



VB923

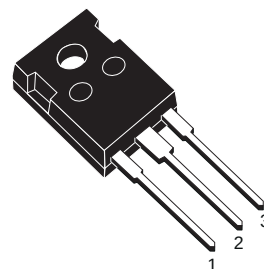
HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

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

DESCRIPTION

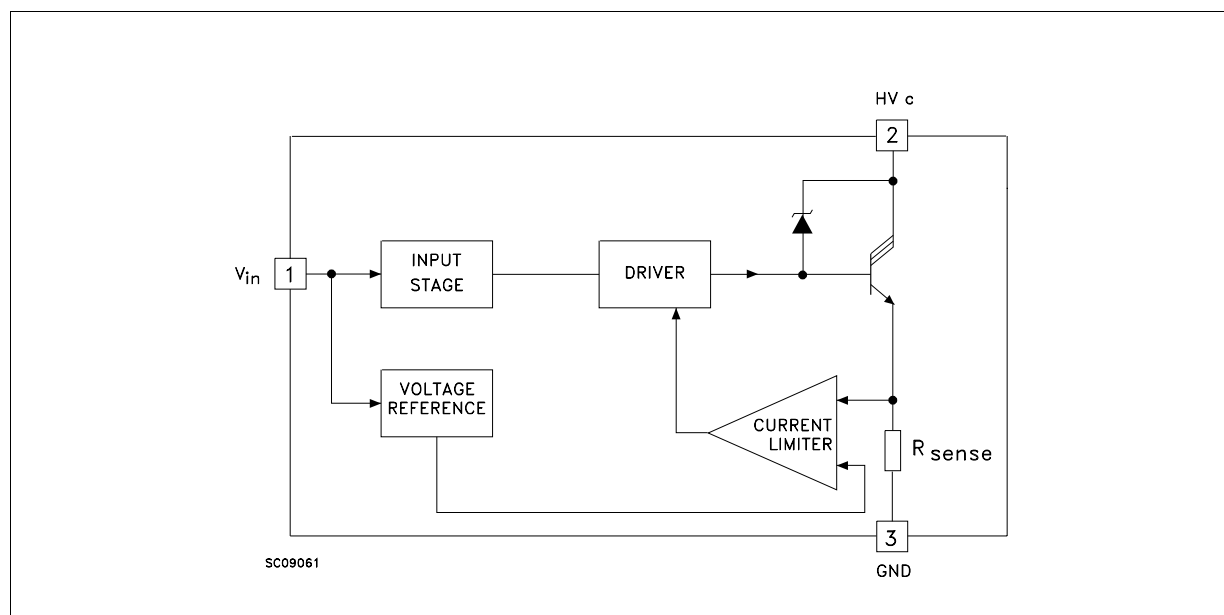
The VB923 is a monolithic high voltage integrated circuits made using STMicroelectronics VIPower Technology, which combines a vertical current flow power trilinton with a coil current limiting circuit and a collector voltage clamping.

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	$^{\circ}\text{C/W}$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max 30	$^{\circ}\text{C/W}$

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

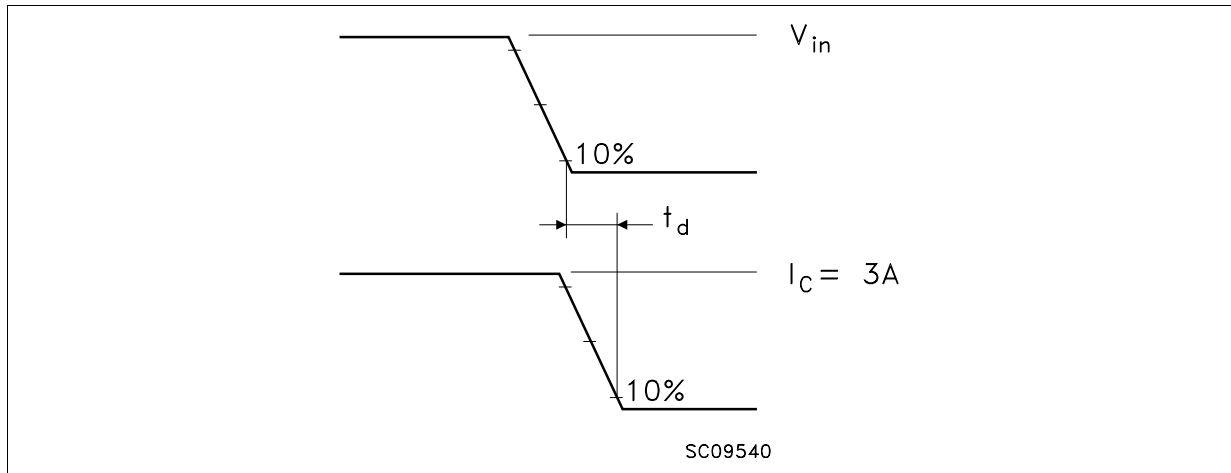
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{cgo}	Collector Cut-off Current	$V_{in} = 0$ $HV_c = 200\text{ V}$			250	μA
V_{cl}	Clamping Voltage	$-40 < T_j < 125\text{ }^{\circ}\text{C}$ $I_c = 5\text{ A}$	350	400	500	V
$V_{cg(sat)}$	Power Stage Saturation Voltage	$I_c = 5\text{ A}$ $V_{in} = 4\text{ V}$		2	2.5	V
$I_{cl} *$	Coil Current Limit	$-30 \leq T_j \leq 50\text{ }^{\circ}\text{C}$	6.0	6.6	7.2	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

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