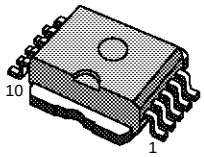
SGS-THOMSON MICROELECTRONICS

VB921ZVSP

HIGH VOLTAGE IGNITION COIL DRIVER POWER IC

ADVANCE DATA

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



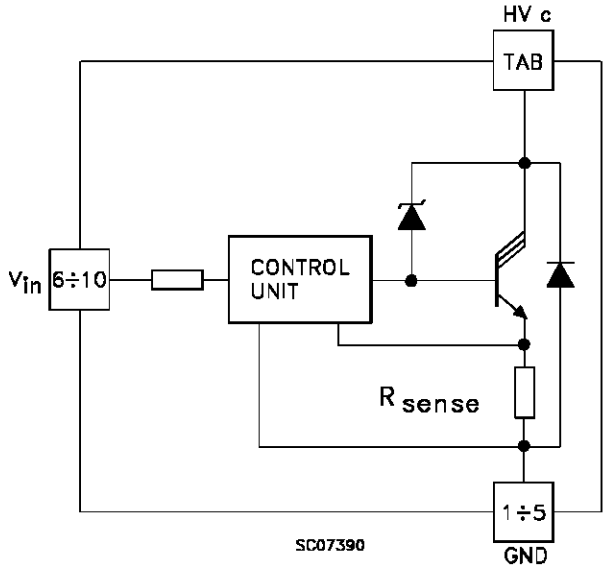
Power SO-10™

DESCRIPTION

The VB921ZVSP is a monolithic high voltage integrated circuits made using SGS-THOMSON Microelectronics Vertical Intelligent Power 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.

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Unit
HV_c	Collector Voltage	Internally Limited	V
V_{in}	Maximum Input Voltage	8	V
I_c	Collector Current	Internally Limited	A
I_{in}	Input Current	20	mA
P_{tot}	Total Dissipation at T_c = 25 °C	100	W
T_{stg}	Storage Temperature	-40 to 150	°C
T_j	Operating Junction Temperature	-40 to150	°C

THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.25	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	62.5	°C/W

ELECTRICAL CHARACTERISTICS (V_{batt} = 12 V, T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{cgo}	Collector Cut-off Current	V_{in} = 0 HV_c = 250 V			250	µA
V_{cl} *	Clamping Voltage	-40 < T_j < 125 °C	300		400	V
$V_{cg(sat)}$	Power Stage Saturation Voltage	I_c = 6 A I_{in} = 10 mA			2.5	V
I_{cl} *	Coil Current Limit	V_{in} = 5 V -40 ≤ T_j ≤ 125 °C see note 1	6.5	7	7.5	A
I_{in}	Input Current		8			mA
V_f **	Diode Forward Voltage	I_f = 10 A			2.5	V
V_{in}	Input Voltage		4.5		5.5	V
ΔI_{cl}	Coil Current Variation in Respect to V_{in} = 5 V	V_{in} = 4.5 - 5.5 V			200	mA

* Coil data: primary resistance R_c = 0.4 - 0.8 Ω, primary inductance L_c = 6 - 8 mH

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

NOTE 1: I_{cl} is also controlled in respect to the variation of V_{in} between 0.5 to 5.5 V

Power SO-10 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	3.45	3.5	3.55	0.135	0.137	0.140
B		1.28	1.30		0.050	0.051
C			0.15			0.006
D	9.40	9.50	9.60	0.370	0.374	0.378
E	4.98	5.08	5.48	0.196	0.200	0.216
E1	0.40	0.45	0.60	0.016	0.018	0.024
E2	1.17	1.27	1.37	0.046	0.050	0.054
F	9.30	9.40	9.50	0.366	0.370	0.374
F1	7.95	8.00	8.15	0.313	0.315	0.321
G	7.40	7.50	7.60	0.291	0.295	0.299
H	6.80	6.90	7.00	0.267	0.417	0.421
I		0.10			0.004	
K	13.80	14.10	14.40	0.543	0.555	0.567
L		0.40	0.50		0.016	0.020
M	1.60	1.67	1.80	0.063	0.066	0.071
N	0.60	0.08	1.00	0.024	0.031	0.039