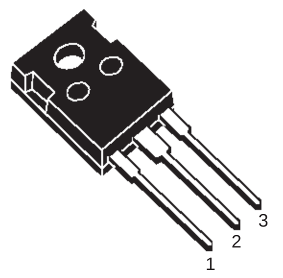
VB923

HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

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



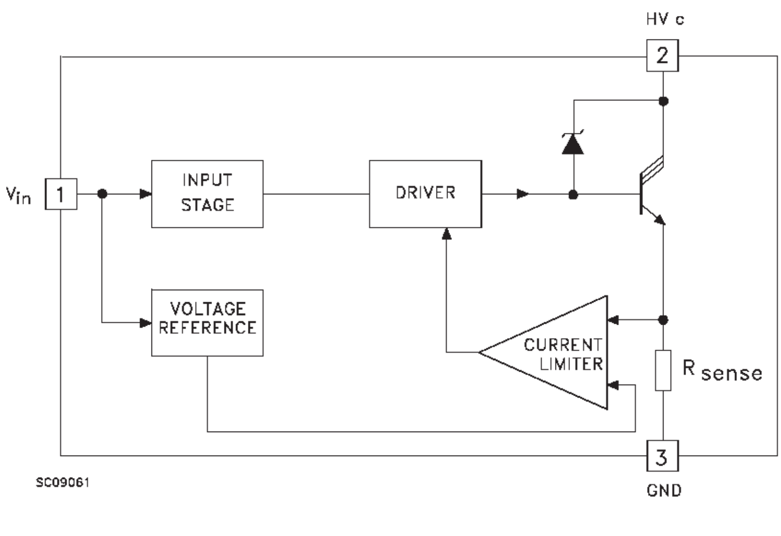
TO-247

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.

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 $T_c = 25\ ^oC$	150	W
T_{stg}	Storage Temperature	-40 to 150	^oC
T_j	Operating Junction Temperature	-40 to150	^oC
$E_{s/b}$	Avalanche Energy	350	mJ

THERMAL DATA

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

ELECTRICAL CHARACTERISTICS (V_{batt} = 14 V, HEI Coil = xx, T_{case} = 25 ^oC unless otherwise specified)

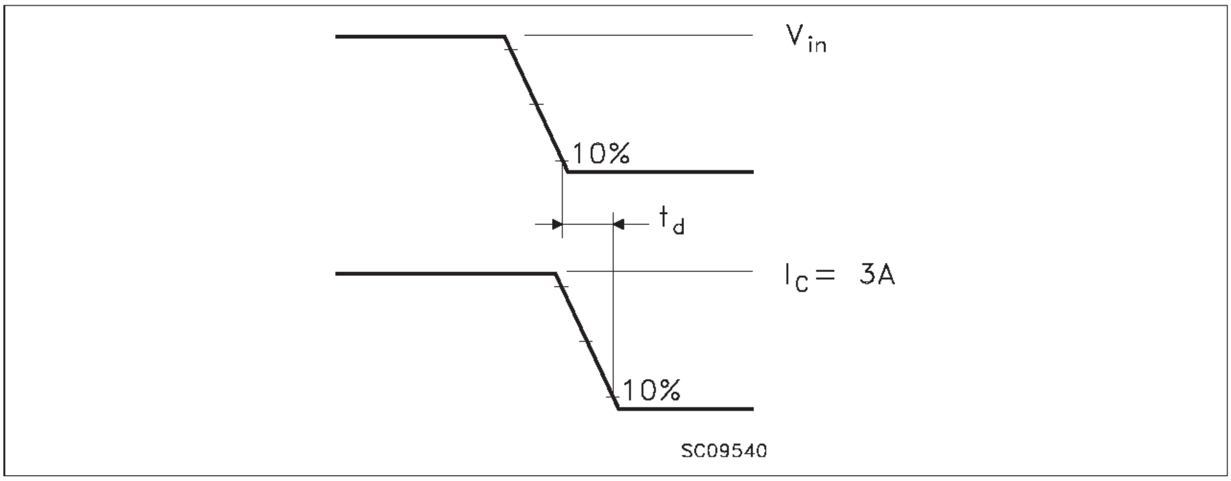
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{cgo}	Collector Cut-off Current	$V_{in} = 0$ $HV_c = 200$ V			250	µA
V_{cl}	Clamping Voltage	$-40 < T_j < 125\ ^oC$ $I_c = 5$ A	350	400	500	V
$V_{cg(sat)}$	Power Stage Saturation Voltage	$I_c = 5$ A $V_{in} = 4$ V		2	2.5	V
I_{cl} *	Coil Current Limit	$-30 \le T_j \le 50\ ^oC$	6.0	6.6	7.2	A
V_f **	Diode Forward Voltage	$I_f = 10$ A			3.5	V
V_{inCL}	Input Voltage During On State	$-30 \le T_j \le 120\ ^oC$ $I_c = 5$ A $I_{in} = 10$ mA see note 1			4	V
V_{inTH}	Threshold Input Voltage	$-30 \le T_j \le 120\ ^oC$ $I_c = 5$ A see note 2	0.5		4	V
$t_{d(off)}$	Switching Time	$I_c = 3$ A L = 6 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 = 5A, V_{in} (Tr ON) should be measured.

Note 2: The device is biased with 14V on collector with respectto 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=5A

Fig. 1 Switching Time



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