



VB922

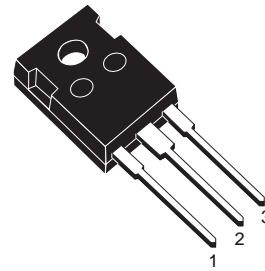
HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

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

DESCRIPTION

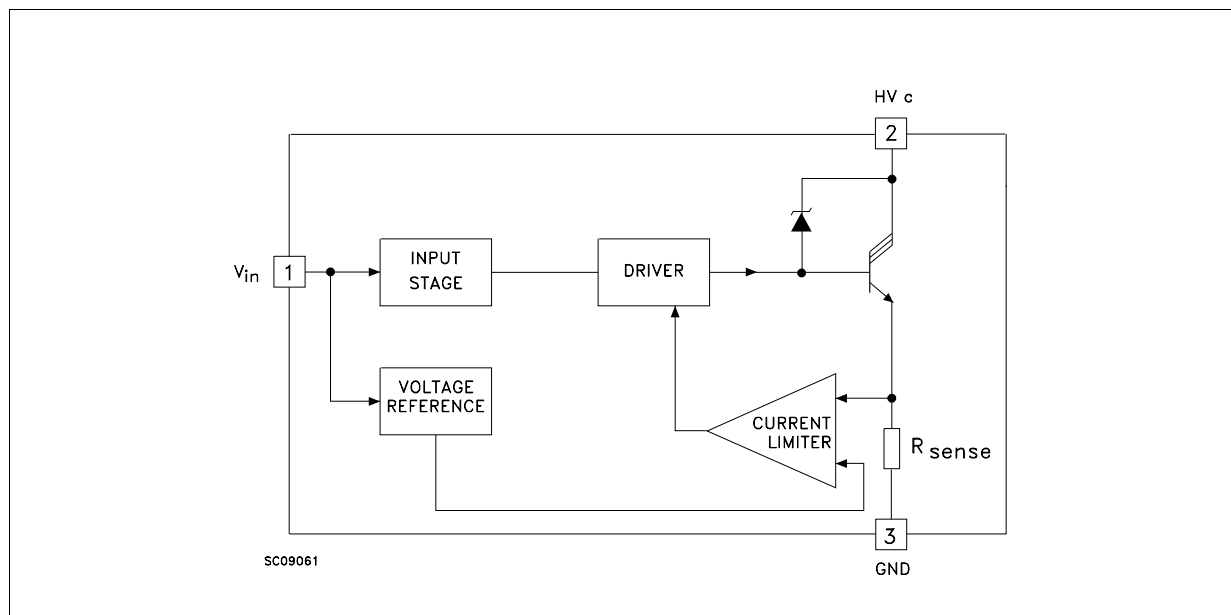
The VB922 is a monolithic high voltage integrated circuits made using STMicroelectronics VIPower Technology, which combines a vertical current flow power trilinton with a coil current limiting circuit and a collector voltage clamping.

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



TO-247

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Unit
HV_c	Collector Voltage	Internally Limited	V
I_c	Collector Current	Internally Limited	A
I_{in}	Input Current	40	mA
P_{tot}	Total Dissipation at $T_c = 25\text{ }^\circ\text{C}$	150	W
T_{stg}	Storage Temperature	-40 to 150	$^\circ\text{C}$
T_j	Operating Junction Temperature	-40 to 150	$^\circ\text{C}$
$E_{s/b}$	Avalanche Energy	350	mJ

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal Resistance Junction-case	Max 0.83	$^\circ\text{C}/\text{W}$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max 30	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS ($V_{batt} = 14\text{ V}$, HEI Coil = xx, $T_{case} = 25\text{ }^\circ\text{C}$)

unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{cgo}	Collector Cut-off Current	$V_{in} = 0$ $HV_c = 200\text{ V}$			250	μA
V_{cl}	Clamping Voltage	$-40 < T_j < 125\text{ }^\circ\text{C}$ $I_c = 5\text{ A}$	350	400	500	V
$V_{cg(sat)}$	Power Stage Saturation Voltage	$I_c = 5\text{ A}$ $V_{in} = 4\text{ V}$		2	2.5	V
I_{cl}^*	Coil Current Limit	$50 \leq T_j \leq 150\text{ }^\circ\text{C}$ $-30 \leq T_j \leq 50\text{ }^\circ\text{C}$	6.7 6.4	7.3 7.3	7.9 8.1	A
V_f^{**}	Diode Forward Voltage	$I_f = 10\text{ A}$			3.5	V
V_{inCL}	Input Voltage During On State	$-30 \leq T_j \leq 120\text{ }^\circ\text{C}$ $I_c = 5\text{ A}$ $I_{in} = 10\text{ mA}$ see note 1			4	V
V_{inTH}	Threshold Input Voltage	$-30 \leq T_j \leq 120\text{ }^\circ\text{C}$ $I_c = 5\text{ A}$ see note 2	0.5		4	V
$t_{d(off)}$	Switching Time	$I_c = 3\text{ A}$ $L = 6\text{ mH}$ (see fig.1)	15		40	μs

* I_{CL} is measured 1ms after the maximum peak

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

Note 1: After adjusting input signal (frequency and duty) to be $I_c = 5\text{ A}$, V_{in} (Tr ON) should be measured.

Note 2: The device is biased with 14V on collector with respect to emitter. Then a voltage ramp (0 to 5V) is put on input. V_{inTH} is the input voltage when the device is in on-state with $I_c=5\text{ A}$

Fig. 1 Switching Time

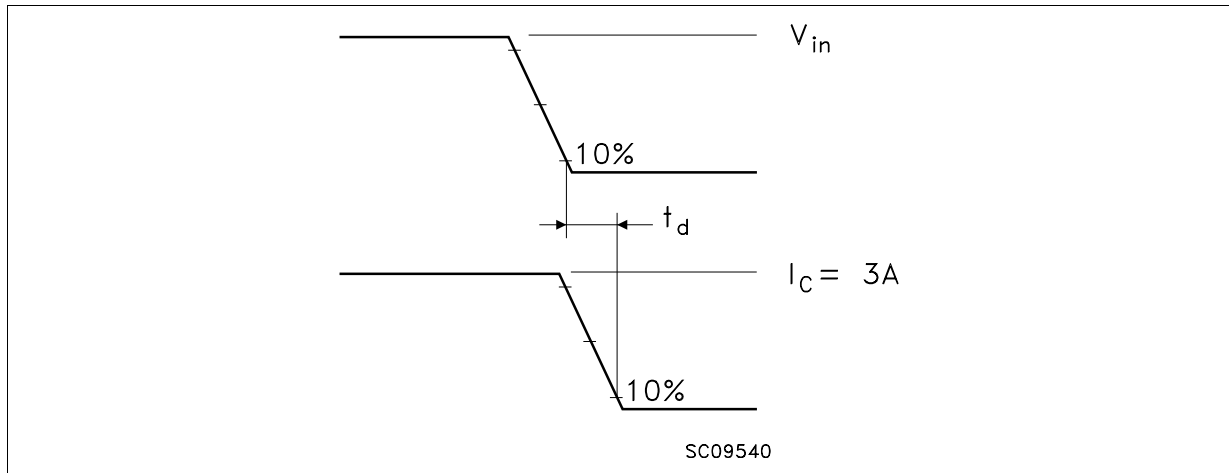
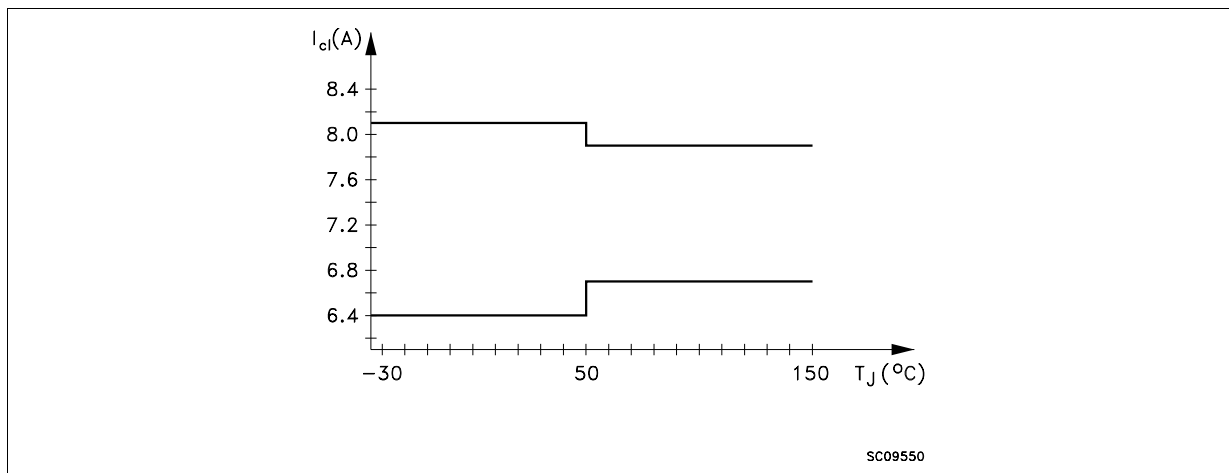
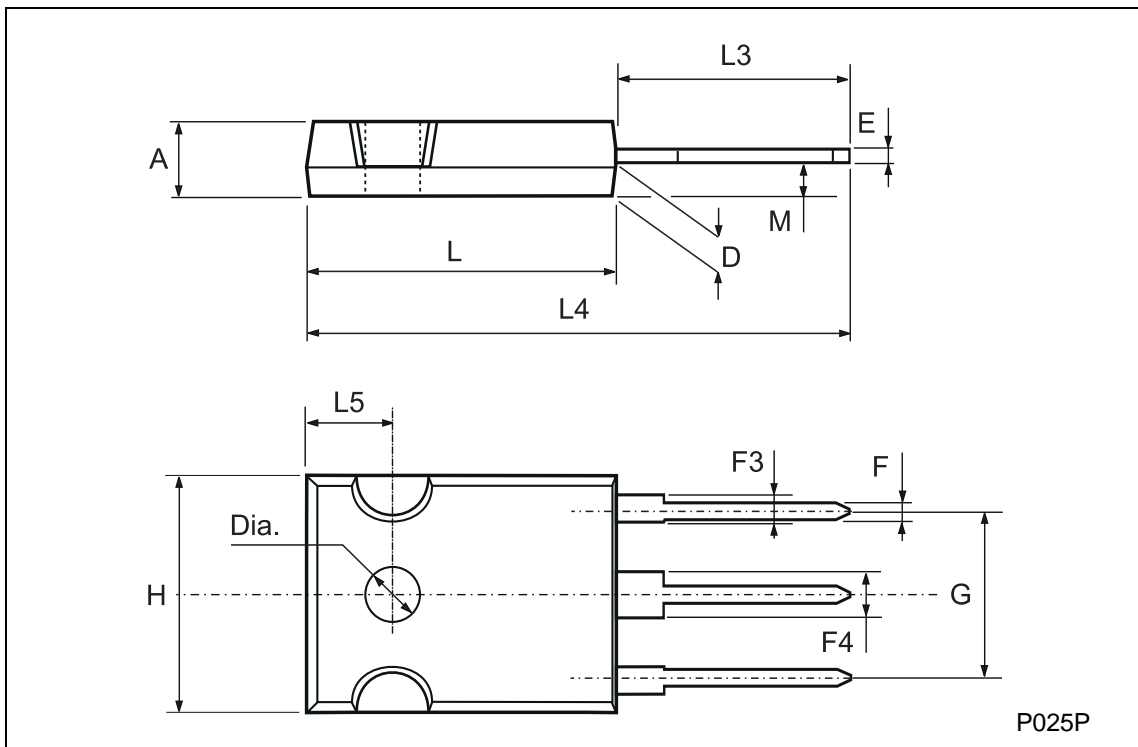


Fig. 2 Coil Current Limit Spread



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



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