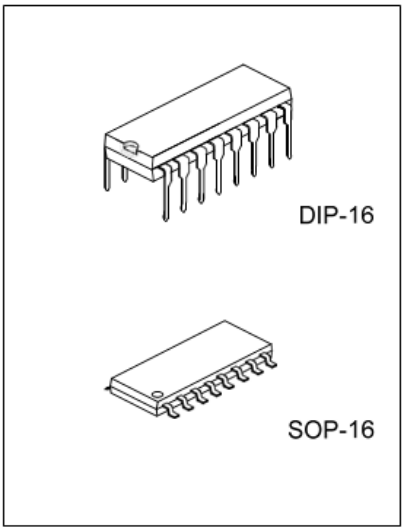
SYNTEZ MICROELECTRONICS

L497

AUTOMOTIVE HALL EFFECT IGNITION CONTOLLER

Features

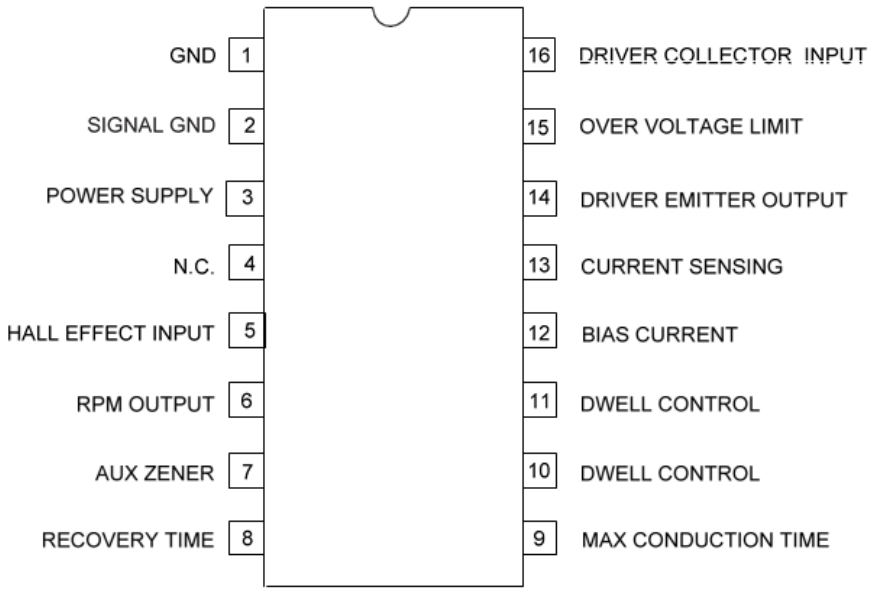
- Direct driving of the external power Darlington
- Coil current charging angle control
- Programmed coil current peak limitation
- When 94% nominal current not reached programmable dwell recovery time
- RPM output
- Has permanent conduction protection
- Overvoltage protection
- Internal supply Zener
- Reverse battery protection



Description

As an integrated electronic ignition controller for breakerless ignition systems which uses Hall effect sensors, the L497 drives an NPN external Darlington to control the coil current providing the required stored energy with low dissipation.

Pin Configuration



Absolute Maximum Rating

PARAMETER		SYMBOL	RATINGS	UNIT
D.C. Supply Current		I_3	200	mA
Transient Supply Current	t_f fall time constant=100ms		800	mA
Supply Voltage		V_3	Internal Limited to V_{Z3}	
RPM Voltage		V_6	28	V
D.C. Driver Collector Current		I_{16}	300	mA
Driver Collector Voltage		V_{16}	28	V
Auxiliary Zener Current		I_7	40	mA
D.C. Overvoltage Zener Current	Pulse t_{fall}=300μs	I_{15}	15	mA
	t_{rep} Repetition Time≥3ms		35	mA
Reverse Battery Voltage if Application Circuit		V_R	-16	V
Junction Temperature		T_J	-55~ +150	°C
Storage Temperature		T_{STG}	-55~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Electrical Characteristics

(VS=14.4V, -40 °C<TJ<125°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Min Operating Voltage	V_3		3.5			V
Supply Current	I_3	V_3=6V	5	18	25	mA
		V_3=4V	5		13	mA
Voltage Supply	V_S				28	V
Supply Clamping Zener Voltage	V_{Z3}	I_{Z3}=70mA	6.8	7.5	8.2	V
Input Voltage	V_5	Low Status			0.6	V
		High Status	2.5			V
Input Current	I_5	V_5=LOW	-400		-50	μA
Darlington Driver Saturation Current	V_{16-14}	I_{14}=50mA			0.5	V
		I_{14}=180mA			0.9	V
Current Limit Sensing Voltage	V_{SENSE}	V_S=6~16V	260	330	400	mV
C_W Charge Current	I_{11C}	V_S=5.3~16V,V_{11}=0.5V, T=10~33ms	-11.0	-9.3	-7.8	μA
C_W Charge Current	I_{11D}	V_S=5.3~16V, V_{11}=0.5V, T=10~33ms	0.5	0.7	1.0	μA
C_W Charge Discharge ratio	$I_{11C/I11D}$	V_S= 5.3~16V, V_{11}=0.5V, T=10~33ms (Note 1)	7.8		22.0	
Percentage of Output Current Determining the Slow Recovery Control Start (Note 2)	$I_{SRC/ISENSE}$		90	94	98.5	%
Duration of Altered Small Control Ratio after SRC Function Start	T_{SRC}	C_{SRC}=1μF, R_7=62KΩ		0.8		s
External Darlington over V Prot Zener Voltage	V_{Z15}	I_{15}=5mA	20	25	30	V
		I_{15}=2mA	18	23	28	
Permanent Conduction Time	T_P	V_5=High, C_P=1μF, R_7=62KΩ		1.0		s
RPM Output Saturation Voltage	V_{6SAT}	I_6=18.5mA			0.5	V
		I_6=25mA			0.8	V
RPM Output Leakage Current	$I_{6\ LEAK}$	V_S=20V			50	μA
Auxiliary Zener Voltage	V_{Z7}	I_7=20mA	19		27	V
Reference Voltage	V_{12}		1.0	1.2	1.3	V

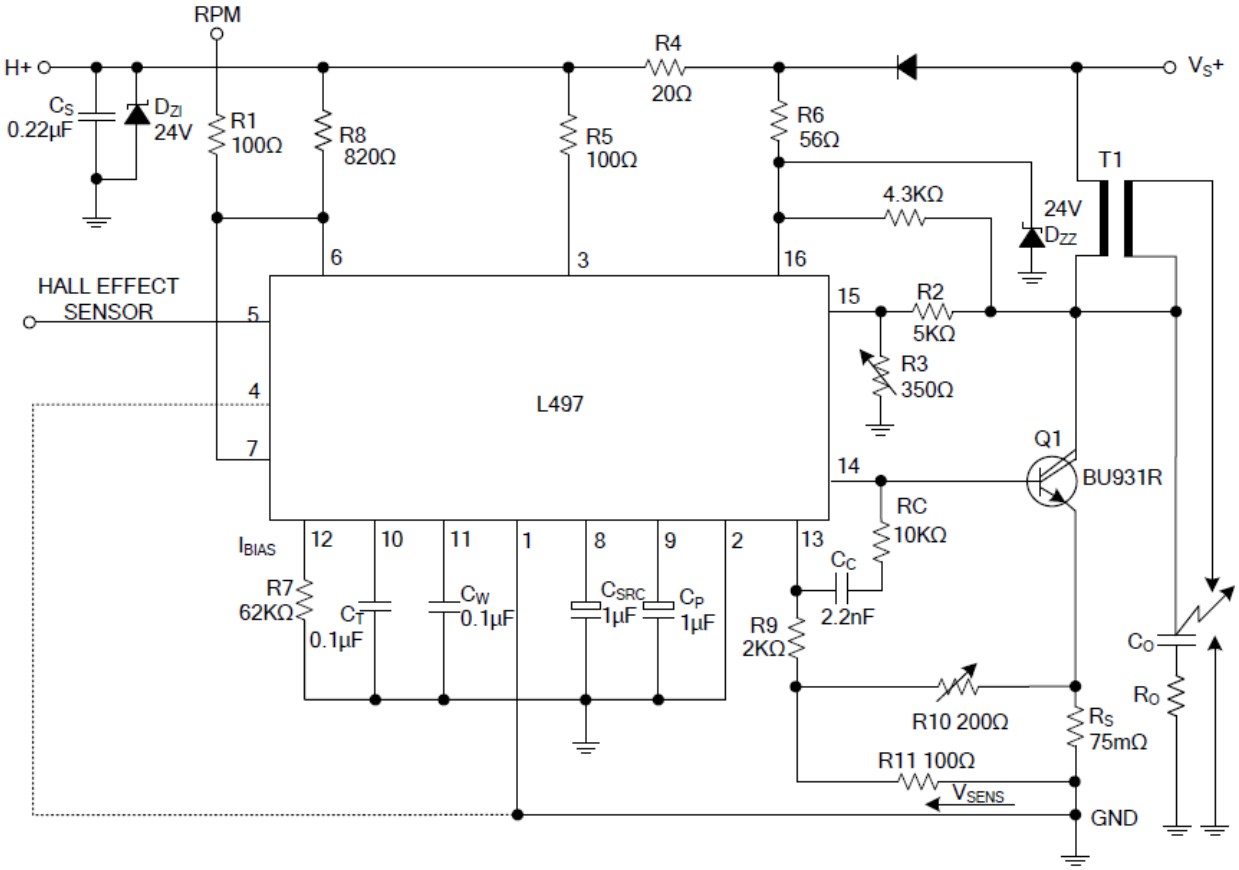
Notes: 1. td/t desaturation ratio is given by: td/T=1/[1+I11C/I11D].
2. ISENSE=Icoil when the external Darlington is in the active region.

Thermal Data

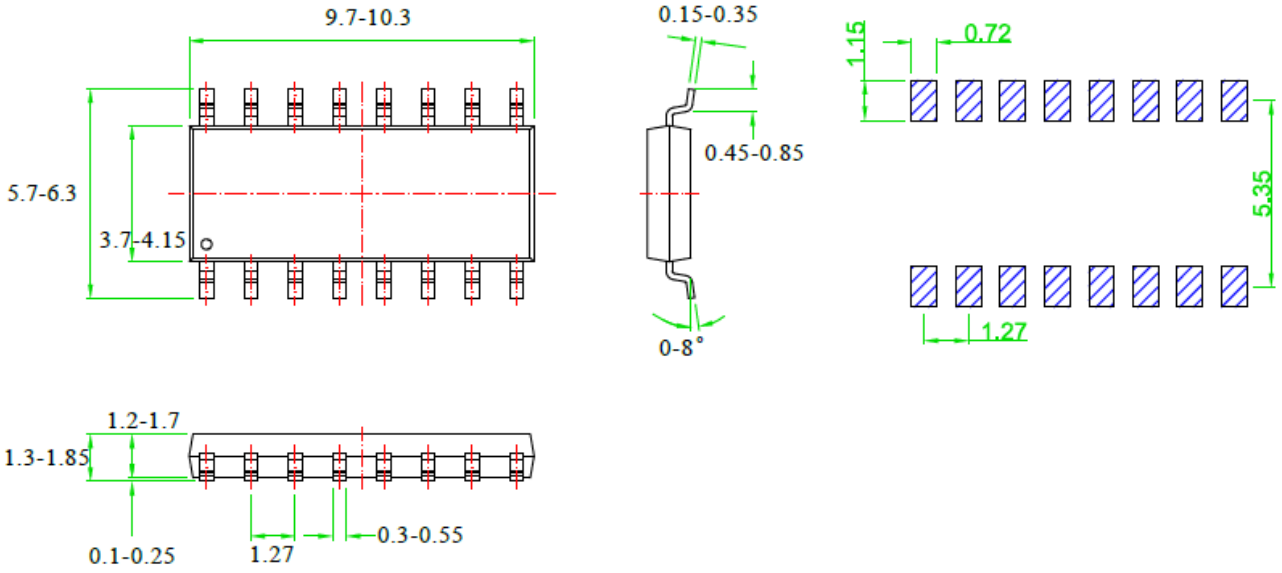
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	DIP-16	θ_{JA}	90	°C/W
	SOP-16		55 (Note)	°C/W

Note: Thermal resistance junction Ambient with the device soldered on the middle of an Ambient supporting substrate measuring 15x20; 0.65mm thickness.

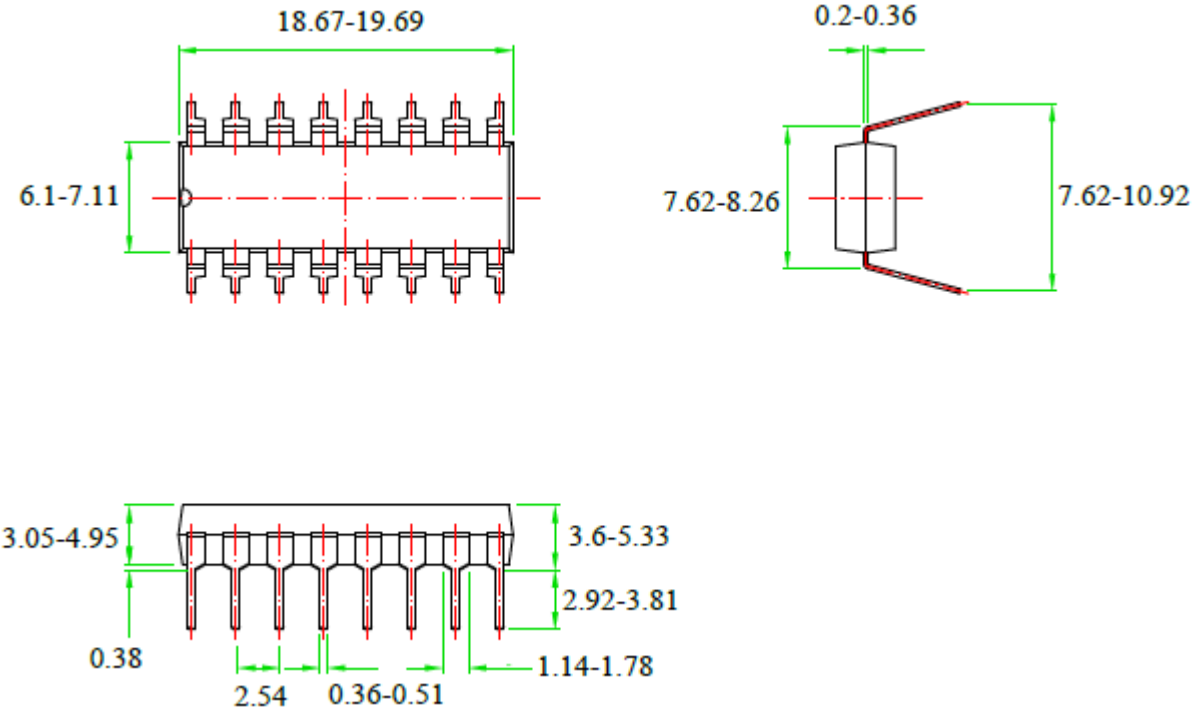
Typical Application Circuit



SOP-16 Package Dimensions



DIP-16 Package Dimensions



*All dimensions are in millimeters

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