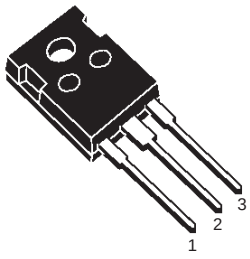
VB927
VB927FI

HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

- NO EXTERNAL COMPONENT REQUIRED
- INTEGRATED HIGH VOLTAGE CLAMP
- COIL CURRENT LIMIT INTERNALLY SET
- HIGH RUGGEDNESS



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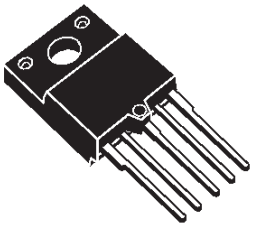


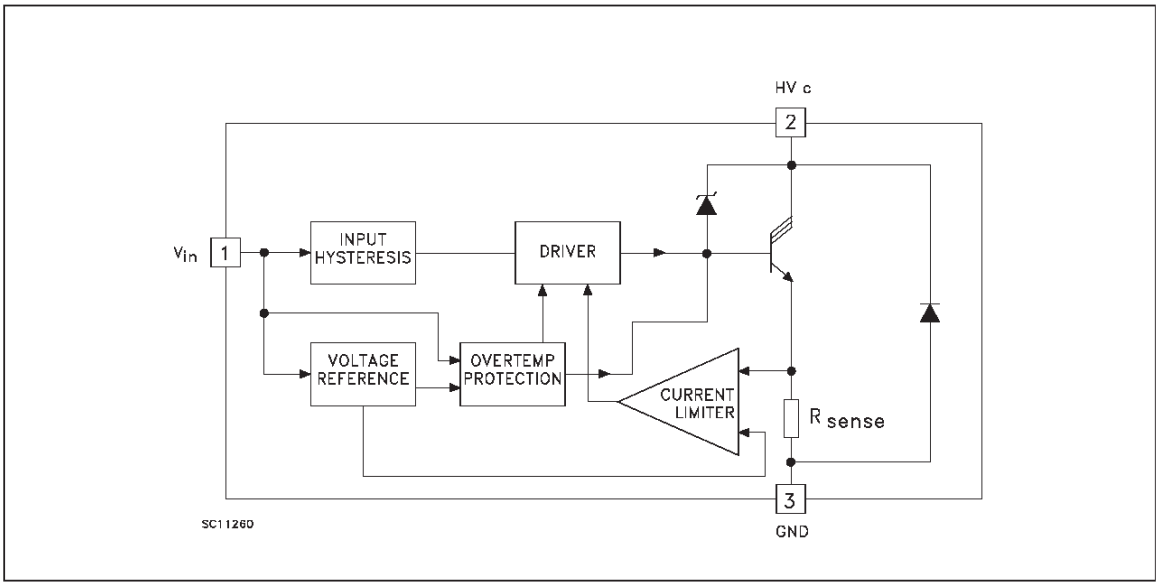
ISOWATT5

DESCRIPTION

The VB927 is a monolithic high voltage integrated circuit made using STM VIPower Technology, which combines a vertical current flow power trilinton with a coil current limiting circuit and a collector voltage clamping.

The device is peculiarly suitable for application in high performance electronic car ignition, where coil current limitation and voltage clamping are required.

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value		Unit
		VB927	VB927FI	
HV_c	Collector Voltage	Internally Limited		V
V_{in}	Maximum Input Voltage	15		V
I_c	Collector Current	Internally Limited		A
I_{in}	Input Current	Internally Limited		mA
P_{tot}	Total Dissipation at T_c = 25 °C	150	70	W
T_{stg}	Storage Temperature	-40 to150		°C
T_j	Operating Junction Temperature	-40 to150		°C

THERMAL DATA

			TO-247	ISOWATT5	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	0.6	2	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	30		°C/W

ELECTRICAL CHARACTERISTICS (V_{batt} = 14 V, -40 < T_j < 125 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{leak}	Collector Cut-off Current	V_{in} = 0 HV_c = 250 V			250	µA
V_{cl} *	Clamping Voltage	-40 < T_j < 125 °C	380	420	490	V
$V_{cg(sat)}$	Power Stage Saturation Voltage	I_c = 5 A I_{in} = 10mA 25 ≤ T_j ≤ 125 °C I_c = 6 A I_{in} = 10mA -40 ≤ T_j ≤ 25 °C			2.5 3	V V
I_{cl} *	Coil Current Limit	V_{in} = 5 V -40 ≤ T_j ≤ 125 °C	8.5		9.5	A
I_{in}	Input Current	V_{in} = 5 V I_c = 5 A V_{in} = 5 V I_c = 5 A T_j = 25 °C	 3		10 10	mA mA
V_f **	Diode Forward Voltage	I_f = 10 A T_j = 25 °C	1.2	2.2	3.2	V
$V_{in(h)}$	Input Voltage (ON)	On state input threshold	3.2		3.6	V
$V_{in(l)}$	Input Voltage (OFF)	Off state input threshold	3		3.4	V
$V_{n(hyst)}$	Input Voltage (Hyst.)		0.2		0.6	V
$t_{d(off)}$	Turn-off Time	Ic = 5 A		30		µs
T_j	Junction Temperature Limit	See note1	150			°C

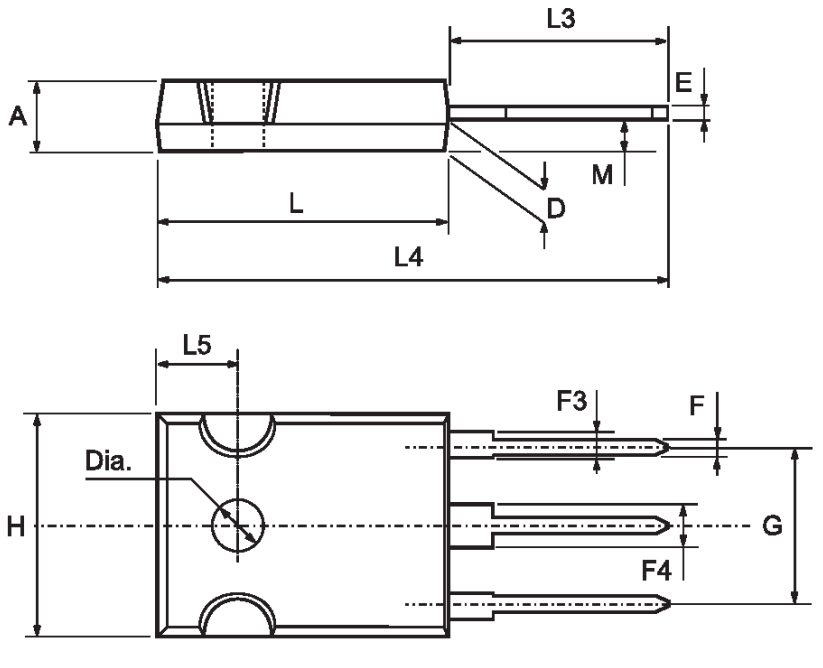
* Coil data: primary resistance R_c = 0.4 - 0.8 Ω, primary inductance L_c = 6 - 8 mH

** Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %

Note1 : T_j min = 150 °C means that the behaviour of the device will not be affected for junction temperature lower then 150 °C . For higher temperature, the thermal protection circuit will begin its action reducing the I_{cl} limit according with the power dissipation. Chip temperature is a function of the R_{th} of the whole system in which the device with be operating.

TO-247 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		5.3	0.185		0.209
D	2.2		2.6	0.087		0.102
E	0.4		0.8	0.016		0.031
F	1		1.4	0.039		0.055
F3	2		2.4	0.079		0.094
F4	3		3.4	0.118		0.134
G		10.9			0.429	
H	15.3		15.9	0.602		0.626
L	19.7		20.3	0.776		0.779
L3	14.2		14.8	0.559	0.413	0.582
L4		34.6			1.362	
L5		5.5			0.217	
M	2		3	0.079		0.118
Dia	3.55		3.65	0.140		0.144



ISOWATT5 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.210		0.222
B	3.3		3.8	0.130		0.149
D	2.95		3.1	0.116		0.122
D1	1.88		2.08	0.074		0.081
E	0.45		1	0.017		0.039
F	0.75		1	0.029		0.039
F1		1.5			0.059	
F2		1.3			0.051	
G		10.16			0.400	
G1		5.08			0.200	
H	15.8		16.2	0.622		0.637
L		9			0.354	
L1	20.25		20.75	0.797		0.817
L2	19.10		19.9	0.751		0.783
L3	22.8		23.6	0.897		0.929
L4	34.9		36.9	1.374		1.452
L5	4.85		5.25	0.190		0.206
L7		16			0.630	
N	2.1		2.3	0.082		0.090
R		3.1			0.122	
	3.5		3.7	0.138		0.145