



## VB927T

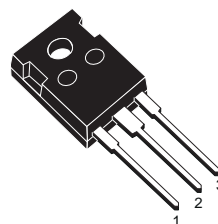
# HIGH VOLTAGE IGNITION COIL DRIVER POWER I.C.

TYPE	$V_{cl}$	$I_{cl}$	$V_{cg(sat)}$
VB927T	380V	9.5A	2.5V

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

### DESCRIPTION

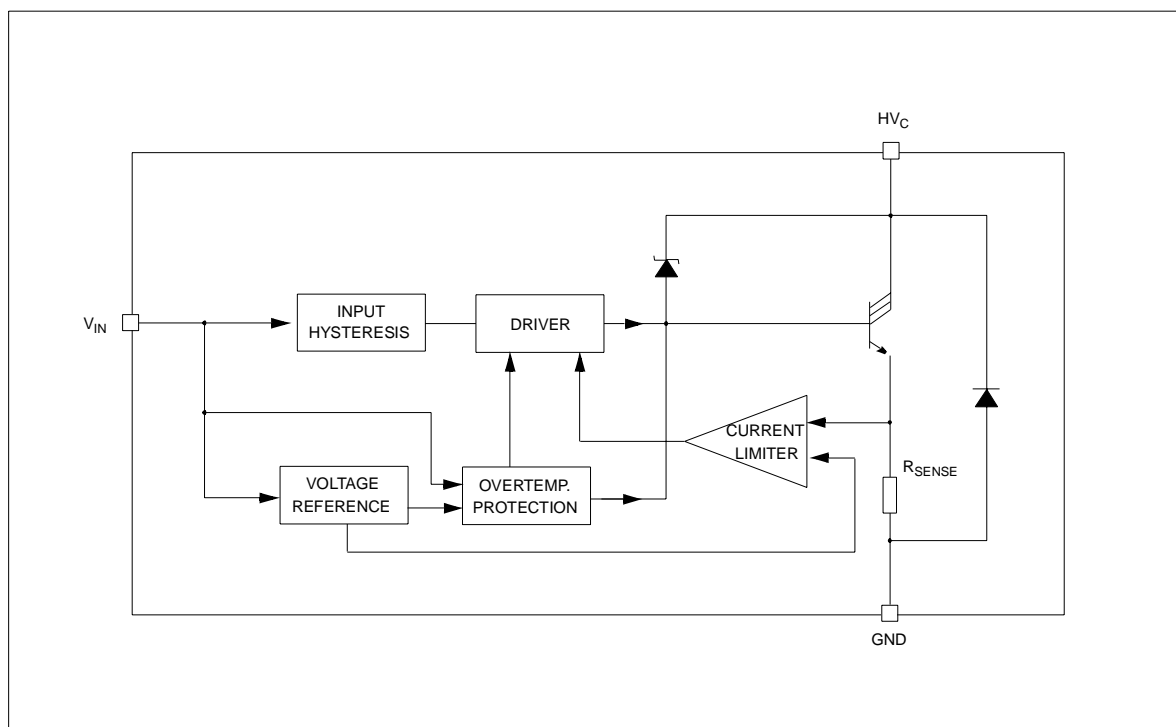
The VB927T is a monolithic high voltage integrated circuit made by using the STMicroelectronics VIPower™ technology, which combines vertical current flow power trilinear with a coil current and a collector voltage clamping. The device is particularly suitable for application in high performance electronic car ignition, where coil current limitation and voltage clamping are required.



TO-247

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### BLOCK DIAGRAM

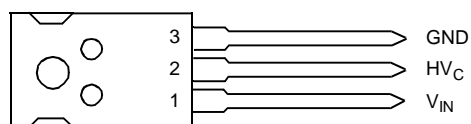


## VB927T

### ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Unit
$HV_C$	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 $T_C=25^{\circ}C$	150	W
$T_{stg}$	Storage Temperature	-40 to 150	$^{\circ}C$
$T_j$	Junction Operating Temperature	-40 to 150	$^{\circ}C$

### CONNECTION DIAGRAM



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## THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal Resistance Junction-case (MAX)	0.6	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient (MAX)	30	°C/W

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$I_{leak}$	Collector Cut-off Current	$V_{IN}=0V$ ; $HV_C=250V$			250	$\mu A$
$V_{cl}^{(*)}$	Clamping Voltage	$-40^{\circ}C < T_j < 125^{\circ}C$	380	420	490	V
$V_{cg(sat)}$	Power Stage Saturation Voltage	$I_C=5A$ ; $I_{IN}=10mA$ ; $25^{\circ}C \leq T_j \leq 125^{\circ}C$			2.5	V
		$I_C=6A$ ; $I_{IN}=10mA$ ; $-40^{\circ}C \leq T_j \leq 25^{\circ}C$			3	V
$I_{cl}^{(*)}$	Coil Current Limit	$V_{IN}=5V$ ; $-40^{\circ}C \leq T_j \leq 125^{\circ}C$	8.5		9.5	A
$I_{IN}$	Input Current	$V_{IN}=5V$ ; $I_C=5A$			10	mA
		$V_{IN}=5V$ ; $I_C=5A$ ; $T_j=25^{\circ}C$	3		10	mA
$V_f^{(**)}$	Diode Forward Voltage	$I_f=10A$ ; $T_j=25^{\circ}C$	1.2	2.2	3.2	V
$V_{INH}$	Input Voltage (ON)	On state input threshold	3.2		3.6	V
$V_{INL}$	Input Voltage (OFF)	Off state input threshold	3		3.4	V
$V_{IN(hyst)}$	Input Voltage (Hyst.)		0.2		0.6	V
$t_{d(off)}$	Turn-off Time	$I_C=5A$		30		$\mu s$
$T_j$	Junction Temperature Limit	See note 1	150			°C

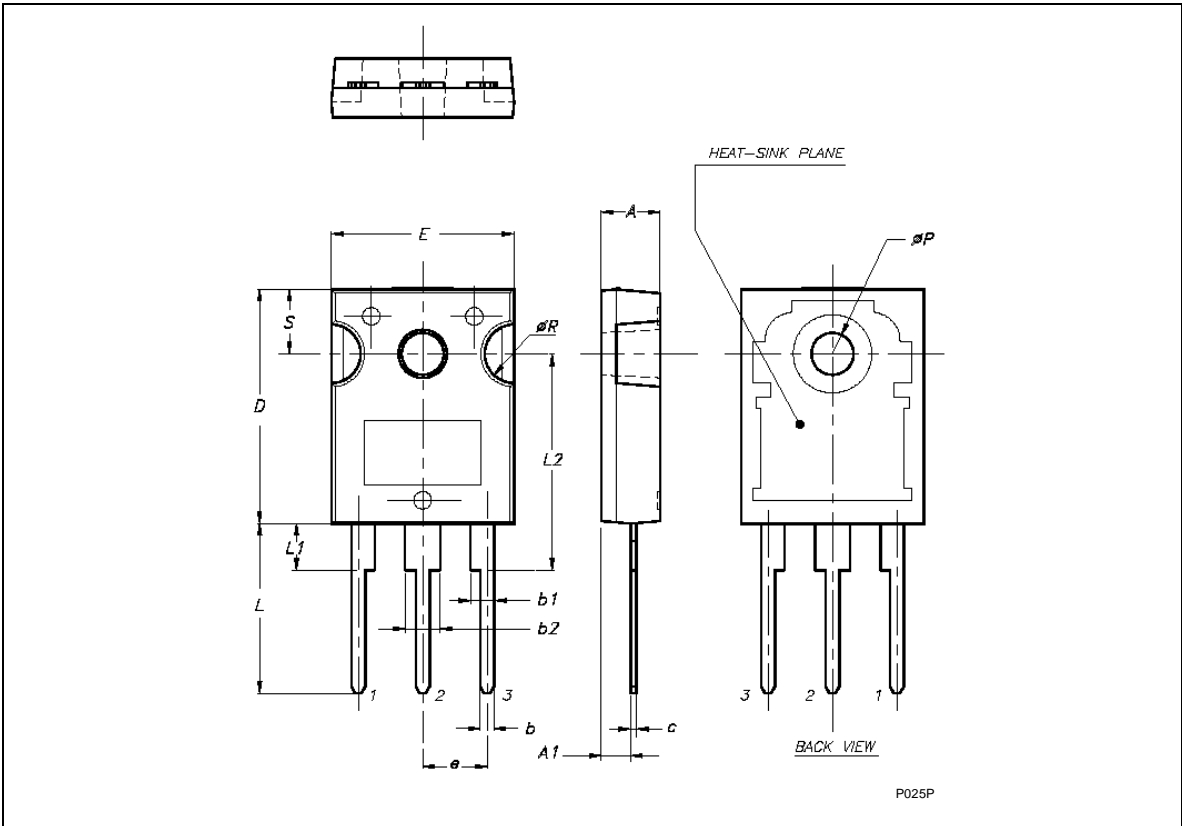
(\*) Coil data: primary resistance  $R_C=0.4 - 0.8\Omega$ ; primary inductance  $L_C=6 - 8 mH$

(\*\*) Pulsed: Pulse duration  $\approx 300\mu s$ , duty cycle 1.5%

Note 1:  $T_{jmin}=150^{\circ}C$  means that the behavior of the device will not be affected for junction temperature lower than  $150^{\circ}C$ . 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.		
	MIN.	TYP	MAX.
A	4.85		5.15
A1	2.20		2.60
b	1.0		1.40
b1	2.0		2.40
b2	3.0		3.40
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e		5.45	
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
ØP	3.55		3.65
ØR	4.50		5.50
S		5.50	
Package Weight	Gr. 4.43		



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