



# ST931ZT

## HIGH VOLTAGE IGNITION COIL DRIVER NPN POWER DARLINGTON

- VERY RUGGED BIPOLAR TECHNOLOGY
- BUILT IN CLAMPING ZENER
- HIGH OPERATING JUNCTION TEMPERATURE

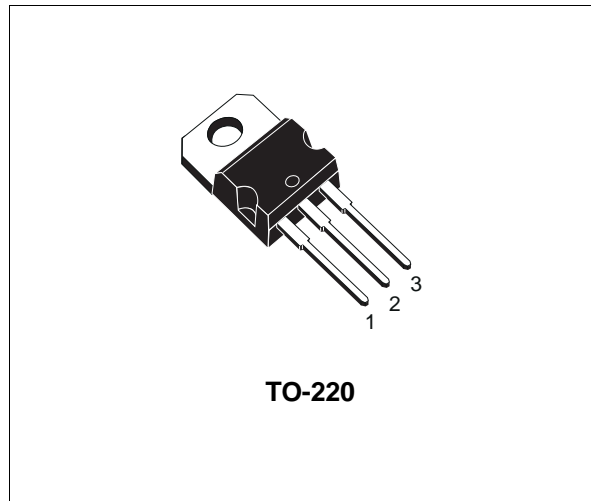
### APPLICATIONS

- HIGH RUGGEDNESS ELECTRONIC IGNITIONS

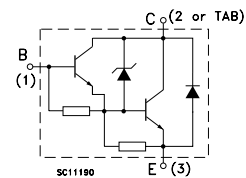
### DESCRIPTION

The ST931ZT is specifically designed for automotive electronic ignition.

The built in clamping Zener is characterized with tight voltage spread range (350V to 500V).



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	350	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	5	V
$I_C$	Collector Current	10	A
$I_{CM}$	Collector Peak Current	15	A
$I_B$	Base Current	1	A
$I_{BM}$	Base Peak Current	5	A
$P_{tot}$	Total Dissipation at $T_c = 25^\circ\text{C}$	125	W
$T_{stg}$	Storage Temperature	-65 to 175	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	175	$^\circ\text{C}$

## ST931ZT

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.2	°C/W
-----------------------	----------------------------------	-----	-----	------

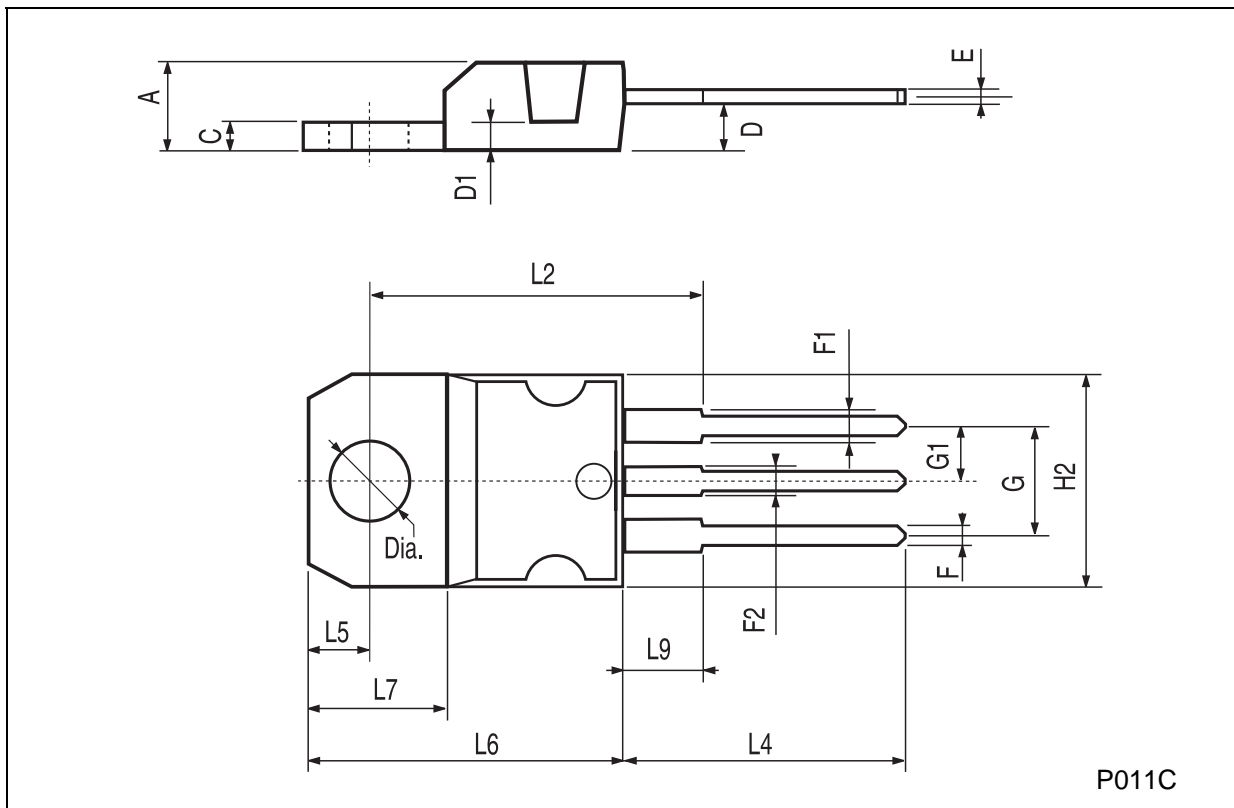
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 300 V V <sub>CE</sub> = 300 V T <sub>j</sub> = 125 °C			100 0.5	μA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			20	mA
V <sub>CL</sub> *	Clamping Voltage	I <sub>C</sub> = 100 mA	350		500	V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 7 A I <sub>B</sub> = 70 mA I <sub>C</sub> = 8 A I <sub>B</sub> = 100 mA			1.6 1.8	V V
V <sub>BE(sat)</sub> *	Base-Emitter Saturation Voltage	I <sub>C</sub> = 7 A I <sub>B</sub> = 70 mA I <sub>C</sub> = 8 A I <sub>B</sub> = 100 mA			2.2 2.4	V V
h <sub>FE</sub> *	DC Current Gain	I <sub>C</sub> = 5 A V <sub>CE</sub> = 10 V	300			
V <sub>F</sub>	Diode Forward Voltage	I <sub>F</sub> = 8 A			2.5	V
	Functional Test (see fig. 1)	V <sub>CC</sub> = 24 V L = 7 mH	8			A
t <sub>s</sub> t <sub>f</sub>	INDUCTIVE LOAD Storage Time Fall Time (see fig. 3)	V <sub>CC</sub> = 12 V L = 7 mH V <sub>clamp</sub> = 300 V I <sub>C</sub> = 7 A I <sub>B</sub> = 70 mA V <sub>BE</sub> = 0 R <sub>BE</sub> = 47 Ω		15 0.5		μs μs

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

**TO-220 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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 trademark of STMicroelectronics

© 1999 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>