



# VB922

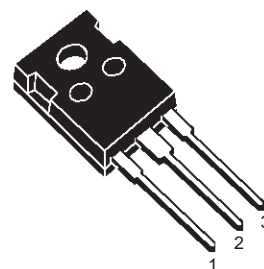
## HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

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

### DESCRIPTION

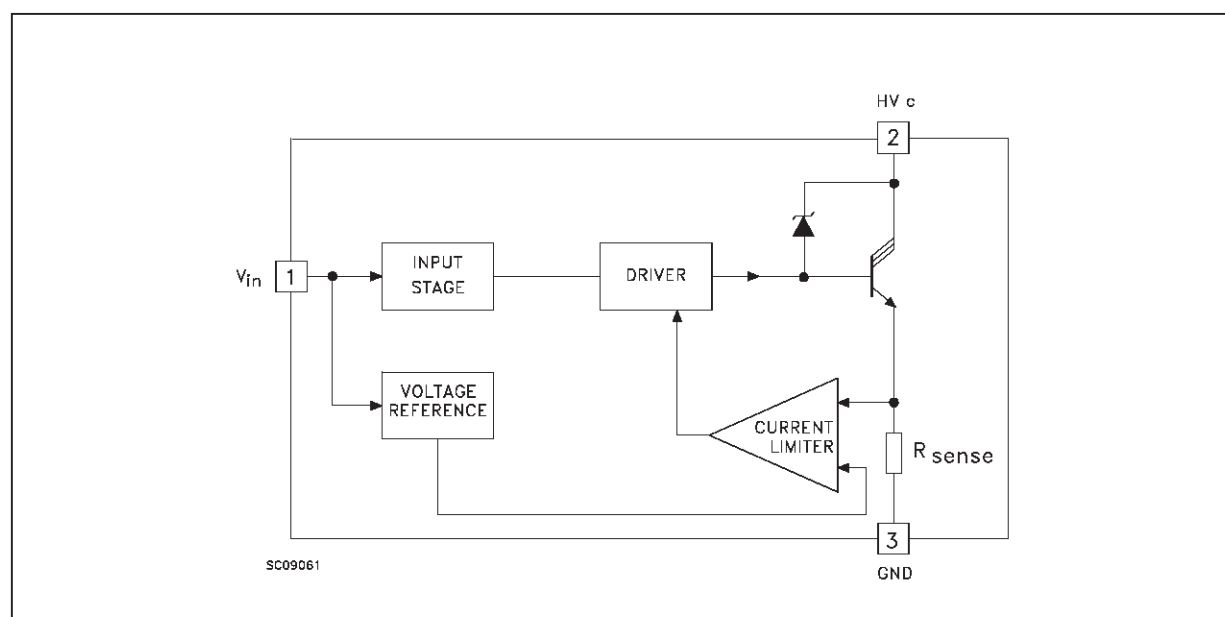
The VB922 is a monolithic high voltage integrated circuits made using STMicroelectronics VIPower Technology, which combines a vertical current flow power trilinton with a coil current limiting circuit and a collector voltage clamping.

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	$\mu\text{A}$
$V_{cl}$	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 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	$\mu\text{s}$

\*  $I_{CL}$  is measured 1ms after the maximum peak\*\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , 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

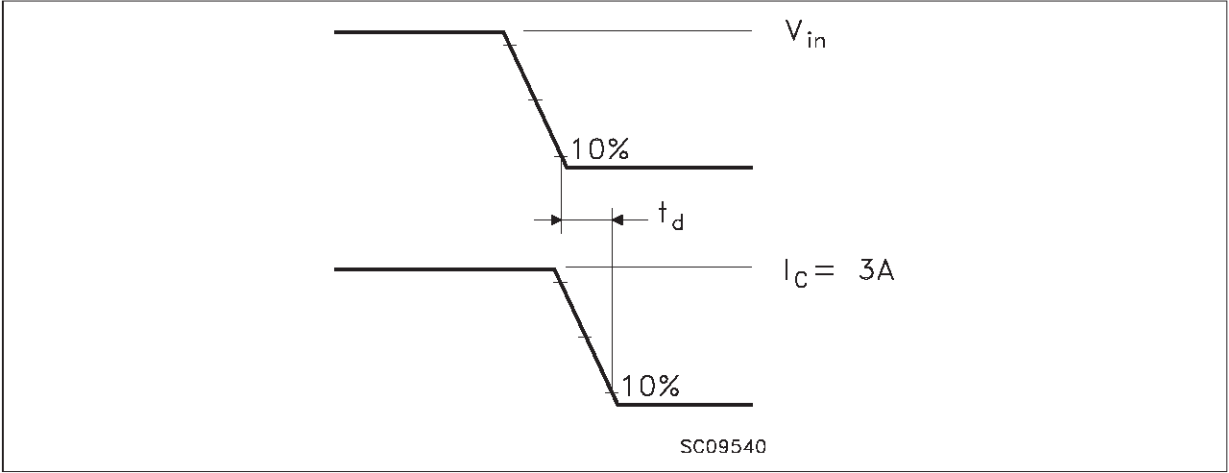
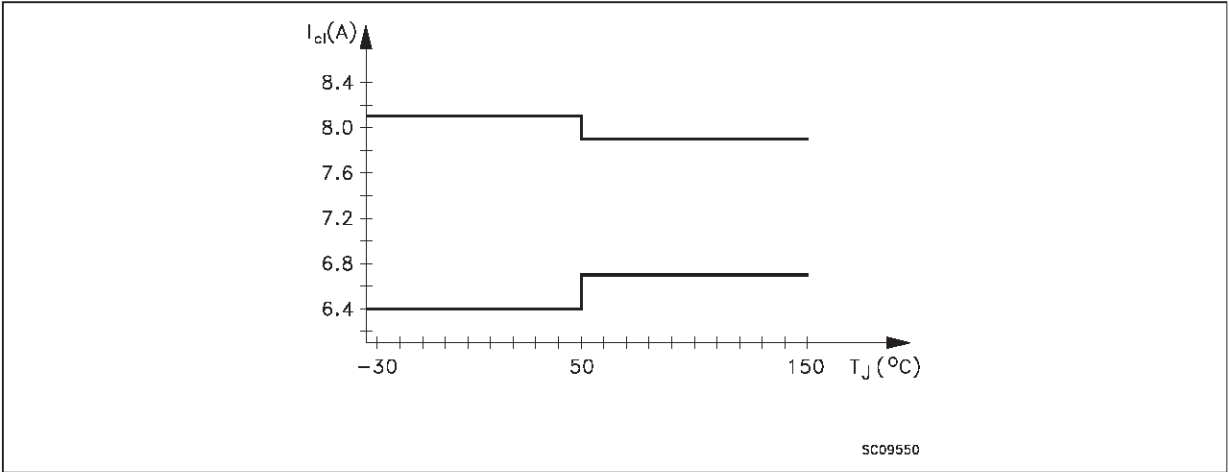
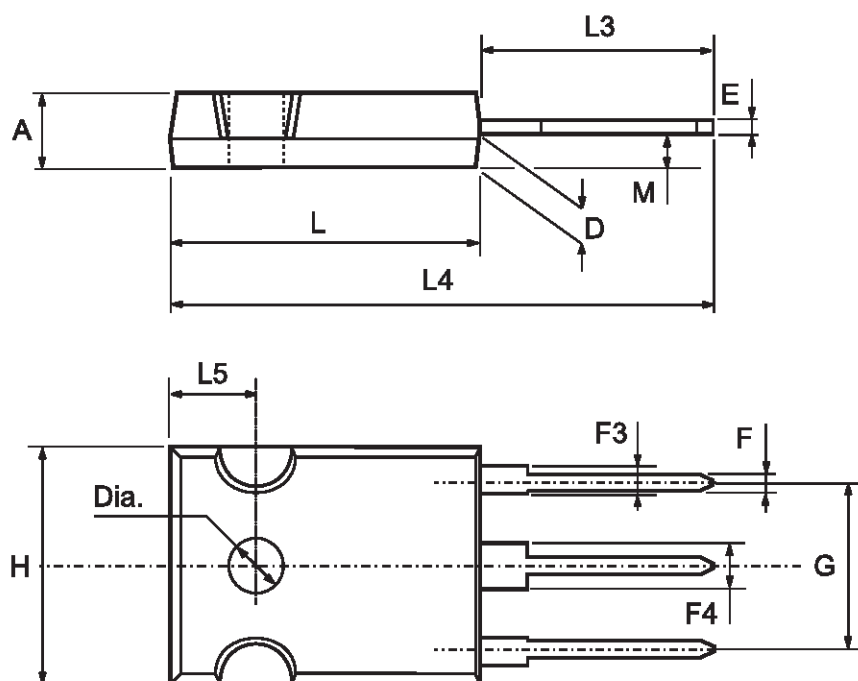


Fig. 2 Coil Current Limit Spread



## 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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