 input, complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 20 leads Ceramic Flat Package
NC2041C/F	6 input, 3, 6 single output, others complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 16 leads Ceramic Flat Package
NC2042C/F	5 input, 3, 4 single output, others complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 16 leads Ceramic Flat Package
NC2043C/F	2 input, 4-to-1 Encoder, complementary output	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±4	20~50	-5V	Die or 16 leads Ceramic Flat Package
NC2044C/F	8-bit serial to parallel converter, complementary	-4.7 / -0.3	-4.6 / -0.4	-4.4 / -0.6	±4	±6	10MHz (Clock Frequency)	-5V	Die

4.4 High Speed Frequency Measurement Circuit Series

Part Number	Frequency (MHz)	Measure Error (MHz)	Input Power (dBm)	Control Voltage(V)	Power Dissipation (mW)
NC2103Q	50~500	≤0.4	-5~+5	TTL	≤20
NC2104Q	100~900	≤1	+6~+12	TTL	≤20
NC2106Q	100~1500	≤1	+6~+12	TTL	≤20

5. GaAs FETS

5.1 Low Noise GaAs FET Series

Part Number	Frequency (GHz)	Ga (dB)	NF (dB)	gm (mS)	P-1 (dBm)
NC4002S-1	1	17*	0.67*	30*	–
NC4003S-4	4	12*	0.5*	70*	15*
NC4004S-4	4	17.5*	0.5*	–	20*
NC4001S-6	6	12*	1.8*	30*	–
NC4007S-12	12	12.0	0.45	70	–
NC4005S-12	12	10*	1.0*	–	20*
NC4006S-12	12	12.5*	0.65*	–	15*

5.2 High Power GaAs FET Series

Part Number	Frequency (GHz)	Psat (dBm)	PAE (%)	Gain (dB)	Supply Voltage (V)
NC4133S-2	2.3	30.0 (P1dB) *	≥50	16*	10
NC4142S-2	2.3	≥32.8 (P1dB)	≥50	≥13.5	10
NC4134S-2	2.3	35.5 (P1dB) *	≥48	11.5*	10
NC4128S-2	2.4	37*	≥40	11.5*	9
NC4117S-4	4	≥27	–	≥10	8
NC4143S-8	8	27.5 (P1dB) *	40*	10*	10
NC4135S-8	8	29.5(P1dB)*	≥40	8.5*	10
NC4119S-8	8	≥30	≥30	≥6	8
NC4118S-12	12	≥20	≥30	≥7	7
NC4144S-14	14.5	≥21.5 (P1dB)	≥30	≥7.5	10
NC4145S-14	14.5	25.0 (P1dB) *	38*	7*	10

5.3 Internally Matched High Power GaAs FET Series

Part Number	Frequency (GHz)	Psat (dBm)	PAE (%)	Gain (dB)	Gain Flatness (dB)	Supply Voltage (V)
NC4132S-2325	2.3–2.5	≥42.0 (P1dB)	≥42	≥14	±0.5	10
NC4113S-2731	2.7–3.1	≥39	≥35	≥12	±0.5	8
NC4137S-3135	3.1–3.5	≥35.5 (P1dB)	≥40	≥11.5	±0.5	9
NC4123S-3640	3.6–4	≥35.5 (P1dB)	≥40	≥11.5	±0.5	9
NC4124S-3640	3.6–4	≥40.5 (P1dB)	≥40	≥10.5	±0.5	9
NC4151S-3742	3.7–4.2	43.0 (P1dB)	42	12	±0.6	10
NC4138S-3842	3.8–4.2	≥40.5 (P1dB)	≥40	≥10.5	±0.5	9
NC4115S-4244	4.2–4.4	≥33	≥35	≥11	±0.5	9
NC4116S-4244	4.2–4.4	≥41	≥35	≥12	±0.5	9
NC4140S-4854	4.8–5.4	≥40.0	≥41	≥10	±0.5	10
NC4141S-4854	4.8–5.4	≥33.0	≥45	≥11	±0.5	10
NC4126S-4854	4.8–5.4	≥46.5 (P1dB)	≥41	≥9	±0.8	10
NC4102S-5258	5.2–5.8	≥36	≥40	≥10	±0.5	8
NC4103S-5258	5.2–5.8	≥39	≥37	≥10	±0.5	8
NC4107S-5258	5.2–5.8	≥44	≥35	≥10	±0.5	9
NC4127S-5359	5.3–5.9	≥45	≥40	≥10	±0.8	10

5.3 Internally Matched High Power GaAs FET Series(Continued)

Part Number	Frequency (GHz)	Psat (dBm)	PAE (%)	Gain (dB)	Gain Flatness (dB)	Supply Voltage (V)
NC4139S-5359	5.3-5.9	≥46.0	≥41	≥8	±0.8	10
NC4101S-5359	5.3-5.9	≥46.5 (P1dB)	≥41	≥9	±0.8	10
NC4122S-5359	5.3-5.9	≥47	≥40	≥8	±0.5	10
NC4136S-6366	6.3-6.6	≥43 (P1dB)	≥41	≥11	±0.5	10
NC4153S-7785	7.7-8.8	≥37.5 (P1dB)	≥30	≥7	±0.5	10
NC4154S-7785	7.7-8.5	≥41.4 (P1dB)	≥40	≥8.5	±0.5	10
NC4104S-910	9-10	≥39	≥30	≥7	±0.5	8
NC4146S-910	9-10	≥41.8	≥30	≥6.8	±0.5	10
NC4108S-910	9-10	≥43	≥30	≥7	±0.5	9
NC4121S-910	9-10	≥44	≥30	≥7	±0.5	9
NC4120S-910	9-10	≥44.8	≥30	≥6.8	±0.5	9
NC4110S-9498	9.4-9.8	≥33	≥30	≥7.5	±0.2	8
NC4111S-9498	9.4-9.8	≥39	≥30	≥7.5	±0.2	8
NC4112S-9498	9.4-9.8	≥41.7	≥30	≥7	±0.2	8
NC4129S-9510	9.5-10.5	≥39.0	≥30	≥7.5	±0.5	10
NC4147S-9510	9.5-10.5	≥41.8	≥30	≥6.8	±0.5	10
NC4125S-9510	9.5-10.5	≥44.8	≥30	≥6.8	±0.5	10
NC4131S-1011	10.3-10.7	≥41.8	≥30	≥6.8	±0.5	10
NC4148S-1011	10.3-10.7	≥44.0	≥30.0	≥6.5	±0.5	10
NC4130S-1011	10.4-10.6	≥37.0	≥35	≥7	±0.3	8

Silicon devices and MMIC products

1. Silicon RF Low Noise Transistor



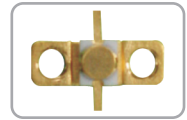
Part Number	f _o (GHz)	VCBO (V)	f _T (GHz)	F _n (dB)	G _a (dB)
Cg461	0.4	40	2	5	10
CG392	0.6	12	3	2	10
3DG142	0.6	15	0.8	2.5	8
3DG44	0.4	25	2	3.5	9
CG38	2	12	4	3.5	9
CG391	0.6	12	2	1.5	9
Cg472	0.6	30	3	2	10
Part Number	f _o (GHz)	VCBO (V)	PO(1dB) (dBm)	GP(1dB) (dB)	----
Cg481	1.7	25	21	10	----
Part Number	f _o (GHz)	VCBO (V)	PO(1dB) (dBm)	GP(1dB) (dB)	----
3DG122	0.1	60	100	10	----
CG462	0.5	30	100	10	25

2. Silicon RF MMIC



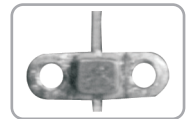
Part Number	f _L ~f _H (MHz)	G _p (dB)	ΔG _p (dB)	PO(1dB) (mW)	VSWR _{i_n}
Xn421	50~500	14	2	500	2:1
XN431	100~1000	8	2	300	2:1
XN481	30~200	16	1	1000	2:1
XN482	50~500	10	2	1000	2:1
XN491	50~500	15	2	160	2:1
XN492	50~1000	9	2	100	2:1
Part Number	f ₀ (MHz)	G _p (dB)	PO(1dB)(dBm)	VSWR _{i_n}	VSWR _{o_{ut}}
XN371	400	8	17	2:1	2.5:1
XN381	400	12	19	2:1	2.5:1
XN451	100	15	14	2:1	2.5:1
XN402(Plastic Sealed)	100	19	12	2:1	2.5:1

3. Silicon RF Continuous Wave Transistor



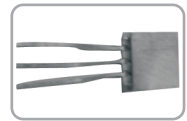
3.1 Oscillating Tube

Part Number	f_{osc} (GHz)	V_{CBO} (V)	R_{th-jc} (°C/W)	PO_{SC} (mW)	η_C (%)
Wz304	6	22	119	150	10
Wz311	4	25	50	120	16
Part Number	f_{osc} (GHz)	V_{CBO} (V)	P_{OSC} (mW)	C_{CB} (pF)	----
CG42	3.5	20	40	1.2	----
CG421	3.5	20	20	1.2	----



3.2 Microwave Static Induction Transistor

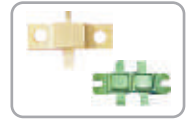
Part Number	f_o (GHz)	V_{GDO} (V)	G_p (dB)	P_o (W)	η_C (%)
Dx381	0.6	45	7	1	35
DX0211	0.35	55	10	3	----
DX0221	0.35	55	10	6.5	----



3.3 Continuous Wave Power Transistor

Part Number	hFE	V_{CBO} (V)	CCB (pF)	R_{th-jc} (°C/W)	
Dd001	≥ 50	60	30	6.5	
DD002	≥ 50	60	----	6.5	
Part Number	f_o (MHz)	V_{CC} (V)	P_o (W)	GP (dB)	η_C (%)
CD003	30	28	10	14	50
CD004	30	28	75	14	50
CD005	30	50	150	14	50
CD001	60	27	12.5	10	50
WD0331	350	24	$PO(1dB) \geq 28$	11	60
WD0421	1650–1750	24	20	7	45
WD381	2000	24	3.0	8	40
WD451	2300	20	$PO(1dB) \geq 0.5$	8	–
WD452	2300	20	$PO(1dB) \geq 1$	7	–
CD431	3000	24	7	4	35
CD41	5000	18	0.5	7	30
CD423	5000	18	1	7	30

3.4 DMOS Power Transistor (VDMOS、 L DMOS)



Part Number	f ₀ (MHZ)	V _{DS} (V)	P _o (W)	G _P (dB)	η _D (%)	t _w (μ s)	D (%)
WD371	150–175	50	100	8	50	600	15
WD372	400	40–50	200	8	50	1	1
CD006	150–175	50	300	10	50	640	14.4
CD007	2–175	50	300	10	50	650	50
CD008	380–480	28	150	8.5	40	CW	
Cd009	175	12	8	10	50	CW	

4. Silicon RF Pulse Power Transistor



Part Number	f ₀ (GHz)	V _{CC} (V)	P _o (W)	G _P (dB)	η _C (%)	t _w (μ s)	D (%)
In Research	0.225–0.255	28	180	9	50	600	12
3DA502	0.54–0.61	37	120	7	50	500	15
WD0561	0.87–0.99	36	10	8	50	300	15
WD0562	0.87–0.99	36	40	8	50	300	15
WD0563	0.87–0.99	36	220	7.4	50	300	15
3DA521	0.87–0.99	36	12	7.8	50	300	15
3DA522	0.87–0.99	36	50	7	50	300	15
3DA523	0.87–0.99	36	210	7.9	50	300	15
WD0564	0.87–0.99	28	15	8.75	50	300	15
WD0565	0.87–0.99	32	90	8.4	50	300	15
WD0563A	0.87–0.99	32	185	7.2	57	300	15
Wd0551	0.96–1.215	36	25	7	40	10	40
WD0481	0.96–1.215	36	30	9.5	40	10	10
3DA516	0.96–1.215	35	30	7.8	45	63	10
3DA517	0.96–1.215	35	50	7.5	45	63	10
3DA518	0.96–1.215	35	85	7.5	45	63	10
3DA519	0.96–1.215	35	150	7.5	45	63	10
3DA520	0.96–1.215	50	300	7.0	38	63	10
WD0511	0.96–1.215	36	120	9.2	40	10	10
WD0521	0.96–1.215	50	150	7.8	38	10	10
WD0622	0.96–1.225	30	85	7.5	38	10	40
WD0581	0.96–1.215	50	350	7	30	10	10
WD0451	1.025–1.150	28	5	9	40	10	1
WD0461	1.025–1.150	50	75	7.6	38	10	1
WD0571	1.025–1.150	50	550	5.6	30	10	1
WD0491	1.2–1.3	28	3	7.7	45	100	10
Wd0611	1.2–1.3	28	12	8	50	70	10
WD0612	1.2–1.3	28	60	8	50	70	10
WD0613	1.2–1.3	35	140	7.5	50	70	10
Wd0531	1.2–1.3	35	120	7.5	50	40	10

4. Silicon RF Pulse Power Transistor(Continued)

Part Number	fo (GHz)	Vcc (V)	Po (W)	Gp (dB)	η_c (%)	tw (μ s)	D (%)
WD0231	1.2~1.4	28	6	7	50	15000	50
WD0232	1.2~1.4	28	30	7	50	15000	50
WD0233	1.2~1.4	28	60	7	50	15000	50
Wd0301	1.2~1.4	40	100	7	50	300	10
WD0302	1.2~1.4	40	150	7	50	300	10
WD0303	1.2~1.4	40	200	7	50	300	10
3DA507	1.2~1.4	28	25	9.5	50	150	10
3DA508	1.2~1.4	40	40	8.5	50	150	10
3DA509	1.2~1.4	40	80	7.5	50	150	10
3DA510	1.2~1.4	40	110	7.4	50	150	10
3DA511	1.2~1.4	40	240	7.4	50	150	10
3DA532	1.2~1.4	36	150	8.0	38	6000	25
Wd0620	1.2~1.4	36	40	9.1	50	60	20
Wd0621	1.2~1.4	36	180	7.1	50	60	20
Wd0291	1.4~1.6	40	150	6.5	40	16	25
WD0401	1.46~1.66	40	16	8	45	150	10
Wd0402	1.46~1.66	40	100	7	40	150	10
3DA533	1.44~1.66	40	225	7.5	38	200	10
WD0101	2.5~3.0	30	6	7	30	1	5
WD481	2.5~2.75 2.75~3.0	30	20	7	30	10	5
WD0541	2.6~2.8 2.8~3.0	36	100 80	7.5 6.5	35	1	25
WD0381	2.6~2.8	35	50	7	35	0.5	30
Wd0614	2.7~3.1	36	20	8.2	45	200	10
WD0615	2.7~3.1	36	90	7.5	38	200	10
3DA529	2.7~3.0	36	110	8.5	42	300	10
3DA530	2.8~3.1	36	110	8.5	38	300	10
WD0619	3.1~3.3	30	4.8	9.8	35	100	10
3DA531	3.08~3.32	36	65	8.5	35	200	10
3DA525	3.1~3.4	32	5.5	9.0	33	300	10
3DA526	3.1~3.4	32	11	9.0	31	500	10
3DA527	3.1~3.4	36	25	7.45	38	300	10
3DA528	3.1~3.4	32	45	7.0	36	500	10
WD0431	3.1~3.4	32	12	9.3	31	300	10
WD0432	3.1~3.4	32	45	7	36	300	10
2123-40W	2.1~2.3	30	40	9.0	45	400	20
2123-100W	2.1~2.3	30	100	8.5	45	400	20
2729-4W	2.68~2.9	36	4	10	35	100	10
2729-28W	2.68~2.9	40	28	9.7	40	100	10
2729-150W	2.7~2.9	36	150	7.8	38	10	20
2731-8W	2.7~3.1	32	8	9.0	38	200	15
2731-40W	2.7~3.1	32	40	7.5	38	200	15
2731-60W	2.7~3.1	30	60	7.7	40	300	10
2731-100W	2.7~3.1	36	100	7.4	38	100	5
3134-65W	3.1~3.4	32	65	8.1	40	300	10
3134-100W	3.1~3.4	36	100	8.2	35	100	10
3135-80W	3.1~3.5	36	80	7.0	35	300	10
1500-110	1.5	40	110	7.0	45	40	10
1500-300	1.5	40	300	8.5	45	40	10

4. Silicon RF Pulse Power Transistor(Continued)

Part Number	f ₀ (GHz)	V _{CC} (V)	P ₀ (W)	G _P (dB)	η _C (%)	t _w (μs)	D (%)
668-300	0.668	50	300	9.33	45	40	10
1675-400	1.675	50	400	10	40	4	1
1030-700	1.3	45	700	10	45	4	2
720-810-300	0.7-0.82	50	300	9.9	45	150	5
960-120W	0.96-1.225	33	120	7	45	6000	25
350W LDMOS	0.48~0.61	36	350	17	50	15000	34

5. Modules



Part Number	f ₀ (GHz)	V _{CC} (V)	P ₀ (W)	G _P (dB)	η _C (%)	t _w (μs)	D (%)
JGF162	3.1-3.4	36	120	8.0	36	300	10
JGF197	3.08-3.32	36	130	8.5	35	200	10
2856-300W	2.856	36	300	7.7	35	10	20
2729-300W	2.7~2.9	36	300	7.7	35	10	20
3135-150W	3.1~3.5	36	150	7.0	35	300	10

PIN Diode Chip

Part Number	Dimension (μm)	Min. Reverse Bias VR	Max Capacitor (1MHz) C _j	Max Series Resistance (100MHz) R _s @IF	Carriers Life time τ _L (μs)	Length of I Zone (μm)	Thermal Resistance (°C/W)	Anode Diameter (μm)	Thickness (μm)
K100	330×330	100	0.05@50V	2.0@10mA	0.1	8	80	50	140
K150	330×330	150	0.05@10V	2.5@10mA	0.2	19	150	50	140
K200	400×400	200	0.15@10V	1.5@50mA	0.3	20	85	90	140
K250	500×500	250	0.20@50V	0.7@50mA	0.6	30	30	170	140
K500	660×660	500	0.7@100V	0.3@100mA	3	50	11	280	140

Capacitor Chip

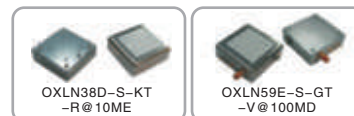
Part Number	Cap 255	Cap 305	Cap 390	Cap 460	Cap 550	Cap 750
Dimension (μm)	255×255	305×305	390×360	460×460	550×550	750×750
Value of Capacitor (PF)	13	20	33	50	130	250

Note: MOS Capacitor can be produced according to customized request.

RF & Microwave Hybrid Integrated Circuits

Crystal Oscillators

Ultra Low Phase Noise Crystal Oscillators(OXLNs, PXLNs)



Model	Frequency f(MHz)	Cut	Frequency Stability Vs Temperature (ppm)	Phase Noise SΦ(dBc/Hz) (fm=1KHz/100KHz)Typ	Ageing ppm/year (Max)	Output
PXLN32 Series	20 ~ 160	AT	± 10 ~ 50	-150/-165	2	S
OXLNM25/OXLN253 Series	40 ~ 120 40 ~ 140	SC AT	± 0.02 ~ 0.5	-155/-170 -150/-165	0.5	S
OXLN253D-S-KT-R@100MC	100	SC	± 0.02	-155/-170	0.5	S
OXLN253B-S-KR-R@100MB	100	SC	± 0.02	-153/-170	0.3	S
OXLN36/OXLN38x Series	10 ~ 120 10 ~ 200	SC AT	± 0.02 ~ 0.5	-160/-170 -150/-165	0.5	S
OXLN38D-S-KT-R@10ME	10	SC	± 0.02	-165/-170	0.1	S
OXLN5x Series	10 ~ 120 10 ~ 200	SC AT	± 0.002 ~ 0.5	-160/-170 -150/-165	0.5	S
OXLN59E-S-GT-V@100MD	100	SC	± 0.2	-160/-170	0.5	S

Custom design PXLN20 Series, OXLN41 Series, PXLN62 Series, Crystal oscillator module

Note: ppm=10-6, ppb=10-9, *:S:Sinewave; T:TTL; H:HCMOS.

Crystal Oscillators

Ruggedized OCXO (OXKs, TXKs)



Model	Frequency f(MHz)	Cut	Frequency Stability Vs Temperature (ppm)	Phase Noise SΦ(dBc/Hz) (fm=1KHz/100KHz)Typ	Ageing ppm/year (Max)	Output
OXK40 Series	40 ~ 120	SC	± 0.05 ~ ± 0.5	-155/-170(static) -140/-165(dynamic)	0.5	S
OXK581 Series	10 ~ 120	SC	± 0.05 ~ ± 0.5	-155/-170(static) -145/-165(dynamic)	0.5	S
TXK15 Series	10 ~ 33	AT	± 0.5 ~ 5	-135/-150(static) -130/-150(dynamic)(10MHz)	1	T/H
TXK251 Series(cable)	1.25 ~ 120	AT	± 0.5 ~ 5	-145/-150(static) -125/-150(dynamic)(10MHz)	1	S/T/H

Note : ppm=10-6, *:S:Sinewave ; T:TTL ; H:HCMOS. Shock method:GJB1032.

Crystal Oscillators

Phase Locked Crystal Oscillator (PLXs)

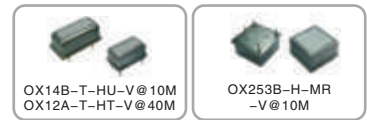


Model	Frequency f(MHz)	Phase Noise SΦ(dBc/Hz) (fm=1KHz/100KHz)Typ	Locked port	Power Supply (V)	Output
PLX36 Series	105 ~ 100	-135/-150	Optional	5or12	S/T/H
PLX50x Series	105 ~ 140	-155/-165	Optional	12or15	S

Note: *:S:Sinewave; T:TTL; H:HCMOS.

Crystal Oscillators

Oven Controlled Crystal Oscillators(OCXOs)



Model	Frequency f(MHz)	Cut	Frequency Stability Vs Temperature (ppm)	Phase Noise SΦ(dBc/Hz) (fm=1KHz/100KHz)Typ	Ageing ppm/year (Max)	Output
OX12/OX14 Series	85 ~ 40	AT	± 0.05 ~ ± 0.3	-135/-145(10MHz)	1	S/T/H
OXM15 Series	85 ~ 40	AT	± 0.05 ~ ± 0.3	-135/-145(10MHz)	1	T/H
OX20 Series	105 ~ 40	SC	± 0.01 ~ ± 0.2	-145/-150(10MHz)	0.2	S/T/H
	105 ~ 40	AT		-140/-145(10MHz)		
OX25x/OXM25(SMD) Series	105 ~ 120	SC	± 0.005 ~ 0.2	-140/-145	0.5	S/T/H
	105 ~ 140	AT		-140/-145		
OX253B-H-MR-R@10M	10	SC	± 0.005	-150/-155	0.05	H
OX30 Series	105 ~ 120	SC	± 0.005 ~ 0.2	-140/-145	0.5	S/T/H
	105 ~ 140	AT		-140/-145		
OX36/OX38x Series	10 ~ 120	SC	± 0.002 ~ 0.1	-140/-145	0.5	S/T/H
	10 ~ 200	AT		-140/-145		
OX36D-H-MR-R@10M	10	SC	± 0.003	-150/-155	0.05	H
DOX551 Series	10 ~ 20	SC	± 0.1ppb~5ppb	-145/-150(10MHz)	0.05	S/T/H
Custom design Ox303 Series、Ox40 Series						

Note: ppm=10-6, ppb=10-9, *:S:Sinewave; T:TTL; H:HCMOS.

RF/Microwave Filters

1-1. Miniature LC Bandpass Filters



Model	Center Freq. Fc(MHz)	3dB Bandwidth (% of Fc)	Sections Number	VSWR	Power Handling	Impedance	Packages
MB Series LC Bandpass Filters	1-5000	3-100	2-9	1.5:1	1W	50Ω	DIP, Microstrip pin or SMA

Note: Chebyshev response for standard, Butterworth, Bessel, Gaussian, Elliptical or more Section Number available as required.

1-2. Miniature LC Lowpass Filters



Model	Center Freq. Fc(MHz)	Orders	VSWR	Power Handling	Impedance	Packages
LP Series LC Lowpass Filters	1-6000	1-19	1.5:1	1W	50Ω	DIP, Microstrip pin or SMA

Note: Chebyshev response for standard, Butterworth, Bessel, Gaussian, Elliptical available as required.

1-3. Miniature LC Highpass Filters



Model	Center Freq. Fc(MHz)	Orders	VSWR	Power Handling	Impedance	Packages
LP Series LC Lowpass Filters	2-2000	1-19	1.5:1	1W	50Ω	DIP, Microstrip pin or SMA

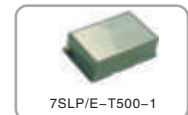
Note: Chebyshev response for standard, Butterworth, Bessel, Gaussian, Elliptical available as required.

1–4. Miniature LC Bandstop Filters



Model	Center Freq. Fc(MHz)	Fractional 3dB BW (%of Fc)	Section Number	VSWR	Power Handling	Impedance	Packages
HP Series LC Bandstop Filters	5-600	5–40	2–5	1.5:1	1W	50Ω	Microstrip pin or SMA

1–5. Surface Mount LC Filters



Model	Center Freq. Fc(MHz)	Fractional 3dB BW (%of Fc)	Section Number	VSWR	Power Handling	Impedance	Packages
S series SMD LC Filters	10-3000	5–100	2–7	1.5:1	1W	50Ω	SMD

Note: 1. Chebyshev response for standard, Butterworth, Bessel, Gaussian available as requested.

2. SBP model for bandpass shown specs. above, SLP model for lowpass, SHP model for highpass see corresponding models of LP and HP series.

1–6. Miniature Aluminum Substrate LC Filters

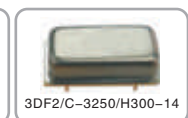
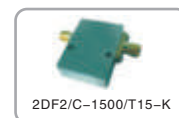


Model	Center Freq. Fc(MHz)	Fractional 3dB BW (%of Fc)	Section Number	VSWR	Power Handling	Impedance	Packages
CLC series SMD LC Filters	30-2000	5–20	2–5	1.5:1	1W	50Ω	SMD

Note: 1. Chebyshev response for standard, Butterworth, Bessel, Gaussian available as requested.

2. CB model for bandpass shown specs. above, CL model for lowpass, CH model for highpass see corresponding models of LP and HP series.

1–7. High performance Ceramic Filters



Model	Center Freq. Fc(MHz)	Fractional 3dB BW (%of Fc)	Section Number	VSWR	Power Handling	Impedance	Packages
DF Series Ceramic Filters	300-5000	0.5–7%	2–7	1.5:1	2W	50Ω	DIP, Microstrip pin or SMA

Note: New developed miniature ceramic filter, frequency range : 1100~4000MHz,
hermetic package: DIP-18B, SMT2A, SMT5.

1– 8. Miniature unity ceramic filters



Model	Center Freq. Fc(MHz)	Fractional 3dB BW (%of Fc)	Section Number	VSWR	Power Handling	Impedance	Packages
Miniature unity ceramic filters	800-6000	1–4	3–4	1.5:1	2W	50Ω	SMD

1–9. Miniature LC Delay Equalizers



Model	Equalized % BW3dB or Freq. Range	Improved Percentage	VSWR	Power Handling	Impedance	Packages
DE series LC delay Equalizers (DEB, DEL, DEH series)	Fc:5–300MHz BW:8~80 (for DEB)	>50%(delay)	1.5:1	1W	50Ω	DIP, SMA or Microstrip
	Fc:5–300MHz DC~1dB Cutoff Freq.(DEL, DEH)	>75%(phase Linearity)				

1–10. Microminiature LTCC Lowpass Filter



Model	Freq.Range fc(MHz)	Attenuation As(dB)	VSWR	Power Handling	Impedance	Dimensions(TYP) (L × W × H)(mm)	Packages
LTLP series Lowpass filter	80–5000	20–50(typ)	2:1	10W	50Ω	6.6×3.2×1.9 3.2×1.6×10	SMD

Typical parts:LTLP80–S3,LTLP320–S3,LTBP180–S2,LTLP500–S1,the part number include offset frequency(MHZ)

1–11. Microminiature LTCC Highpass Filters

Model	1dB cutoff Freq. fc(MHz)TYP	Attenuation As(dB)	VSWR	Power Handling	Impedance	Dimensions(TYP) (L × W × H)(mm)	Packages
LTHP850	850	60@DC~345MHz	1.5:1	3W	50Ω	4.4×2.4×1.8	SMD
LTHP2G	2000	60@DC~500MHz					

Typical parts:LTLP80–S3,LTLP320–S3,LTBP180–S2,LTLP500–S1,the part number include offset frequency(MHZ)

1–12. Microminiature LTCC Bandpass Filters

Model	Center Freq. Fc(MHz)	Fractional 3dB BW (% of Fc)	Section Number	VSWR	Power Handling	Impedance	Packages
LTBP series bandpass filter	0.8–18	8–20	2–5	2:1	4W	50Ω	SMA.Pins

Typical parts:LTBP5.7–8.2G–NUL,LTBP7.2–10G–NUL,LTBP3.3–4.3G–SMT,LTBP13.4–181G–SMT,the part number include offse frequency(GHz)

1–13. MEMS Si Cavity filters



Model	Freq.Range Fc(MHz)	Fractional 3dB BW (% of Fc)	Insertion Loss	Section	VSWR	40dB Shape factor	Power Handling	Dimensions (TYP) (L × W × H)(mm)	Packages
SIMF series bandpass filter	1.5 – 20	3% – 30%	2.3dB (TYP)	4–7	2:1 (TYP)	1.5:1	8W	7×4×0.8	Microstrip

Typical part:SIMF9/2R3–03,SIMF10/2R3–03,SIMF14/2R3–03,SIMF16R5/3R3–03,the part number include offset frequency(GHz)

1– 14. Microwave Cavity Filters



Model	Freq.Range Fc(GHz)	Fractional 3dB BW (% of Fc)	Section	VSWR (Zo=50Ω)	Power Handling	Packages
FS Series Combine Filters	0.3–25	0.8–30%	2–15	1.5:1	5W	SMA,N(K), SMT Microstrip, Flange available for BJ series
CC Series Coaxial Filters	0.5–23	0.8–80%	2–15	1.5:1	5W	
FD Series Interdigital Filters	0.3–6	0.3–5%	2–15	1.3:1	10W	
BJ Series Rectangular Waveguide Filters	5–40	0.3–4%	2–10	1.3:1	20W	

Note: For high power up to 300W, contact the factory.

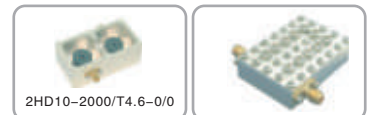
1–15. Dual Mode Cavity Filters



Model	Freq.Range Fc(GHz)	Fractional 3dB BW (% of Fc)	Cavity Number	VSWR (Zo=50Ω)	Power Handling	Packages
DM series Dual Mode Cavity Filters	3–18	0.3–1.8	1–4	1.2:1	40W	Flange

Note: Dual mode design, small size, low loss.

1–16. Dielectric Loaded Cavity Filters



Model	Freq.Range Fc(MHZ)	Fractional 3dB BW (% of Fc)	Resonators	VSWR	Power Handling	Impedance	Packages
HD series dielectric cavity filter	1000 – 12000	0.1 – 1	2 – 8	1.3:1	5W	50W	SMA,N(K),Microstrip

1–17. Helical Cavity Filters



Model	Freq.Range Fc(MHZ)	Fractional 3dB BW (% of Fc)	Resonators	VSWR	Power Handling	Impedance	Packages
HLseries Helical Filters	20 – 550	0.9 – 7	2 – 8	1.5:1	10W	50Ω	SMA,N(K),Microstrip

1–18. Tubular Bandpass Filters



Model	Freq.Range Fc(MHZ)	Fractional 3dB BW (% of Fc)	Section Number	VSWR	Power Handling	Impedance	Packages
TB series tubular bandpass filter	200 – 3000	5 – 40%	2 – 6	1.3:1	10W	50Ω	SMA,Pins

1–19. Suspended Stripline Bandpass Filters



Model	Freq.Range (GHz)	Shape Factor K50/dB/3dB	Insertion Loss dB	VSWR TYP	Power Handling	Packages
SB series Suspended Stripline Bandpass Filter	0.8 – 18	1.2(TYP)	<1.0	2.0:1	15W	SMA

TYP Model: 11SB–3000/T2000–O/O, 11SB–6000/T4000–O/O, 11SB–12000/T12000–O/O, 11SB–1400/T800 0–O/O.

1– 20. Suspended Stripline Duplexer

Model	Freq.Range (GHz)	Shape Factor K50/dB/3dB	Insertion Loss dB	VSWR TYP	Power Handling	Packages
DP series Suspended Stripline Duplexer	2 – 18	1.2(TYP)	<1.0	2.0:1	15W	SMA

TYP Model : DP–2000/5–O/O, DP–4000/5–O/O, DP–6000/5–O/O, DP–1200/5–O/O.

1–21. Miniature Plane PCB Filter



Model	Center Freq. Fc(GHz)	3dB BW% (%ofFc)	VSWR	Section	Packages
MS series plane PCB filter	800–25000	2–100	1.5:1	2–8	SMA, Microstrip Pin

Note: lowpass, highpass, bandpass and bandstop.

1–22. Bandreject filters



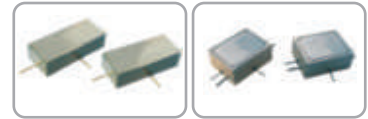
Model	Center Freq. Fc(GHz)	3dB BW% (%ofFc)	Section Number	VSWR @passband	Shape Factor BW40/dB/ BW3dB	Power Handling	Impedance	Packages
BSF series band –reject Filter	30–12000	0.2–10	2–6	1.7:1	1:4 (4sections)	10W	50Ω	SMA, N(K) Pin

1–23. Cavity Diplexers



Model	Freq.Range (MHz)	3dB BW% (%ofFc)	Section Number	VSWR @passband	Minimum Space	Power Handling	Impedance	Packages
DP series Diplexers	30–18000	0.3–20%	2 – 10	1.5:1	>2.4:1	10W	50Ω	SMA, Microstrip N(K), Flange

1-24. Miniature Electronically Tunable Bandpass Filters



Model	Tuning Range (MHz)	%Band width(3dB)	Insertion Loss1 (Typ)dB	VSWR (Zo=50Ω)	Shape Factor BW30/BW3	Passband InputPower (dBm)	Tuning Voltage	Tuning Speed
VT30-110-X	30-110	3-10%	2-6	2.0	7:1	0	DC-20V	10us
VT90-200-X	90-200							
VT200-400-X	200-400							
VT400-700-X	400-700							
VT550-865-X	550-865							
VT950-1450AE	950-1450	1.5-3.5%	15-20	2.0	22dBc(Fc ± 60MHz)	0	1-20V	10us

Note: 1) For VT30-110-x to VT550-865-x, I.L depends on 3dB BW%, I.L × BW3dB%=20-25, for an example: 4-5dB Insertion Loss for 5% BW3dB. For VT950-1450AE, the I.L shown above is the actual value in the full tuning frequency (amplitude equalizer inside).

1-25. Digitally Tuned Bandpass Filters



Model	Freq. Range Fc(MHz)	% Bandwidth (3dB)	Insertion Loss	VSWR @ Fc (Zo=50Ω)	Shape Factor BW30/BW3	Input Pwr Handling (dBm)	Tuning Control	Tuning Speed (Fc>30MHz) (TYP)	
LBM034A	1.5–4	5–10	3–5dB	≤2.0:1	≤6.5:1	10	8bit TTL Level	–	
LBM035A	4–10					20			
LBM036A	10–30					30			
LBM037A–85	30–90	5–10	3–5dB	≤2.0:1	≤6.5:1	30		8bit TTL Level	10 μ S
LBM038A–85	30–110								
LBM017A–85	40–110								
LBM039A–85	90–200								
LBM040A–85	200–400								
LBM041A–85	225–450								
LBM041A512–85	225–512								
LBM700A–85	400–700								
LBM1000A–85	700–1000								
LBM043A–512US	30–512	5–10	7–8dB	≤2.0:1	≤6.5:1	30	10bit	10 μ S	
MFSS mini digital tuned filter	30–1000 (sub band)	3–10	4–5dB	≤2.0:1	≤7:1	30	8bit	≤10 μ S	

Note: 1) Widely used as receiver front end filters for frequency hopping radios. LBM034-LBM037*, LBM039*-LBM1000* Can replace POLE ZERO Products.

2) LBM043A-512US is a newly developed miniature full band digital controlled tuned filter.

3) Low power consumption design is available for LBM034*-LBM1000*. For example low power consumption design can reduce +5V/90mA of LBM 038 to +3.3V /30 mA, 100V/1mA.

4) MFSS series is a new series of high dynamic miniature digital control filter, same performance as LBM037A-85-LBM1000A-85.

1-26. High Power Digitally Tuned Bandpass Filters



Model	Freq. Range Fc(MHz)	% Bandwidth (3dB)	Insertion Loss	VSWR @ Fc (Zo=50Ω)	Rejection (@ Fc ± Fc10%)	Input Pwr	Tuning Control	Tuning Speed (Pi=0dBm)
LBM038/5W	30-110	3-4	3.5dBmax	≤2.0:1	27dBc	5W	8bit TTL	30 μ S(TYP)
LBM038/10W						10W		
LBM39/5W	90-200	3-4	3.5dBmax	≤2.0:1	27dBc	5W	8bit TTL	30μS(TYP)
LBM40/5W	200-400							
LBM41/5W	225-512							

Note: Products with higher power up to 50W is in developing, as well as products operating at other frequency ranges.

1-27. Miniature Digitally Tuned Bandpass Filters



Model	Freq. Range Fc(MHz)	% Bandwidth (3dB)	Inserion Loss	VSWR @ Fc (Zo=50Ω)	Shape Factor BW30/BW3	Input Pwr Handling (dBm)	Tuning Control	Tuning Speed (Typ)
DVT30-110-X	30-110	3-10%	2-6dB	2.0	6.5:1	0	8bit TTL Level	50 μs
DVT90-200-X	90-200							
DVT200-400-X	200-400							
DVT400-700-X	400-700							
DVT550-865-X	550-865							
Single DC Supply, Vcc:+3-3.6V/15mA.								

Note:1) Insertion Loss depends on the % bandwidth, I.L × BW3dB% = 20~25, for an example, 4-5dB I.L for 5% bandwidth.

1-28. Shortwave Pre/Post Selector



Model	Freq. Range Fc(MHz)	3dB Bandwidth (% of Fc)	Power Gain	Stopband Rejection	Output IP3	Tuning Speed (TYP)
ML038(F)	1.6 - 30	≥ ± 1.8% (1.6 ~ 4MHz)	0-3dB	>20dB(FC ± 5%) >45dB(FC ± 10%)	20dBm (Pre Only)	10mS(Serial word control) 2mS(Parallel word control)
		≥ ± 1.5% (4~10MHz)				
		≥ ± 1%(10 ~ 30MHz)				

High Reliability RF/Microwave HIC

2-1. Broadband Amplifiers



HE321B/HEM321B/HES321B

Model	Freq. f(MHz)	Gain Gp(dB)		Gain Flatness ΔGp(dB) Max	NF Fn (dB) Typ	P ₋₁ (dBm)		VSWR Typ	Power V/mA	Package
		Typ	Min			Typ	Min			
HE316	3-50	11.0	10.0	± 0.5	1.3	21.0	20.0	1.7:1	15/35	TO-8F
HE316-1	1-110	11.0	10.0	± 0.5	1.4	18.5	16.0	1.7:1	12/25	TO-8F
HE311/HEM311	1-110	18.0	17.0	± 0.5	4.0	18.0	17.0	1.7:1	12/58	TO8C/ SMO-8C
HE312/HEM312	1-110	17.0	15.0	± 0.5	3.5	/	19.0	1.5:1	15/65	TO-8F/ SMO-8D
HE313	1-110	28.0	27.0	± 0.5	2.2	17.0	16.0	1.5:1	15/32	TO-8F
HE315	1-110	20.0	17.0	± 0.5	4.5	/	27.0	1.5:1	15/180	SP-1A
HE364B/HEM364B/HES364B	1-200	33.5	32.0	± 0.5	1.3	8.0	6.0	1.3:1	15/38	TO-8A/ SMO-8C /SM64D

Model	Freq. f(MHz)	Gain Gp(dB)		Gain Flatness Δ Gp(dB) Max	NF Fn (dB) Typ	P ₋₁ (dBm)		VSWR Typ	Power V/mA	Package
		Typ	Min			Typ	Min			
HE393A/HEM393A	10–500	18.0	17.0	±0.5	2.7	12.0	11.0	1.5:1	5/30	TO–8C
HE393B/HEM393B	10–500	18.0	17.0	±0.5	4.0	17.0	16.5	1.5:1	5/60	/SMO–8C
HE372B/HEM372B/HES372B	10–500	20.0	19.0	±0.5	2.2	10.0	9.5	1.5:1	15/25	TO–8C /SMO–8C
	10–500	28.0	25.0	±0.5	2.0	4.0	3.0	1.5:1	12/35	
HE360A/HEM360A/HES360A	10–500	29.0	28.0	±0.5	1.7	7.5	6.0	1.5:1	15/38	/SM64D
HE361B/HEM361B/HES361B	10–500	29.0	28.0	±0.5	1.8	7.0	6.0	1.3:1	15/38	
HE373B/HEM373B/HES373B	10–1000	15.0	14.0	±0.5	2.8	8.5	8.0	1.9:1	15/25	TO–8C /SMO–8C
HE394A/HEM394A	10–1000	16.0	15.0	±0.5	3.0	11.0	10.0	1.8:1	5/30	
HE394B/HEM394B	10–1000	16.0	15.0	±0.5	4.5	16.0	15.0	1.7:1	5/60	TO–8A /SMO–8C
HE321D/HEM321D/HES321D	10–1000	19.5	18.0	±1.0	3.0	1.5	0	1.5:1	12/35	
HE362B/HEM362B/HES362B	10–1000	19.0	18.0	±1.0	4.0	2.0	0	1.8:1	15/38	/SMO–8C /SM64D
HE461B/HEM461B/HES461B	10–1000	24.0	23.0	±0.5	3.5	10.5	10.0	1.7:1	15/45	
HE374B/HEM374B/HES374B	10–1500	11.0	9.5	±0.75	4.5	9.0	8.5	2.0:1	15/25	TO–8C /SMO–8C
HE395A/HEM395A	10–1500	11.5	11.0	±0.5	4.0	10.0	9.0	1.7:1	5/30	
HE395B/HEM395B	10–1500	11.5	10.0	±0.5	4.8	14.0	13.0	1.7:1	5/60	TO–8A /SMO–8C
HE462B/HEM462B	10–1500	20.0	19.0	±0.75	4.0	8.5	8.0	1.9:1	15/45	
HE463B/HEM463B	10–2000	17.0	16.0	±1.0	5.0	/	8.0	2.0:1	15/45	TO–8C /SMO–8C
HE397A/HEM397A	10–2000	17.0	15.0	±0.5	1.7	16.0	15.0	1.5:1	5/55	
HE397B/HEM397B	10–3000	14.5	13.0	±0.5	2.0	16.0	15.0	1.5:1	5/55	SM25
HE397B–2	20–3600	22.0	20.0	±1.0	2.5	16.5	15.0	1.7:1	5/85	
HE386A/HEM386A/HES386A	20–200	10.5	10.0	±0.5	1.2	/	15.0	1.8:1	15/15	TO–8C /SMO–8C
HE386B/HEM386B/HES386B	20–200	10.5	10.0	±0.5	1.5	/	19.0	1.8:1	15/30	
HE386D/HEM386D/HES386D	20–200	10.5	10.0	±0.5	1.2	/	10.0	1.8:1	5/10	SP–1A
HE391D	20–200	11.0	10.0	±0.5	4.5	26.0	25.0	1.7:1	15/160	
HE365/HEM365/HES365	20–200	18.0	17.0	±1.0	4.2	18.0	17.0	1.6:1	12/58	TO–8C /SMO–8C
HE385C/HEM385C/HES385C	20–250	7.5	7.0	±0.5	1.8	24.0	23.0	2.0:1	15/50	
HE389A/HEM389A/HES389A	20–250	30.0	29.0	±0.5	2.0	21.0	20.0	2.0:1	15/45	/SMO–8C /SM64C
HE389B/HEM389B/HES389B	20–250	30.0	29.0	±0.5	3.0	23.5	22.0	2.0:1	15/65	
HE387E/HEM387E/HES387E	20–300	25.0	24.0	±0.5	1.0	12.0	11.0	1.5:1	5/18	TO–8C /SMO–8C
HE385A/HEM385A/HES385A	20–400	/	8.0	±0.5	1.5	11.0	10.0	1.8:1	15/15	
HE385B/HEM385B/HES385B	20–400	/	8.0	±0.5	1.8	18.0	16.0	2.0:1	15/30	TO–8C /SMO–8C
HE391C	20–400	16.0	14.0	±0.5	4.0	24.0	23.0	1.8:1	15/120	
HE387A/HEM387A/HES387A	20–400	26.0	25.0	±0.5	2.3	17.0	16.5	2.0:1	15/30	/SMO–8C
HE387B/HEM387B/HES387B	20–400	26.0	25.0	±0.5	2.7	21.0	20.0	2.0:1	15/45	
HE388A/HEM388A/HES388A	20–400	26.0	25.0	±0.5	3.5	22.5	22.0	2.0:1	15/65	/SM64C
HE381B/HEM381B/HES381B	20–500	12.0	11.0	±0.5	2.4	12.5	12.0	1.5:1	15/32	
HE383B/HEM383B/HES383B	20–500	11.0	10.0	±0.5	4.0	16.5	16.0	1.7:1	15/45	/SM64C
HE383C/HEM383C/HES383C	20–500	11.0	10.0	±0.5	4.5	20.0	19.0	1.8:1	15/60	
HE396A/HEM396A/HES396A	20–500	10.5	10.0	±0.5	2.0	7.5	7.0	1.8:1	5/17	SP–1A
HE396B/HEM396B/HES396B	20–500	10.5	10.0	±0.5	2.0	/	13.0	1.8:1	5/30	
HE391B/HEM391B/HES391B	20–500	16.0	15.0	±0.5	3.8	19.5	19.0	1.5:1	15/65	TO–8D /SMO–8D
HE390A	20–500	18.0	17.0	±0.75	6.0	27.5	27.0	1.7:1	15/180	
HE390B	20–520	16.5	15.0	±0.5	2.3	29.0	28.0	1.9:1	12/180	SP–1A
HE390C	20–1000	13.0	12.0	±1.0	3.0	30.0	29.0	1.8:1	12/220	
HE861/HEM861	20–500	30.0	26.0	±0.5	4.0	/	18.0	1.7:1	12/82	SP–1A
HE383B–2L/HEM383B–2L	20–600	11.5	10.0	±0.5	1.5	24.5	24.0	1.8:1	15/100	
HE383B–3L/HEM383B–3L	20–600	14.0	13.0	±0.5	1.5	24.5	24.0	1.8:1	15/100	SP–1A
HE388D–2/HEM388D–2	20–600	23.0	21.0	±0.5	0.8	20.0	19.0	1.6:1	5/80	
HE388D–2B/HEM388D–2B	20–600	22.0	21.0	±1.0	1.0	22.0	21.0	1.5:1	5/120	SP–1A
HE388D–4/HEM388D–4	20–600	23.0	21.0	/	0.6	20.5	19.0	1.5:1	5/85	

Model	Freq. f(MHz)	Gain Gp(dB)		Gain Flatness ΔGp (dB) Max	NF Fn (dB) Typ	P ₋₁ (dBm)		VSWR Typ	Power V/mA	Package
		Typ	Min			Typ	Min			
HE391A/HEM391A/HES391A	20–700	16.0	15.0	±0.5	3.0	17.5	17.0	1.8:1	15/55	TO–8C /SMO–8C /SM64C
HE382B/HEM382B	20–1000	11.0	10.0	±0.5	3.5	/	8.0	1.8:1	15/25	TO–8C /SMO–8C
HE382B–1/HEM382B–1	20–1000	11.0	10.0	±0.5	1.4	18.5	18.0	1.4:1	5/50	
HE382B–2/HEM382B–2	20–1000	15.0	14.0	±0.5	1.4	19.5	19.0	1.5:1	5/50	
HE373C/HEM373C	20–1000	12.5	12.0	±0.5	3.8	/	17.0	1.8:1	15/60	
HE388E/HEM388E/HES388E	20–1000	19.0	17.0	±0.5	1.2	17.0	15.0	1.7:1	5/60	TO–8C /SMO–8C /SM64C
HE871/HEM871	20–1000	26.0	22.0	±1.0	4.5	/	17.0	1.7:1	12/82	TO–8D
HE872/HEM872	20–1000	37.0	35.0	±0.5	1.2	18.0	17.0	1.7:1	5/80	/SMO–8D
HE383B–4	100–600	12.0	11.0	±0.5	1.7	/	27.0	1.5:1	15/160	QF004A
HE387C/HEM387C	100–700	21.0	20.0	±0.5	2.5	16.0	15.0	1.5:1	15/30	TO–8C /SMO–8C
HE387D/HEM387D	100–700	22.0	21.0	±0.5	3.8	21.0	20.0	1.5:1	15/55	
HE383B–2/HEM383B–2	100–1000	12.0	11.0	±0.5	1.7	/	24.0	1.5:1	15/110	
HE575A/HEM575A	10–3000	12.0	11.0	±0.5	2.8	16.5	15.0	1.6:1	12/50	
HE575B/HEM575B	10–3000	12.0	11.0	±0.5	2.8	20.0	19.0	1.6:1	12/75	TO–8C
HE575C	10–1500	13.5	12.0	±0.5	2.8	24.5	24.0	1.6:1	12/145	
HE576A/HEM576A	100–3500	12.5	11.0	±0.5	2.8	16.5	15.0	1.6:1	12/50	TO–8C
HE576B/HEM576B	100–3500	12.5	11.0	±0.5	2.8	20.0	19.0	1.6:1	12/80	/SMO–8C
HE576C	100–3000	12.5	11.0	±0.5	2.7	25.0	24.0	1.6:1	12/150	TO–8C

2–2. Low Noise Amplifier



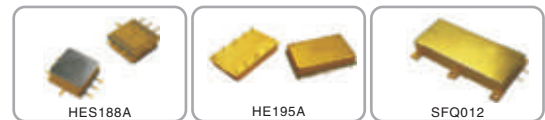
Model	Freq. f(MHz)	Gain Gp(dB)		Gain Flatness ΔGp (dB) Max	NF Fn (dB)		P ₋₁ (dBm)		VSWR Typ	Power V/mA	Package
		Typ	Min		Typ	Max	Typ	Min			
HE550	0.32–0.38	27.0	25.0	±1.25	0.9	1.2	0	/	2.0:1	5/12	TO–8F
HE550A	0.5–0.7	27.0	25.0	±1.25	0.9	1.2	8.0	3.0	2.0:1	12/55	
HE550AL	0.5–0.7	27.0	25.0	±1.25	0.9	1.2	8.0	3.0	2.0:1	5/55	
HE550B	0.6–1.0	27.0	24.0	±1.25	0.9	1.2	10.0	3.0	2.0:1	12/55	
HE550BL	0.6–1.0	27.0	24.0	±1.25	0.9	1.2	10.0	3.0	2.0:1	5/55	
HE551/HEM551/HES551	0.9–1.3	30.0	28.0	±1.0	1.0	1.3	11.5	11.0	1.5:1	12/65	TO–8D/ SMO–8D/ SM64D
HE551L/HEM551L/HES551L	0.9–1.3	30.0	28.0	±1.0	1.1	1.3	12.0	10.0	1.5:1	5/55	
HE552/HEM552/HES552	1.2–1.5	28.0	23.0	±1.0	1.1	1.35	12.0	11.0	1.5:1	12/65	
HE552L/HEM552L/HES552L	1.2–1.5	29.0	23.0	±1.0	1.2	1.35	12.0	10.0	1.5:1	5/60	
HE553/HEM553/HES553	1.4–1.7	28.0	23.0	±1.0	1.1	1.4	12.0	10.0	1.6:1	12/65	
HE553L/HEM553L/HES553L	1.4–1.7	28.0	23.0	±1.0	1.1	1.4	12.0	10.0	1.6:1	5/60	TO–8D /SMO–8D
HE554/HEM554	2.0–2.5	24.0	22.0	±1.0	1.1	1.5	10.5	10.0	1.8:1	12/65	
HE554L/HEM554L	2.0–2.5	24.0	22.0	±1.0	1.1	1.5	10.5	10.0	1.8:1	5/65	
HE554B/HEM554B	2.4–2.8	24.0	22.0	±1.0	1.2	1.5	10.5	10.0	1.8:1	12/65	
HE554BL/HEM554BL	2.4–2.8	24.0	22.0	±1.0	1.2	1.5	10.5	10.0	1.8:1	5/65	
HEM554D	2.7–3.0	24.0	23.0	±0.5	1.1	1.3	9.0	8.0	1.5:1	5/60	SMO–8C
HEM554E	2.7–3.0	13.0	12.0	±0.4	0.7	0.8	9.0	8.0	1.4:1	5/45	SMO–8D
HE008/HEM008	3.1–3.4	23.0	22.0	±0.5	1.1	1.5	9.0	8.0	1.5:1	12/50	TO–8D/ SMO–8D

2-3. Wideband Amplifier



Model	Freq. f(MHz)	Gain Gp(dB)		Gain Flatness $\Delta Gp(dB)$ Max	NF Fn (dB)		P ₋₁ (dBm)		VSWR Typ	Power V/mA	Package
		Typ	Min		Typ	Max	Typ	Min			
HE244A	2-8	11	10	± 1.0	2.7	3.5	10.5	10	1.8:1	12/40	SP-3
HE244B	2-8	21	18	± 1.0	2.7	3.5	10.5	10	1.8:1	12/80	SP-3
MKF0408-0113	4-8	12	10	± 0.5	2.3	2.5	15	13	1.8:1	12/40	2C(17 × 17 × 8)
MKF0408-0213	4-8	21	20	± 0.5	2.3	2.5	15	13	1.8:1	12/60	2C(17 × 17 × 8)
MKF0408-0313	4-8	32	30	± 0.5	2.3	2.5	15	13	1.8:1	12/80	2C(22 × 17 × 8)
MKF0408-0216	4-8	21	20	± 0.5	2.7	3.0	17	16	1.8:1	12/80	2C(17 × 17 × 8)
MKF0408-0316	4-8	32	30	± 0.5	2.7	3.0	17	16	1.8:1	12/120	3C(22 × 17 × 8)
MKF0208-0110	2-8	11	10	± 1.0	2.2	2.5	11	10	1.8:1	12/40	2C(17 × 17 × 8)
MKF0208-0210	2-8	21	20	± 1.0	2.7	3.0	11	10	1.8:1	12/60	2C(17 × 17 × 8)
MKF0208-0310	2-8	32	30	± 1.0	2.7	3.0	11	10	1.8:1	12/80	3C(22 × 17 × 8)
MKF0208-0213	2-8	21	20	± 1.0	2.7	3.0	14	13	1.8:1	12/60	2C(17 × 17 × 8)
MKF0208-0313	2-8	32	30	± 1.0	2.7	3.0	14	13	1.8:1	12/80	3C(22 × 17 × 8)
MKF0812-0110	8-12	12	10	± 1.0	1.8	2.5	12	10	2.0:1	12/40	2C(17 × 17 × 8)
MKF0812-0210	8-12	20	18	± 1.0	2.0	2.5	12	10	2.0:1	12/80	3C(22 × 17 × 8)
MKF0812-0310	8-12	30	28	± 1.0	2.0	2.5	12	10	2.0:1	12/100	2C(22 × 17 × 8)
MKF1218-0210	12-18	16	14	± 1.5	2.5	3.5	11	10	2.0:1	12/70	2C(17 × 17 × 8)
MKF1218-0213	12-18	22	20	± 1.5	2.8	3.5	14	13	2.0:1	12/140	2C(17 × 17 × 8)
MKF1218-0313	12-18	28	26	± 1.5	2.8	3.5	14	13	2.0:1	12/180	3C(22 × 17 × 8)
MKF0618-0113	6-18	14	12	± 1.5	4.0	5.0	14	13	1.5:1	12/70	3C(22 × 17 × 8)
MKF0618-0213	6-18	20	18	± 1.5	4.0	5.0	14	13	1.5:1	12/100	3C(22 × 17 × 8)
MKF0618-0313	6-18	28	26	± 1.5	4.0	5.0	14	13	1.5:1	12/130	4C(27 × 17 × 8)
MKF0218-0108	2-18	20	18	± 1.0	4.5	5.0	11	10	2.0:1	12/90	2C(17 × 17 × 8)
MKF0218-0213	2-18	30	28	± 2.0	4.5	5.0	14	13	2.0:1	12/130	3C(22 × 17 × 8)

2-4. Broadband Limiting Amplifier



Model	Frequency f(MHz)	Small-Signal Gain Gp(dB) Typ	Gain Flatness $\Delta Gp(dB)$ Max	Limiting Output Power Po(dBm)Typ	Even Order Harmonic Suppression (dB)	NF Fn(dB) Max	Power V/mA	Package
HE072/HEM072 /HES072	10-300	10	± 0.5	0	-20	7.0	15/25	TO-8C/ SMO-8D/ SM64D
HE072A/HEM072A /HES072A	2-100	13	± 0.5	0	-25	5.0	15/25	
HE072B/HEM072B /HSM072B	10-400	10	± 0.5	-3.5	-25	5.0	5/15	
HE073/HEM073	10-300	20	± 0.5	0	-20	7.5	15/45	TO-8D/ SMO-8D
HE073A/HEM073A	200-500	20	± 0.5	0	-20	6.0	15/45	
HE073B/HEM073B	2-100	26	± 0.5	0	-30	6.0	15/45	
HE188/HEM188 /HES188	5-1100	11.5	± 0.5	14	-20	8.5	15/55	TO-8C/SMO -8C/SM64D
HE188A/HEM188A /HES188A	1000-2000	10.5	± 0.5	14	-15	9.5	15/55	
HEM188B	2000-4000	11	± 0.5	12	-	8.0	5/50	

Model	Frequency f(MHz)	Small- Signal Gain Gp(dB) Typ	Gain Flatness ΔG_p (dB) Max	Limiting Output Power Po(dBm)Typ	Even Order Harmonic Suppression (dB)	NF Fn(dB) Max	Power V/mA	Package
HE195	10–300	75	± 0.5	12	–	3.5	12/240	HD-28A-1
HE195A	200–400	75	± 0.5	12	–	6.0	12/240	
HE195B	400–1000	90	± 0.5	10	–	7.0	5/400	
HE195C	10–100	60	± 0.5	–3.5	–	7.0	5/80	DIP-15
HE234	400–1100	48	± 0.5	5.0	–	6.0	12/230	
SFQ012	1100–1900	65	± 1.0	0	–	7.5	5/280	SP-10
SFQ012A	4000–8000	12	± 0.75	10	–	7.5	5/65	SMA(22 × 17 × 18)
SFQ012B	8000–12000	11	± 0.75	10	–	7.5	5/65	SMA(22 × 17 × 18)

2–5. VGC and AGC Amplifiers



Model	Frequency f(MHz)	Gain Gp(dB) Typ	VGC Range (dB)		VGC Voltage /VGC Current V/mA	P-1 (dBm) Typ	Power V/mA	Package
			<200MHz	<500MHz				
HE761/HEM761	20–500	17.5	35	30	0–12/0–7	9.0	12/35	TO-8G/SMO-8E
HE762	20–200	31.0	50	/	0–12/0–10	8.0	12/50	TO-8H
HE190*	20–100	46.5	55(<100MHZ)	/	0–5/0–15	7.0	15/65	TO-8C-2

Note: “*” equivalent to AGC553, AGC230.

Model	Frequency f(MHz)	Max AGC Gain Gp (dB)typ	AGC Dynamic range(dB)	AGC output control range (dBm)Typ	Power V/mA	Package
JGF051A	10–200	59	≥ 60	–10–+5	12/110	HD-28A
JGF051B	10–200	59	≥ 60 (Typ)	0	12/110	HD-28A
JGF051C	10–200	59	≥ 60	–10–+5	12/110	HD-28A
JGF051D	10–200	59	≥ 60 (Typ)	–10–+5	12/110	DIP-15-2

Note: “*” equivalent to AGC553, AGC230.

High Reliability RF/Microwave HIC

RF/Microwave Switches



Model	Frequency f(MHz)	Switching Speed Ton(ns) Typ	ISO (dB) Min	I.L(dB) Typ	VSWR Typ	Type	Function	Package (mm)
SW101	0.5–2.0	120	70/65	0.8/1.2	1.3	SPST	reflective	SMA Connectors 26.6 × 15.6 × 8.3
SW101B	0.5–2.0	120	70/65	1.0/1.5	1.3	SPST	absorptive	
SW102	1.0–4.0	120	70/65	1.0/1.5	1.4	SPST	reflective	
SW102B	1.0–4.0	120	70/65	1.4/1.8	1.4	SPST	absorptive	
SW103	2.0–8.0	120	65/60	1.5/2.0	1.7	SPST	reflective	
SW103B	2.0–8.0	120	65/60	1.8/2.5	1.7	SPST	absorptive	
SW104	2.0–12.0	120	65/60	2.0/2.5	1.7	SPST	reflective	SMA Connectors 26 × 15.6 × 8.3
SW105	2.0–18.0	120	60/55	3.0/3.5	2.0	SPST	reflective	
SW201	0.5–2.0	120	70/65	0.8/1.5	1.3	SPDT	reflective	
SW201B	0.5–2.0	120	70/65	1.0/1.5	1.3	SPDT	reflective	
SW202	1.0–4.0	120	70/65	1.0/1.7	1.4	SPDT	absorptive	
SW202B	1.0–4.0	120	70/65	1.4/2.0	1.4	SPDT	reflective	
SW203	2.0–8.0	120	65/60	1.5/2.0	1.7	SPDT	absorptive	Two Packages SW4xx: 34 × 30 × 9 SW4xx: 56 × 26 × 10
SW203B	2.0–8.0	120	65/60	1.8/2.5	1.7	SPDT	reflective	
SW204	2.0–12.0	120	65/60	2.0/2.5	1.7	SPDT	absorptive	
SW205	2.0–18.0	120	60/55	3.0/3.5	2.0	SPDT	absorptive	
SW401/SWB401	0.5–2.0	120	70/65	1.0/1.5	1.5	SP4T	absorptive	
SW401B/SWB401B	0.5–2.0	120	70/65	1.2/1.8	1.5	SP4T	reflective	
SW402/SWB402	1.0–4.0	120	70/65	1.5/2.0	1.7	SP4T	absorptive	Two Packages SW6xx: 44 × 44 × 11.5 SWB6xx: 84 × 35 × 11.5
SW402B/SWB402B	1.0–4.0	120	70/65	1.8/2.3	1.7	SP4T	reflective	
SW403/SWB403	2.0–8.0	120	65/60	2.0/2.5	2.0	SP4T	absorptive	
SW403B/SWB403B	2.0–8.0	120	65/60	2.5/2.8	2.0	SP4T	reflective	
SW404/SWB404	2.0–12.0	120	65/60	3.0/3.5	2.0	SP4T	absorptive	
SW404B/SWB405	2.0–18.0	120	60/55	3.5/4.0	2.0	SP4T	absorptive	
SW601/SWB601	0.5–2.0	120	70/65	1.0/1.5	1.5	SP6T	absorptive	Two Packages SW6xx: 44 × 44 × 11.5 SWB6xx: 84 × 35 × 11.5
SW601B/SWB601B	0.5–2.0	120	70/65	1.2/1.8	1.5	SP6T	reflective	
SW602/SWB602	1.0–4.0	120	70/65	1.5/2.0	1.7	SP6T	absorptive	
SW602B/SWB602B	1.0–4.0	120	70/65	1.8/2.3	1.7	SP6T	reflective	
SW603/SWB603	2.0–8.0	120	65/60	2.0/2.5	2.0	SP6T	absorptive	
SW603B/SWB603B	2.0–8.0	120	65/60	2.5/2.8	2.0	SP6T	reflective	
SW604/SWB604	2.0–12.0	120	65/60	3.0/3.5	2.0	SP6T	absorptive	
SW605/SWB605	2.0–18.0	120	60/55	3.5/4.5	2.0	SP6T	absorptive	

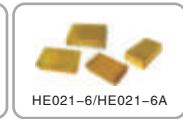
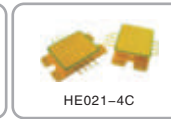
RF/Microwave Switches

Model	Frequency f(MHz)	Switching Speed Ton(ns) Typ	ISO (dB) Min	I.L(dB) Typ	VSWR Typ	Type	Function	Package (mm)
SW801	0.5–2.0	120	70/65	1.0/1.5	1.5	SP8T	reflective	SMA Connectors 112 × 40 × 11.5
SW801B	0.5–2.0	120	70/65	1.2/1.8	1.5	SP8T	absorptive	
SW802	1.0–4.0	120	70/65	1.5/2.0	1.7	SP8T	reflective	
SW802B	1.0–4.0	120	70/65	1.8/2.3	1.7	SP8T	absorptive	
SW803	2.0–8.0	120	65/60	2.0/2.5	2.0	SP8T	reflective	
SW803B	2.0–8.0	120	65/60	2.5/2.8	2.0	SP8T	absorptive	
SW804	2.0–12.0	120	65/60	3.0/3.5	2.0	SP8T	reflective	
SW805	2.0–18.0	120	60/55	3.5/4.5	2.0	SP8T	reflective	

High Reliability RF/Microwave HIC

0° Power Combiners/Splitters

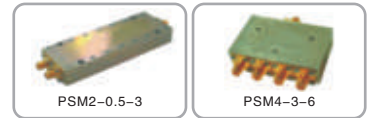
5–1.0° Power Combiners/Splitters



Model	Frequency f(MHz)	Way	I.L(dB) Typ	ISO(dB) Typ	Phase Unbalance Δ deg(°) Typ	Amplitude Unbalance Δ dB(dB) Typ	VSWR Typ	Package (mm)
HE/HEM/HES021-2	10 – 750	2	0.9	23	2°	0.2	1.3:1	To-8A/SMO-8C/SC04
HE021-2A	30 – 1500	2	0.8	25	2°	0.3	1.3:1	To-8F
HE/HEM/HES021-2B	0.5 – 200	2	0.3	35	0.5°	0.2	1.2:1	To-8A/SMO-8C/SC04
HE021-2C	700 – 2400	2	0.9	23	2°	0.3	1.3:1	SP-1
HE022-2A	800 – 1200	2	0.7	21	2°	0.2	1.4:1	SP-1
HE022-2B	1000 – 2000	2	0.7	24	2°	0.2	1.4:1	SP-1
HE022-2C	1600 – 3000	2	0.8	23	4°	0.3	1.5:1	SP-1
HE021-3	20 – 1000	3	0.8	22	2°	0.3	1.3:1	SP-1
HE021-3A	0.5 – 200	3	0.6	25	1°	0.3	1.2:1	To-8H
HE021-3B	5 – 500	3	0.7	25	1°	0.3	1.3:1	To-8H
HE021-3C	700 – 1800	3	0.9	22	3°	0.4	1.3:1	SP-1
HE022-3A	1100 – 2200	3	0.9	22	8°	0.4	1.3:1	SP-1
HE022-3B	1800 – 3000	3	0.9	22	6°	0.4	1.3:1	SP-1
HE021-4	10 – 500	4	0.9	23	3°	0.3	1.3:1	To-8H
HE021-4A/HE021-4D	20 – 1200	4	1.5	18/23	4°	0.5	1.4:1	SP-2/DIP-15
HE021-4B	0.5 – 200	4	0.6	28	1°	0.2	1.2:1	To-8H
HE021-4C	750 – 1500	4	1.2	18	4°	0.5	1.4:1	SP-2
HE022-4	1000 – 2200	4	1.0	22	4°	0.5	1.4:1	SP-2
HE021-6	10 – 500	6	0.8	23	2°	0.3	1.3:1	DIP-15
HE021-6A	10 – 500	6	0.8	23	2°	0.3	1.3:1	HD-28C
HE022-6A	600 – 1200	6	1.2	25	4°	0.3	1.3:1	HD-32A
HE021-8A	10 – 500	8	1.0	25	2°	0.3	1.3:1	HD-28C

Note: 1. Custom solution available. 2. SMA connector package available.

5-2.0° Power Combiners/Splitters



Model	Frequency f(MHz)	Way	I.L(dB) Typ	ISO(dB) Typ	Phase Unbalance $\Delta \text{deg} (^{\circ})$ Typ	Amplitude Unbalance $\Delta \text{dB(dB)}$ Typ	VSWR Typ	Dimension (mm)
PSM2-0.5-3	0.5-3.0	2	0.6	20	2.5°	0.3	1.3:1	102×36×13
PSM2-0.5-6	0.5-6.0	2	1.0	19	4°	0.4	1.4:1	102×36×13
PSM2-1-2	1.0-2.0	2	0.4	21	1.5°	0.2	1.2:1	28×36×13
PSM2-2-4	2.0-4.0	2	0.4	20	1.5°	0.2	1.2:1	28×36×13
PSM2-2-8	2.0-8.0	2	0.5	18	3°	0.3	1.3:1	28×36×13
PSM2-3-6	3.0-6.0	2	0.45	20	2°	0.2	1.3:1	28×25.4×13
PSM2-4-8	4.0-8.0	2	0.45	22	2°	0.2	1.3:1	28×25.4×13
PSM2-4-10	4.0-10.0	2	0.7	20	3°	0.3	1.3:1	28×25.4×13
PSM2-7-12.5	7.0-12.5	2	0.5	20	3°	0.3	1.3:1	28×25.4×13
PSM3-0.5-3	0.5-3.0	3	0.7	19	4°	0.3	1.4:1	102×42×13
PSM3-1-2	1.0-2.0	3	0.4	20	2°	0.2	1.2:1	45×54×13
PSM3-2-4	2.0-4.0	3	0.4	20	2°	0.3	1.3:1	45×42×13
PSM3-3-6	3.0-6.0	3	0.5	20	3°	0.3	1.3:1	45×30×13
PSM3-4-8	4.0-8.0	3	0.5	20	3°	0.4	1.3:1	45×30×13
PSM4-0.5-3	0.5-3.0	4	0.8	20	3°	0.3	1.3:1	102×78×13
PSM4-0.5-6	0.5-6.0	4	1.5	19	4°	0.6	1.4:1	102×72×13
PSM4-1-2	1.0-2.0	4	0.5	22	3°	0.3	1.2:1	58×56×13
PSM4-2-4	2.0-4.0	4	0.5	22	3°	0.3	1.3:1	58×34×13
PSM4-2-8	2.0-8.0	4	1.0	20	4°	0.4	1.4:1	58×56×13
PSM4-3-6	3.0-6.0	4	0.5	21	3°	0.3	1.4:1	58×34×13
PSM4-4-8	4.0-8.0	4	0.8	21	4°	0.4	1.4:1	58×34×13
PSM4-5-10	5.0-10.0	4	0.8	21	4°	0.4	1.4:1	58×34×13
PSM4-7-12.5	7.0-12.5	4	0.8	19	6°	0.4	1.4:1	58×34×13

5-3.0° Broadband Power Combiners/Splitters



Model	Frequency f(MHz)	Way	I.L(dB) Typ	ISO(dB) Typ	Phase Unbalance $\Delta \text{deg} (^{\circ})$ Typ	Amplitude Unbalance $\Delta \text{dB(dB)}$ Typ	VSWR Typ	Dimension (mm)
PSM2-0220G	2.0-20.0	2	0.7	25	$\pm 1.5^{\circ}$	0.2	1.3:1	37×28×13
PSM2-0226G	2.0-26.5	2	0.8	20	$\pm 1.5^{\circ}$	0.4	1.4:1	37×28×13
PSM3-0220G	2.0-20.0	3	0.8	20	$\pm 2^{\circ}$	0.4	1.5:1	41×20×13
PSM4-0220G	2.0-20.0	4	1.2	20	3°	0.4	1.5:1	65×39×13
PSM8-0118G	0.8-18.0	8	2.0	18	$\pm 3^{\circ}$	± 0.3	1.7:1	120×78×12

5-4.0° Power Combiners/Splitters



Model	Frequency f(MHz)	Way	I.L(dB) Typ	ISO(dB) Typ	Phase Unbalance Δ deg(°) Typ	Amplitude Umbalance Δ dB(dB) Typ	VSWR Typ	Dimension (mm)
PSM6-1-200	1-200	6	0.9	30	2°	0.3	1.2:1	80 × 32 × 13
PSM6-10-500	10-500	6	1.0	26	3°	0.4	1.3:1	80 × 32 × 13
PSM8-1-200A/B	1-200	8	0.9	30	2°	0.3	1.2:1	A:103 × 20 × 38
PSM8-10-500A/B	10-500	8	1.2	25	3°	0.4	1.3:1	B:106 × 32 × 13
PSM8-600-1200	600-1200	8	0.8	23	3°	0.3	1.3:1	106 × 32 × 13
PSM12-1-200A/B	1-200	12	0.7	30	3°	0.3	1.2:1	A:136.4 × 20 × 38
PSM12-10-500A/B	10-500	12	1.5	23	4°	0.5	1.3:1	B:158 × 32 × 13
PSM16-1-200A/B	1-200	16	1.2	28	3°	0.4	1.2:1	A:170 × 20 × 38
PSM16-10-500A/B	10-500	16	1.6	23	5°	0.5	1.3:1	B:210 × 32 × 13
PSM24-1-200	1-200	24	1.3	26	3°	0.5	1.3:1	236.5 × 20 × 38
PSM24-10-500	10-500	24	2.0	23	8°	0.8	1.4:1	236.5 × 20 × 38
PSM32-1-200	1-200	32	1.5	26	5°	0.5	1.3:1	170 × 20 × 90.6
PSM32-10-500	10-500	32	2.3	23	8°	0.9	1.4:1	170 × 20 × 90.6
PSM48-1-200	1-200	48	1.6	26	6°	0.7	1.4:1	236.5 × 20 × 90.6
PSM48-10-500	10-500	48	2.6	21	10°	1.0	1.4:1	236.5 × 20 × 90.6

SAW VCO

Features

Frequency range: 200MHz ~ 1.1GHz

SAW W technology, low phase noise, low frequency drift

Integrated buffer amplifier

SMT precess, hermetical package

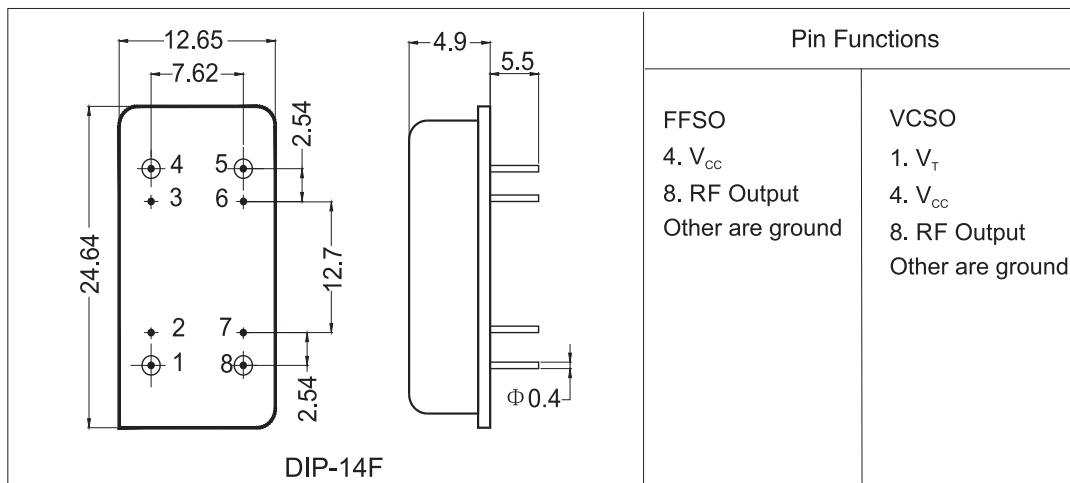
Operating temperature range: -55°C ~ +85°C



Model	Center Freq. f(MHz)	Tuning Voltage VT(V)	Frequency Range kHz Typ	Output Power dBm Typ	Harmonics dBc Max	Frequency Drift kHz Typ	Phase noise @ 1/100kHz dBc/Hz Typ	Input Capacitance pF Typ	Power Supply V/mA Typ	Package
FFSO315	315	—	—	12 ± 2	-30	±75	-130 / -160	470	12 / 40	DIP -14F
FFSO433	433	—	—	12 ± 2	-30	±75	-125 / -155	470	12 / 40	DIP -14F
FFSO622	622	—	—	12 ± 2	-30	±75	-125 / -155	470	12 / 40	DIP -14F
FFSO970	970	—	—	12 ± 2	-30	±250	-107 / -150	470	12 / 40	DIP -14F
FFSO1030	1030	—	—	12 ± 2	-30	±250	-107 / -150	470	12 / 40	DIP -14F
FFSO1090	1090	—	—	12 ± 2	-30	±250	-107 / -150	470	12 / 40	DIP -14F
VCSO300	300	0.5-4.5	30	12 ± 2	-30	—	-129 / -160	470	5 / 50	DIP -14F
VCSO500	500	1-12	100	12 ± 2	-30	—	-120 / -155	470	12 / 50	DIP -14F

SAW VCO(Continued)

1. Custom frequency , power supply available.
2. SMT package available .
3. Maximum storage temperature : + 125 " C .
4. DIP —14F outline drawing and pin functions :



MVCO series SMT Voltage Controlled Oscillator

Features

Standard package 12.7 * 12.7 * 4.0mm

Low power voltage + 5V , + 3V

Frequency range 25 ~72000MHz

ROHS compliant



Part number	Frequency MHz	Tuning Voltage V	Tuning sensitivity MHz/V Typ	Power output dBm Typ	Harmonic dBc Typ	Phase noise @ 10/100KHz dBc/Hz Typ	Input capacitance pF Typ	Power supply V/mA Max	Package
MVCO038W	25-50	0-12	3	7±3	-12	-120/-140	1000	5/15	SMT
MVCO032	30-34	0-5	2.3	5±2	-10	-116/-136	1000	8/16	SMT
MVCO50J	40-60	3-15	2.0	8±2	-15	-135/-155	1000	5/25	SMT
MVCO57.5	40-75	1-12	4.4	0±2	-25	-117/-137	1000	5/18	SMT
MVCO044	41-47	0.5-4.5	3.4	4±1	-15	-115/-135	1000	5/18	SMT
MVCO060C	44-75	0.5-8.0	4	6.5±2	-10	-120/-140	1000	5/25	SMT
MVCO060W	45-65	0.5-5	5	1.5±2	-16	-117/-137	1000	5/16	SMT
MVCO65J	60-70	0.5-4.5	3.0	8±2	-15	-135/-155	1000	5/25	SMT
MVCO075W	50-100	0-12	5	6±3	-12	-125/-145	1000	5/14	SMT
MVCO74J	68-80	1.5-11	2.0	8±2	-15	-133/-153	1000	5/25	SMT
MVCO065	50-80	0.5-4.5	9	0±2	-8	-120/-140	1000	5/15	SMT
MVCO060B	57-63	0.5-4.5	2.5	0±2	-8	-120/-140	1000	5/16	SMT
MVCO070	67-73	0.5-4.5	2.5	0±2	-10	-123/-143	1000	5/16	SMT
MVCO080A	70-90	0.5-4.5	7	2±2	-10	-120/-140	1000	5/18	SMT
MVCO080	80-81	0.6-2.4	3	0±2	-8	-121/-141	330	5/16	SMT
MVCO82J	71-93	2-10	3.4	8±2	-15	-130/-150	1000	5/25	SMT
MVCO85J	80-90	0.5-4.5	3.0	8±2	-15	-130/-150	1000	5/25	SMT
MVCO90.6	83-94	0.5-4.51-12	3.2	5±2	-8	-124/-144	1000	8/25	SMT

(Continued)

Part number	Frequency MHz	Tuning Voltage V	Tuning sensitivity MHz/V Typ	Power output dBm Typ	Harmonic dBc Typ	Phase noise @ 10/100KHz dBc/Hz Typ	Input capacitance pF Typ	Power supply V/mA Max	Package
MVCO90J	75–105	1–12	3.4	8±2	–15	–130/–150	1000	5/25	SMT
MVCO106	91–121	2–9	5.5	6±2	–8	–122/–142	1000	8/25	SMT
MVCO106J	91–121	1–9	4.4	8±2	–15	–128/–148	1000	5/25	SMT
MVCO113J	105–120	0.5–4.5	4.5	8±2	–15	–130/–150	1000	5/25	SMT
MVCO120W	100–140	0.5–5	10.5	4±4	–10	–118/–138	1000	5/14	SMT
MVCO150W	100–200	0–15	7–12	6±3	–12	–120/–140	1000	5/15	SMT
MVCO123A	108–138	0.5–4.5	10	9±2	–8	–115/–135	1000	5/20	SMT
MVCO123	117.5–126.5	0.3–3	4	2±2	–40	–120/–140	330	3.3/13	SMT
MVCO150	140–160	0.5–4.5	6	0±2	–12	–118/–138	330	5/15	SMT
MVCO300W	150–450	0–20	15–23	3±3	–8	–108/–128	390	5/35	SMT
MVCO184	154–213	0.5–8	7–13	6.5±2	–8	–114/–134	1000	8/25	SMT
MVCO165	160–170	0.5–4.5	3.8	0±2	–20	–118/–138	330	5/14	SMT
MVCO185J	180–190	0.5–4.5	3.2	8±2	–15	–128/–148	330	5/25	SMT
MVCO200	170–238	1–12	10.5	1±2	–17	–110/–130	400	5/15	SMT
MVCO190	185–195	0–5	3	0±2	–17	–118/–138	400	5/15	SMT
MVCO205	199–210	0.5–4	4	0±3	–20	–120/–140	30	5/12	SMT
MVCO223J	219–226	1–12	1.5	8±2	–15	–125/–145	330	5/25	SMT
MVCO233	223–243	0.5–4.5	6	0±2	–16	–115/–135	250	3/15	SMT
MVCO245J	240–250	0.5–4.5	3.0	8±2	–15	–125/–145	330	5/25	SMT
MVCO280J	270–290	0.5–4.5	6	8±2	–15	–125/–145	330	5/25	SMT
MVCO450W	300–600	1–18	15–30	3±3	–10	–100/–120	100	5/25	SMT
MVCO348	305–392	0–5	15–26	8±2	–10	–100/–120	200	5/15	SMT
MVCO395W	310–480	0.2–4.8	40–55	–5±3	–25	–95/–115	150	5/17	SMT
MVCO325	315–335	0.5–4.5	5	6±2	–15	–118/–138	100	5/15	SMT
MVCO345	330–360	0.5–4.5	6	0±2	–15	–112/–132	100	5/10	SMT
MVCO385	360–410	0.5–4.5	14	3±3	–15	–113/–133	200	5/15	SMT
MVCO385W	360–410	0.5–4.5	14	3±3	–15	–110/–130	200	5/15	SMT
MVCO375J	370–380	0.5–4.5	3.5	8±2	–15	–125/–145	220	5/25	SMT
MVCO405	380–430	0–4.5	15	0±2	–20	–116/–136	100	5/20	SMT
MVCO395A	385–405	0.5–4.5	9	0±2	–10	–118/–138	330	5/13	SMT
MVCO400	390–410	0–5	6	0±2	–13	–111/–130	100	5/10	SMT
MVCO600W	400–800	0.5–15	25–45	7±3	–10	–100/–120	82	8/30	SMT
MVCO420A	405–435	0.5–4.5	10	0±2	–15	–116/–136	100	5/12	SMT
MVCO440	420–460	0.5–4.5	12	0±2	–15	–115/–135	100	5/12	SMT
MVCO457	420–494	0.5–4.5	25	0±2	–20	–110/–130	51	5/20	SMT
MVCO460	450–470	0.5–3	12	4±2	–16	–114/–134	100	3.3/12	SMT
MVCO465	450–480	0.5–4.5	13	0±3	–20	–114/–134	100	5/12	SMT
MVCO490	470–515	0.5–4.5	15	0±3	–20	–113/–133	100	5/10	SMT
MVCO500D	485–515	0.5–4.5	13.5	0±2	–25	–117/–137	51	5/15	SMT
MVCO516	496–536	0–5	14.5	5±2	–20	–115/–135	100	8/18	SMT
MVCO750W	520–1000	0–15	26–46	10±2	–10	–104/–124	51	12/25	SMT
MVCO540	530–550	0.5–4.5	8	4±2	–20	–117/–137	51	5/15	SMT
MVCO565	550–580	0.5–4.5	11	0±3	–18	–110/–130	100	5/10	SMT
MVCO600	580–620	0.5–4.5	12.5	0±3	–14	–115/–135	68	5/14	SMT
MVCO600D	585–615	0.5–4.5	12.5	0±2	–25	–116/–136	51	5/15	SMT
MVCO800W	600–1200	1–18	26–46	6±3	–8	–103/–123	51	5/30	SMT
MVCO622	602–642	0.5–4.5	12	0±2	–16	–115/–135	100	5/12	SMT
MVCO638A	625–650	2.2–4.2	21	3±2	–25	–115/–135	51	5/13	SMT
MVCO650	640–660	0.5–4.5	8	6±2	–20	–117/–137	51	5/18	SMT
MVCO645	645–659.5	0–3.3	8	0±2	–20	–115/–135	51	3.3/10	SMT
MVCO669	649–689	0.5–4.5	13.51	0±2	–14	–115/–135	68	5/12	SMT

(Continued)

Part number	Frequency MHz	Tuning Voltage V	Tuning sensitivity MHz/V Typ	Power output dBm Typ	Harmonic dBc Typ	Phase noise @ 10/100KHz dBc/Hz Typ	Input capacitance pF Typ	Power supply V/mA Max	Package
MVCO4350	3600–5100	0–20	50–170	4 ± 3	–10	–80/–100	51	12/30	SMT
MVCO3710	3680–3740	0.5–4.5	35	5 ± 2	–20	–97/–117	51	5/33	SMT
MVCO3950	3700–4200	1–8	80–150	5 ± 2	–20	–80/–100	51	12/30	SMT
MVCO3950A	3700–4225	1–15	46	2 ± 2	–15	–95/–115	20	8/33	SMT
MVCO4150	3700–4600	1–15	72	2 ± 2	–15	–93/–113	20	8/33	SMT
MVCO3850	3800–3900	0–5	38	3 ± 2	–20	–95/–115	20	8/30	SMT
MVCO4100D	4050–4210	1–6	38	9 ± 2	–15	–97/–117	20	5/55	SMT
MVCO4375	4100–4650	1–15	60	1.5 ± 2	–15	–96/–116	20	8/33	SMT
MVCO4400	4200–4600	1–15	36	2 ± 2	–15	–94/–114	20	8/33	SMT
MVCO4750	4200–5300	1–20	65	2 ± 2	–15	–87/–107	20	8/33	SMT
MVCO4600	4300–4900	1–15	55	0 ± 2	–15	–92/–112	20	8/33	SMT
MVCO4525	4350–4700	1–15	30	0 ± 2	–15	–94/–114	20	8/33	SMT
MVCO4700	4400–5000	2–14	65	8 ± 2	–15	–92/–112	20	5/55	SMT
MVCO4800	4400–5200	1–15	72	0 ± 2	–15	–90/–110	20	8/33	SMT
MVCO4800T2	4400–5225	1–15	62	–2 ± 2	–15	–94/–114	20	8/65	SMT
MVCO4813	4400–5225	0.5–18	20–80	3 ± 2	–15	–93/–113	51	8/30	SMT
MVCO4500	4450–4550	0–5	45	0 ± 3	–20	–88/–108	20	8/30	SMT
MVCO4660	4620–4720	0.5–4.5	50	2 ± 2	–20	–97/–117	51	5/25	SMT
MVCO5400T2	5000–5810	1–15	62	–2 ± 2	–15	–92/–112	20	8/65	SMT
MVCO5200	5080–5160	0–5	30	0 ± 3	–20	–88/–108	20	8/30	SMT
MVCO5650	5620–5670	0.5–4.5	35	2 ± 2	–20	–92/–112	51	5/26	SMT
MVCO6090	6000–6180	0–5	65	2 ± 2	–20	–86/–106	20	8/30	SMT
MVCO6500	6450–6550	0–5	50	0 ± 2	–20	–86/–106	10	5/30	SMT
MVCO7200	7150–7250	0–5	50	0 ± 2	–20	–88/–108	10	5/30	SMT

Note: “*” is a VCO with two tuning ports. V = V – V

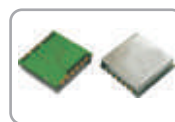
MPLL–C series Phase locked synthesizer

Features

Small size 15.24*15.24*3.0mm

Low power supply +5V or +3V

Frequency 50~6000MHz, relative bandwidth up to 20%



Part number	Frequency MHz	Power output dBm	Step size kHz	Switching time mS	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/Hz	Vpll/Ipll V/mA	Vvco/Ivco V/mA
MPLL62AC–500k	59–65	2 ± 2	500	< 5	–10	–70	–120	+5/5	+5/15
MPLL330BC–25k	325–335	2 ± 2	25	< 20	–12	–70	–108	+5/8	+5/15
MPLL990BC–50k	970–1010	2 ± 2	50	< 15	–12	–70	–107	+5/8	+5/15
MPLL1325CC–200k	1300–1350	2 ± 2	200	< 5	–12	–70	–105	+5/12	+5/15
MPLL2217CC–125k	2182–2252	1 ± 2	125	< 5	–15	–70	–98	+5/12	+5/20
MPLL3333CC–250k	3293–3373	1 ± 2	250	< 10	–15	–70	–93	+5/12	+5/20
MPLL4410EC–125k	4370–4450	0 ± 2	125	< 10	–15	–70	–90	+3/15	+5/20
MPLL5815EC–2M	5780–5850	0 ± 2	2000	< 5	–15	–70	–82	+3/15	+3/25

MPLL–D series Phase locked synthesizer

Features

Standard package 20.0*15.0*4.0mm

Low power supply +5V or +3V

Frequency 50~7500MHz, relative bandwidth up to 20%



Part number	Frequency MHz	Power output dBm	Step size kHz	Switching time mS	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	Vpll/Ipll V/mA	Vvco/Ivco V/mA
MPLL55AD–10k	50–60	2±2	10	< 15	–30	–75	–110/–130	+5/5	+5/15
MPLL105AD–20k	100–110	0±2	20	< 30	–30	–75	–112/–133	+5/5	+5/15
MPLL140AD–20k	135–145	0±2	20	< 30	–20	–75	–113/–135	+5/5	+5/15
MPLL150AD–20k	145–155	0±2	20	< 30	–20	–75	–113/–135	+5/5	+5/15
MPLL290AD–20k	285–295	0±2	20	< 30	–20	–75	–113/–135	+5/5	+5/15
MPLL385BD–25k	380–390	0±2	25	< 15	–15	–75	–111/–132	+5/7	+5/20
MPLL615BD–25k	610–620	0±2	25	< 15	–15	–75	–111/–132	+5/7	+5/20
MPLL755BD–30k	730–780	0±2	30	< 15	–15	–75	–108/–128	+5/7	+5/20
MPLL836BD–30k	824–849	0±2	30	< 15	–15	–75	–108/–128	+5/7	+5/20
MPLL881BD–30k	869–894	0±2	30	< 15	–15	–75	–109/–129	+5/7	+5/20
MPLL1015BD–30k	990–1040	0±2	30	< 15	–15	–75	–108/–128	+5/7	+5/20
MPLL1620BD–50k	1590–1650	0±2	50	< 15	–15	–75	–102/–122	+5/7	+5/28
MPLL1777BD–200k	1747–1807	2±2	200	< 6	–15	–75	–90/–117	+5/7	+5/28
MPLL1810BD–50k	1780–1840	0±2	50	< 15	–15	–75	–103/–123	+5/7	+5/28
MPLL2140BD–200k	2110–2170	2±2	200	< 6	–15	–75	–90/–117	+5/7	+5/28
MPLL2280BD–50k	2240–2320	0±2	50	< 15	–25	–75	–101/–121	+5/7	+5/28
MPLL2386BD–200k	2341–2431	3±2	200	< 5	–25	–75	–92/–120	+5/7	+5/28
MPLL2650CD–200k	2600–2700	2±2	200	< 5	–25	–75	–92/–117	+5/12	+5/28
MPLL2800CD–200k	2700–2900	2±2	200	< 5	–25	–75	–92/–117	+5/12	+5/28
MPLL3250CD–250k	3200–3300	2±2	250	< 5	–25	–75	–92/–117	+5/12	+5/30
MPLL3550ED–250k	3500–3600	2±2	250	< 5	–25	–75	–90/–115	+3.3/17	+5/30
MPLL4450ED–500k	4400–4500	0±2	500	< 5	–25	–75	–90/–113	+3.3/17	+5/35
MPLL5150ED–500k	5100–5200	0±2	500	< 5	–25	–75	–85/–111	+3.3/17	+5/35
MPLL5800ED–1M	5750–5850	0±2	1000	< 5	–25	–70	–85/–110	+3.3/17	+5/35
MPLL7200FD–500k	7160–7240	0±2	500	< 5	–25	–70	–82/–108	+3.3/17	+5/35

Part number	Frequency MHz	Power output dBm	Step size kHz	Switching time mS	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	Vpll/Ipll V/mA	Vvco/Ivco V/mA
MPLL749CD–200k	719–778	5±2	200	< 0.45	–20	< –80	–90/–147	+3.3/13	+5/40
MPLL825CD–200k	805–844	5±2	200	< 0.45	–20	< –80	–90/–147	+3.3/13	+5/40
MPLL1001CD–200k	976–1025	5±2	200	< 0.45	–20	< –80	–90/–145	+3.3/13	+5/40
MPLL1066CD–200k	1046–1085	5±2	200	< 0.45	–20	< –80	–90/–145	+3.3/13	+5/40
MPLL1537CD–200k	1499–1575	5±2	200	< 0.45	–20	< –80	–85/–141	+3.3/13	+5/40
MPLL1635CD–200k	1597–1672	5±2	200	< 0.45	–20	< –80	–85/–140	+3.3/13	+5/40
MPLL1669CD–200k	1639–1699	5±2	200	< 0.45	–20	< –80	–85/–141	+3.3/13	+5/40
MPLL1752CD–200k	1722–1782	5±2	200	< 0.45	–20	< –80	–85/–140	+3.3/13	+5/40

Part number	Frequency MHz	Power output dBm	Step size kHz	Switching time mS	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @10kHz dBc/HHz	Vpll/Ipll V/mA	Vvco/Ivco V/mA
MPLL540DD-200k	500-580	2±2	200	<15	-15	<-75	-90/-122	+3.3/20	+5/25
MPLL1010DD-30k	970-1050	2±2	30	<15	-15	<-70	-82/-122	+3.3/20	+5/25
MPLL1250DD-100k	1200-1300	2±2	100	<15	-15	<-70	-85/-120	+3.3/20	+5/25
MPLL1530DD-125k	1480-1580	2±2	125	<15	-20	<-75	-85/-120	+3.3/20	+5/25
MPLL1765DD-50k	1670-1860	2±3	50	<15	-20	<-70	-82/-120	+3.3/20	+5/35
MPLL1910DD-250k	1860-1960	2±2	250	<15	-25	<-75	-85/-120	+3.3/20	+5/35
MPLL2350DD-250k	2300-2400	2±2	250	<15	-25	<-75	-85/-118	+3.3/20	+5/35
MPLL2600DD-250k	2500-2700	2±3	250	<15	-25	<-75	-85/-117	+3.3/20	+5/35
MPLL3100DD-250k	3000-3200	2±3	250	<15	-25	<-75	-85/-115	+3.3/20	+5/35
MPLL3500DD-250k	3400-3600	2±3	250	<15	-25	<-75	-85/-115	+3.3/20	+5/35
MPLL4440DD-500k	4400-4480	2±3	500	<15	-25	<-70	-80/-112	+3.3/30	+5/35
MPLL5210DD-500k	5180-5240	2±3	500	<15	-25	<-65	-80/-110	+3.3/30	+5/35

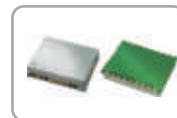
MPLL-BW series Broadband phase locked synthesizer

Features

Broadband, octave bandwidth available

Frequency range 25~6000MHz

Small size 25*20*4.5mm



Part number	Frequency MHz	Power output dBm	Step size kHz	Switching time mS	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @10kHz dBc/HHz	Vpll/Ipll V/mA	Vvco/Ivco V/mA
MPLL75ABW-100k	50-100	2±3	100	<15	-10	-70	-120	+5/5	+15/45
MPLL140ABW-125k	100-180	2±3	125	<15	-12	-70	-115	+5/5	+15/45
MPLL450CBW-200k	300-600	2±3	200	<15	-12	-70	-100	+5/12	+15/55
MPLL1200CBW-500k	950-1450	3±3	500	<5	-12	-70	-100	+5/12	+12/65
MPLL2600CBW-250k	2200-3000	2±3	250	<5	-15	-70	-95	+5/12	+15/65
MPLL3950EBW-500k	3700-4200	0±3	500	<5	-15	-70	-90	+3.3/15	+15/65
MPLL4900EBW-1M	4600-5200	0±3	1000	<5	-15	-70	-90	+3.3/15	+15/65

MPLL-E series Fast Switching Synthesizer

Features

Fast Switching

Parallel control

Small Size 35*25*6mm

Frequency range 50~3000MHz

Custom design available



Part number	Frequency MHz	Power output dBm	Step size kHz	Switching time mS	Spurious output dBc	Phase noise @10kHz dBc/HHz	Vcc1/Im1 V/mA	Vcc2/Im2 V/mA	Control Port
MPLL225E-300k	210-240	10±2	300	<25	-75	-110	+5/180	+12/20	Parallel
MPLL860E-2M	830-890	10±2	2000	<50	-70	-100	+5/100	+12/20	Parallel
MPLL1750E-2M	1600-1900	10±2	2000	<50	-70	-93	+5/100	+12/20	Parallel
MPLL2675E-2.5M	2550-2800	10±2	2500	<25	-70	-90	+5/100	+12/20	Parallel

MPLL10000E–250k SMT X band phase locked synthesizer

Features

Phase locked and frequency multiplying source

Small package 60*45*8mm



Parameters	Units	Value	Parameters	Units	Value
Frequency	MHz	9.5–10.5	Spurious output	dBc	–70
Power output	dBm	2 ± 2	Phase noise	dBc/Hz	–90
Step size	kHz	250	Vcc1/Im1	V/mA	+5/200
Harmonic output	dBc	–40	Vcc2/Im2	V/mA	+18/20

HMPLL–L series Connectorized Phase Locked Synthesizer

Features

Connectorized Package 35*26*10mm

SMA connector Input/Output

Frequency range 50~7500MHz, Relative Bandwidth up to 20%



Part number	Frequency MHz	Power output dBm	Step size kHz	Switching time mS	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	Vcc/Im V/mA
HMPLL55AL–10k	50–60	10 ± 2	10	< 15	–30	–75	–110/–130	+5/50
HMPLL105AL–20k	100–110	10 ± 2	20	< 30	–30	–75	–112/–133	+5/50
HMPLL140AL–20k	135–145	10 ± 2	20	< 30	–25	–75	–113/–135	+5/50
HMPLL150AL–20k	145–155	10 ± 2	20	< 30	–25	–75	–113/–135	+5/50
HMPLL290AL–20k	285–295	10 ± 2	20	< 30	–25	–75	–113/–135	+5/50
HMPLL385BL–25k	380–390	12 ± 2	25	< 15	–20	–75	–111/–132	+5/60
HMPLL615BL–25k	610–620	13 ± 2	25	< 15	–20	–75	–111/–132	+5/60
HMPLL755BL–30k	730–780	13 ± 2	30	< 15	–20	–75	–108/–128	+5/60
HMPLL836BL–30k	824–849	12 ± 2	30	< 15	–20	–75	–108/–128	+5/60
HMPLL881BL–30k	869–894	12 ± 2	30	< 15	–20	–75	–109/–129	+5/60
HMPLL1015BL–30k	990–1040	12 ± 2	30	< 15	–20	–75	–108/–128	+5/60
HMPLL1620BL–50k	1590–1650	12 ± 2	50	< 15	–30	–75	–102/–122	+5/70
HMPLL1810BL–50k	1780–1840	12 ± 2	50	< 15	–30	–75	–103/–123	+5/70
HMPLL2140BL–200k	2110–2170	10 ± 2	200	< 6	–30	–75	–90/–117	+5/70
HMPLL2280BL–50k	2240–2320	10 ± 2	50	< 15	–30	–75	–101/–121	+5/70
HMPLL2386BL–200k	2341–2431	10 ± 2	200	< 5	–30	–75	–92/–120	+5/70
HMPLL2650CL–200k	2600–2700	10 ± 2	200	< 5	–30	–75	–92/–117	+5/75
HMPLL2800CL–200k	2700–2900	10 ± 2	200	< 5	–30	–75	–92/–117	+5/75
HMPLL3250CL–250k	3200–3300	10 ± 2	250	< 5	–30	–75	–92/–117	+5/75
HMPLL3550EL–250k	3500–3600	10 ± 2	250	< 5	–30	–75	–90/–115	+5/90
HMPLL4450EL–500k	4400–4500	10 ± 2	500	< 5	–30	–75	–90/–113	+5/90
HMPLL5150EL–500k	5100–5200	10 ± 2	500	< 5	–30	–75	–85/–111	+5/90
HMPLL5800EL–1M	5750–5850	10 ± 2	1000	< 5	–30	–70	–85/–110	+5/90
HMPLL7200FL–500k	7160–7240	7 ± 2	500	< 5	–30	–70	–82/–108	+5/90

MPS-A series Fixed frequency synthesizer

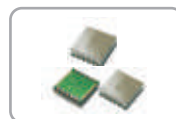
Features

Small size 12*12*4mm

Low power supply +5V

Frequency range 300~5000MHz

Dual fixed frequency output available, TTL control



Part number	Frequency MHz	Power output dBm	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	Vpll/Ipll V/mA	Vvco/Ivco V/mA
MPS330A -10M	330	2 ± 1.5	-10	< -75	-113	+5/15	+5/20
MPS460A -12M	460	2 ± 1.5	-10	< -75	-110	+5/15	+5/20
MPS771A -12M	771	2 ± 1.5	-10	< -75	-110	+5/15	+5/20
MPS1000A -20M	1030	2 ± 1.5	-10	< -75	-108	+5/15	+5/20
MPS1575.42A -10.23M	1575.42	0 ± 1.5	-12	< -75	-103	+5/15	+5/28
MPS1600A -100M	1600	3 ± 1.5	-12	< -75	-105	+5/15	+5/28
MPS2180A -40M	2180	0 ± 1.5	-12	< -75	-100	+5/15	+5/28
MPS2246.508A -15M	2246.508	0 ± 1.5	-12	< -70	-95	+5/15	+5/28
MPS2565.648A -15M	2565.648	0 ± 1.5	-12	< -70	-95	+5/15	+5/28
MPS2810A -20M	2810	0 ± 1.5	-15	< -75	-93	+5/20	+5/28
MPS3150A -20M	3150	0 ± 1.5	-15	< -70	-93	+5/20	+5/28
MPS3500A -100M	3500	0 ± 1.5	-15	< -70	-93	+5/20	+5/30
MPS4100A -100M	4100	0 ± 1.5	-15	< -70	-90	+5/20	+5/35
MPS4800A -100M	4800	0 ± 1.5	-15	< -70	-88	+5/20	+5/35

MPS-D series Fixed frequency phase locked synthesizer

Features

Small size 20*15*4mm

Low power supply +5V

Frequency range 10~7500MHz

Dual fixed frequency output available, TTL control



Part number	Frequency output MHz	Power output dBm	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	Vpll/Ipll V/mA	Vvco/Ivco V/mA
MPS20.16D-12M	20.16	2 ± 1.5	-15	< -80	-115	+5/10	+5/15
MPS80D-20M	80	2 ± 1.5	-15	< -80	-130	+5/10	+5/15
MPS100D-20M	100	2 ± 1.5	-15	< -80	-125	+5/10	+5/15
MPS140D-20M	140	2 ± 1.5	-15	< -80	-125	+5/10	+5/15
MPS150D-20M	150	2 ± 1.5	-15	< -80	-125	+5/10	+5/15
MPS290D-20M	290	2 ± 1.5	-15	< -80	-118	+5/15	+5/15
MPS406D-10M	406	2 ± 1.5	-15	< -80	-112	+5/15	+5/20
MPS760D-10M	760	2 ± 1.5	-15	< -80	-112	+5/15	+5/20
MPS830D-10M	830	2 ± 1.5	-15	< -80	-113	+5/15	+5/20
MPS1000D-60M	1000	2 ± 1.5	-20	< -80	-110	+5/15	+5/20
MPS1575.42D-10.23M	1575.42	2 ± 1.5	-20	< -80	-105	+5/15	+5/28

Part number	Frequency output MHz	Power output dBm	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	VpII/IpII V/mA	Vvco/Ivco V/mA
MPS2000D-100M	2000	2±1.5	-20	<-80	-103	+5/15	+5/28
MPS2260D-80M	2260	2±1.5	-25	<-80	-102	+5/15	+5/28
MPS2246.508D-15M	2246.508	2±1.5	-25	<-80	-98	+5/15	+5/28
MPS2565.648D-15M	2565.648	2±1.5	-25	<-80	-98	+5/15	+5/28
MPS2810D-20M	2810	2±1.5	-25	<-80	-95	+5/20	+5/28
MPS3150D-20M	3150	2±1.5	-25	<-75	-95	+5/20	+5/28
MPS3330D-100M	3330	2±1.5	-25	<-75	-95	+5/20	+5/30
MPS3500D-100M	3500	2±1.5	-25	<-75	-95	+5/20	+5/30
MPS4100D-100M	4100	0±1.5	-25	<-75	-92	+5/20	+5/35
MPS4800D-100M	4800	0±1.5	-25	<-75	-90	+5/20	+5/35
MPS5220D-100M	5220	0±1.5	-25	<-70	-90	+5/20	+5/35
MPS5600D-100M	5600	0±1.5	-25	<-70	-90	+5/20	+5/35
MPS7200D-100M	7200	0±1.5	-25	<-70	-85	+5/20	+5/35

MPS-BT series Fixed frequency synthesizer (integrated TCXO)

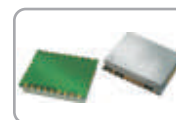
Features

Integrated TCXO

Small size 25*20*5.4mm

Low power supply +5V

Frequency range 50~7500MHz



Part number	Frequency output MHz	Power output dBm	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	VpII/IpII V/mA	Vvco/Ivco V/mA
MPS100BT-10M-HQ	100	2±1.5	-15	<-80	-125	+5/10	+5/15
MPS150BT-20M-HQ	150	2±1.5	-15	<-80	-125	+5/10	+5/15
MPS290BT-20M-HT	290	2±1.5	-15	<-80	-118	+5/15	+5/15
MPS760BT-10M-GQ	760	2±1.5	-15	<-80	-112	+5/15	+5/20
MPS1000BT-20M-GQ	1000	2±1.5	-20	<-80	-110	+5/15	+5/20
MPS2000BT-20M-LT	2000	2±1.5	-20	<-80	-103	+5/15	+5/28
MPS2810BT-20M-HQT	2810	2±1.5	-25	<-80	-95	+5/20	+5/28
MPS3330BT-20M-HQ	3330	2±1.5	-25	<-75	-95	+5/20	+5/30
MPS3500BT-20M-HQ	3500	2±1.5	-25	<-75	-95	+5/20	+5/30
MPS4100BT-20M-IQ	4100	0±1.5	-25	<-75	-92	+5/20	+5/35
MPS4800BT-20M-HS	4800	0±1.5	-25	<-75	-90	+5/20	+5/35
MPS5600BT-20M-HQ	5600	0±1.5	-25	<-70	-90	+5/20	+5/35
MPS7200BT-20M-HQ	7200	0±1.5	-25	<-70	-85	+5/20	+5/35

MPS3500BL–100M Low phase noise fixed frequency synthesizer

Features

Low phase noise -110dBc/Hz @ 10kHz

Small size $25 \times 20 \times 4.5\text{mm}$

Low power supply +5V

Frequency range 300~7500MHz

Custom design available



Parameters	Units	Value	Parameters	Units	Value
Frequency output	MHz	3500	Phase noise @ 10kHz	dBc/Hz	-110
Power output	dBm	2 ± 1.5	VpII/IpII	V/mA	+5/100
Harmonic output 2nd	dBc	-25	Vvco/Ivco	V/mA	+5/60
Spurious output	dBc	< -75			

MPS–185.5/169/329.025F3–HU Triple frequency output synthesizer (Integrated TCXO)

Features

Triple frequency output

2 bit TTL control

Integrated TCXO

Small size $40 \times 35 \times 5\text{mm}$

Custom design available



Parameters	Units	Value	Parameters	Units	Value
Frequency output	MHz	185.5/169/329.025	Phase noise @ 10kHz	dBc/Hz	-98
Power output	dBm	2 ± 2	Vcc/Im	V/mA	+5/80
Frequency stability	ppm	± 1	Control level	—	Two bit TTL
VS Temperature	dBc	-70			
Spurious output					

MPS11000–100M X Band fixed frequency synthesizer

Features

Phase locked and frequency multiplying source

Small size 60*45*8mm

Low power supply +5V

Custom design available



Parameters	Units	Value	Parameters	Units	Value
Frequency output	GHz	11.0	Spurious output	dBc	< -70
Power output	dBm	2 ± 1.5	Phase noise @ 10kHz	dBc/Hz	-98
Harmonic output 2nd	dBc	-40	Vpll/lpll	V/mA	+5/250

HMPS–L series Connectorized fixed frequency Synthesizer

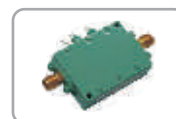
Features

Connectorized Package 35*26*10mm

SMA connector Input/Output

Low power supply +5V

Frequency range 50~7500MHz, Relative Bandwidth up to 20%



Part number	Frequency output MHz	Power output dBm	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	Vcc/Im V/mA
HMPS48L-100M	48	12 ± 1.0	-30	< -80	-130	+5/60
HMPS80L-10M80	80	12 ± 1.0	-30	< -80	-125	+5/60
HMPS100L-10M	100	12 ± 1.0	-30	< -80	-125	+5/60
HMPS140L-10M	140	12 ± 1.0	-30	< -80	-125	+5/60
HMPS150L-20M	150	12 ± 1.0	-30	< -80	-125	+5/60
HMPS290L-20M	290	12 ± 1.0	-30	< -80	-118	+5/65
HMPS406L-10M	406	12 ± 1.0	-30	< -80	-112	+5/70
HMPS760L-10M	760	12 ± 1.0	-30	< -80	-112	+5/70
HMPS830L-10M	830	12 ± 1.0	-30	< -80	-113	+5/70
HMPS1000L-60M	1000	12 ± 1.0	-30	< -80	-110	+5/70
HMPS1575.42L-10.23M	1575.42	12 ± 1.0	-30	< -80	-105	+5/75
HMPS2000L-100M	2000	12 ± 1.0	-30	< -80	-103	+5/75
HMPS2260L-80M	2260	12 ± 1.0	-30	< -80	-102	+5/75
HMPS2246.508L-15M	2246.508	12 ± 1.0	-30	< -80	-98	+5/75
HMPS2565.648L-15M	2565.648	12 ± 1.0	-30	< -80	-98	+5/75
HMPS2810L-20M	2810	12 ± 1.5	-30	< -80	-95	+5/85
HMPS3150L-20M	3150	12 ± 1.5	-30	< -75	-95	+5/85
HMPS3330L-100M	3330	12 ± 1.5	-30	< -75	-95	+5/85
HMPS3500L-100M	3500	12 ± 1.5	-30	< -75	-95	+5/85

Part number	Frequency output MHz	Power output dBm	Harmonic output 2nd dBc	Spurious output dBc	Phase noise @ 10kHz dBc/HHz	Vcc/Im V/mA
HMPS4100L-100M	4100	10 ± 1.5	-30	< -75	-92	+5/90
HMPS4800L-100M	4800	10 ± 1.5	-30	< -75	-90	+5/90
HMPS5220L-100M	5220	10 ± 1.5	-30	< -70	-90	+5/90
HMPS5600L-100M	5600	10 ± 1.5	-30	< -70	-90	+5/90
HMPS7200L-100M	7200	7 ± 1.5	-30	< -70	-85	+5/95

HMPS-MT series Connectorized fixed frequency Synthesizer with Crystal Oscillator

Features

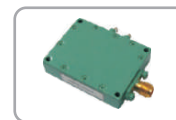
Integrated TCXO

Connectorized Package 40*30*10mm

SMA connector Input/Output

Low power supply +5V

Frequency range 50~7500MHz, Relative Bandwidth up to 20%



Part number	Frequency output MHz	Power output dBm	Harmonic output 2nd dBc	Spurious output dBc	Frequency stability VS Temperature dBc/Hz	Phase noise @ 10kHz dBc/HHz	Vcc/Im V/mA
HMPS100MT-LU	100	12 ± 1.0	-30	< -80	± 5	-126	+5/65
HMPS290MT-HQ	290	12 ± 1.0	-30	< -80	± 1	-118	+5/70
HMPS830MT-IT	830	12 ± 1.0	-30	< -80	± 1.5	-113	+5/75
HMPS1000MT-HU	1000	12 ± 1.0	-30	< -80	± 1	-110	+5/75
HMPS2000MT-IU	2000	12 ± 1.0	-30	< -80	± 1.5	-103	+5/80
HMPS2850MT-HU	2850	12 ± 1.5	-30	< -80	± 1	-95	+5/90
HMPS3150MT-GQ	3150	12 ± 1.5	-30	< -75	± 0.5	-95	+5/90
HMPS3330MT-GQ	3330	12 ± 1.5	-30	< -75	± 0.5	-95	+5/90
HMPS3500MT-JT	3500	12 ± 1.5	-30	< -75	± 2	-95	+5/90
HMPS5220MT-LT	5220	10 ± 1.5	-30	< -70	± 5	-90	+5/95
HMPS7200MT-JU	7200	7 ± 1.5	-30	< -70	± 2	-85	+5/100

Microwave & Millimeter-wave components, modules and sub-systems

METDA has been providing high reliable Microwave and Millimeter-wave products to the market for decades. As an experienced manufacturer in components, modules and sub-systems, most products can be customized according to special request, fulfilling high characteristic needs in different system requirements.

Product Index

Millimeter-wave Module and Subsystems

1. Millimeter-wave Low Noise Amplifier
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7. Millimeter-wave Phase Shifter
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9. Millimeter-wave Digital Attenuator
10. Millimeter-wave Switch
11. Millimeter-wave Oscillator
12. Other Millimeter-wave Products

Typical Millimeter-wave Products Illustration

High-Frequency and Microwave Frequency Generator

1. Frequency Generator Series
2. Multiplier Frequency Generator Series
3. Miniature Surface Mounted Frequency Synthesizer
4. DRO
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Power Amplifier

1. General Microwave Power Amplifier
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Microwave Sub-systems

1. Amplifier/Multiplier Sub-systems
2. Up-conversion Amplifier Sub-systems
3. Other Conversion Sub-systems
4. T/R Modules

Low Noise Amplifier

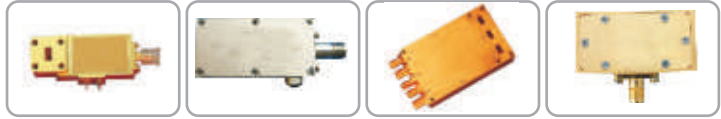
1. General Low Noise Amplifier
 2. Broadband Low Noise Amplifier
 3. Special Low Noise Amplifier
 4. Broadband Low Noise Limiting Amplifier
- Typical Low Noise Amplifier Products Illustration

Packaged Module Circuit

1. General Packaged Power Amplifier
2. Broadband Packaged Power Amplifier

Millimeter-wave Module and Subsystems

1. Millimeter-wave Low Noise Amplifier



Part Number	Frequency (Ghz)	Gain (dB)	Gain Flatness (± dB)	Noise Figure (dB)	VSWR	Dimension (mm ³)
JXLNA1826-18	18.0~26.5	18	1.5	3	2.5	40 × 30 × 15
JXLNA1841-18	18.0~41.0	18	3	6	3.0	20 × 15 × 10
JXLNA2640-30	26.5~40.0	30	2.5	3.5	2.5	60 × 20 × 20
JXLNA3033-18A	30.0~33.0	18	2.5	3		40 × 25 × 25
JXLNA3033-18B	30.0~33.0	18	2.5	3		40 × 20 × 20
JXLNA3336-50	33.0~36.0	50	2	3.5	2.5	65 × 19.2 × 19.2
JXLNA3436-20	34.0~36.0	20	1.5	3	2.5	30 × 20 × 20
JXLNA3536-18	35.0~36.0	18		3		40 × 20 × 20

2. General Broadband Amplifier

Part Number	Frequency (Ghz)	Gain (dB)	Output Power (dBm)	VSWR	Current (mA)
JXPAM180265	18.0~26.5	20~28	12	2.5/2.5	400
JXPAM265400	26.5~40.0	20~28	10	3.0/3.0	400
JXPAM330500	33.0~50.0	20~28	10	3.0/3.0	450

3. Millimeter-wave Power Amplifier

Part Number	Frequency (Ghz)	Power (dBm)	Gain (dB)	Gain Flatness (± dB)	VSWR	Voltage/Current (V/A)
JXPAM260400	26.0~40.0	22	18	1.5	2.5	
JXPAM302307-33	30.2~30.7	33	55	1.0	2.0	6.5/3
JXPAM302307-37	30.2~30.7	37	16	1.0	2.0	6.5/7
JXPAM320360-40A	32.0~36.0	40	10	1.0	2.5	6/18
JXPAM320360-40B	32.0~36.0	40	35	1.2	2.5	6/22
JXPAM340360	34.0~36.0	31	26	1.0	2.5	
JXPAM380400	38.0~40.0	26	40	1.0	2.0	6/0.9

4. Broadband Passive Multiplier

Part Number	Multiplying Times	Input Frequency (GHz)	Output Frequency (GHz)	Input Power (dBm)	Output Power (dBm)	Harmonic Suppression (dBc)
JXFM26540-2	2	13.25~20	26.5~40	10	-5	20
JXFM26540-3	3	8.83~12	26.5~36	10	-8	20
JXFM3350-2	2	16.6~25	33~50	10	-8	20

5. Broadband Active Multiplier

Part Number	Multiplying Times	Input Frequency (GHz)	Output Frequency (GHz)	Input Power (dBm)	Output Power (dBm)	Harmonic Suppression (dBc)	Current (mA)
JXFM180265-2	2	9.0~13.25	18.0~26.5	10	10	20	300
JXFM265400-2	2	13.25~20.0	26.5~40.0	10	10	20	300
JXFM330500-2	2	16.5~25.0	33.0~50.0	10	10	20	350
JXFM265400-3	3	8.83~13.33	26.5~40.0	10	10	20	400
JXFM330500-3	3	11.0~16.67	33.0~50.0	10	10	20	400
JXFM265400-4	4	6.625~10.0	26.5~40.0	10	10	20	400
JXFM330500-4	4	8.25~12.5	33.0~50.0	10	10	20	400

6. Millimeter-wave 90° Divider

Operating Bandwidth	Insert Loss	Unbalance (dB)	Return Loss	Phase Unbalance
10%	≤0.5	±0.5	≤-14	≤±10°

7. Millimeter-wave Phase Shifter

Part Number	Operating Bandwidth (MHz)	Bits	Insert Loss (dB)	Phase Error (°)	VSWR	Max Power (dBm)
JXMMDP500-4	500	4	<12	3(RMS)	1.5	18
JXMMDP500-5	500	5	<14	3(RMS)	1.5	18
JXMMDP300-5	300	5	≤16	≤5	1.4	18

8. Millimeter-wave 0/π Modulator

Operating Bandwidth (GHz)	Insert Loss (dB)	Carrier Suppression (dBc)	Phase Error (°)	VSWR	Max Power (dBm)
1	<3	-20	3(RMS)	1.5	15
1	<4	-20	4(RMS)	1.5	18

9. Millimeter-wave Digital Attenuator

Part Number	Mode	Frequency (MHz)	Insert Loss (dB)	Max Attenuation (dB)	Step (dB)	Attenuation Accuracy (dB)	Dimension (mm ³)
JXMDA3236	6 Bits	32~36	5	60	1	±1.5	30×20×20
JXMDA3234		32~34	≤5	60	1	±1.5(≤20dB); ±2 (20~40dB); ±2.5 (>40dB)	80×75×35

10. Millimeter-wave Switch

Mode	Frequency (GHz)	Insert Loss (dB)	Isolation (dB)	Dimension (mm ³)	Max Input Power (W)	TTL control
SPST	18~40	2.0	37	30×20×20	2	SMA
SPDT	24~40	2.0	30	30×25×20	2	SMA

11. Millimeter-wave Oscillator

Part Number	Frequency (GHz)	Frequency Stability	Output Power (dBm)	Harmonic Suppression (dB)	Clutter Suppression (dB)	Output Phase Noise	Electromagnetic Leakage (dBc)	Voltage/Current (V/A)	Dimension (mm ³)
JXMMO3400	34	≥1×10 ⁻⁶	13	≥40	≥60	≤-70dBc/Hz@1KHZ	≤-70	12V/1A	90×120×40

12. Other Millimeter-wave Products



Part Number	Frequency (GHz)	Input Frequency (GHz)	Output Frequency (GHz)	Local Flow Frequency (GHz)	Intermediate Frequency (GHz)	Transmitting Power (dBm)
JXUP3005 Millimeter-wave Upconverter	0.03~6.0		30.03~36.0	30		
JXX2PA35 Millimeter-wave conversion amplifier sub-system	5		35	15		
JXX330500 Millimeter-wave Multiplier		8.25~12.5	33~50			
JXX265400 Millimeter-wave Multiplier		13.25~20	26.5~40			
23GHz Single Channel multiplier receiving front-end	22		1.0	10.5		
23GHz Transmitting Sub-system			22	10.5	1.0	
8mm Single channel receiving sub-system	34~36			15	0.03~6	
JXRM3336 Millimeter-wave three channels receiving sub-system	33~36			33~36	0.06~2.0	
JXRM345355 Millimeter-wave three channels receiving sub-system	34.5~35.5			15	3.0~5.5	
23GHz Transceiver	22			23	1.0	28
8mm T/R Conversion Module	33~36				33~36	30
Millimeter-wave Power Amplifier	Frequency 33~36GHz; Power Output≥10W; Gain≥35dB					
8mm Radiometer sensor	Signal Frequency 28~36GHz ; Gain 50dB ; Video Output-5 +5V ; Front Noise 3dB					
8mm LMDS Communication System	Transmitting Channel 31.0~31.3GHz ; Power 30dBm ; Receiving Channel 27.5~28.35GHz ; Noise Figure 4dB ; Transmit/Receive Isolation>50dB					

Part Number	Frequency (GHz)	Input Frequency (GHz)	Output Frequency (GHz)	Local Flow Frequency (GHz)	Intermediate Frequency (GHz)	Transmitting Power (dBm)
JXMMT/RA3400 8mm T/R Module	Frequency 34.2GHz $\pm$ 300MHz; Transmitting Power Output $P_o \geq 500\text{mW}$ (Input Power $\geq 4\text{dBm}$), $P_o \geq 400\text{mW}$ (Input Power $\geq 1\text{dBm}$); VSWR ≤ 1.5 ; 4 Bit Phase Shifter; Phase Shifting Control Time $\leq 100\text{ns}$; Phase error $\leq 5^\circ$ (Root Mean Square); Efficiency of Module $\geq 6\%$; Dimension $80 \times 80 \times 9.8\text{mm}^3$					
JXMR Ka Band Receiving Front-end	Frequency Range $f \pm 300\text{MHz}$; Receiving Gain $20 \pm 2\text{dB}$; Receiving Noise $< 5\text{dB}$; Local Oscillator Frequency 27GHz; Intermediate Frequency $6 \pm 0.3\text{GHz}$; Filter Out-band Rejection $> 45\text{dB}$ ($f \pm 4\text{GHz}$); Switching Isolation $> 45\text{dB}$; Switching Speed $\leq 10\text{ns}$; Dimension $\leq 120 \times 60 \times 25\text{mm}^3$					
Millimeter-wave T/R Module	Frequency $f_0 = f_s + f_1$; Local Oscillator Frequency 27GHz; Phase Noise $\leq -80\text{dBc/Hz}$; Output Signal Peak Power $\geq 600\text{mW}$ (Three channels); Noise Figure $\leq 6\text{dB}$; Gain $15 \pm 2\text{dB}$					
JXPL350-1 Millimeter-wave Analog Source Front-end	1 st Local Oscillator Input Frequency Ku Band; 1st Mixing Input Frequency C Band; Millimeter-wave Output Frequency Ka Band; 1st Local Oscillator Frequency Input Power $-20 \pm 5\text{dBm}$; 1st Mixing Input Power $-15 \pm 5\text{dBm}$; Dimension: $290 \times 250 \times 32\text{mm}^3$					
JXFS350-1 Millimeter-wave Frequency Synthesizer	Main Frequency Ka Band; Power 100mW; Phase Noise -85dBc/Hz (10KHz); Spurious Level -60dBc ; Main Leakage -60dBc ; Intermediate Frequency Modulated Generator 60MHz					
JXTR350-1 Millimeter-wave T/R Module	Frequency Ka Band(Band width 500MHz); 4 Bits Phase Shifting, Phase Error 5° ; VSWR ≤ 1.5 ; Receiving Channel Gain 35dB, $F_n 4.5\text{dB}$; Transmitting Channel Gain 35dB; Operating Current 1.5A; Dimension: $100 \times 60 \times 19.2\text{mm}^3$					
JXMRAA3550 Millimeter-wave Straight Amplifier /Receiving Module	Center Frequency 35.5GHz; Bandwidth 5GHz; Total Gain of three amplifier stages $\geq 55\text{dB}$; Power Dissipation $\leq 1.8\text{W}$; Dimension $80 \times 14 \times 13\text{mm}^3$					
JXMPTR Ka Band $0/\pi$ Phase Modulating Switching T/R Module	Frequency $f_0 \pm 0.3\text{GHz}$; Transmitting Power per Channel $\geq 400\text{mW}$; VSWR of each port ≤ 1.5 ; On-off Ratio $< -45\text{dB}$; Switching Rise Time/Fall Time: $\leq 5\text{ns}$; Unbalance of both channel power $\leq 10\%$					
JXMD3040 Millimeter-wave Geophone	Frequency 30-40GHz; Bandwidth 10GHz; Max Power $\geq 100\text{mW}$; VSWR ≤ 2.0 ; Voltage Sensitivity $\geq 0.5\text{mV/uV}$; Frequency Response $\leq \pm 1\text{dB}$; Tangent Sensitivity -40dBm ; Rectified Voltage $< 5\text{V}$; Supply Voltage 12V; Dimension $80 \times 40 \times 30\text{mm}^3$					

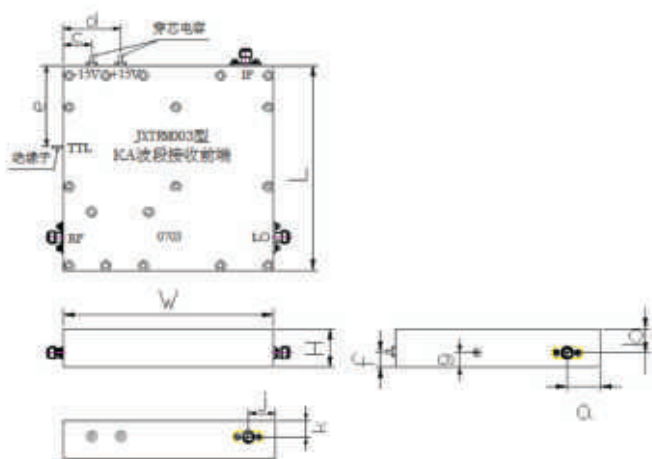
Typical Millimeter-wave Products Illustration

JXTRM0003 Ka Band Receiving Front-end

Specification:

Frequency $f_0 \pm 0.3\text{GHz}$;	Filter Out-band Rejection: $f_0 \pm 4\text{GHz} > 45\text{dB}$;
Intermediate Frequency: $f_0 \pm 0.3\text{GHz}$;	Local Oscillator Frequency: 27GHz;
Receiving Noise: $< 5\text{dB}$;	Receiving Gain: $20 \pm 2\text{dB}$;
Operating Voltage: $\pm 15\text{V}$,	Operating Current: $< 300\text{mA}$
Switching Isolation $> 45\text{dB}$;	Switching Speed $\leq 10\text{ns}$;

Structure and Dimension



Symbol	Value (Unit: mm)		
	Min.	Nominal	Max.
L	—	—	60
W	—	—	60
H	—	—	11
a	—	9.51	
b	—	5.85	
c	—	8.05	
d	—	16.25	
e	—	23.26	
f	—	4.4	
g	—	4.2	
j	—	7.88	
k	—	4.65	

Power Amplifier

1. General Microwave Power Amplifier



Part Number	Frequency (GHz)	Power Output (dBm)	Gain (dB)	Gain Flatness (± dB)	VSWR	Voltage/Current (V/A)
JXPA0110	0.1~1.0	40	40	1.0	2	
JXPA047086	0.47~0.86	51	50	1.5	2	
JXPA0510	0.5~1.0	43	40	1.0	2	
JXPA086096-44	0.86~0.96	44.8	45	1.0		+27/4.25
JXPA08650895-47	0.865~0.895	47	57	1.0		+27/4.25
JXPA0925096-43	0.925~0.96	43	53	1.0		+27
JXPA1214-57	1.2~1.4	57	47	0.5	1.5	
JXPA144166-50	1.44~1.66	50	50	0.5	1.5	
JXPA1619-53	1.6~1.9	53	50	0.5	1.5	
JXPA1520-50	1.5~2.0	50	50	0.6	1.5	
JXPA188192-47	1.88~1.92	47	57	1.0		+27/4.25
JXPA193198-43	1.93~1.98	43	53	1.0		+27/4.25
JXPA2223	2.2~2.3	40	45	0.3	1.25	
JXPA2527-53	2.5~2.7	53	53	1.0		+12/46
JXPA2729	2.7~2.9	33	33	0.3	1.25	
JXPA2731-50	2.7~3.1	50	40	0.5	1.5	
JXPA3035-47	3.0~3.5	47	45	0.5	1.25	
JXPA3134-45	3.1~3.4	45	45	0.5	1.25	
JXPA3134-3544	3.1~3.4	3.5~44	23	0.5		+10
JXPA3742-44	3.7~4.2	44	50	0.5	1.25	
JXPA4951-46	4.9~5.1	46	45	0.5	1.25	
JXPA5065-32	5.0~6.5	32.5	31			+10/1.26
JXPA5065-295	5.0~6.5	29.5	34			+7/0.95
JXPA5258-48	5.2~5.8	48	48	0.5	1.25	
JXPA5359	5.3~5.9	43	43	0.5	1.25	
JXPA5459-46	5.4~5.9	46	46	0.5	1.25	

Part Number	Frequency (GHz)	Power Output (dBm)	Gain (dB)	Gain Flatness (± dB)	VSWR	Voltage/Current (V/A)
JXPA5880	5.8~8.0	26.5	34			+7/0.55
JXPA5964	5.9~6.4	43	40	0.5	1.25	
JXPA6472-43	6.4~7.2	43	40	0.5	1.25	
JXPA6480	6.4~8.0	32.5	29			+10/1.35
JXPA7090-29	7.0~9.0	29.5	34			+7/0.95
JXPA7090-26	7.0~9.0	26.5	34			+7/0.55
JXPA7185	7.1~8.5	32.5	29			+10/1.35
JXPA7782-27	7.7~8.2	27	50	1.0		+12
JXPA7782-31	7.7~8.2	31	50	1.0		+12
JXPA7785	7.7~8.5	44	44	0.5	1.25	
JXPA7788	7.7~8.8	30	30	0.5	1.25	
JXPA8596	8.5~9.6	38	37	0.5	1.25	
JXPA85100	8.5~10.0	35	30	0.75	1.25	
JXPA9095-45	9.0~9.5	45	45	0.5	1.25	
JXPA90100-41	9.0~10.0	41	40	0.5	1.25	
JXPA9298	9.2~9.8	40	40	0.3	1.25	
JXPA9397	9.3~9.7	44	30	0.3	1.25	
JXPA95100	9.5~10.0	46	46	0.3	1.45	
JXPA95117-32	9.5~11.7	32	29			+7/1.9
JXPA95117-29	9.5~11.7	29.5	30			+7/0.9
JXPA95117-26	9.5~11.7	26.5	30			+7/0.53
JXPA95137	9.5~13.7	29.5	30			+7/0.9
JXPA103133	10.3~13.3	29.5	30			+7/0.9
JXPA107117	10.7~11.7	40	40	0.5	1.25	
JXPA110120	11.0~12.0	35	30	0.5	1.25	
JXPA117127	11.7~12.7	38	40	0.5	1.25	
JXPA125155-31	12.5~15.5	31.5	28			+7/1.9
JXPA125155-28	12.5~15.5	28.5	28			+7/0.9
JXPA125155-26	12.5~15.5	26	28			+7/0.53
JXPA127133-32	12.7~13.3	32	28			+7/1.9
JXPA127133-29	12.7~13.3	29	28			+7/0.9
JXPA127133-26	12.7~13.3	26	28			+7/0.53
JXPA138145-32	13.8~14.5	32	29			+7/1.9
JXPA138145-29	13.8~14.5	29	29			+7/0.9
JXPA142146	14.2~14.6	32	28			+7/1.9
JXPA144154-32	14.4~15.4	32	28			+7/1.9
JXPA144154-29	14.4~15.4	29	28			+7/0.9
JXPA144154-26	14.4~15.4	26	28			+7/0.53
JXPA145150-28	14.5~15.0	28	25	1		+12
JXPA145150-37	14.5~15.0	≥37	≥30	0.5		±12
JXPA145153	14.5~15.3	44	40	0.5	1.45	
JXPA150180	15.0~18.0	36	30	0.75	1.45	
JXPA175200-31	17.5~20.0	31.5	27			+7/1.7
JXPA175200-28	17.5~20.0	28.5	27			+7/0.85
JXPA175200-26	17.5~20.0	26.5	29			+7/0.5
JXPA212236-31	21.2~23.6	31	24			+7/1.7
JXPA212236-28	21.2~23.6	28	24			+7/0.85
JXPA212236-26	21.2~23.6	26	24			+7/0.5

2. Broadband Microwave Power Amplifier



Part Number	Frequency (GHz)	Power Output (dBm)	Gain (dB)	Gain Flatness (± dB)	VSWR	Voltage/Current (V/A)
JXWPA1020-20	1.0~2.0	20	29~35	1.3	2	+12/0.3
JXWPA1020-40	1.0~2.0	40	30~50	1.0	2	
JXWPA1020-50	1.0~2.0	50	30~50	1.0	2	
JXWPA2040-20A	2.0~4.0	20	18~24	1.4	2	+12/0.2
JXWPA2040-20B	2.0~4.0	20	25~31	1.3	2	+12/0.3
JXWPA2040-20C	2.0~4.0	20	31~39	1.5	2	+12/0.3
JXWPA2040-20D	2.0~4.0	20	38~46	1.8	2	+12/0.3
JXWPA2040-39	2.0~4.0	39	40	1.5		
JXWPA2080-20A	2.0~8.0	20	20~40	2.0	2	
JXWPA2080-20B	2.0~8.0	20	18~24	1.8	2	+12/0.35
JXWPA2080-20C	2.0~8.0	20	24~31	1.8	2	+12/0.35
JXWPA2080-20D	2.0~8.0	20	31~39	2	2	+12/0.4
JXWPA2080-20E	2.0~8.0	20	38~46	2	2	+12/0.45
JXWPA20180-20A	2.0~18.0	20	21~28	2.2	2.2	+12/0.28
JXWPA20180-20B	2.0~18.0	20	28~36	2.2	2.2	+12/0.38
JXWPA20180-20C	2.0~18.0	20	20~40	2.5	2	
JXWPA20180-27	2.0~18.0	27	30			+12
JXWPA4060	4.0~6.0	39	30	1.5		+12
JXWPA4080-20A	4.0~8.0	20	18~24	1.4	2	+12/0.25
JXWPA4080-20B	4.0~8.0	20	25~31	1.5	2	+12/0.35
JXWPA4080-20C	4.0~8.0	20	31~39	1.8	2	+12/0.4
JXWPA4080-20D	4.0~8.0	20	38~46	2.0	2	+12/0.45
JXWPA40120	4.0~12.0	20	20~40	2.0	2	
JXWPA60180-20A	6.0~18.0	20	18~24	1.8	2	+12/0.28A
JXWPA60180-20B	6.0~18.0	20	24~32	1.5	2	+12/0.38A
JXWPA60180-20C	6.0~18.0	20	38~46	2.2	2	+12/0.4A
JXWPA60180-20D	6.0~18.0	20	20~40	1.5	2	
JXWPA60180-36	6.0~18.0	36	20~40	2.0	2	
JXWPA80120-20A	8.0~12.0	20	18~24	1.4	2	+12/0.25
JXWPA80120-20B	8.0~12.0	20	24~31	1.4	2	+12/0.35
JXWPA80120-20C	8.0~12.0	20	32~38	1.8	2	+12/0.45
JXWPA80120-20D	8.0~12.0	20	39~46	2	2	+12/0.45
JXWPA80120-30	8.0~12.0	30	20~40	1.5	2	
JXWPA80124	8.0~12.4	20	20	1.5	2	+12
JXWPA80180-20A	8.0~18.0	20	18~24	1.8	2	+12/0.4
JXWPA80180-20B	8.0~18.0	20	24~32	1.5	2	+12/0.45
JXWPA80180-20C	8.0~18.0	20	31~39	1.8	2	+12/0.45
JXWPA80180-20D	8.0~18.0	20	38~46	2	2	+12/0.5
JXWPA80180-20E	8.0~18.0	20	45~53	2	2	+12/0.5
JXWPA80180F	8.0~18.0	30	20~40	2	2	
JXWPA120180	12.0~18.0	30	20~40	1.5	2	

3. Special Microwave Power Amplifier

Part Number	Frequency (GHz)	Power Output (dBm)	Gain (dB)	Gain Flatness (± dB)	VSWR
JXZPA003042	0.03~0.42	45	32	1.5	1.5
JXZPA1020	L Band	41	50	0.5	1.25
JXZPA1214	1.2~1.4	39	25	0.5	1.25
JXZPA2040-41	S Band	41	50	0.5	1.25
JXZPA2122	2.1~2.2	29	28	0.2	1.25
JXZPA3134	3.1~3.4	37	37	0.3	1.25
JXZPA3437	3.4~3.7	45	31	0.2	1.25
JXZPA4080	C Band	45	45	0.5	1.25
JXZPA5359	5.3~5.9	39	30	0.3	1.25
JXZPA80125	X Band	≥+40	≥+40	0.4	1.5

4. Microwave Power Amplifier Module

Part Number	Frequency (GHz)	Power (dBm)	Gain (dB)	Gain Flatness (± dB)	VSWR
JXPA040045	0.40~0.45	1000	50	0.5	1.3
JXPA047086	0.47~0.86	200	50	1.5	2.5
JXPA087099	0.87~0.99	1200	30	0.5	1.3
JXPA0961215	0.96~1.215	1000	50	0.5	1.3
JXPA1214-65	1.2~1.4	3000	32	0.5	1.3
JXPA145165-63	1.45~1.65	2000	63	0.5	1.3
JXPA1820	1.8~2.0	120	51	0.3	1.3
JXPA2022	2.0~2.2	150	52	0.3	1.3
JXPA2023	2.0~2.3	5	32	1	1.5
JXPA2731	2.7~3.1	100	50	0.5	1.3
JXPA3134	3.1~3.4	100	50	0.5	1.3

Microwave Sub-systems

1. Amplifier/Multiplier Sub-systems

Part Number	Input Frequency (GHz)	Output Frequency (GHz)
JXBP044-046	0.44~0.46	2.2~2.3
JXBP09-095	0.9~0.95	1.8~1.9
JXBP11-13	1.1~1.3	3.3~3.9
JXBP13-146	1.3~1.46	5.2~5.84
JXBP8	8	16

2. Up-conversion Amplifier Sub-systems

Part Number	Output Frequency (GHz)	Local Oscillator Frequency (GHz)	Intermediate Frequency (GHz)
JXBP0962-1213	0.962~1.213	P~L Band	P~L Band
JXBP3-4	3~4	3~4GHz	700~100MHz
JXBP12-16	12~16	10~13GHz	3~4GHz

3. Other Conversion Sub-systems



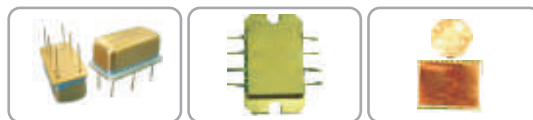
Part Number	Local Oscillator Frequency (GHz)	Intermediate Frequency (GHz)	Output Frequency (GHz)	Stepping
JXBP8695 Frequency Conversion Amplifier Sub-system	7~7.9GHz	1.6GHz	8.6~9.5GHz	
L Band Frequency Agility Fractional Phase-Locking Sub-System	1~2GHz (rational choice)		L Band	1MHz
C Band Up Conversion Fractional Phase-Locking Amplification Sub-System	7~8GHz (rational choice)	1~2GHz (rational choice)	5~7GHz	
JXBP2730 Up Conversion Sub-System	Signal 30MHz; 1 LO:500MHz; 2 LO:3280 ~ 3580MHz; Input Signal 2750 ~ 3050MHz; Clutter Suppression≥50dBc; Harmonic Suppression≥50dBc; Dimension:210 × 130 × 33mm ³			
JXBP90100 Up Conversion Sub-System	Local Oscillator Frequency:7.5GHz; Intermediate Frequency:1.52.5GHz; Power Output≥20dBm; RF Modulation≥60dBc			
L Band Channel Receiver	Frequency 900~1000MHz; 10 Receiving Channels; Intermediate Frequency: 20MHz, Two times conversion; Total Gain≥50dB; Noise Figure≤3dB; Max Power≥10W, With STC			
Doppler RF Front-end Sub-System	Frequency 11GHz; Output Power≥16dBm; Intermediate Frequency Gain≥20dB			
JXMMDC1250 Mixer-Ku Band Down Converter	Frequency 12.25~12.75GHz; Local Oscillator Frequency 11.25GHz; Conversion Loss 13dB; Isolation 60dB; Intermediate Frequency 1000~1500MHz; Voltage 15V; VSWR 1.3; Image Rejection 60dB; Dimension 200 × 150 × 20mm ³			
JXM0005-4500 Mixer	Frequency 5~4500MHz; Local Oscillator Frequency 5~4200MHz; Intermediate Frequency 5~3500MHz; Conversion Loss 8dB; Local Oscillator level 13dBm; Port Isolation 30dB; Noise Figure 8dB; Carrier Suppression 30dB; Dimension≤10 × 7 × 5mm ³			
JXMWS1275-1675 Ku Broadband Frequency Synthesizer	Frequency 12.75~16.75GHz; Power Output 10mW; Harmonic Suppression30dBc; Reference Frequency 100MHz; Pre Stepping 2MHz; Clutter Suppression 65dBc; Phase Noise -70dBc/Hz(10KHz); Dimension 92 × 92 × 16mm ³			
JXUAFA0100-8000 Up Conversion Amplifier Filter Sub-System	RF Input Frequency 0.1~8GHz; RF Input Power -10dBm; Local Oscillator Frequency 10GHz; Output Power 10.1~18GHz; VSWRin≤2; Local Oscillator Power≤13dBm; Noise Figure≤9dB; Output Power≥10dBm; LO-RF Isolation≥25dB; Dimension 90 × 40 × 24mm ³			
JXDSFA1618 Down Conversion Amplifier Filter Sub-System	RF Frequency 16~18GHz; Local Oscillator Frequency 14.5~16.5GHz; Intermediate Frequency 1.5GHz; RF Port VSWR 2.5; RF-IF Gain 10dB; LO-IF Isolation>40dB; Local Oscillator Input Power<10dBm; Noise Figure<5dB; Dimension 90 × 40 × 24mm ³			

4. T/R Modules

Part Number	Frequency (GHz)	TX Channel				RX Channel					Phase Shifter			Consistency				
		Input Power (dBm)	Pulse Output Power (dBm)	Output Power Fluctuation (dB)	Tx Efficiency	VSWR	Digital Attenuato	Gain (dB)	Noise Figure (dB)	Output Power (P-1) (dBm)	Power Handling (W)	Input Level (dBm)	Bits	Max Phase Error(°)	RMS Error (°)	Tx Power (dB)	Tx Channel Phase(°)	Rx Channel Phase(°)
JXTR5258 -46 C Band HighPower T/R Module	5.2~5.8	+5	≥46	≤ ±0.5	20%			25	≤ ±3.0	≥+3	≥10		4	≤ ±10	RX ≤4 TX ≤4.5	≤1.5	≤ ±5	≤ ±5
JXTR5258 -40 C Band T/R Module	5.2~5.8	+5	≥39	≤ ±0.5		≤1.5	5Bits	25	≤2.5	≥6	≥5	-15 -90	4	≤ ±7	≤3	≤ ±1	≤ ±5	≤ ±5
JXTR90100 -40 X Band T/R Module	9~10		8~10w					30	3.5	5	10	≤25	5Bits 5°			56 × 16 × 10mm3		
JXBTR T/R Front-End Module	C、X、 Ku Band	Bandwidth 1GHz ; Output Power ≥5W ; Receiving Sensitivity-55dBm ; T/R Isolation ≥60dB ; Operation Voltage+12V, +15V																
JXMRA X band Receiving Module	X Band	Bandwidth 5.5~0.5MHz ; Gain Dynamic Control ≥65dB ; Operation Sensitivity -70dBm ; Frequency 18 ± 0.2MHz ; Noise Figure 7dB ; LO Power 10dBm ; Load Impedance:3000~ ; Dimension 80 × 25 × 20mm ³																
JXRM9298 X band Receiving Channel Module	RF Frequency 9.2~9.8GHz ; L0 Frequency ; RF ± 0.5GHz ; IF Frequency 500MHz ; Gain ≥ 60dB ; Output Power ≥ 15dBm ; Noise Figure ≤ 2.2dB ; Gain Flatness ≤3dB ; Max Power Supply +15V ; LO Power+5~+13dBm ; Dimension:80 × 40 × 30mm3																	
JXRM2223 S Band Receiving Front-End Module	RF Frequency S Band ; IF Frequency L Band ; IF Bandwidth 10 ± 0.5MHz ; Output Power ≥ 3dBm ; Gain 35 ± 1.5dB ; Noise Figure ≤ 2.0dB ; VSWRin ≤ 1.3 ; Mirror Frequency Rejection ≥ 40dB ; Isolation between channels ≥44dB ; Operation Voltage: +15V ; Dimension:270 × 120 × 56.5mm3																	
JXRM150 Ku Band Receive Module	Input Signal 14 ± 0.25GHz ; IF Noise Figure ≤ 3.5dB ; IF Bandwidth: 80MHz、240MHz、480MHz ; Mirror Frequency Rejection ≥ 20dB ; Gain:70~90dB ; AGC Control :60dB, Stepping :1dB ; Video Amplifier Spurious Output ≤ -55dBc ; Amplitude Fluctuation ≤ ± 1dB, Quadrature Phase Error ≤ ± 15° , Amplitude Error ≤ ± 1dB ; Front Occlusion ≥50dB																	
X Band 170W Solid-State Transmitter	X Band ; Bandwidth 1GHz ; Output Power >170W																	
L Band Continuous Wave 500W Solid -State Transmitter	L Band ; Bandwidth 200MHz ; CW Power Output >500W																	
Ku Band 30W Solid-State Transmitter	Ku Band ; Bandwidth 500MHz ; CW Power Output >30W																	

High-Frequency and Microwave Frequency Generator

1. Frequency Generator Series



Product	Output Frequency (GHz)	Output Power (dBm)	Stepped Frequency Interval (Hz)	Phase Noise (dBc/Hz)
Separate Frequency	0.5~5	10	Separate Frequency	-110/1KHz; -112/10KHz
PLL Frequency Generator	5~16	10	Separate Frequency	-100/1KHz
Single Loop Frequency	0.2~4	10	100K、1M	-85~-90/1KHz; -95~-100/10KHz
Synthesizer	4~16	10	10M、20M	-85~-100/10KHz
Multi-Loop Frequency Synthesizer	1~16	10	100K、1M、10M	-90/1KHz; -100/10KHz

2. Frequency Multiplier Generator

Product	Part Number	Characteristics
232 Times Phase-Lock Frequency Multiplier	JXBP-232	Input Frequency 9.2~9.6MHz; Output Power $\geq$ 5dBm
JXBP Miniature Frequency Multiplier	—	Input Frequency 10~500MHz; Output Frequency 50~1000MHz; Times of Multiplying can be selected, 3,4,5 times can be chosen.
RF Frequency Multiplier	JXBP-100	Input Frequency 100~102.5MHz; Output Frequency 10~10.25GHz
Microwave 10 Times Frequency Multiplier	JXBP-10	Input Frequency 92~96MHz; Output Frequency 920~960MHz
Microwave 2 Times Frequency Multiplier	JXBP-2	Input Frequency 920~960MHz; Output Frequency 1840~1920MHz
Microwave 3 Times Frequency Multiplier	JXBP-3	Input Frequency 3000~3350MHz; Output Frequency 10~10.05GHz
Microwave 96 Times Frequency Multiplier	JXBP-96	Input Frequency 95 ± 0.5 MHz; Output Frequency 9120 ± 48 MHz

3. Miniature Surface Mounted Frequency Synthesizer

Part Number	Frequency (MHz)	Phase Noise (dBc/Hz/10kHz)	Clutter Suppression (dBc)	Operation Voltage (V)	Dimension (mm ³)
JXZDQ01	380~420	-95	-60	5/15	24.2×24.2×6
JXZDQ02	1450~1750	-90	-50	5/15	32×25.5×6
JXZDQ03	2200~2300	-95	-60	5/12	32×25.5×6
JXZDQ04	2700~2800	-85	-60	5/12	32×25.5×6

4. DRO

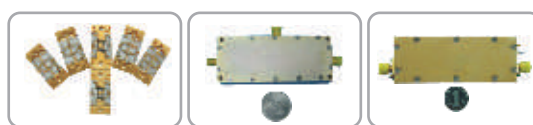
Part Number	Frequency (MHz)	Power Output (dBm)	Phase Noise (dBc/Hz)	Dimension (mm ³)
JXDRO-5	5.0	10	-100(fm=10kHz)	45×35×33
JXDRO-6	6.0	10	-100(fm=10kHz)	45×35×33
JXDRO-8	8.0	5	-95(fm=10kHz)	30×25×25
JXDRO-9	9.0	5	-90(fm=10kHz)	30×25×25

5. Harmonic Generator

Part Number	Input Frequency (MHz)	Output Power (dBm)		
		<5GHz	5 ~ 10GHz	10 ~ 18GHz
JXXB120	120	-20	-30	-40
JXXB500	500	0	-20	-30
JXXB1000	1000	0	-10	-20
JXXB2000	2000	0	-10	-20

Low Noise Amplifier

1. General Microwave Power Amplifier



Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (± dB)	Noise Figure (dB)	VSWR
JXLNA0913	0.9~1.3	30~50	0.2	0.9	1.25
JXLNA1114	1.1~1.4	30~50	0.2	0.9	1.25
JXLNA1315	1.3~1.5	30~50	0.2	0.7	1.25
JXLNA1519	1.5~1.9	30~50	0.2	0.7	1.25
JXLNA1923	1.9~2.3	30~50	0.2	0.7	1.25
JXLNA2124	2.1~2.4	30~50	0.2	0.7	1.25
JXLNA2223	2.2~2.3	30~50	0.2	0.7	1.25
JXLNA2426	2.4~2.6	30~50	0.2	0.8	1.25
JXLNA3032	3.0~3.2	30~50	0.2	0.8	1.25
JXLNA3134	3.1~3.4	30~50	0.2	0.8	1.25
JXLNA3742	3.7~4.2	30~50	0.2	0.7	1.25
JXLNA4045	4.0~4.5	30~50	0.2	0.8	1.25
JXLNA4450	4.4~5.0	30~50	0.3	0.8	1.25
JXLNA5258	5.2~5.8	30~50	0.3	0.9	1.25
JXLNA5359	5.3~5.9	30~50	0.3	0.9	1.25
JXLNA5964	5.9~6.4	30~50	0.3	0.9	1.25
JXLNA6472	6.4~7.2	30~50	0.4	0.9	1.25
JXLNA6776	6.7~7.6	30~50	0.4	0.9	1.25
JXLNA7585	7.5~8.5	30~50	0.5	0.9	1.25
JXLNA90100	9.0~10.0	30~50	0.5	1.0	1.25
JXLNA97104	9.7~10.4	30~50	0.5	1.1	1.25
JXLNA109117	10.9~11.7	30~50	0.5	1.1	1.25
JXLNA117127	11.7~12.7	30~50	0.5	1.3	1.25
JXLNA140145	14.0~14.5	30~50	0.5	1.3	1.25
JXLNA145155	14.5~15.5	30~50	0.5	1.6	1.25

2. Broadband Low Noise Amplifier

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (± dB)	Output Power (dBm)	Noise Figure (dB)	VSWR	Operation Voltage /Current (V/mA)	IP3 (dBm)
JXWLNA0310	0.3~1.0	32~39	0.5	10	2.0	2.0	+12/300	20
JXWLNA0510-1418	0.5~1.0	14~18	0.5	14	3.0	2.0	+12/120	20
JXWLNA0510-2935	0.5~1.0	29~35	1.0	14	3.0	2.0	+12/150	20
JXWLNA0510-3050	0.5~1.0	30~50	1.0		1.0	1.8		
JXWLNA0520-1418	0.5~2.0	14~18	1.0	14	3.0	2.0	+12/120	20
JXWLNA0520-2935	0.5~2.0	29~35	1.4	14	3.0	2.0	+12/150	20
JXWLNA1020-1418	1.0~2.0	14~18	0.8	10	3.0	2.0	+12/120	20
JXWLNA1020-2935	1.0~2.0	29~35	1.5	16	2.0	2.0	+12/230	35
JXWLNA1040	1.0~4.0	15~50	1.2		1.7	2.0		
JXWLNA1060	1.0~6.0	15~50	1.4		1.9	2.0		
JXWLNA1080	1.0~8.0	15~50	1.5		2.0	2.0		
JXWLNA10180-1550	1.0~18.0	15~50	2.8		2.0	2.0		
JXWLNA10180-2128	1.0~18.0	21~28	2.0	9	4.5	2.2	+12/200	18
JXWLNA10180-2836	1.0~18.0	28~36	2.2	14	5.0	2.2	+12/350	23
JXWLNA10180-3645	1.0~18.0	36~45	2.5	14	5.5	2.5	+12/450	23
JXWLNA1114	1.1~1.4	30~50	0.2		0.9	1.25		
JXWLNA1315	1.3~1.5	30~50	0.2		0.7	1.25		
JXWLNA2040-3846	2.0~4.0	38~46	1.5	15	3.5	2.0	+12/300	25
JXWLNA2060	2.0~6.0	15~50	1.0		1.8	2.0		
JXWLNA2080-3139	2.0~8.0	31~39	2.0	15	4.0	2.0	+12/350	25
JXWLNA2080-3846	2.0~8.0	38~46	2.0	15	3.5	2.0	+12/350	25
JXWLNA20180-1550	2.0~18.0	15~50	1.5		3.5	2.5		
JXWLNA20180-3645	2.0~18.0	36~45	2.5	14	5.5	2.5	+12/400	23
JXWLNA4060	4.0~6.0	32~39	1.0	13	2.1	2.0	+12/240	28
JXWLNA4080-3846	4.0~8.0	38~46	1.8	15	2.0	2.0	+12/350	25
JXWLNA40120	4.0~12.0	15~50	1.2		2.5	2.0		
JXWLNA60180-3846	6.0~18.0	38~46	2.0	15	3.5	2.0	+12/380	25
JXWLNA60180-4553	6.0~18.0	45~53	2.2	10	4.0	2.0	+12/450	25
JXWLNA80120-4553	8.0~12.0	45~53	2.0	15	2.5	2.0	+12/400	25
JXWLNA80140-2531	8.0~14.0	25~31	1.4	10	2.5	2.0	+12/250	20
JXWLNA80140-3238	8.0~14.0	32~38	1.4	10	2.5	2.0	+12/300	20
JXWLNA80180-4553	8.0~18.0	45~53	2.0	15	4.0	2.0	+12/450	25
JXWLNA1518	15.0~18.0	18~22	2.0	14	3.0	2.5	+15	

3. Special Low Noise Amplifier

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness (± dB)	Noise Figure (dB)	VSWR	Dimension (mm ³)
JXZLNA005055	0.05~0.55	28	0.5	1.0	1.5	30×24×10
JXZLNA00508	0.05~0.8	28	0.7	1.2	1.2	30×24×10
JXZLNA0232	0.2~3.2	18	0.4	4.4	2.0	20×15×7
JXZLNA0810	0.8~1.0	35	0.5	1.5	2.0	40×25×10
JXZLNA095125	0.95~1.25	29	0.7	1.0	1.2	90×80×25
JXZLNA1519	1.5~1.9	25	0.5	0.6	1.2	80×35×20
JXZLNA2023	2.0~2.3	45	0.3	0.8	1.3	58×32×23
JXZLNA2225	2.2~2.5	34	0.5	0.9	1.3	40×46×25
JXZLNA2532	2.5~3.2	35	0.5	1.3	1.2	100×30×24
JXZLNA2730	2.7~3.0	47	0.7	1.3	1.3	85×50×25
JXZLNA5359	5.3~5.9	20	1.0	1.3	1.2	110×32×27
JXZLNA80100	8.0~10.0	25	1.0	1.3	1.3	100×32×20
JXZLNA9299	9.2~9.9	22	0.5	2.0	1.2	58×32×23

4. Broadband Low Noise Limiting Amplifier

Part Number	Frequency (GHz)	Gain (dB)	VSWR	Input Power (dBm)	Noise Figure (dB)	Saturation Power Output (dBm)	Limiting Level (dBm)	Power Output Flatness (dB)	Current/ +12VDC (mA)
JXWXA0520	0.5~2.0		2.0	-35~+10	5.0	17/22		1.5	300
JXWXA1040	1.0~4.0	30~70	2.0				+16~+20		
JXWXA1080	1.0~8.0	30~70	2.2				+16~+20		
JXMAA1236	1.2~3.6		2.0	-60~+10	6.0	5dBm ± 1dB			200
JXWXA2040A	2.0~4.0	30~70	2.0				+16~+20		
JXWXA2040B	2.0~4.0		2.0	-35~+10	5.0	17/22		1.8	300
JXWXA2040C	2.0~4.0		2.0	-35~+10	5.0	12/17		1.8	350
JXWXA2060A	2.0~6.0		2.0	-35~+10	5.0	17/22		1.8	300
JXWXA2060B	2.0~6.0		2.0	-35~+10	5.0	12/17		1.8	350
JXWXA2080A	2.0~8.0	30~70	2.2				+16~+20		
JXWXA4080B	4.0~8.0	30~70	2.0				+16~+20		
JXWXA40120	4.0~12.0	30~70	2.2				+16~+20		
JXWXA60180A	6.0~18.0	30~70	2.2	≤+10	3.5	20	+16~+20		
JXWXA60180B	6.0~18.0		2.0	-35~+10	6.0	17/22		1.8	450
JXWXA60180C	6.0~18.0		2.0	-35~+10	6.0	12/17		1.8	450
JXWXA60180D	6.0~18.0		2.0	-35~+10	6.0	8/13		1.8	450
JXWXA80120A	8.0~12.0		2.0	-35~+10	6.0	12/17		1.8	450
JXWXA80120B	8.0~12.0		2.0	-35~+10	6.0	8/13		1.8	450
JXWXA80180A	8.0~18.0	30~70	2.0				+16~+20		
JXWXA80180B	8.0~18.0		2.0	-35~+10	6.0	17/22		1.8	450
JXWXA80180C	8.0~18.0		2.0	-30~+10	6.0	12/17		1.8	450
JXWXA80180D	8.0~18.0		2.0	-50~+10	6.0	8/13		1.8	350

Typical Low Noise Amplifier Products Illustration JXLNA3536-18 8mm Low Noise Amplifier

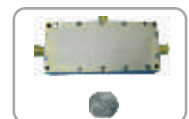


Parameter	Symbol	Test Method SJ20645-97	Condition System Impedance 50Ω, -40℃ ≤ TA ≤ +70℃	Limiting Value Min.	Max.	Unit
Frequency	f _R	—	—	35	36	GHz
Gain	G _P	5.1	VCC=+12V	18	—	dB
Noise Figure	F _n	5.12	Pi=-30dBm	—	3	dB
DC Current	I _c	—	TA is normal Temp, VCC=+12V	—	200	mA

JXLNA0203 S Band High Gain Low Noise Amplifier Main Specification and Dimension

Frequency: 2.2 ~ 2.3GHz
Gain: ≥30dB
Noise Figure: ≤1dB (Normal Temp)
Reverse Isolation: ≥20dB
Operation Voltage: +12V
Dimension: 86 × 36 × 20 (mm3)

Bandwidth: 100MHz
Gain Flatness: ≤ ± 1dB
P1dB: ≥20dBm
Port VSWR: ≤1.5
DC Current: ≤200mA



JXLNA3033 Ka Band Low Noise Amplifier

Frequency: 30 ~ 33GHz

Bandwidth: 3GHz

Gain: ≥ 18 dB

Gain Flatness: ≤ 2.5 dB

Dimension: 40×20×20 (mm³)

Noise Figure: ≤ 3 dB (Normal Temp)

Power Output: ≥ 8 dBm

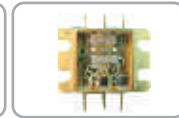
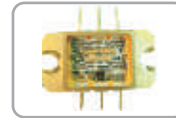
Operation Voltage: +5V

DC Current: ≤ 100 mA



Packaged Module Circuit

1. General Packaged Power Amplifier



Part Number	Frequency (GHz)	Output Power (dBm)	Gain (dB)	Gain Flatness ($\pm$ dB)	Operation Voltage (V)	Operation Current (mA)	Package
JXMK0510	0.5~1.0	30.5	22.5	0.3	+8	400	W06-E
JXMK1015	1.0~1.5	30.5	20.5	0.3	+8	400	W06-E
JXMK1214	1.2~1.4	36.5	16.5	0.2	+28	150	W06-E
JXMK1520	1.5~2.0	30.5	20.5	0.3	+8	400	W06-E
JXMK1921-37	1.9~2.1	37.5	38.5	0.2	+9	1800	BF04
JXMK2223-36	2.2~2.3	36.5	25.0	0.3	+9	1800	W06-E
JXMK2223-39A	2.2~2.3	39.0	29.0	0.3	+9/-5	3300	QF96-6
JXMK2223-39B	2.2~2.3	39.0	40.0	0.3	+9/-5	3500	QF136-6
JXMK2223-41	2.2~2.3	41.0	28.0	0.3	+9/-5	5000	QF96-6
JXMK2226	2.2~2.6	30.5	27.0	0.4	+9	700	W06-E
JXMK2224	2.2~2.4	31.0	31.0	0.3	+9	750	W06-E
JXMK2325-39	2.3~2.5	39.0	29.0	0.3	+9/-5	3300	QF96-6
JXMK2527	2.5~2.7	30.5	20.5	0.3	+9	400	W06-E
JXMK2731	2.7~3.1	30.5	20.5	0.3	+9	400	W06-E
JXMK2735-33	2.7~3.5	33.0	23.0	0.3	+9	700	W06-E
JXMK3134-45	3.1~3.4	45.0	45.0	0.3	270mA/+10V, 300mA/+36V		
JXMK3742	3.7~4.2	33.0	23.0	0.3	+9	700	W06-E
JXMK3944	3.9~4.4	36.0	27.0	0.3	+10	1800	BF04
JXMK4450	4.4~5.0	33.5	23.5	0.3	+8/-5	900	QF96-6
JXMK5258-36	5.2~5.8	36.5	26.0	0.3	+8/-5	1800	QF96-6
JXMK5459	5.4~5.9	36.5	26.0	0.3	+8/-5	1800	QF96-6
JXMK5964	5.9~6.4	33.5	20.5	0.3	+8/-5	900	QF96-6
JXMK6472	6.4~7.2	33.5	20.5	0.3	+8/-5	1000	QF96-6
JXMK7177	7.1~7.7	33.5	20.5	0.3	+8/-5	1000	QF96-6
JXMK8085	8.0~8.5	33.0	18.0	0.3	+9/-5	1000	QF96-6
JXMK8590	8.5~9.0	33.0	18.0	0.3	+9/-5	1000	QF96-6
JXMK9095	9.0~9.5	33.0	18.0	0.3	+9/-5	1000	QF96-6
JXMK90100-30A	9.0~10.0	30.0	13.0	0.5	+9/-5	750	QF97-4
JXMK90100-30B	9.0~10.0	30.0	20.0	0.5	+8/-5	500	QF96-6
JXMK90100-39	9.0~10.0	39.0	30.0	0.5	+8/-5	4000	QF96-6
JXMK100110-30	10.0~11.0	30.0	23.0	0.5	+9/-5	900	QF97-4
JXMK120130	12.0~13.0	30.0	23.0	0.5	+9/-5	900	QF97-4
JXMK140150	14.0~15.0	30.0	23.0	0.5	+9/-5	900	QF97-4
JXMK150160	15.0~16.0	30.0	23.0	0.5	+9/-5	900	QF97-4

2. Broadband Packaged Power Amplifier

Part Number	Frequency (GHz)	Output Power (dBm)	Gain (dB)	Gain Flatness ($\pm$ dB)	Operation Voltage (V)	Operation Current (mA)	Package
JXMK1020	1.0~2.0	30.0	25.0	0.5	+9	600	QF96-6
JXMK2040-33	2.0~4.0	33.0	25.0	0.5	+8/-5	1000	QF96-6
JXMK4060	4.0~6.0	30.0	25.0	0.5	+8/-5	600	QF96-6
JXMK6080	6.0~8.0	30.0	20.0	0.5	+8/-5	700	QF96-6
JXMK7090	7.0~9.0	30.0	20.0	0.5	+8/-5	850	QF96-6
JXMK80100	8.0~10.0	30.0	20.0	0.5	+8/-5	850	QF96-6
JXMK90110	9.0~11.0	30.0	20.0	0.5	+8/-5	900	QF96-6
JXMK100120	10.0~12.0	30.0	20.0	0.5	+8/-5	900	QF96-6
JXMK120140-30	12.0~14.0	30.0	20.0	0.5	+8/-5	900	QF96-6
JXMK140160-30	14.0~16.0	30.0	20.0	0.5	+8/-5	900	QF96-6
JXMK160180-30	16.0~18.0	30.0	30.0	0.5	+5	200	QF96-6

Optoelectronics and LED applications

LED Applications

High Luminous Efficiency

The products are based on full advantages in semiconductor process technology and long-term technical accumulation. Take the illumination as purpose, through a variety of analysis for organic materials optical radiological characteristics, selecting high refractive index conductive optical materials, optimizes various chemical additive and conductive optical colloid distribution proportions, and different chip conductive optical layer's thickness parameter, to unified bounding the integrated structure chips. Make the luminous efficiency per watt of surface light-emitting light source module have significant increase compared to same level single-particle-chip.

Easy heat dissipation

Surface light-emitting light source changes the original single-particle-chip heat dissipation structure compared with same power single-particle-chip. The standard LED light source module uses aluminum substrate structure, and can be very easy to connect with other cooling materials take the second cooling. LED junction temperature can conduct rapidly, enhance the reliability and lifetime greatly, and make the thermal path design problems simple and convenient. The light-emitting area of low-glare LED light source module compared with traditional single-particle-chip, if the heat dissipation area are same, also expanded several hundred times of even over a thousand times. Makes the unit luminous intensity of the stimulation for the human eye is also reduced greatly, and solved the LED light source glare problem fundamentally. Application easily, LED surface light-emitting light source module basic unit can be designed according to customers' requirements about power, voltage, color temperature and special shape. Can be easily realize series and parallel connection, make the application, lamp design more convenient and practical. Greatly shorten the lamp development period and replacement cycle, play a fundamental role in the promotion large-scale use of semiconductor lighting.

Proprietary intellectual property rights

The key technology of this product proprietary intellectual property rights patented technology (patent no: 200710139584.0, 200720102909.0).





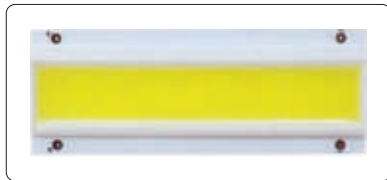
Material: Metal substrate, Ceramic substrate, Resin-encapsulaion
 Standard Color Temperature: 3000K,3500K,4000k,5000k,
 6400k.(Other can be customized according to customer needs)
 Light source has passed the RoHS certification

Working Conditions:Operation Temperature Range:−40~+65 C

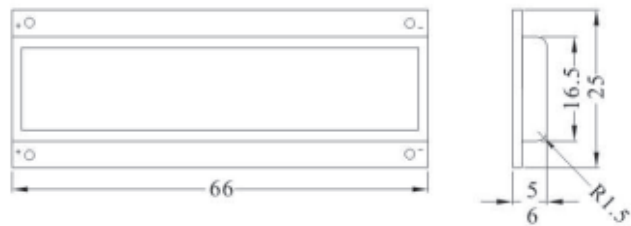
Storage Temperature Range:−40~+85 C

Max Junction Temperature:Tjmax=120 C

ARW66 Series



Dimension Drawing (Unit:mm)



Photoelectricity Parameter

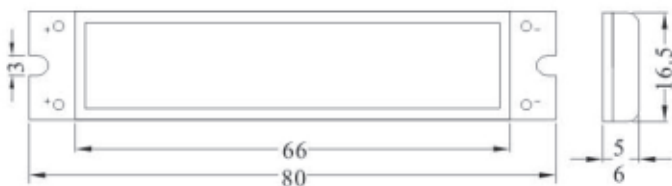
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE66A15H-3V	500	2.9	3	3.5	—	1.5	—	112.5	120	—	15
ARE66Z40H-3V	1330	2.9	3	3.3	—	4	—	300	320	—	
Unit	mA	V			W			lm			V

Note: Test Conditions: Environment Temperature 25°C, Color 80, Color Temperature 5000K.

ARE66 Series



Dimension Drawing (Unit:mm)



Photoelectricity Parameter

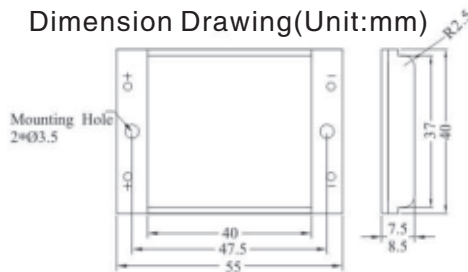
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE66A15H-3V	500	2.9	3	3.3	—	1.5	—	112.5	120	—	15
ARE66Z40H-3V	1330	2.9	3	3.3	—	4	—	300	320	—	
Unit	mA	V			W			lm			V

Note: Test Conditions; Environment Temperature 25°C, Color Rendering Index 80, Color Temperature 5000K.

ARE40 Series



Dimension Drawing(Unit:mm)



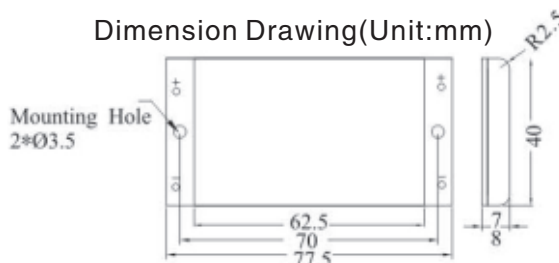
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Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE40A30H-18V	170	17.7	18	19.4	-	3	-	225	240	-	90
ARE40Z60H-15V	400	14.7	15	16.2	-	6	-	450	480	-	75
Unit	mA	V			W			lm			V

ARE62 Series



Dimension Drawing(Unit:mm)



Photoelectrlclty Parameter

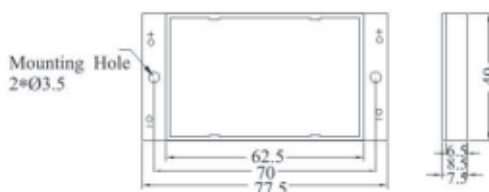
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE62A25H-12V	210	11.8	12	12.9	-	2.5	-	187.5	200	-	60
ARE62A50H-9V	560	8.8	9	9.7	-	5	-	375	400	-	45
ARE62A50H-18V	280	17.7	18	19.4	-	5	-	375	400	-	90
ARE62A100H-12V	833	11.8	12	12.9	-	10	-	750	800	-	60
ARE62A150H-12V	1250	11.8	12	12.9	-	15	-	1125	1200	-	60
ARE62A150H-8V	833	17.7	18	19.4	-	15	-	1125	1200	-	90
Unit	mA	v			w			lm			v

Note: Test Conditions: Environment Temperature 25 °C, Color Rendering Index 80, Color Temperature 5000k.

ARE62* Series



Dimension Drawing(Unit:mm)



Photoelectrlclty Parameter

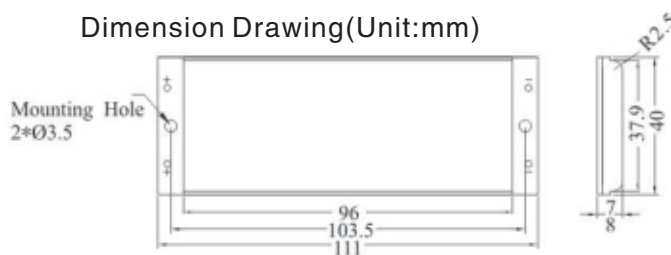
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE62*A50H-9V	560	8.8	9	9.7	-	5	-	375	400	-	45
ARE62*A50H-18V	280	17.7	18	19.4	-	5	-	375	400	-	90
ARE62*Z100H-12V	833	11.8	12	12.9	-	10	-	750	800	-	60
ARE62*Z150H-12V	1250	11.8	12	12.9	-	15	-	1125	1200	-	60
ARE62*Z150H-18V	833	17.7	18	19.4	-	15	-	1125	1200	-	90
Unit	mA	v			w			lm			v

Note: Test Conditions: Environment Temperature 25°C, Color Rendering index 80, Color Temperature 5000k.

ARE96 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

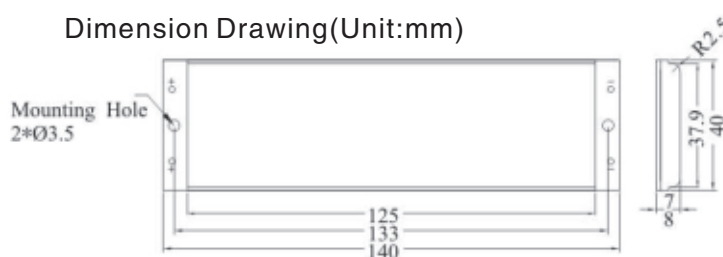
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE96A35H-15V	235	14.7	15	16.2	-	3.5	-	262.5	280	-	75
ARE96A60H-15V	400	14.7	15	16.2	-	6	-	450	480	-	75
ARE96Z200H-12V	1670	11.8	12	12.9	-	20	-	1500	1600	-	60
ARE96Z200H-15V	1330	14.7	15	16.2	-	20	-	1500	1600	-	75
ARE96Z200H-24V	833	23.6	24	25.8	-	20	-	1500	1600	-	120
Unit	mA	v			w			lm			v

Note : Test Conditonns: Envionment Temperature 25C ,Color Rendering Index 80, Color Temperatute 5000K.

ARE125 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

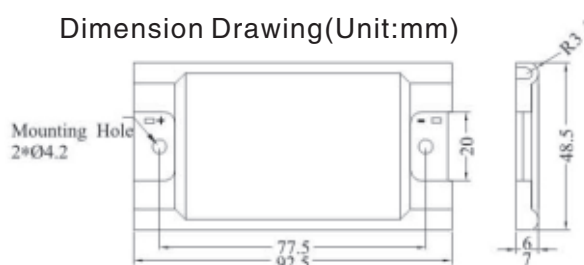
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE125A90H-12V	750	11.8	12	12.9	-	9	-	675	720	-	60
ARE125A90H-15V	600	14.7	15	16.2	-	9	-	675	720	-	75
ARE125Z300H-12V	2500	11.8	12	12.9	-	30	-	2250	2400	-	60
ARE125Z300H-15V	2000	14.7	15	16.2	-	30	-	2250	2400	-	75
ARE125Z300H-24V	1250	23.6	24	25.8	-	30	-	2250	2400	-	120
Unit	mA	v			w			lm			v

Note : Test Conditonns: Envionment Temperature 25C ,Color Rendering Index 80, Color Temperatute 5000K.)

ARE92 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

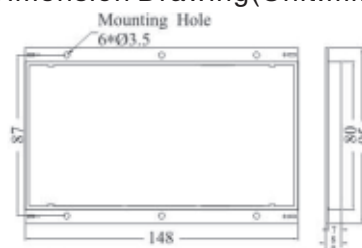
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARE92Z80H-12V	670	11.8	12	12.9	-	8	-	600	640	-	60
ARE92Z100H-12V	833	11.8	12	12.9	-	10	-	750	800	-	
ARE92Z150H-12V	1250	11.8	12	12.9	-	15	-	1125	1200	-	
ARE92Z150H-18V	833	17.7	18	19.4	-	15	-	1125	1200	-	90
Unit	mA	v			w			lm			v

Note : Test Conditonns: Envionment Temperature 25C ,Color Rendering Index 80, Color Temperatute 5000K.)

ARE148 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

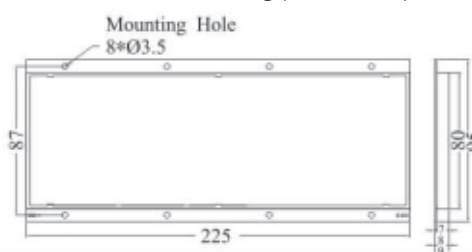
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARW148A240H-72V	350	70.8	72	77.7	—	24	—	1800	1920	—	360
ARW148Z750H-72V	1050	70.8	72	77.4	—	75	—	5625	6000	—	
Unit	mA	V			W			lm			V

Note : Test Conditions: Environment Temperature 25°C, Color Rendering Index 80, Color Temperature 5000K

ARE225 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

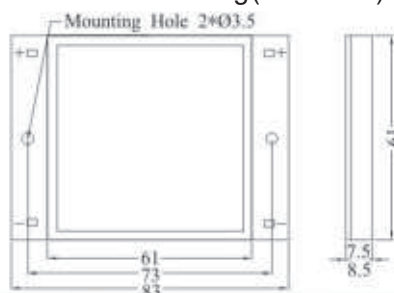
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ARW225A300H-66V	455	64.9	66	71.0	—	30	—	2250	2400	—	330
ARW225Z1000H-66V	1520	64.9	66	71.0	—	100	—	7500	8000	—	
Unit	mA	V			W			lm			V

Note : Test Conditions: Environment Temperature 25°C, Color Rendering Index 80, Color Temperature 5000K.

ASE61 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

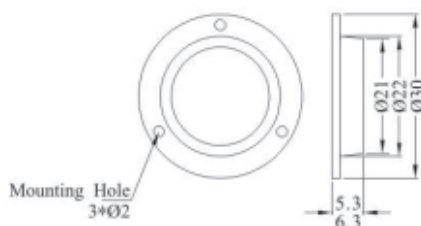
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
ASE61A65H-9V	720	8.8	9	9.7	—	6.5	—	487.5	520	—	45
ASE61A75H-15V	500	14.7	15	16.2	—	7.5	—	562.5	600	—	75
ASE61A75H-30V	250	29.5	30	32.3	—	7.5	—	562.5	600	—	150
ASE61Z200H-9V	2200	8.8	9	9.7	—	20	—	1500	1600	—	45
ASE61Z250H-15V	1670	14.7	15	16.2	—	25	—	1875	2000	—	75
ASE61Z250H-30V	833	29.5	30	32.3	—	25	—	1875	2000	—	150
Unit	mA	V			W			lm			V

Note : Test Conditions: Environment Temperature 25°C, Color Rendering Index 80, Color Temperature 5000K.

AG22 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

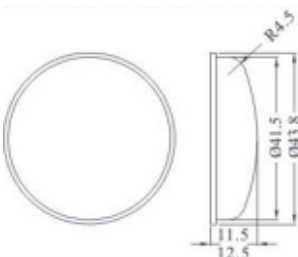
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
AG22A15H-12V	125	11.8	12	12.9	—	1.5	—	112.5	120	—	60
AG22Z30H-12V	250	11.8	12	12.9	—	3	—	225	240	—	
AG22Z50H-12V	420	11.8	12	12.9	—	5	—	375	400	—	
Unit	mA	v			w			lm			V

Note: Test Conditions: Environs: Environment Temperature 25 C, Color Rendering Index 80, Color Temperature 5000K

AG38 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

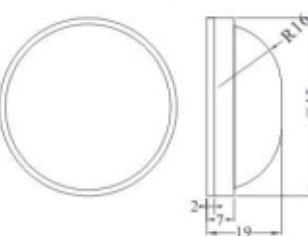
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
AG38A30H-12V	250	11.8	12	12.9	—	3	—	225	240	—	60
AG38A30H-18V	170	17.7	18	19.4	—	3	—	225	240	—	90
AG38Z60H-12V	500	11.8	12	12.9	—	6	—	450	480	—	60
AG38Z60H-24V	250	23.6	24	25.8	—	6	—	450	480	—	120
AG38Z80H-12V	670	11.8	12	12.9	—	8	—	600	640	—	60
AG38Z80H-24V	350	23.6	24	25.8	—	8	—	600	640	—	120
Unit	mA	v			w			lm			v

Note: Test Conditions: Environs: Environment Temperature 25 C, Color Rendering Index 80, Color Temperature 5000K.

AG45 Series



Dimension Drawing(Unit:mm)

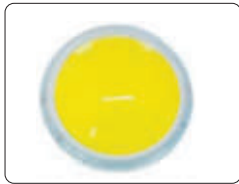


Photoelectricity Parameter

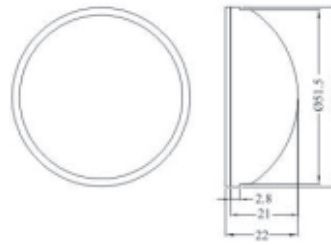
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
AG45A25H-12V	210	11.8	12	12.9	—	2.5	—	187.5	200	—	60
AG45A25H-24V	105	23.6	24	25.8	—	2.5	—	187.5	200	—	120
AG45Z40H-12V	350	11.8	12	12.9	—	4	—	300	320	—	60
AG45Z40H-24V	170	23.6	24	25.8	—	4	—	300	320	—	120
AG45Z60H-12V	500	11.8	12	12.9	—	6	—	450	480	—	60
AG45Z60H-24V	250	23.6	24	25.8	—	6	—	450	480	—	120
Unit	mA	v			w			lm			v

Note: Test Conditions: Environs: Environment Temperature 25 C, Color Rendering Index 80, Color Temperature 5000K.

AG48 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

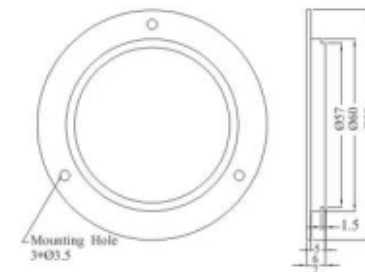
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
AG48A50H-24V	210	23.6	24	25.8	—	5	—	375	400	—	120
AG48Z150H-24V	625	23.6	24	25.8	—	15	—	1125	1200	—	
Unit	mA	V			W			lm			V

Note: Test Conditions: Environs: Environment Temperature 25 C, Color Rendering Index 80, Color Temperature 5000K.

AG60 Series



Dimension Drawing(Unit:mm)

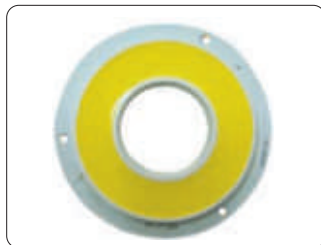


Photoelectricity Parameter

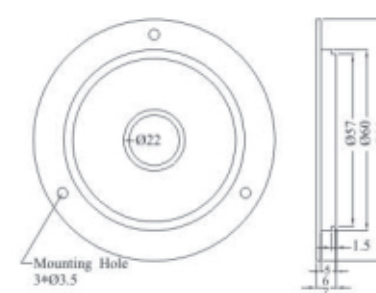
Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
AG60A90H-36V	250	35.4	36	38.7	—	9	—	675	720	—	180
AG60Z250H-36V	700	35.4	36	38.7	—	25	—	1875	2000	—	
AG60Z300H-36V	833	35.4	36	38.7	—	30	—	2250	2400	—	
Unit	mA	V			W			lm			V

Note: Test Conditions: Environs: Environment Temperature 25 C, Color Rendering Index 80, Color Temperature 5000K.

AG60-22 Series



Dimension Drawing(Unit:mm)



Photoelectricity Parameter

Model	Test Current I_F	Forward Voltage V_F			Power P_d			Luminous flux ϕ_v			Reverse voltage V_R
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
AG60-22A80H-36V	220	35.4	36	38.7	—	8	—	600	640	—	180
AG60-22Z240H-36V	670	35.4	36	38.7	—	24	—	1800	1920	—	
Unit	mA	V			W			lm			V

Note: Test Conditions: Environs: Environment Temperature 25 C, Color Rendering Index 80, Color Temperature 5000K..

LED Reading Lamp Characteristics

Adopted LED surface light-emitting light source and Constant-current control circuit driving. Close lighting scattering effect is good, and it offers a flicker free lighting that is both soft and even.

LED surface light-emitting light source reading lamp is latest technology products to protect eyesight. Very suitable for young people in reading and low maintenance cost, and an average lifetime of over 10 years.

Beautiful in style and it's with wide range of applications. With a spare electrical supply, it can be utilized for a long period of time in the case of a blackout or emergency.

Very low power requirement, high efficiency energy-saving and excellent luminous efficiency.

It's the typical nationally promoted green lighting product.

ORE2283-10L Reading Lamp

Voltage (AC): 220V

Power: 3W

Material: Plastic



MT-2707 Reading Lamp

Voltage (AC): 220V

Power: 3W

Material: Plastic



MT-2703 Reading Lamp

Voltage (AC): 220V

Power: 1.5W

Material of lamp shell: Plastic



MT-168 Reading Lamp

Voltage (AC): 220V

Power: 1.5W

Material: Plastic

Spare Power Source: sustainable use of 20 hours



ORE238B-10L Reading Lamp

Voltage (AC): 220V

Power: 1W

Material: Plastic

Spare Power Source: sustainable use of 5 hours



Emergency Lamp

Voltage (AC):220V

Power:1.5W

Material:Plastic



ORE368A-20L Reading Lamp

ORE368B-25L Reading Lamp

Voltage (AC):220V

Power:2W、2.5W

Material of lamp shell:Glass

Material of lamp body:Metal



LED GRILLE LAMP Lighting Features

No stroboscopic,excellent illumination efficiency,high rendering index,high performance heat dissipating hannel design,the minimum thermal resistance,the operating temperature is low,energy saving,the protection,the ligh fade slightly,long life span.Soft and even light,green and health,fit for family,office,entertainment places and many other places.

Grille lamp GQA24

Voltage (AC):220V

Power:1.24W

Material:Aluminum



Sheepskin ceiling lamp

Voltage (AC):220V

Power:28W



Sheepskin wall lamp

Voltage (AC):220V

Power:28W



Grille lamp GQA32

Voltage (AC):220V

Power:32W

Material:Aluminum



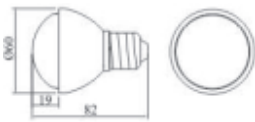
Proprietary intellectual property rights and unique flat-encapsulation technology

Characteristic: Soft, excellent illumination efficiency, high rendering index, high performance heat dissipating channel design, the minimum thermal resistance, the operating temperature is low, energy saving, the environmental protection, the light fade slightly, the life are high.

SRP Serise Screw Lamp



Dimension Drawing (Unit:mm)



Photoelectricity Characteristic

Conditions	Item	Min	Typ	Max	Unit
SC320-C SC320-J	Power	—	2	—	w
	Luminous flux	—	160	—	Lm
	1m distance illumination	—	—	—	Lx
	Color temperature	—	6000	—	K
	Rendering index	—	80	—	—

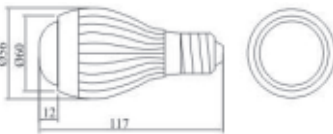
Photoelectricity Characteristic

Model	Material	Power source characteristic	Color temperature	operation temperature range(°C)	Storage temperature range(°C)
SRP20-C	PC	Ac180~260v 50/60Hz	2700~8000	-20~65	-30~85
SRP20-J	PC	Ac90~150v 50/60Hz	2700~8000	-20~65	-30~85

SRA S Series Screw Lamp



Dimension Drawing (Unit:mm)



Photoelectricity Characteristic

Conditions	Item	Min	Typ	Max	Unit
Ta=25°C Tx=40°C	Power	—	4	—	w
	Luminous flux	—	300	—	Lm
	1m distance illumination	110	—	—	Lx
	Color temperature	—	6000	—	K
	Rendering index	—	80	—	—

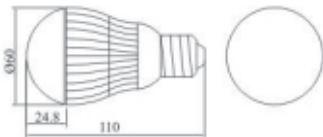
Photoelectricity Characteristic

Model	Material	Power source characteristic	Color temperature	operation temperature range(°C)	Storage temperature range(°C)
SRA40A-C	PC	Ac180~260v 50/60Hz	2700~8000	-20~65	-30~85
SRA40A-J	PC	Ac90~150v 50/60Hz	2700~8000	-20~65	-30~85

Photoelectricity Characteristic

Conditions	Item	Min	Typ	Max	Unit
Ta=25°C Tx=40°C	Power	—	4	—	w
	Luminous flux	—	320	—	Lm
	1m distance illumination	110	—	—	Lx
	Color temperature	—	6000	—	K
	Rendering index	—	80	—	—

Dimension Drawing (Unit:mm)



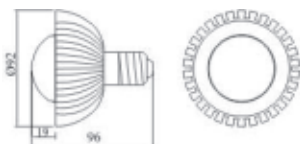
Photoelectricity Characteristic

Model	Material	Power source characteristic	Color temperature	operation temperature range(°C)	Storage temperature range(°C)
SRA40B-C	Aluminium	Ac180~260v 50/60Hz	2700~8000	-20~65	-30~85
SRA40B-J	Aluminium	Ac90~150v 50/60Hz	2700~8000	-20~65	-30~85

Photoelectricity Characteristic

Conditions	Item	Min	Typ	Max	Unit
Ta=25°C Tx=40°C	Power	—	8	—	w
	Luminous flux	—	640	—	Lm
	1m distance illumination	200	—	—	Lx
	Color temperature	—	6000	—	K
	Rendering index	—	80	—	—

Dimension Drawing (Unit:mm)



Photoelectricity Characteristic

Model	Material	Power source characteristic	Color temperature	operation temperature range(°C)	Storage temperature range(°C)
SRA80B-C	Aluminium	AC 180~260V 50/60Hz	2700~8000	-20~65	-20~65

Sc3 Series Scrow Lamp



Size

Item	SC315-C SC315-J	SC320-C SC320-J	SC325-C SC325-J
A(mm)	62.5	96	125
B(mm)	103.5	137	166

Photoelectricity Characteristic

Model	Conditions	Item	Typ	Max	Unit
SC315-C SC315-J	Ta=25℃ Tx=40℃	Power	4.5	—	w
		Luminous flux	360	—	Lm
		Color temperature	6000	—	K
		Rendering index	80	—	—

Model	Conditions	Item	Typ	Max	Unit
SC325-C SC325-J	Ta=25℃ Tx=40℃	Power	7.5	—	w
		Luminous flux	600	—	Lm
		Color temperature	6000	—	K
		Rendering index	80	—	—

Sc4 Series Scrow Lamp



Size

Item	SC415-C SC415-J	SC420-C SC420-J	SC425-C SC425-J
A(mm)	62.5	96	125
B(mm)	111.5	149	178

Photoelectricity Characteristic

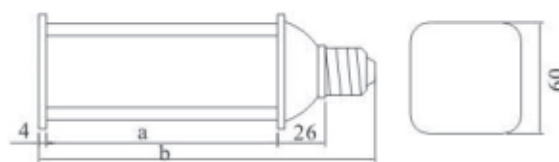
Model	Conditions	Item	Typ	Max	Unit
SC415-C SC415-J	Ta=25℃ Tx=40℃	Power	6	—	w
		Luminous flux	480	—	Lm
		Color temperature	6000	—	K
		Rendering index	80	—	—

Model	Conditions	Item	Typ	Max	Unit
SC425-C SC425-J	Ta=25℃ Tx=40℃	Power	10	—	w
		Luminous flux	800	—	Lm
		Color temperature	6000	—	K
		Rendering index	80	—	—

(Others can be customized according to customer needs)



Dimension Drawing (Unit:mm)

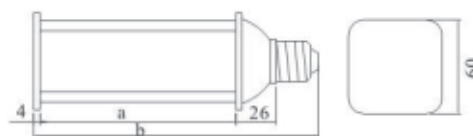


Application Parameters

Power source characteristic	Model		
Ac180~260v 50/60Hz	SC315-C	SC320-C	SC325-C
Ac90~150v 50/60Hz	SC315-J	SC320-J	SC325-J

Model	Conditions	Item	Min	Typ	Max	Unit
SC320-C SC320-J	Ta=25℃ Tx=40℃	Power	—	4.5	—	w
		Luminous flux	—	360	—	Lm
		Color temperature	—	6000	—	K
		Rendering index	—	80	—	—

Dimension Drawing (Unit:mm)



Application Parameters

Power source characteristic	Model		
Ac180~260v 50/60Hz	SC415-C	SC420-C	SC425-C
Ac90~150v 50/60Hz	SC415-J	SC420-J	SC425-J

Model	Conditions	Item	Min	Typ	Max	Unit
SC420-C SC420-J	Ta=25℃ Tx=40℃	Power	—	8	—	w
		Luminous flux	—	640	—	Lm
		Color temperature	—	6000	—	K
		Rendering index	—	80	—	—

LED DOWN LAMP Adopted unique surface light– emitting light source

Characteristic:

Light body with three–legged holder, good stability. High–purity aluminum alloy reflector, the surface with anodic oxidation treatment, so it is with high efficiency reflection! And there is high–performance ballast inside.

Application area:

This product can be widely used in large–scale public places, hotels and commercial stores.

Model	Hole Size
DI102	φ 76mm
DI103	φ 105mm
DI104	φ 125mm
DI105	φ 160mm
DI106	φ 175mm



Model	Hole Size
DI304	φ 125mm
DI305	φ 160mm
DI306	φ 175mm
DI308	φ 212mm



Lighting Source Characteristic

- ◎ Proprietary intellectual property rights and advanced flat–encapsulation technology.
- ◎ High performance heat dissipating channel design.
- ◎ Excellent illumination efficiency and high luminous flux.
- ◎ High rendering index.
- ◎ Low glare
- ◎ Meet ROHS standard.
- ◎ Support for all of colors

Performance Parameter

Material of Lamp shell:High purity aluminum and cold–rolled sheet

Potting resin:Silica gel

Printed Circuit Board:Metal substrate.

Chip:InGaN

Power Source Characteristic

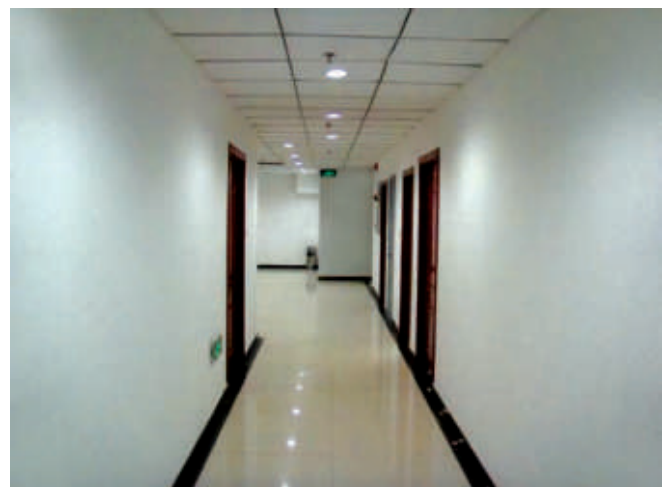
Input Voltage:180~260(V);

Power Factor>0.95;

Circuit life:>30000hours

Adopt imported constant current chip.

Engineering Case



Fluorescent tubes

Power source characteristic: AC150~280V 50/60Hz

Operation Temperature range(°C): -20~65

Storage Temperature range(°C): -30~85

Color Temperature Range:2700~8000K

Material: PC/Aluminum tube

Life Span: >30000 hours

Characteristic:

- ◎ high performance heat dissipating
- ◎ channel design
- ◎ excellent illumination efficiency
- ◎ the operating temperature is low
- ◎ the minimum thermal resistance
- ◎ the environmental protection
- ◎ the light fade slightly
- ◎ high rendering index
- ◎ the life are high
- ◎ energy saving
- ◎ Soft light

T8

Power:6w/8w/12w/16w/20w

Dimension:

450 × ϕ 30mm

600 × ϕ 30mm

900 × ϕ 30mm

1200 × ϕ 30mm

1500 × ϕ 30mm



T5

Power:6w/8w/12w/16w/20w

Dimension:

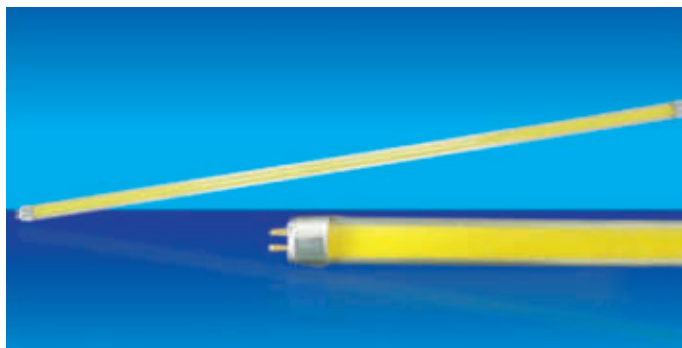
450 × ϕ 16mm

600 × ϕ 16mm

900 × ϕ 16mm

1200 × ϕ 16mm

1500 × ϕ 16mm



LED STREET LAMP

LED Street Lamp is typical energy-saving green lighting product, color temperature range is 3500–7000K, Rendering Index over 80, long lifetime, low maintenance cost, low power consumption, 50,000 hours continuous use. Under the same visual conditions, it can save energy 60% more than high-pressure sodium lamp. Use LED Street lamp can reduce the construction investment cost too, the project in matching investments, such as transformer, power distribution cabinet, laying of cables, surpassen 70% frugal. The total project price is equal to the upscale street lamp price, environmental protection, energy-saving, nonpolluting and high stability.

At present the main road lighting mainly adopted 250W and 400W high pressure sodium lamp, suggested that uses 80W and 160W semiconductor illumination street lamp replacement respectively. The general sub-distributor roads, auxiliary roads and path way also can replacement by 25W–60W semiconductor street lamp. Some others don't obscured by tall buildings or trees, the road can be considered solar, wind and solar power supplementary or the electro-optical supplementary street lamp. After use the semiconductor illumination street lamp, the overall electricity saving will be about 60%, ensure that the use of 10 years, and the maintenance cost will be dropped significantly.

Lighting Source Characteristic

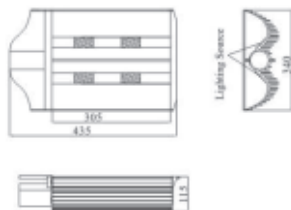
Proprietary intellectual property rights and advanced flat-encapsulation technology.

- ⊙ High performance heat dissipating channel design.
- ⊙ Excellent illumination efficiency and high luminous flux.
- ⊙ High rendering index.
- ⊙ Low glare.
- ⊙ Meet ROHS standard.
- ⊙ Support for all color.

SI30 STREET LAMP



Dimension Drawing (Unit:mm)



Power Source Characteristic

Input Voltage: 180~260(V)50Hz;
Output Power:30(W);
Power Factor:>0.95;
Circuit life:>30000hours;
Adopt imported constant current chip.

Performance Parameter

Material Lamp shell: High-pressure tensile aluminum alloy.
Printed Circuit Board: Metal substrate.
Potting resin:Silica gel
Chip:InGaN

Lighting Source Characteristic

Parameter	Rated Value	Unit
Power	30	W
Luminous flux	2400	Lm
Color Rendering Index	80	--
Operating Temperature Range	-20~+65	°C
Storage Temperature Range	-30~+85	°C
Maximum Junction Temperature	120	°C

Power Source Characteristic

Input Voltage: 180~260(V)50Hz;
Output Power:60(W);
Power Factor:>0.95;
Circuit life:>30000hours;
Adopt imported constant current chip.

Performance Parameter

Material Lamp shell: High-pressure tensile aluminum alloy.
Printed Circuit Board: Metal substrate.
Potting resin:Silica gel
Chip:InGaN

Lighting Source Characteristic

Parameter	Rated Value	Unit
Power	60	W
Luminous flux	4800	Lm
Color Rendering Index	80	--
Operating Temperature Range	-20~+65	°C
Storage Temperature Range	-30~+85	°C
Maximum Junction Temperature	120	°C

SI60 STREET LAMP



Dimension Drawing (Unit:mm)



SI90 STREET LAMP



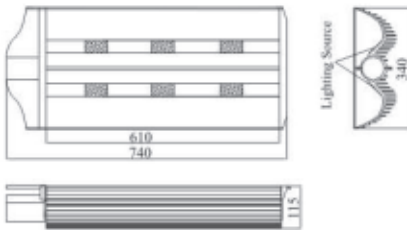
Power Source Characteristic

Input Voltage: 180~260(V)50Hz;
Output Power:90(W);
Power Factor:>0.95;
Circuit life:>30000hours;
 Adopt imported constant current chip.

Performance Parameter

Material Lamp shell: High-pressure tensile aluminum alloy.
Printed Circuit Board: Metal substrate.
Potting resin:Silica gel
Chip:InGaN

Dimension Drawing (Unit:mm)



Lighting Source Characteristic

Parameter	Rated Value	Unit
Power	90	W
Luminous flux	7200	Lm
Color Rendering Index	80	--
Operating Temperature Range	-20~+65	°C
Storage Temperature Range	-30~+85	°C
Maximum Junction Temperature	120	°C

SI150 STREET LAMP



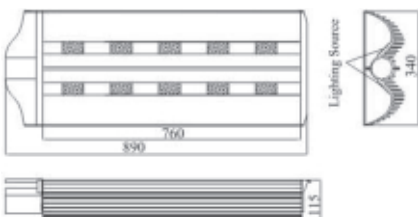
Power Source Characteristic

Input Voltage: 180~260(V)50Hz;
Output Power:150(W);
Power Factor:>0.95;
Circuit life:>30000hours;
 Adopt imported constant current chip.

Performance Parameter

Material Lamp shell: High-pressure tensile aluminum alloy.
Printed Circuit Board: Metal substrate.
Potting resin:Silica gel
Chip:InGaN

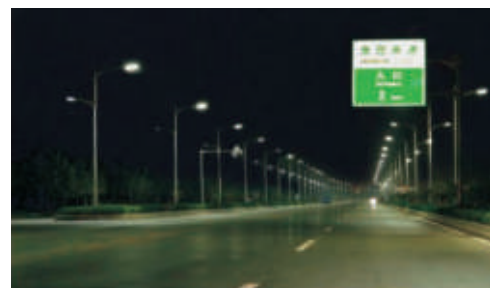
Dimension Drawing (Unit:mm)



Lighting Source Characteristic

Parameter	Rated Value	Unit
Power	150	W
Luminous flux	12000	Lm
Color Rendering Index	80	--
Operating Temperature Range	-20~+65	°C
Storage Temperature Range	-30~+85	°C
Maximum Junction Temperature	120	°C

Engineering Case



LED surface light-emitting high source application product Flood lamp

- Low power consumption, low heat and high luminous efficiency, energy saving than traditional neon lights above 80%
- Lifetime a few times higher than traditional neon lights, it can be up to 30,000 hours, equal to over 10 years for normal use.
- Light weight, compact structure and easy installation.
- Specifications can provide a variety of sizes, suitable for a wide range of applications.
- Use low-voltage power supply, new-style encapsulation methods, safe and reliable.

Wall Washer Lamp



Flood Lamp



LED surface light-emitting light source application products

- The control system output RGB tricolor control signals;
- The RGB tricolor maximum brightness is through the constant current and PWM dimming to achieve;
- Through the different brightness tricolor blending, may realize each kind of color;

Lamp Parameter

Lamp shell material: aluminum diecase alloy

Weight: 5.0kg

Color effects

Static color: May output 4 kinds of colors;

Dynamic-color: Various colors change alternately;

Light Source Characteristic

Power: 18W*2

Operation Temperature range: -20~+65°C;

Storage Temperature range: -30~+85°C;

Power Source Parameter

Rated Voltage: 110v-260v (AC)

Maximum operating power: 30w

Application area

Hotel wall, Square night scene,
Garden lighting, Interior decoration,
outdoor floodlight.



Note: The photo shows a partial color effect chart of wall washer lamp in the process of change.

Tunnel Lamp

Material

Lamp shell: High-pressure tensile aluminum alloy

Potting resin: Silica gel

Printed Circuit Board: Metal substrate

Chip: InGaN



Power Source Characteristic

input Voltage: 92~264 (V);

Power Factor: >0.95;

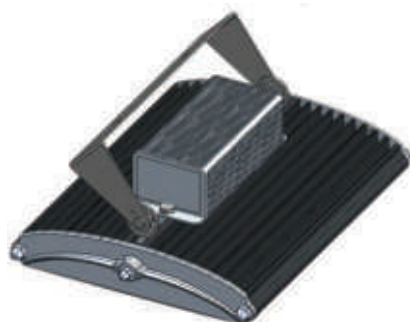
Circuit life: >30000hours]

Adopt imported constant current chip.

Lighting Source Characteristic

Proprietary intellectual property rights and advanced flat-encapsulation technology.

- High performance heat dissipating channel design, effective heat dissipation to extend the life of tunnel lamp.
- Excellent illumination efficiency and high luminous flux.
- High rendering index.
- Low glare.
- Meet ROHS standard.
- Support for all color.



The mounting brackets adopted adjustable angle design structure, to make installation more convenient and debugging more flexible.

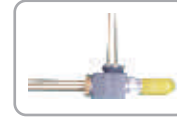
Application area: Tunnel, Workshop, Large-scale warehouse, Stadiums, metallurgy and various plants, Project construction, and many other places.



Bi-Directional Optical Sub-Assembly

Applications

- Suitable for 155Mbps~2.5 Gbps applications.
- Single Fiber Bi-Directional Module
- un-cooled FP-LD/DFB-LD chips with MQW structure



Absolute Maximum Ratings

Table 1 – Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Forward Voltage (LD)	V _{rl}	–	2	V
Forward Current (LD)	I _{fl}		100	mA
Reverse Voltage (MPD)	V _{rpm}	–	20	V
Reverse Voltage (PD)	V _{rp}	–	15	V
TIA Supply Voltage	V _{cc}	3	5	V
Operating Temperature	T _A	–40	85	°C
Storage Temperature9(Ambient)	T _{stg}	–40	95	°C
Lead Soldering Temperature	T _s	–	260(10S)	°C

Optical and Electrical Characteristics

Table 2 – Transmitter Optical and Electrical Characteristics (T_A =25°C)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Condition
I _{th}	Threshold Current	–	10	–	mA	CW, T _A =25°C
P _f	Fiber Output Power	0.2		2	mW	Kink free, T _A =25°C, IOP
S _e	Slope Efficiency	0.01		0.1	W/A	T _A =25°C
λ	Central Wavelength(1)		1310 1490 1550		nm	T _A =–40~85°C
Δλ	Spectrum Width		1 3		nm	DFB-LD@–20dB FP-LD@–3dB
TE	Tracking Error	–1.5	--	1.5	dB	T _A =–40~85°C
V _f	Forward Voltage	--		1.8	V	
t _r /t _f	Rise /Fall Time	--		200	ps	
I _m	Monitor Current	100	--	800	μA	V _{rpm} =1.5V
I _d	Monitor Dark Current			0.1	μA	
SMSR	Side Mode Suppression Ratio(2)	35			dB	

Note:

(1): wavelength can be selected

(2): The parameters are tested under DFB-chip condition.

Laser Diode

1310nm/1490nm/1550nm high power DFB-LD or FP-LD

Features

- 1310nm/1490nm/1550nm typical emission wavelength
- un-cooled DFB/FP chip with MQW structure
- better high temperature performance
- TO56 package with ball lens cap, Aspherical lens cap

Application

- SDH telecommunications
- data communications
- optical transmission system



Absolute maximum ratings

Symbol	Parameter	Conditions	Ratings	Unit
VRL	Reverse voltage (Laser diode)	–	2	V
VRD	Reverse voltage (Photo diode)	–	20	V
IFD	Forward current (laser diode)	–	100	mA
TC	Operating Temperature	–	–40—85	°C
TSTG	Storage Temperature(Ambient)	–	–40—95	°C

Electrical/optical characteristics (T=25°C, Ball Lens cap)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I _{th}	Threshold current	CW		10		mA
V _{op}	Operating voltage	CW, I _{th} +20mA		1.3		V
η	Slope efficiency	P _o =5mW	0.25			mW/mA
λ	Peak wavelength	CW, P _o =5mW		1310 1490 1550		nm
Δλ	Spectrum width(DFB@–20dB) Spectrum width(FP@–3dB)	CW		1 3		nm
SMSR	Side Mode Suppression Ration (DFB-LD)	P _o = 5mW	35			dB
I _m	Monitoring output current	CW, I _{th} +20mA	100		800	μA
L	Distance between refrence plane to fiber		5.8		6.7	mm

Electrical/optical characteristics (T=25°C, Aspherical Lens cap)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I _{th}	Threshold current	CW		10		mA
V _{op}	Operating voltage	CW		1.3		V
η	Slope efficiency	P _o =5mW	0.25			mW/mA
λ	Peak wavelength	CW, P _o =5mW		1310 1490 1550		nm
Δλ	Spectrum width(DFB@–20dB) Spectrum width(FP@–3dB)	CW		1 3		nm
SMSR	Side Mode Suppression Ration (DFB-LD)	CW, P _o =5mW	35			dB
I _m	Monitoring output current	CW, I _{th} +20mA	100		800	μA
L	Distance between refrence plane to fiber			7.5		mm

PIN InGaAs

Features

- Standard TO-46 package with cap lens
- High responsibility InGaAs planar PIN-detector
- Low capacitance, Low dark current
- low inter-modulation distortion

Applications

- Analog CATV receivers
- Broadband analog receivers
- Multi-channel fiber optical transmission systems



Absolute maximum ratings

Symbol	Parameter	Conditions	Ratings	Unit
Tc	Operating Temperature	–	–40—85	℃
Tstg	Storage Temperature(Ambient)	–	–40—95	℃

Electrical/optical characteristics (T=25℃)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
D	Active area diameter			75		μ m
IMD2		Note1		70		dBc
λ	Detection range		1000		1650	nm
BW(3dB)	Bandwidth		5			Gbps
Id	Dark Current	Ee=0, VR =5V			1	nA
Re	Responsivity	VR =5V, λ=1310nm	0.85	0.9		A/W
		VR =5V, λ=1550nm		0.95		A/W

PIN-TIA 155Mbps~10 Gbps

Features

- High-sensitivity with AGC
- Operating wavelength range: 1000~1650nm
- 3or 5V power supply .3
- TO46 package with a ball lens

Features

- Fiber Channel
- Data/Tele communication
- Access networks



Absolute maximum ratings

Symbol	Parameter	Conditions	Ratings	Unit
Tc	Operating Temperature	–	–40—85	℃
Tstg	Storage Temperature(Ambient)	–	–40—95	℃
Tls	Lead Solder Temperature	10 seconds	260	℃

Electrical/optical characteristics(Typical values are at Vcc = 3.3/5V @25℃)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
Vcc	Power supply		3.0 4.7	3.3 5	3.6 5.3	V
Vd1	Differential Output Voltage			–		mV
Icc	Supply Current			–		mA
λd	Detection range		1000		1650	nm
Psat	Saturation power		–3			dBm
Sens	Sensitivity	OC–3,PRBS27–1,ER=9.2 dB OC–12,PRBS27–1,ER=9.2 dB Gigabit Ethernet,PRBS27–1,ER=9.2 dB OC–48,PRBS223–1,ER=9.2 dB 10.3125bps,PRBS27–1,ER=5.4dB		–38 –31 –28 –24 –17		dBm
L	Lens to Fiber	High cap low cap		1.65 2.65		mm

1: Different product has different Vd.

Receiver Optical Sub-Assembly (ROSA) 155Mbps~2.5 Gbps

Features

- LC/SC receptacle for SM fiber communication.
- Suitable for 155Mbps~2.5 Gbps applications.
- Operating wavelength range: 1000nm~1650nm

Application

- Fiber Channel
- Data/Tele communication
- Access networks



Electro-optical Characteristics (Typical values at Vcc = 3.3 @25℃)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test conditions
Δd	Operating Wavelength	1000		1650	nm	
Vcc	Supply Voltage		3.3		V	
Icc	Supply Current		25		mA	
Vr	Reverse Voltage		2		V	
Id	Dark current	0.1		1	nA	
Smin	Optical Sensitivity		–38 –31 –28 –24		dBm	OC–3,PRBS27–1,ER=9.2 dB OC–12,PRBS27–1,ER=9.2 dB Gigabit Ethernet,PRBS27–1,ER=9.2 dB OC–48,PRBS223–1,ER=9.2dB
Smax	Overload	–3			dBm	

Absolute maximum ratings

Parameter	Min.	Max.	Unit	Conditions
Storage Temperature	-40	85	°C	
Operating Temperature	-40	95	°C	
Lead Solder Temperature		260	°C	10 seconds

Transmitter Optical Sub-Assembly(TOSA) LC/SC TOSA

Features

- 1310nm/1490nm/1550nm typical emission wavelength
- laser diode type FP or DFB
- High power over wide temperature range
- Integrated PIN PD for optical power monitor
- LC/SC receptacle with fiber-stub and sleeve

Application

- Fiber Channel
- Data/Tele communication
- Access networks



Absolute maximum ratings

Symbol	Parameter	Conditions	Ratings	Unit
VRL	Reverse voltage (Laser diode)	—	2	V
VRD	Reverse voltage (Photo diode)	—	20	V
IFD	Forward current (laser diode)	—	100	mA
TC	Operating Temperature	—	-40—85	°C
TSTG	Storage Temperature(Ambient)	—	-40—95	°C

Electrical/optical characteristics (T=25°C)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I _{th}	Threshold current	CW		10		mA
V _{op}	Operating voltage	CW		1.25		V
P _f	Power out of fiber	CW, I _{op} =I _{th} +20mA, Kink free		1		mW
TE	Tracking Error	T _c =0~70°C	-1.5		1.5	dB
λ	Peak wavelength(1)	CW, P _o =5mW		1310 1490 1550		nm
Δλ	Spectrum width	CW, I _{th} +20mA (DFB-LD@-20dB) CW, I _{th} +20mA (FP-LD@-3dB)		1 3		nm
I _m	Monitoring output current	CW, I _{th} +20mA	100		800	AM
SMSR	Side Mode Suppression Ratio(DFB)	35				dB T _c =25°C

MEMS Devices and Modules

1. MEMS Inertial Devices and Systems
 - 1.1 MEMS Accelerometers
 - MSA007 MEMS Capacitive Accelerometer
 - MSA006 MEMS Capacitive Accelerometer
 - MSA301 MEMS Capacitive Accelerometer
 - 1.2 MEMS Gyroscopes
 - MSG001 MEMS Gyroscope
2. RF MEMS Filter
 - 2.1 Band-pass MEMS Filter
 - 2.2 Band-stop MEMS Filter
 - 2.3 Low-pass MEMS Filter
 - 2.4 High-pass MEMS Filter
4. MOEMS
 - 4.1 MEMS Variable Optical Attenuator
 - 2D MEMS Variable Optical Attenuator
 - 3D MEMS Variable Optical Attenuator (chips)
 - 4.2 MEMS Optical Switch
 - 2D MEMS Optical Switch
 - 3D MEMS Optical Switch (chips)
3. MEMS Sensor
 - 3.1 MEMS Automobile Sensors
 - 3.1.1 MEMS Automobile Air Flowmeter
 - MEMS Digital Automobile Air Flowmeter
 - MEMS Simulated Automobile Air Flowmeter
 - 3.1.2 MA64 Serious Collision Sensor
 - 3.1.3 MTR001 Automobile Brake Light Smart Controller
 - 3.2 MEMS vibration sensor
 - MVS003
 - MVS002
 - 3.3 MEMS Crash Sensor
 - MPA002
 - MPA003
 - MPA004
 - 3.4 MEMS Collision Sensors
 - MCS001 MCS002
 - MCS003 MCS004
 - 3.5 MEMS Air Flow Sensor
 - Industrial MEMS Air Flow Sensor
 - Household MEMS Air Flow Sensor

1. MEMS Inertial Devices and Systems

1.1.1 MSA007 MEMS capacitive Accelerometer

Parameter	Units	MSA007-02	MSA007-05	MSA007-15
Full Scale	g	±2	±5	±15
Bias	V	2.5±0.2	2.5±0.2	2.5±0.2
Scale Factor	mV/g	850±50	130±20	60±10
Resolution	mg	0.2	0.3	0.5
Noise Level	g/√Hz	10	20	30
Bandwidth	Hz	0-1000	0-3000	0-4000
Mis-alignment	%	< 1%	< 1%	< 1%
Bias Stability	mg	0.3	0.5	0.8
Scale Factor Stability	ppm	200	500	500
Bias Repeatability	mg	0.3	1	1
Scale Factor Repeatability	ppm	300	800	800
Non Linearity	%	±0.2	±0.3	±0.5
Bias temp. coefficient(-40℃~60℃)	mg/℃	2	3	3
Scale factor temp. coefficient(-40℃~60℃)	ppm/℃	300	300	300
Physical	Units			
Size	mm3		10.46 × 7.65 × 2.54	
Package			DIP08/SMT08	
Environmental	Units			
Operating Temperature Range	℃		-40~85	
Storage Temperature Range	℃		-50~100	
Shock Resistance	g		1000 3000	

1.1.2 MSA006 MEMS Capacitance Accelerometer

Parameter	Units	MSA006 -2	MSA006 -5	MSA006 -10	MSA006 -20	MSA006 -30
Full Scale	g	± 2	± 5	± 10	± 20	± 30
Bias	mg	± 50	± 50	± 50	± 50	± 50
Scale Factor	mV/g	1000 ± 30	400 ± 20	200 ± 20	100 ± 20	67 ± 20
Resolution	mg	0.2	0.3	0.5	1	2
Noise Level	g /√Hz	10	10	10	10	10
Cross Axis	%	< 3%	< 3%	< 3%	< 3%	< 3%
Mis-alignment	%	< 30	< 30	< 30 < 3%	< 30	< 30
Bandwidth	Hz	0–100	0–100	0–200	0–200	0–400
Bias Stability	mg	0.3	0.5	0.8	1	3
Scale Factor Stability	ppm	200	200	300	300	500
Bias Repeatability	mg	0.3	0.5	0.8	1	3
Scale Factor Repeatability	ppm	200	200	300	300	500
Non Linearity	%	± 0.2	± 0.2	± 0.5	± 0.5	± 0.5
Bias temp. coefficient(–40°C~60°C)	mg/°C	1	1.5	2	3	12
Scale factor temp. coefficient(–40°C~60°C)	ppm/°C	300	300	300	300	500
Physical	Units					
Size	mm3	25.4 × 21.6 × 10				
Package		Hermetically Sealed				
Environmental	Units					
Operating Temperature Range	°C	–40~85				
Storage Temperature Range	°C	–55~100				
Shock Resistance	g	1000 3000				

1.1.3 MSA301 MEMS Capacitance Accelerometer

Parameter	Units	MSA301 -2	MSA301 -15	MSA301 -50	MSA301 -100
Full Scale	g	± 2	± 15	± 50	± 100
Bias	mv	± 50	± 50	± 50	± 50
Scale Factor	mV/g	1000 ± 30	400 ± 20	200 ± 10	50 ± 10
Resolution	mg	0.3	0.8	5	10
Noise Level	v /√Hz	10	10	10	10
Cross Axis	%	< 3%	< 3%	< 3%	< 3%
Mis-alignment	mrad	< 30	< 30	< 30	< 30
Bandwidth	Hz	0–100	0–200	0–400	0–800
Bias Stability	mg	0.8	1	5	15
Scale Factor Stability	ppm	200	300	600	800
Bias Repeatability	mg	0.8	1	5	15
Scale Factor Repeatability	ppm	300	500	600	800
Non Linearity	%	± 0.1	± 0.2	± 1	± 2
Bias temp. coefficient(–40°C~60°C)	mg/°C	1.5	5	20	40
Scale factor temp. coefficient(–40°C~60°C)	ppm/°C	200	300	600	800
Physical	Units				
Size	mm3	37 × 25 × 25			
Package		Metal Sealed			
Environmental	Units				
Operating Temperature Range	°C	–40~+85			
Storage Temperature Range	°C	–55~+100			
Shock Resistance	g	1000	3000	7500	10000

1.2 MEMS Gyroscopes

Parameter	MSG001
Full Scale	$\pm 300^{\circ} / s$
Non Linearity	0.05%
Scale Factor Repeatability	0.05%
Resolution	$0.01^{\circ} / s$
Bias Stability(1σ)	$30^{\circ} / h$
Bias Instability(Allan Variance)	$10^{\circ} / h$
Start Up Time	10s
Operating temperature	$-40^{\circ}C \sim 60^{\circ}C$
Operating Voltage	$\pm 12V$
Bandwidth	80Hz

2. RF MEMS Filter

Model	Center Frequency (GHz)	Insertion Loss (dB)	1dB Bandwidth (BW1dB)	3dB Bandwidth (BW3dB)	Rejection		VSWR	Impe dance (Ω)	Average Power (W)	Chip size (mm*mm*mm)
SIMF2R8/R2-5	2.80	4.3	≥0.2GHz	≥0.3GHz	60dB@2.3GHz	60dB@3.3GHz	1.5	50	3	7.7*11.2*0.8
SIMF2R9/R4-4	2.90	3.2	≥0.35GHz	≥0.45GHz	60dB@1.9GHz	60dB@3.6GHz		50	3	7.7*10.7*0.8
SIMF2R95/R8-3	2.95	3.0	≥0.8GHz	≥1.0GHz	60dB@1.5GHz	60dB@4.3GHz	1.5	50	3	6.7*9.7*0.8
SIMF3R0/R2-5	3.00	4.8	≥0.2GHz	≥0.3GHz	60dB@2.4GHz	60dB@3.5GHz		50	3	7.7*10.7*0.8
SIMF3R1/R8-3	3.1	3.0	≥0.75GHz	≥1.0GHz	60dB@1.6GHz	60dB@4.2GHz	1.5	50	3	6.7*9.7*0.8
SIMF3R2/R2-5	3.00	4.8	≥0.2GHz	≥0.3GHz	60dB@2.6GHz	60dB@3.7GHz		50	3	7.7*10.2*0.8
SIMF3R3/R3-4	3.30	4.0	≥0.3GHz	≥0.4GHz	55dB@2.6GHz	55dB@3.9GHz	1.6	50	3	7.7*9.7*0.8
SIMF3R25/R4-4	3.25	3.5	≥0.4GHz	≥0.5GHz	60dB@2.3GHz	60dB@3.9GHz		50	3	7.7*9.2*0.8
SIMF3R4/R2-5	3.40	5.0	≥0.2GHz	≥0.3GHz	60dB@2.8GHz	60dB@3.9GHz	1.5	50	3	7.7*9.7*0.8
SIMF4R0/R5-3	4.00	3.0	≥0.4GHz	≥0.5GHz	60dB@2.8GHz	60dB@4.8GHz		50	3	7.7*8.2*0.8
SIMF2R46/R16-5	2.46	4.5	≥0.14GHz	≥0.18GHz	60dB@1.9GHz	60dB@2.82GHz	1.5	50	3	6.7*12.4*0.8
SIMF2R59/R2-5	2.65	4.5	≥0.16GHz	≥0.23GHz	60dB@2.0GHz	60dB@3.0GHz		50	3	6.7*11.8*0.8
SIMF2R77/R26-5	2.65	4.5	≥0.2GHz	≥0.27GHz	60dB@2.1GHz	60dB@3.25GHz	1.5	50	3	6.7*11.3*0.8
SIMF5R4/2R5-2	4.6	2.0	≥2.2GHz	≥2.5GHz	50dB@2.8GHz	50dB@7.2GHz		50	3	6.9*6.1*0.8
SIMF5R55/R8-3	5.55	4.0	≥0.7GHz	≥0.9GHz	60dB@4.0GHz	60dB@7.0GHz	1.5	50	3	6.7*5.7*0.8
SIMF5R75/R8-3	5.75	4.0	≥0.75GHz	≥1.0GHz	60dB@4.2GHz	60dB@7.1GHz		50	3	6.7*5.7*0.8
SIMF7R0/2R5-2	7.0	2.0	≥2.4GHz	≥2.7GHz	60dB@3.8GHz	60dB@9.6GHz	1.7	50	3	6.9*4.9*0.8
SIMF7R2/2R5-2	7.2	2.0	≥2.4GHz	≥2.9GHz	55dB@4.1GHz	55dB@9.6GHz		50	3	6.9*4.9*0.8
SIMF7R2/R5-4	7.2	3.5	≥0.4GHz	≥0.5GHz	60dB@6.0GHz	60dB@8.2GHz	1.6	50	3	11.2*6.3*0.8
SIMF7R4/R6-4	7.4	3.5	≥0.5GHz	≥0.6GHz	60dB@6.1GHz	60dB@8.5GHz		50	3	11.2*6.3*0.8
SIMF7R6/1R8-3	16.75	2.0	≥1.5GHz	≥1.8GHz	60dB@5.3GHz	60dB@9.4GHz	1.7	50	3	8.9*4.7*0.8
SIMF8R25/1R0-3	8.25	2.5	≥1.0GHz	≥1.2GHz	60dB@6.5GHz	60dB@9.45GHz		50	3	7.7*4.5*0.8
SIMF8R65/1R1-3	8.65	2.5	≥1.0GHz	≥1.2GHz	60dB@6.9GHz	60dB@9.95GHz	1.4	50	3	7.7*4.3*0.8
SIMF8R65/1R2-2	8.65	2.0	≥1.2GHz	≥1.5GHz	50dB@6.3GHz	50dB@10.4GHz		50	3	6.7*4.4*0.8
SiMF9R0/1R0-3	9.0	2.5	≥0.8GHz	≥1.0GHz	60dB@7.3GHz	60dB@10.3GHz	1.5	50	3	9.2*4.7*0.8
SIMF9R0/2R0-2	9.0	1.5	≥2.0GHz	≥2.4GHz	50dB@6.3GHz	50dB@10.9GHz		50	3	7.0*4.2*0.8
SIMF9R0/2R5-3	9.0	1.6	≥2.4GHz	≥2.9GHz	60dB@5.7GHz	60dB@11.5GHz	1.6	50	3	6.9*3.9*0.8
SIMF9R0/3R0-3	9.0	2.2	≥3.6GHz	≥4.1GHz	50dB@5.4GHz	50dB@14.3GHz		50	3	6.7*4.2*0.8
SIMF9R25/1R1-3	9.25	2.5	≥1.1GHz	≥1.4GHz	60dB@7.3GHz	60dB@10.6GHz	1.4	50	3	7.7*4.1*0.8
SIMF9R25/2R5-2	9.25	1.5	≥2.2GHz	≥2.6GHz	40dB@6.5GHz	40dB@11.2GHz		50	3	7.0*4.2*0.8
SIMF9R25/3R0-3	9.25	2.2	≥3.6GHz	≥4.3GHz	50dB@5.3GHz	50dB@14.3GHz	1.6	50	3	6.7*4.2*0.8
SIMF9R35/2R5-3	9.35	1.5	≥2.3GHz	≥2.9GHz	50dB@6.4GHz	50dB@11.4GHz		50	3	6.9*3.9*0.8
SIMF9R75/3R0-3	9.75	2.2	≥3.7GHz	≥4.5GHz	40dB@6.2GHz	40dB@14.5GHz	1.6	50	3	6.7*4.2*0.8
SIMF9R8/1R2-2	9.8	2.0	≥1.4GHz	≥1.6GHz	55dB@7.0GHz	55dB@11.7GHz		50	3	6.7*4.4*0.8
SIMF9R8/1R6-3	9.8	2.0	≥1.7GHz	≥2.0GHz	60dB@7.2GHz	60dB@11.7GHz	1.6	50	3	7.9*3.9*0.8
SIMF9R9/1R5-3	9.9	2.2	≥1.3GHz	≥1.6GHz	60dB@7.4GHz	60dB@11.6GHz		50	3	7.7*3.9*0.8
SiMF10R0/1R0-3	10.0	2.6	≥0.75GHz	≥1.0GHz	60dB@8.3GHz	60dB@11.4GHz	1.6	50	3	9.2*4.7*0.8

Model	Center Frequency (GHz)	Insertion Loss (dB)	1dB Bandwidth (BW1dB)	3dB Bandwidth (BW3dB)	Rejection		VSWR	Impe dance (Ω)	Average Power (W)	Chip size (mm*mm*mm)
SIMF10R0/2R0-2	10.0	1.5	≥1.7GHz	≥2.0GHz	50dB@7.5GHz	50dB@11.8GHz	1.8	50	3	7.0*4.2*0.8
SIMF10R0/2R5-3	10.0	1.5	≥2.0GHz	≥2.5GHz	60dB@6.7GHz	60dB@12.5GHz	1.6	50	3	6.9*3.9*0.8
SIMF10R0/4R0-3	10.0	3.0	≥3.9GHz	≥5.0GHz	40dB@6.0GHz	40dB@13.4GHz	1.8	50	3	6.7*4.2*0.8
SIMF10R35/2R5-3	10.35	1.5	≥2.0GHz	≥2.5GHz	55dB@7.3GHz	55dB@12.5GHz	1.6	50	3	6.9*3.9*0.8
SIMF10R4/4R0-3	10.4	3.0	≥4.0GHz	≥4.8GHz	60dB@6.1GHz	60dB@16.5GHz	1.6	50	3	6.7*4.2*0.8
SIMF10R45/1R3-3	10.45	3.0	≥1.2GHz	≥1.5GHz	60dB@8.5GHz	60dB@12.0GHz	1.4	50	3	7.7*3.7*0.8
SIMF10R7/1R2-2	10.7	2.0	≥1.2GHz	≥1.6GHz	55dB@8.2GHz	55dB@12.7GHz	1.7	50	3	6.7*4.4*0.8
SIMF10R7/7R0-3	16.2	3.0	≥6.0GHz	≥7.8GHz	50dB@3.8GHz	60dB@18.6GHz	2.0	50	3	6.9*3.9*0.8
SIMF10R75/1R0-4	10.75	3.5	≥0.88GHz	≥1.1GHz	60dB@8.4GHz	60dB@12.5GHz	1.7	50	3	6.7*4.1*0.8
SIMF10R75/2R5-2	10.75	1.5	≥2.2GHz	≥2.8GHz	50dB@7.2GHz	50dB@13.1GHz	1.8	50	3	7.0*4.2*0.8
SiMF11R0/1R0-4	11.0	2.8	≥0.8GHz	≥1.0GHz	60dB@9.3GHz	60dB@12.4GHz	1.6	50	3	9.2*4.2*0.8
SIMF11R0/2R0-2	11.0	1.7	≥1.5GHz	≥1.9GHz	60dB@8.0GHz	60dB@12.9GHz	1.8	50	3	7.0*4.2*0.8
SIMF11R0/2R0-3	11.0	2.5	≥1.9GHz	≥2.2GHz	60dB@8.2GHz	60dB@13.0GHz	1.7	50	3	6.9*3.9*0.8
SIMF11R0/2R5-3	11.0	1.7	≥2.2GHz	≥2.7GHz	60dB@7.8GHz	60dB@13.6GHz	1.6	50	3	6.9*3.9*0.8
SIMF11R15/1R0-4	11.15	3.5	≥1.0GHz	≥1.2GHz	60dB@8.5GHz	60dB@13.1GHz	1.7	50	3	6.7*4.2*0.8
SIMF11R35/1R5-3	11.35	3.0	≥1.5GHz	≥1.7GHz	60dB@9.2GHz	60dB@12.9GHz	1.4	50	3	7.7*3.7*0.8
SIMF11R4/1R2-3	11.4	3.0	≥1.2GHz	≥1.5GHz	60dB@9.3GHz	60dB@12.9GHz	1.5	50	3	7.9*3.9*0.8
SIMF11R4/2R0-3	11.4	2.5	≥2.0GHz	≥2.4GHz	60dB@8.3GHz	60dB@13.6GHz	1.7	50	3	7.9*3.9*0.8
SIMF11R5/2R5-3	11.5	1.5	≥2.2GHz	≥2.8GHz	60dB@7.9GHz	60dB@14.1GHz	1.6	50	3	6.9*3.9*0.8
SIMF11R5/3R0-2	11.5	2.0	≥3.4GHz	≥4.1GHz	50dB@7.4GHz	50dB@15.1GHz	1.6	50	3	6.7*3.7*0.8
SIMF11R9/1R2-2	11.9	2.2	≥1.4GHz	≥1.7GHz	55dB@9.1GHz	55dB@13.8GHz	1.6	50	3	6.7*4.4*0.8
SiMF12R0/R9-4	12.0	3.5	≥0.7GHz	≥0.9GHz	60dB@10.3GHz	60dB@13.4GHz	1.5	50	3	9.2*4.2*0.8
SIMF12R0/2R5-3	12.0	2.0	≥2.3GHz	≥2.8GHz	60dB@8.4GHz	60dB@14.8GHz	1.6	50	3	6.9*3.9*0.8
SIMF12R5/2R5-3	12.5	2.0	≥2.3GHz	≥2.8GHz	60dB@8.7GHz	60dB@15.0GHz	1.6	50	3	6.9*3.9*0.8
SIMF12R7/1R2-3	12.7	3.0	≥1.2GHz	≥1.5GHz	60dB@10.3GHz	60dB@14.6GHz	1.6	50	3	7.9*3.9*0.8
SIMF13R2/2R0-2	13.2	1.7	≥1.9GHz	≥2.2GHz	60dB@9.8GHz	60dB@15.4GHz	1.8	50	3	7.0*4.2*0.8
SIMF13R25/2R5-3	13.25	2.0	≥2.3GHz	≥2.8GHz	60dB@9.4GHz	60dB@16.2GHz	1.6	50	3	6.9*3.9*0.8
SIMF13R3/1R0-4	13.3	4.0	≥0.84GHz	≥1.1GHz	55dB@11.5GHz	55dB@14.8GHz	1.6	50	3	7.2*3.7*0.8
SIMF13R75/2R5-3	13.75	2.0	≥2.3GHz	≥2.7GHz	60dB@9.1GHz	60dB@16.3GHz	1.6	50	3	6.9*3.9*0.8
SIMF13R8/1R2-3	13.8	3.0	≥1.1GHz	≥1.4GHz	60dB@11.3GHz	60dB@15.6GHz	1.8	50	3	7.9*3.9*0.8
SIMF13R8/1R2-3	13.8	3.0	≥1.1GHz	≥1.4GHz	60dB@11.4GHz	60dB@15.6GHz	1.7	50	3	7.9*3.9*0.8
SIMF14R0/1R0-4	14.0	4.0	≥0.98GHz	≥1.3GHz	55dB@12.0GHz	55dB@15.6GHz	1.8	50	3	7.2*3.7*0.8
SIMF14R0/2R0-2	14.0	1.5	≥1.9GHz	≥2.3GHz	60dB@10.8GHz	60dB@16.3GHz	1.8	50	3	7.0*4.2*0.8
SIMF14R2/1R2-3	14.2	3.5	≥1.1GHz	≥1.4GHz	60dB@11.4GHz	60dB@15.6GHz	1.8	50	3	7.9*3.9*0.8
SIMF14R45/R6-5	14.45	5.0	≥0.4GHz	≥0.6GHz	50dB@13.3GHz	50dB@15.4GHz	1.6	50	3	11.2*4.0*0.8
SIMF14R5/4R5-3	14.5	2.5	≥4.0GHz	≥4.5GHz	55dB@9.5GHz	55dB@19.0GHz	1.6	50	3	6.7*3.7*0.8
SIMF14R65/2R5-3	13.75	2.0	≥2.2GHz	≥2.8GHz	60dB@10.5GHz	60dB@17.4GHz	1.6	50	3	6.9*3.9*0.8
SIMF14R15/2R5-3	14.15	2.0	≥2.3GHz	≥2.8GHz	60dB@10.3GHz	60dB@17.0GHz	1.6	50	3	6.9*3.9*0.8
SIMF15R45/2R5-3	15.45	2.5	≥2.3GHz	≥2.8GHz	60dB@11.3GHz	60dB@18.3GHz	1.6	50	3	6.9*3.9*0.8
SIMF15R85/2R5-3	15.85	2.5	≥2.4GHz	≥2.8GHz	55dB@11.8GHz	55dB@18.6GHz	1.6	50	3	6.9*3.9*0.8
SIMF15R0/R2-5	15.0	5.0	≥1.5GHz	≥1.8GHz	40dB@14.65GHz	40dB@15.4GHz	1.7	50	3	10.2*6.9*0.8
SIMF15R0/R6-5	15.0	5.0	≥0.4GHz	≥0.6GHz	50dB@13.9GHz	50dB@16.0GHz	1.6	50	3	11.2*4.0*0.8
SIMF15R1/4R5-3	15.1	2.5	≥4.0GHz	≥4.5GHz	55dB@9.0GHz	55dB@19.0GHz	1.6	50	3	6.7*3.7*0.8
SIMF15R25/1R4-3	15.25	2.5	≥1.2GHz	≥1.6GHz	60dB@12.3GHz	60dB@17.4GHz	1.7	50	3	7.9*3.9*0.8
SIMF15R6/1R6-3	15.6	3.0	≥1.4GHz	≥1.8GHz	60dB@12.6GHz	60dB@17.9GHz	1.7	50	3	7.9*3.9*0.8
SIMF16R0/7R0-3	15.85	2.5	≥7.0GHz	≥7.8GHz	30dB@10.0GHz	30dB@21.6GHz	1.8	50	3	6.7*3.7*0.8
SIMF16R2/2R6-3	16.2	2.2	≥2.2GHz	≥2.6GHz	50dB@12.8GHz	60dB@18.4GHz	1.7	50	3	7.9*3.9*0.8
SIMF16R7/1R2-3	16.7	3.0	≥1.1GHz	≥1.4GHz	60dB@12.8GHz	60dB@19.0GHz	1.6	50	3	7.9*3.9*0.8
SIMF16R75/4R0-3	16.75	2.0	≥3.0GHz	≥4.0GHz	50dB@12.0GHz	40dB@21.0GHz	1.7	50	3	6.9*3.9*0.8
SIMF16R9/2R5-3	16.9	2.5	≥2.5GHz	≥2.9GHz	60dB@12.1GHz	60dB@20.0GHz	1.6	50	3	6.9*3.9*0.8
SIMF17R1/1R2-3	17.1	3.0	≥1.1GHz	≥1.4GHz	60dB@13.0GHz	60dB@19.3GHz	1.8	50	3	7.9*3.9*0.8
SIMF17R15/3R5-3	16.75	2.0	≥3.0GHz	≥3.9GHz	50dB@12.5GHz	50dB@22.4GHz	1.8	50	3	6.9*3.9*0.8
SIMF17R3/R7-5	17.3	5.0	≥0.5GHz	≥0.7GHz	40dB@16.4GHz	40dB@18.2GHz	1.7	50	3	11.2*3.4*0.8
SIMF17R45/4R0-3	16.75	2.0	≥3.0GHz	≥4.0GHz	50dB@12.1GHz	50dB@22.5GHz	1.8	50	3	6.9*3.9*0.8

Model	Center Frequency (GHz)	Insertion Loss (dB)	1dB Bandwidth (BW1dB)	3dB Bandwidth (BW3dB)	Rejection		VSWR	Impe dance (Ω)	Average Power (W)	Chip size (mm*mm*mm)
SIMF17R8/R7-5	14.8	5.0	≥0.5GHz	≥0.7GHz	40dB@16.9GHz	40dB@18.6GHz	1.8	50	3	11.2*3.4*0.8
SIMF18R0/2R6-3	18.0	3.0	≥2.4GHz	≥2.7GHz	60dB@13.0GHz	60dB@19.3GHz	1.6	50	3	7.9*3.9*0.8
SIMF18R1/1R4-4	18.1	2.5	≥1.4GHz	≥1.7GHz	60dB@15.4GHz	60dB@20.8GHz	1.8	50	3	7.9*3.9*0.8
SIMF18R5/1R4-4	18.5	2.5	≥1.4GHz	≥1.8GHz	60dB@15.8GHz	60dB@20.8GHz	1.7	50	3	7.9*3.9*0.8
SIMF20R1/1R6-4	20.1	2.5	≥1.5GHz	≥1.8GHz	60dB@17.1GHz	60dB@22.8GHz	1.8	50	3	7.9*3.9*0.8
SIMF22R8/1R2-4	22.8	4.0	≥1.0GHz	≥1.3GHz	40dB@20.8GHz	40dB@24.6GHz	1.8	50	3	6.7*3.2*0.8
SIMF24R4/1R5-4	22.8	4.0	≥1.1GHz	≥1.5GHz	40dB@22.0GHz	40dB@26.3GHz	1.7	50	3	6.7*3.2*0.8
SIMF27R8/1R6-5	27.8	4.5	≥1.2GHz	≥1.8GHz	30dB@25.3GHz	30dB@29.7GHz	1.7	50	3	6.7*3.2*0.8

3. MEMS Sensors

3.1 Automobile Sensor

MA64 serious collision sensor

Parameter	Value	Unit	Notes
DYNAMIC			
DynamicRange	± 2000	gpk	
Sensitivity	0.11	mV/g	± 20%
FrequencyResponse	DC~4500	Hz	± 2.5%
Resonance	28000	Hz	Dampingratio0.05
NonLinearity	< ± 0.5	%F.S.	
TransverseSensitivity	<3	%	1%isalsoavailable
ZeroAccelerometeroutput	< ± 25	mV	
ThermalZeroShift	< ± 2	%F.S.	−10~50℃
ThermalSensitivityShift	< ± 2	%	−10~50℃
ELECTRICAL			
VoltageExcitation	0~10	Vdc	Output radiometric to excitation. Donotreversepolarity
InputResistance	3600~4800		Measured between +EXCand-EXC
OutputResistance	3600~4800		Measured between +OUTand-OUT
InsulationResistance	>100		At 100Vdc,leads to case and shield
CableOutputConnections	+EXC	RED	AWG 32#Teflon ® Insulated
	−EXC	BLACK	AWG 32#Teflon ® Insulated
	+OUT	GREEN	AWG 32#Teflon ® Insulated
	−OUT	N/A	AWG 32#Teflon ® Insulated
	CABLESHIELD	−	Braid ed Wires
	CABLEJACKET	WHITE	TPE
PHYSICAL			
Case Material	Anodized aluminum		
Cover Material	Anodized aluminum		
Cable Connection	Assembled freely according to customer’ sneed		
Weight	<1	g	Withoutcable
Mounting Torque	<0.4	Nm	
ENVIRONMENTAL			
Shock	<5000	gpk	150 μ s
Operating Temperature	−40~85	℃	
Storaging Temperature	−55~125	℃	Epoxy Sealed
Humidity			
PART NUMBERING			
Model Number+Range(g)+CableLength			MA64~2000

3.2 MEMS Vibration Sensors

Parameter	Units	MVS001
Full Scale Range	g	± 3g
Zero Measured Output	mv	± 100
Sensitivity	mV/g	1000 ± 20
Resolution	μ g	50
Noise(100Hz)	μ g/√Hz	10
Amplitude Linearity	%	1
Transverse Sensitivity	%	3
Output Impedance	Ω	≤ 100
Bandwidth	Hz	500
Offset Thermal Coefficient	mg /°C	0.5
Operating Voltage	V	0~5
Operating Current	mA	±3
Shock Limit(0.5ms1/2 sine)	g	3000
Vibration(20Hz~2000Hz)	g pk-pk	60
Operating Temperature	°C	-40~80
Storing Temperature	°C	-55~80

3.3 MEMS Crash Sensors

Parameter	Units	MPA002-300	MPA002-500	MPA002-1000	MPA002-2000
Full Scale	g	± 300	± 500	± 1000	± 2000
Sensitivity	mV/g	>0.6	>0.4	>0.25	>0.15
Frequency Response	kHz	0 ~ 2	0 ~ 3	0 ~ 4	0 ~ 5
Maximum Shock Resistance	g	5000	5000	5000	10000
Non Linearity	FS		<1%		
Sensitivity			<3%		
Zero Measured Output	mV		± 25		
Thermal Zero shift(-45°C~+85°C)	mV		± 25		
Operating Voltage	V		10		
Operating Temperature	°C		-45 ~ 85		

3.4 MEMS Collision Sensors

Parameter	Units	MCS001	MCS002	MCS003	MCS004
Full Scale	g	70 ~ 100	500 ~ 850	350 ~ 400	950 ~ 1000
Closing time	μ s	< 100	< 100	< 100	< 100
Holding time	ms	>100	>100	>100	>100
Anti-overload	g	5000	5000	5000	5000
Operating Temperature	°C		-45 ~ 85		
Storing Temperature	°C		-55 ~ 100		

3.5 Air Flow Sensors

Parameter	Units	AFM01
Full Scale	Kg/h	12 ~ 640
Accutracy	%	$\leq \pm 3$
Responding time	ms	≤ 20
Pressure lost	kpa	≤ 1.5
Rated voltage	V	14
Operating Voltage	V	1 ~ 4.5
Operating Current	A	< 0.1
Shock acceleration	m^{-2}	≤ 150
Operating Temperature	°C	- 40 ~ + 120

Packaging solutions

1. Optoelectronic Package

2. Integrated Circuit Package

2.1 BGA/LGA

2.2 CQFP

2.3 PGA

3. Microwave Package

4. LTCC Filter Products

4.1 High-pass and Low-pass Filter series

4.2 Band-pass Filter series

5. LTCC Products

1. Optoelectronic Package

Specification Part number	Applicable Devices	Dimension and Structure(mm)	Number of lead	Lead Pitch (mm)	Useful Frequency (Gbps)	Hermiticity (Pa · m ³ /s)	Isolation resistance ()	Plating Thickness (m)
OEP21	Receiver	13.2×7.4×5.0;Mini-Dil	8	2.54	<2.5	≤1×10 ⁻³	≥1.0×10 ¹⁰	≥1.3
OEP25	Receiver	10.75×8.0×3.15,Flat	17	1.0	10	≤1×10 ⁻³	≥1.0×10 ¹⁰	≥1.3
OEP27	Laser	30×12.7×7.7;Butterfly	14	2.54	10	≤1×10 ⁻³	≥1.0×10 ¹⁰	≥1.3
OEP28	Laser	30×12.7×7.7;Butterfly	14	2.54	<2.5	≤1×10 ⁻³	≥1.0×10 ¹⁰	≥1.3
OEP30	Optoswitch	17.3×10.4×7.8;Mini-Pin	12	2.54	<1.0	≤1×10 ⁻³	≥1.0×10 ¹⁰	≥1.3
OEP54	TOSA	7.6×5.5×5.35;Butterfly	9	0.6	10	≤1×10 ⁻³	≥1.0×10 ¹⁰	≥1.3

2. Integrated Circuit Package

2.1 BGA/LGA

Specification Part number	Number of Lead	Lead Pitch (mm)	Cavity Dimension	Dimension	Sealing	Lead and bonding corresponding relation	Heat Sink
CLGA100	100	1.27	SQ9.00	SQ14.60	Parallel seam	Conventional	No
CLGA240	240	1.27	SQ8.60	SQ25.00	AuSn	Nonconventional	Yes
CLGA272	272	1.27	SQ7.70	SQ27.00	AuSn	Nonconventional	No
CLGA429	429	1.27	SQ9.30	SQ27.00	AuSn	Nonconventional	No
CBGA429B	429	1.27	SQ8.20	SQ27.00	AuSn	Nonconventional	No
CBGA432B	432	1.27	SQ15.50	SQ40.00	AuSn	Conventional	Yes
CBGA256H	256	1.00	SQ7.50	SQ17.00	AuSn	Conventional	No
CLGA560A	560	1.27	SQ24.50	SQ42.50	AuSn	Nonconventional	Yes

2.2 CQFP

Specification Part number	Number of Lead	Lead Pitch (mm)	Cavity Dimension	Dimension	Sealing	Lead and bonding corresponding relation	Heat Sink
CQFP40C	40	0.50	SQ3.40	SQ7.00	Parallel seam	Conventional	No
CQFP128B	128	0.50	SQ6.30	SQ20.00	AuSn	Conventional	Yes
CQFP164	164	0.635	SQ7.62	SQ28.70	AuSn	Conventional	No
CQFP196	196	0.635	SQ9.00	SQ34.30	AuSn	Unconventional	No
CQFP208BA	208	0.50	SQ16.20	SQ28.00	AuSn	Conventional	Yes
CQFP208D	208	0.50	11.30×11.00	SQ28.00	AuSn	Unconventional	Yes
CQFP208E	208	0.50	SQ12.50	SQ28.00	AuSn	Unconventional	Yes
CQFP208F	208	0.50	SQ8.40	SQ28.00	AuSn	Conventional	No
CQFP208G	208	0.50	SQ9.40	SQ28.00	AuSn	Conventional	Yes
CQFP208H	208	0.50	SQ10.00	SQ28.00	AuSn	Conventional	No
CQFP228	228	0.635	SQ14.00	SQ39.37	AuSn	Unconventional	No

Specification Part number	Number of Lead	Lead Pitch (mm)	Cavity Dimension	Dimension	Sealing	Lead and bonding corresponding relation	Heat Sink
CQFP228A	228	0.635	SQ15.50	SQ39.37	AuSn	Unconventional	No
CQFP228C	228	0.635	SQ16.00	SQ39.37	AuSn	Unconventional	No
CQFP228D	228	0.635	SQ20.90	SQ39.37	AuSn	Unconventional	No
CQFP228E	228	0.635	SQ14.00	SQ39.37	AuSn	Unconventional	No
CQFP240C	240	0.50	SQ12.70	SQ32.00	AuSn	Conventional	Yes
CQFP240F	240	0.50	SQ12.70	SQ32.00	AuSn	Conventional	Yes
CQFP240G	240	0.50	13.87 × 19.60	SQ32.00	AuSn	Unconventional	Yes
CQFP240H	240	0.50	SQ10.70	SQ32.00	AuSn	Conventional	No
CQFP240J	240	0.50	SQ9.15	SQ32.00	AuSn	Conventional	No
CQFP240K	240	0.50	SQ6.80	SQ32.00	AuSn	Unconventional	Yes
CQFP240L	240	0.50	11.10 × 9.80(no cavity)	SQ32.00	AuSn	Conventional	No
CQFP240M	240	0.50	SQ11.00	SQ32.00	AuSn	Conventional	No
CQFP240N	240	0.50	11.00 × 9.80	SQ32.00	AuSn	Unconventional	No
CQFP240R	240	0.50	SQ11.00	SQ32.00	AuSn	Conventional	No

2.3 PGA

Specification Part number	Number of Lead	Lead Pitch (mm)	Cavity Dimension	Dimension	Sealing	Lead and bonding corresponding relation	Heat Sink
PGA391	391	2.54 stagger	SQ15.00	SQ47.24	AuSn	Conventional	No
PGA475	475	2.54 stagger	SQ18.70	SQ54.86	AuSn	Conventional	Yes
PGA560	560	2.54 stagger	SQ21.80	SQ55.88	AuSn	Unconventional	Yes
PGA560A	560	2.54 stagger	SQ26.00	SQ55.88	AuSn	Unconventional	Yes

3. Microwave Package

Part Number	Frequency Band	Cavity Dimension (mm)	Dimension (mm)	Number of lead	Hermiticity (Pa · cm ³ /s)	Isolation resistance (Ω)	Plating Thickness (μ m)
PG1031A	P、L Band	29.30x6.00	41.15 × 10.16 × 2.88	4	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
PG1021A	P、L Band	19.42x5.50	34.04 × 10.16 × 3.40	4	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
QF023L	P、L、S Band	10.40x6.60	22.90 × 10.16 × 4.00	2	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
QF014	P、L、S Band	8.70x6.50	22.90 × 10.16 × 4.00	2	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
QF069	S、C、X Band	6.90x2.30	12.40 × 11.50 × 3.40	10	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
QF046A	S、C、X Band	4.50x2.30	11.00 × 8.70 × 3.40	8	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
ST25	S、C、X Band	0.50x0.40	2.00 × 2.00 × 0.95	2	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
SM03C	L、S、C Band	5.35 × 5.35	6.35 × 6.35 × 2.10	8	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
SM08A	L、S Band	11.00 × 11.00	12.20 × 12.20 × 4.80	6	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
SM37	L、S Band	8.40 × 9.00	9.40 × 10.00 × 2.35	14	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
SM64C	L、S、C Band	6.20 × 7.40	9.20 × 9.20 × 4.45	8	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3
SM71	S、C、X Band	5.30 × 8.00	10.00 × 12.50 × 2.95	28	≤1x10 ⁻³	≥1.0x10 ¹⁰	≥1.3

4. LTCC Filter Products

4.1 High-pass and Low-pass Filter series

Specification Part number	Cutoff Frequency f_0 (MHz)	Bandpass IL (dB)	Bandpass VSWR	Stopband Suppression	Dimension (mm ³)
LT7LF210M	210	≤ 2.50	≤ 1.50	50dB@400MHz~2000MHz, 40dB@2000~5000MHz	4.0×7.0×1.55
LT7LF330M	330	≤ 2.50	≤ 1.70	50dB@555MHz~2000MHz, 40dB@2400~5000MHz	4.0×7.0×1.55
LT7LF1.6G	1600	≤ 2.50	≤ 1.80	40dBc@2250~3100MHz, 30dBc@3100~5800MHz	2.5×4.5×1.55
LT7LF1.8G	1800	≤ 1.8	≤ 1.60	45dBc@2500~3500MHz, 20dBc@3500MHz~7000MHz	2.5×4.5×1.55
LT7HF1.2G	1200 (BW1200~2200)	≤ 2.00	≤ 1.60	40dB@DC~500MHz	3.0×5.0×1.90

4.2 Band-pass Filter series

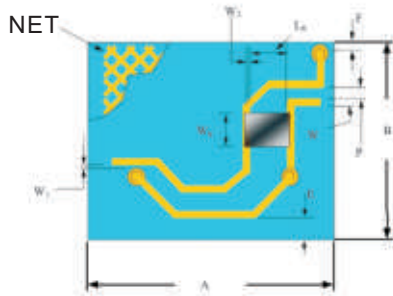
Specification Part number	Cutoff Frequency f ₀ (MHz)	3Db Bandwidth (Ghz)	IL@f ₀ (dB)	VSWR	Stopband Suppression	Dimension (mm ³)
LT5BF0.6–0.95G	0.775	≥0.35 2.30 (Typ)	≤1.8	≥40dBc@DC~450MHz, 40dBc@1275MHz~3300MHz		4×6.5×1.53
LT5BF0.8–1.30G	1.05	≥0.50 1.75 (Typ)	≤2.0	≥40dB@DC~470MHz, 40dB@1775MHz~4500MHz		4×6.5×1.53
LT5BF0.8–1.55G	1.175	≥0.75 1.60 (Typ)	≤2.0	≥40dB@DC~530MHz, 40dB@2150MHz~4500MHz		4×6.5×1.53
LT5BF1.0–1.9G	1.45	≥0.9 1.80 (Typ)	≤1.6	≥40dB@DC~590MHz, 40dB@2450MHz~4500MHz		4×6.5×1.53
LT3BF1.15–1.85G	1.50	≥0.7 1.00 (Typ)	≤2.0	≥30dBc@DC~500MHz, 30dBc@2550MHz~3500MHz		2×5.3×1.00
LT3BF1.3–1.7G	1.50	≥0.4 1.65 (Typ)	≤2.0	≥30dBc@DC~600MHz, 30dBc@2320MHz~2800MHz		2×5.3×1.00
LT5BF1.3–2.0G	1.65	≥0.7 1.80 (Typ)	≤2.0	≥38dB@DC~930MHz, 40dB@2500MHz~4500MHz		4×6.5×1.53
LT7BF2.0–3.4G	2.70	≥1.4 2.00 (Typ)	≤2.0	≥45dBc@10MHz~1320MHz, 45dBc@3840MHz~9000MHz		6.50×7.45×1.55
LT7BF2.8–4.7G	3.75	≥1.9 2.10 (Typ)	≤2.0	≥50dBc@10MHz~2050MHz, 40dBc@5240MHz~9000MHz		6.50×7.45×1.55
LT7BF3.0–4.45G	3.72	≥1.45 2.50 (Typ)	≤2.0	≥40dBc@10MHz2410MHz, 38dBc@4950MHz~9000MHz		6.50×7.45×1.55
LT7BF4.55–5.25G	4.90	≥0.7 3.50 (Typ)	≤1.5	≥40dB@10MHz~4000MHz, 35dB@5800MHz~8500MHz		6.25×7.45×1.55
LT7BF4.0–6.0G	5.00	≥2.0 2.80 (Typ)	≤1.8	≥45dB@10MHz~3000MHz 45dB@6800MHz~9000MHz		6.50×7.45×1.55
LT7BF4.75–5.15G	4.95	≥0.4 6.0 (Typ)	≤1.5	≥50dB@10MHz~4500MHz, 40dB@5400MHz~7000MHz		6.25×9.00×1.55

5. LTCC Products

		Symbol	Standard	Tolerance
Structure	Length of substrate	A	5 ~ 70	0.5% or 0.2mm
	Width of substrate	B	5 ~ 70	0.5% or 0.2mm
	Level of substrate	N	6 ~ 40 levels	
	Thickness of level		0.097	
	Flatness(After burning)		0.05/10	
Pinhole	Typ. hole Diameter(filling orifice)	K	0.12、0.17	
	Distance between hole and center (filling orifice)		Min. 2.5 × K	
Interconnection	Distance between hole and edge of substrate	F	0.4	
Metallization	Linewidth(without hole)	W	Min.0.1	20%
	Line spacing (far from via)	P	Min.0.1	20%
	Via Metal to Line Spacing	W ₁	Min.0.18	20%
	Conductor to Part Edge	E	Min.0.3	20%
	Width of Metal		8 μ m – 12 μ m	
	Internal Resistance		10 Ω /□、100 Ω /□、1000 Ω /□、1 Ω /□ (Dupont951)	25%
	External Resistance		10 Ω /□、100 Ω /□、1000 Ω /□、1 Ω /□ (Dupont951)	1%
	Width of Resistance with metal	W2	Min. 0.15	
	Length of Resistance	LR	Min. 0.2	
	Width of Resistance	WR	Min. 0.15	

Note:

- ①Material of LTCC are Ferro A6M and DuPont 951;
- ②Ground plane mesh is recommended at interior ground wiring
- ③wiring on the second layer from the bottom of the substrate is not allowed
- ④The surface of DuPont 951 material series can weld metal wall and lead





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