



VB923

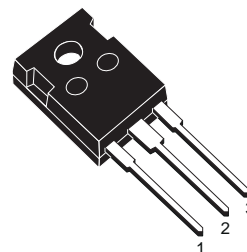
HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

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

DESCRIPTION

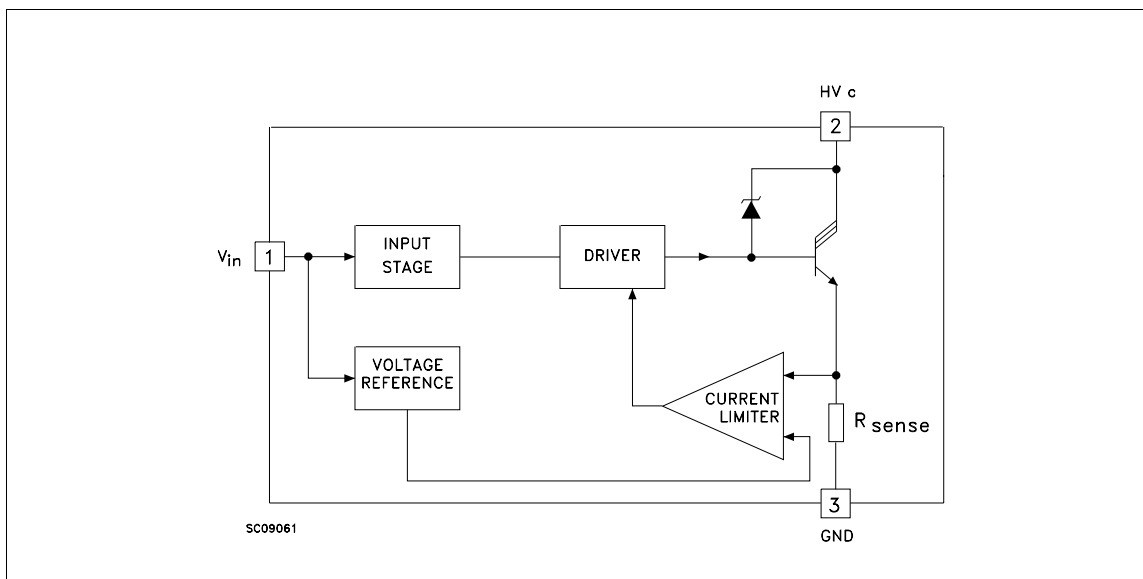
The VB923 is a monolithic high voltage integrated circuits made using STMicroelectronics VIPower Technology, which combines a vertical current flow power trilineon with a coil current limiting circuit and a collector voltage clamping.

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

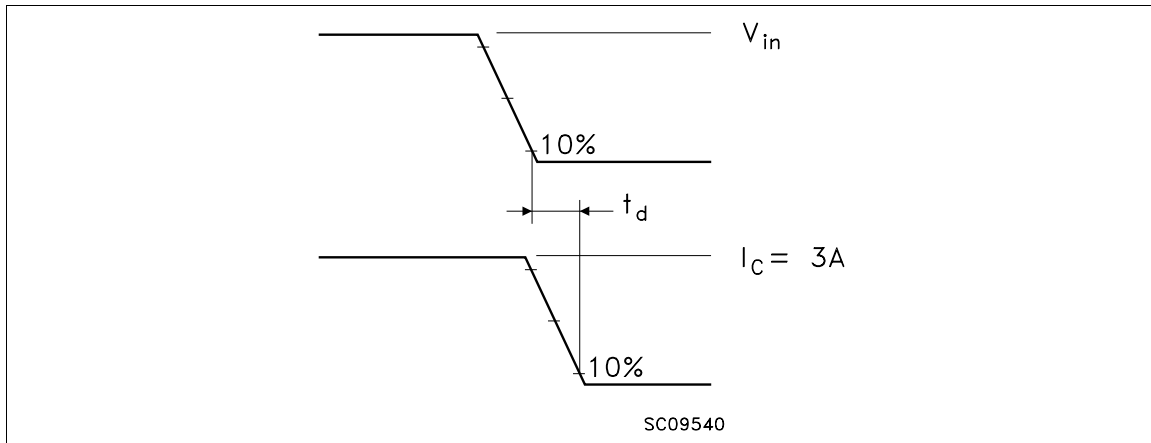
* I_{CL} is measured 1ms after the maximum peak

** 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



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1998 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

<http://www.st.com>

