



VB927 VB927FI

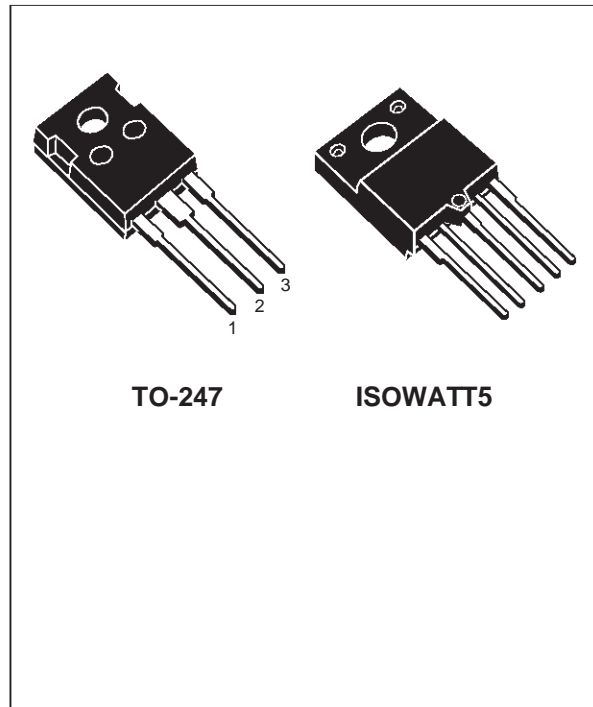
HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

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

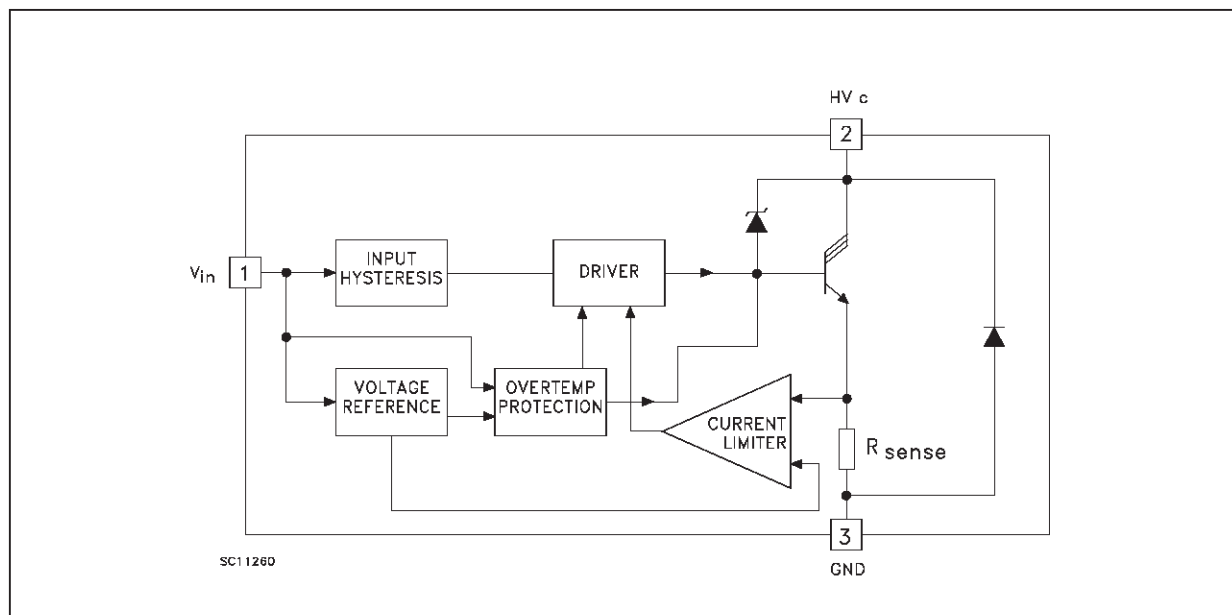
DESCRIPTION

The VB927 is a monolithic high voltage integrated circuit made using STM VIpower Technology, which combines a vertical current flow power triline 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 $T_c = 25\text{ }^\circ\text{C}$	150	70	W
T_{stg}	Storage Temperature	-40 to 150		$^\circ\text{C}$
T_j	Operating Junction Temperature	-40 to 150		$^\circ\text{C}$

THERMAL DATA

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

ELECTRICAL CHARACTERISTICS ($V_{batt} = 14\text{ V}$, $-40 < T_j < 125\text{ }^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{leak}	Collector Cut-off Current	$V_{in} = 0$ $HV_c = 250\text{ V}$			250	μA
V_{cl}^*	Clamping Voltage	$-40 < T_j < 125\text{ }^\circ\text{C}$	380	420	490	V
$V_{cg(sat)}$	Power Stage Saturation Voltage	$I_c = 5\text{ A}$ $I_{in} = 10\text{ mA}$ $25 \leq T_j \leq 125\text{ }^\circ\text{C}$ $I_c = 6\text{ A}$ $I_{in} = 10\text{ mA}$ $-40 \leq T_j \leq 25\text{ }^\circ\text{C}$			2.5 3	V V
I_{cl}^*	Coil Current Limit	$V_{in} = 5\text{ V}$ $-40 \leq T_j \leq 125\text{ }^\circ\text{C}$	8.5		9.5	A
I_{in}	Input Current	$V_{in} = 5\text{ V}$ $I_c = 5\text{ A}$ $V_{in} = 5\text{ V}$ $I_c = 5\text{ A}$ $T_j = 25\text{ }^\circ\text{C}$	3		10 10	mA mA
V_f^{**}	Diode Forward Voltage	$I_f = 10\text{ A}$ $T_j = 25\text{ }^\circ\text{C}$	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	$I_c = 5\text{ A}$		30		μs
T_j	Junction Temperature Limit	See note 1	150			$^\circ\text{C}$

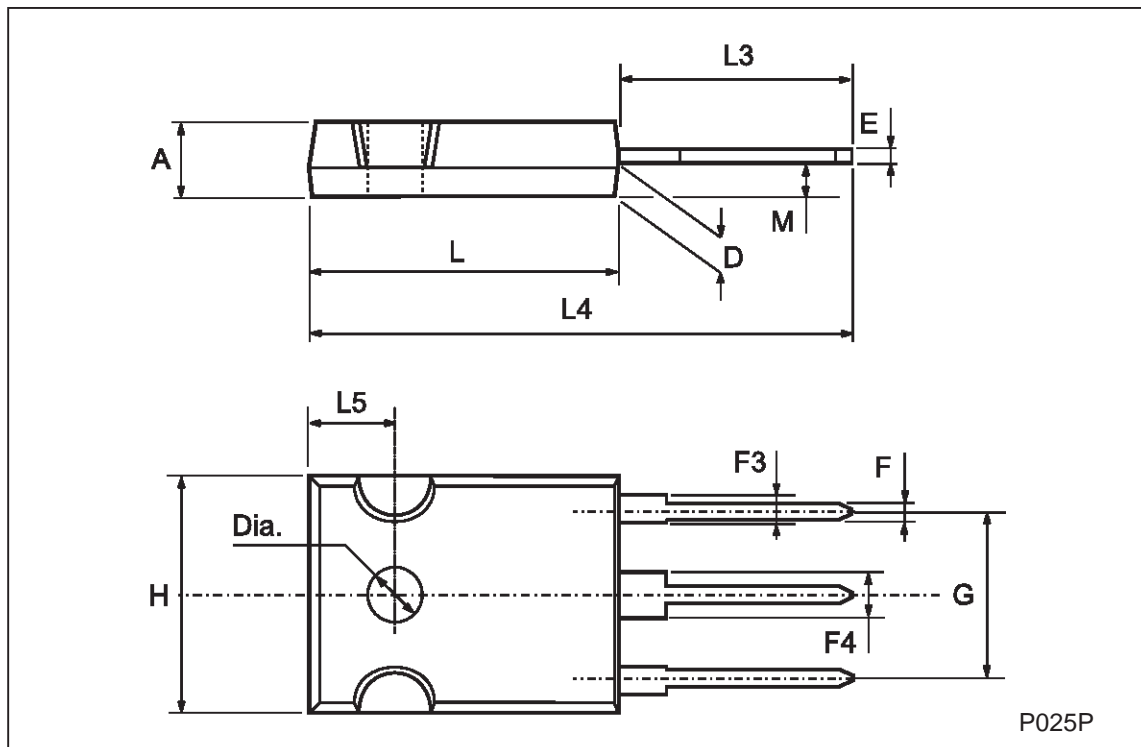
* Coil data: primary resistance $R_c = 0.4 - 0.8\ \Omega$, primary inductance $L_c = 6 - 8\text{ mH}$

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

Note 1 : $T_j \text{ min} = 150\text{ }^\circ\text{C}$ means that the behaviour of the device will not be affected for junction temperature lower than $150\text{ }^\circ\text{C}$. 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 will be operating.

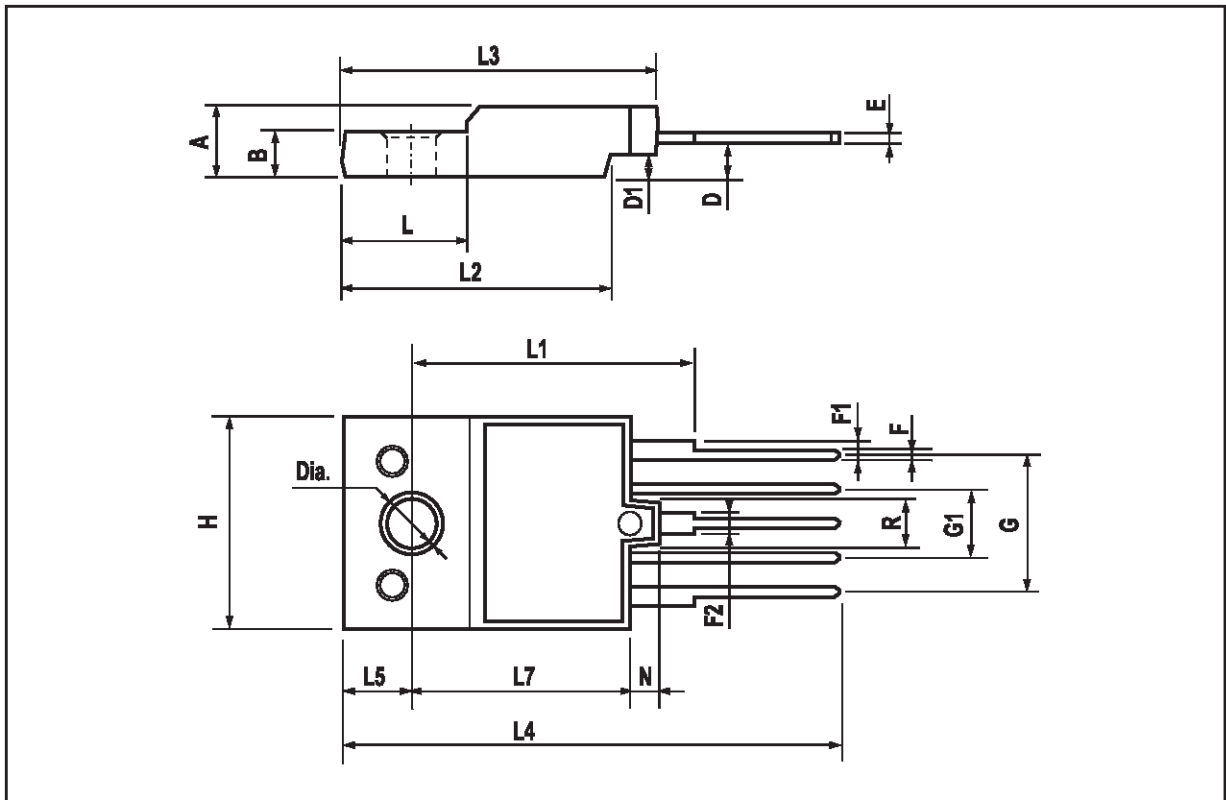
TO-247 MECHANICAL DATA

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



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