



# VB927 VB927FI

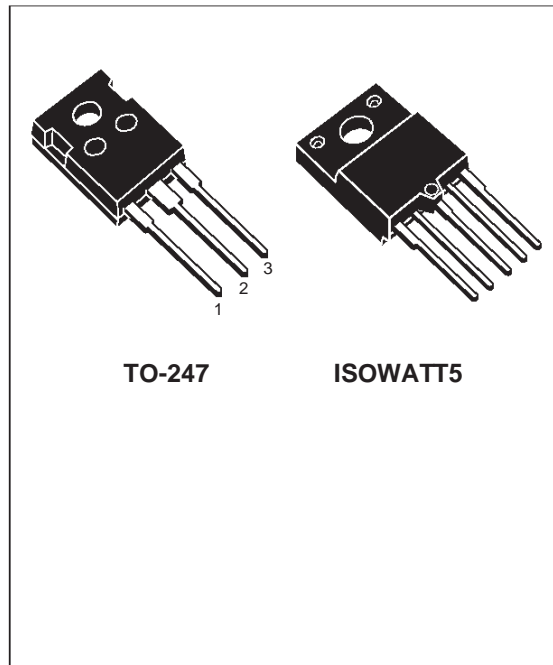
## HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

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

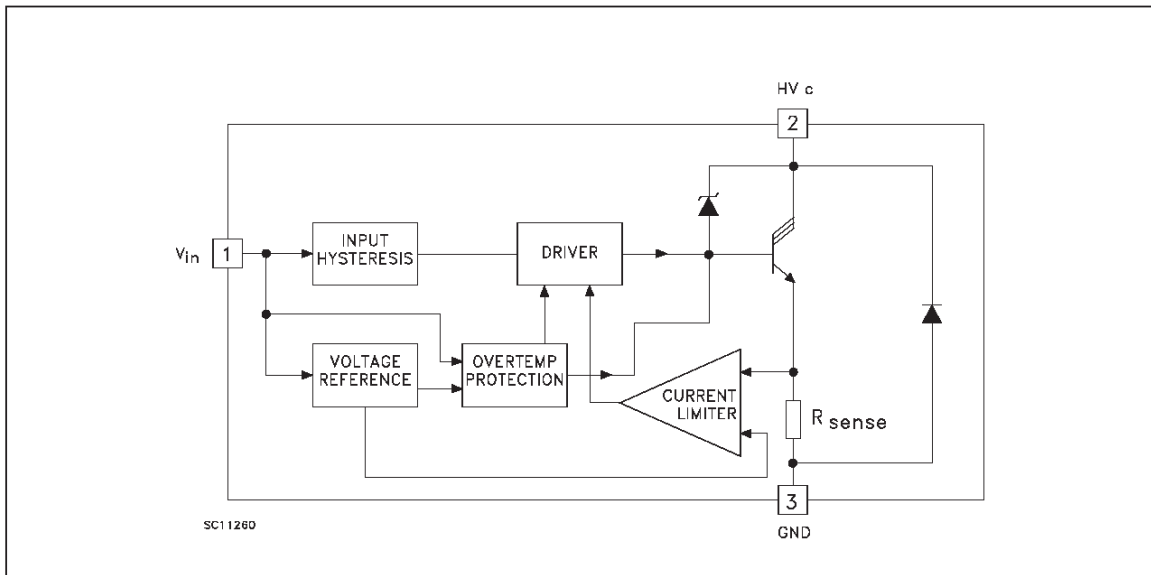
### DESCRIPTION

The VB927 is a monolithic high voltage integrated circuit made using STM VIPower Technology, which combines a vertical current flow power trilineon 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	$\mu\text{A}$
$V_{cl}^*$	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		$\mu\text{s}$
$T_j$	Junction Temperature Limit	See note 1	150			$^\circ\text{C}$

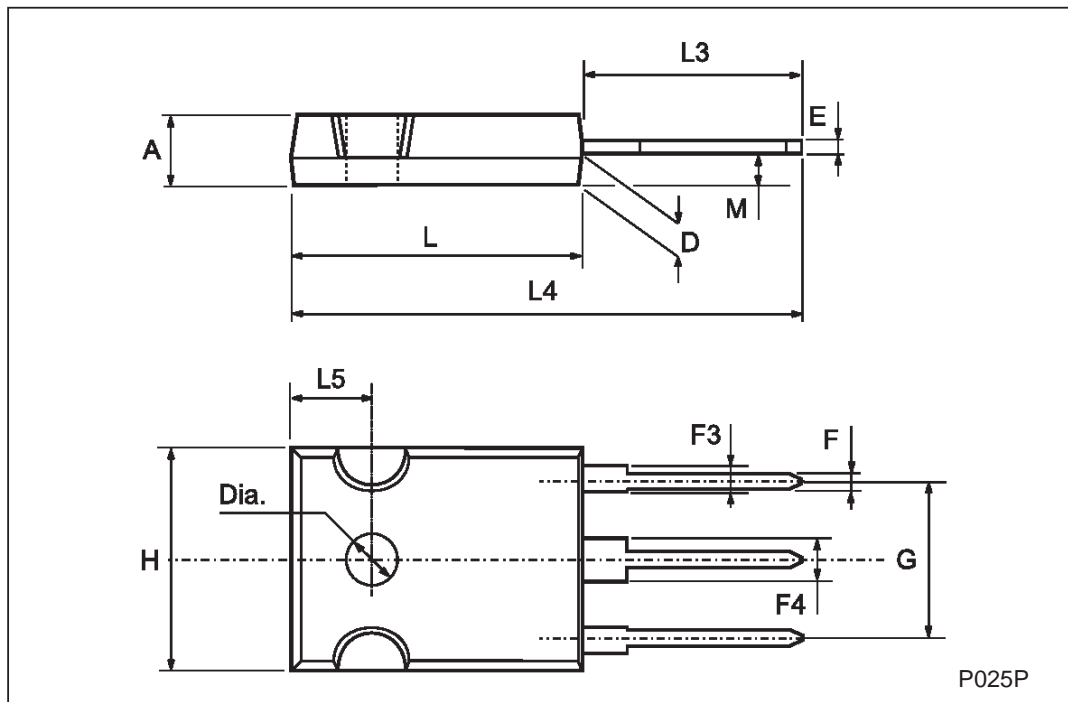
\* Coil data: primary resistance  $R_c = 0.4 - 0.8\ \Omega$ , primary inductance  $L_c = 6 - 8\text{ mH}$

\*\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , 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 then  $150\text{ }^\circ\text{C}$ . 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.

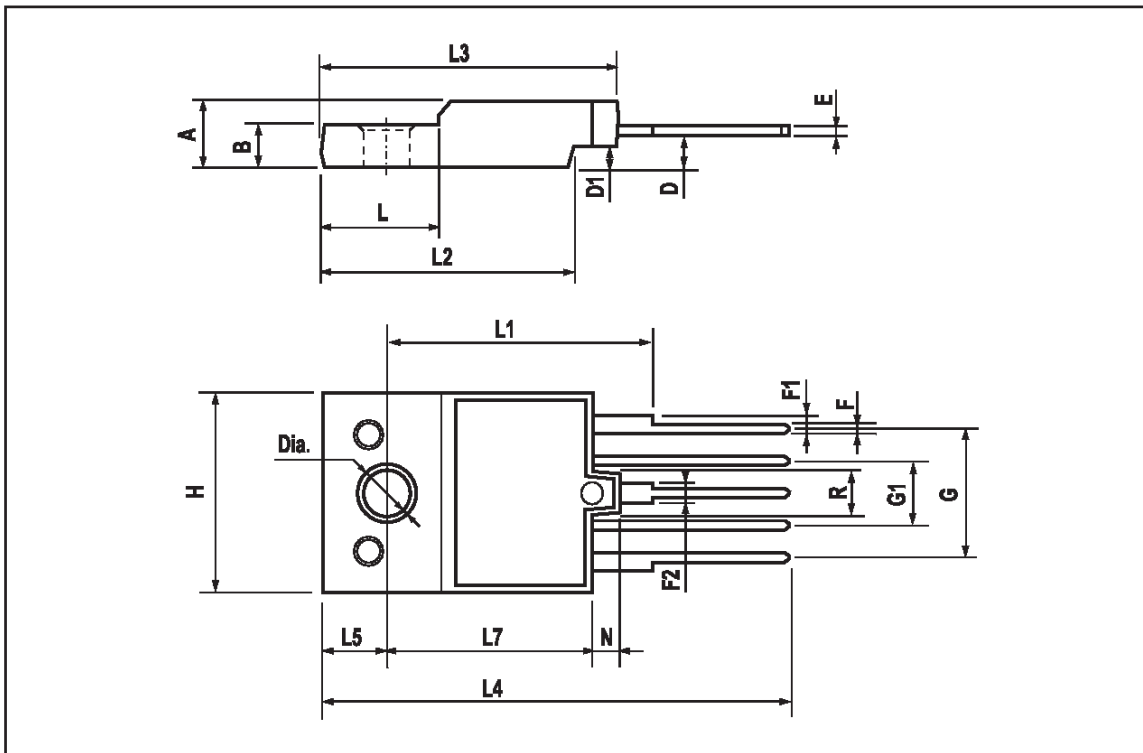
TO-247 MECHANICAL DATA

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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