



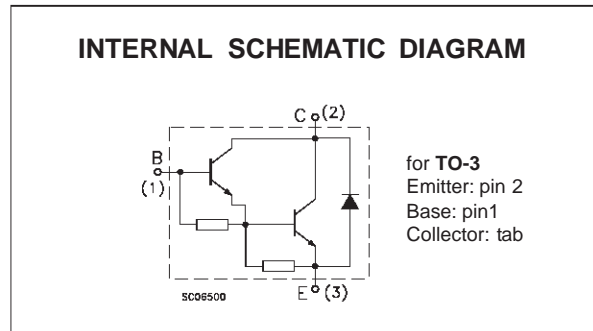
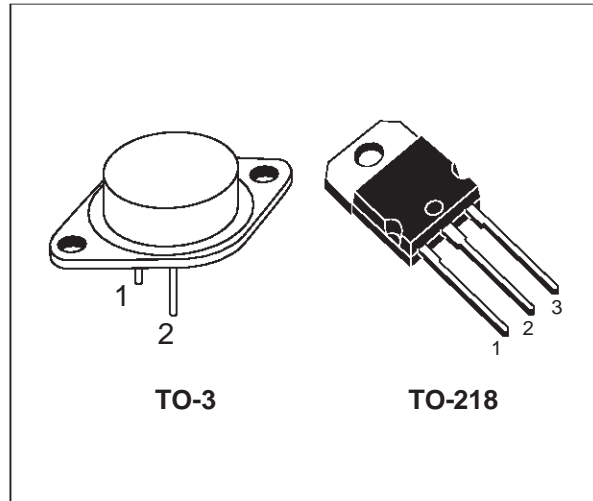
# BU931 BU931P

## HIGH VOLTAGE IGNITION COIL DRIVER NPN POWER DARLINGTON

- VERY RUGGED BIPOLAR TECHNOLOGY
- HIGH OPERATING JUNCTION TEMPERATURE
- WIDE RANGE OF PACKAGES

### APPLICATIONS

- HIGH RUGGEDNESS ELECTRONIC IGNITIONS



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BU931	BU931P	
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )	500		V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	400		V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	5		V
$I_C$	Collector Current	15		A
$I_{CM}$	Collector Peak Current	30		A
$I_B$	Base Current	1		A
$I_{BM}$	Base Peak Current	5		A
$P_{tot}$	Total Dissipation at $T_C = 25\text{ }^\circ\text{C}$	175	135	W
$T_{stg}$	Storage Temperature	-65 to 200	-65 to 175	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	200	175	$^\circ\text{C}$

# BU931 / BU931P

## THERMAL DATA

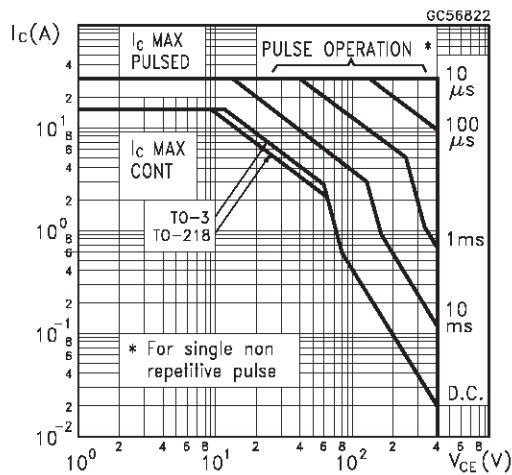
		TO-3	TO-218	
$R_{thj-case}$	Thermal Resistance Junction-case Max	1	1.1	$^{\circ}\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

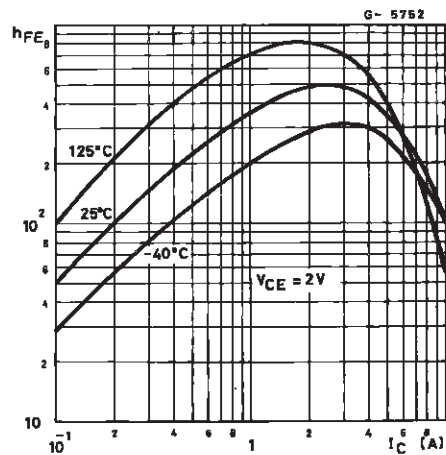
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = 500\text{ V}$ $V_{CE} = 500\text{ V}$ $T_j = 125^{\circ}\text{C}$			100 0.5	$\mu\text{A}$ $\text{mA}$
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = 450\text{ V}$ $V_{CE} = 450\text{ V}$ $T_j = 125^{\circ}\text{C}$			100 0.5	$\mu\text{A}$ $\text{mA}$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			20	$\text{mA}$
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 100\text{ mA}$ $L = 10\text{ mH}$ $V_{Clamp} = 400\text{ V}$ (See Fig.4)	400			$\text{V}$
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 7\text{ A}$ $I_B = 70\text{ mA}$ $I_C = 8\text{ A}$ $I_B = 100\text{ mA}$ $I_C = 10\text{ A}$ $I_B = 250\text{ mA}$			1.6 1.8 1.8	$\text{V}$ $\text{V}$ $\text{V}$
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 7\text{ A}$ $I_B = 70\text{ mA}$ $I_C = 8\text{ A}$ $I_B = 100\text{ mA}$ $I_C = 10\text{ A}$ $I_B = 250\text{ mA}$			2.2 2.4 2.5	$\text{V}$ $\text{V}$ $\text{V}$
$h_{FE}^*$	DC Current Gain	$I_C = 5\text{ A}$ $V_{CE} = 10\text{ V}$	300			
$V_F$	Diode Forward Voltage	$I_F = 10\text{ A}$			2.5	$\text{V}$
	Functional Test (see fig. 1)	$V_{CC} = 24\text{ V}$ $V_{clamp} = 400\text{ V}$ $L = 7\text{ mH}$	8			$\text{A}$
$t_s$	INDUCTIVE LOAD Storage Time	$V_{CC} = 12\text{ V}$ $V_{clamp} = 300\text{ V}$ $L = 7\text{ mH}$		15		$\mu\text{s}$
$t_f$	Fall Time (see fig. 3)	$I_C = 7\text{ A}$ $I_B = 70\text{ mA}$ $V_{BE} = 0$ $R_{BE} = 47\ \Omega$		0.5		$\mu\text{s}$

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5 %

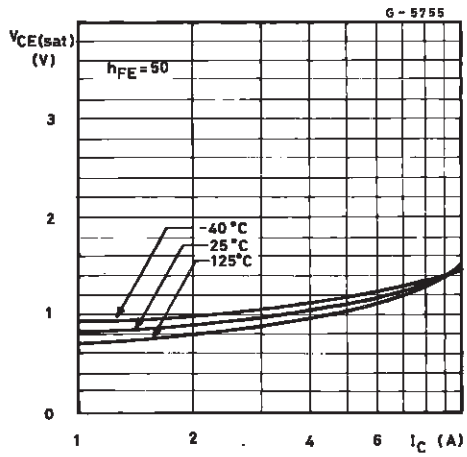
## Safe Operating Area



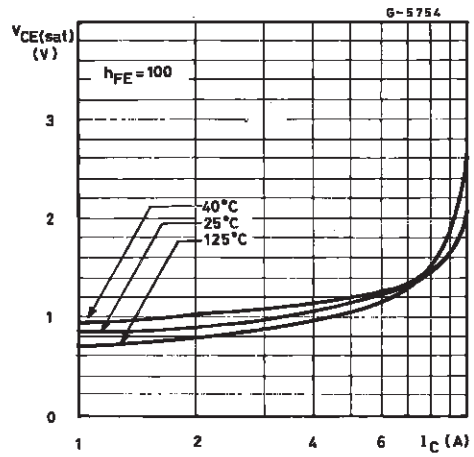
## DC Current Gain



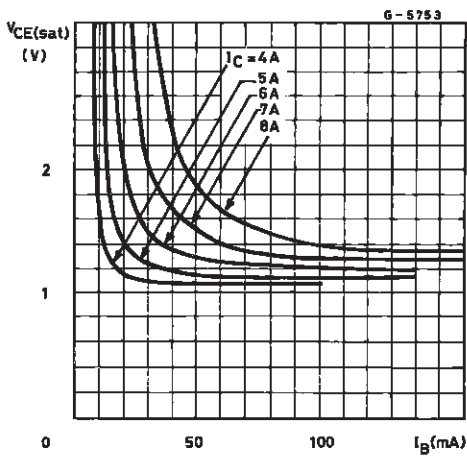
Collector Emitter Saturation Voltage



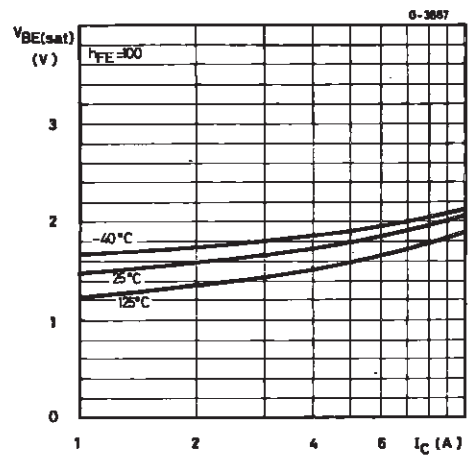
Collector Emitter Saturation Voltage



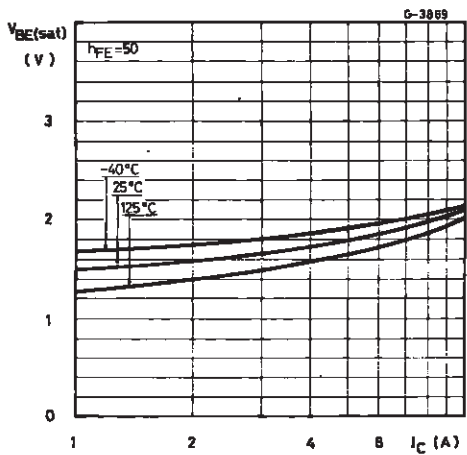
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage



Base Emitter Saturation Voltage



Switching Time Inductive Load

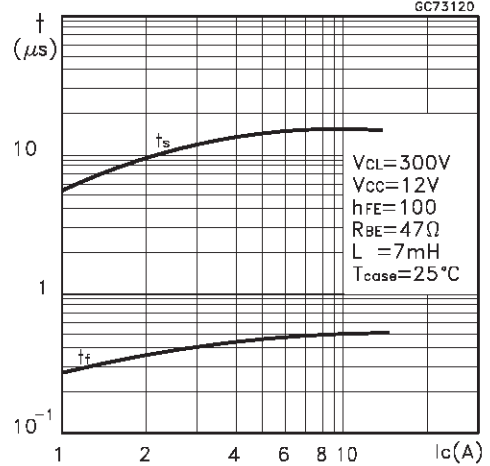


FIGURE 1: Functional Test Circuit

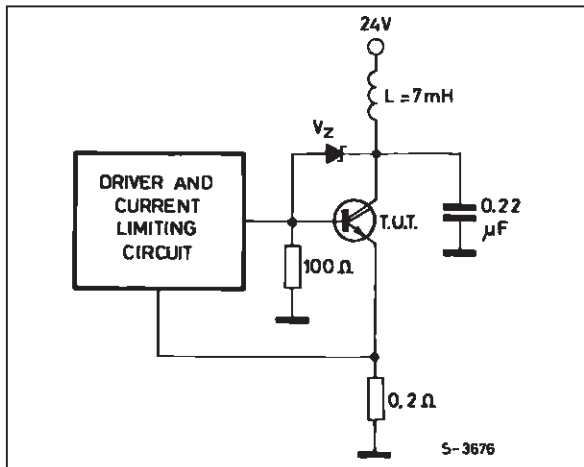


FIGURE 2: Functional Test Waveforms

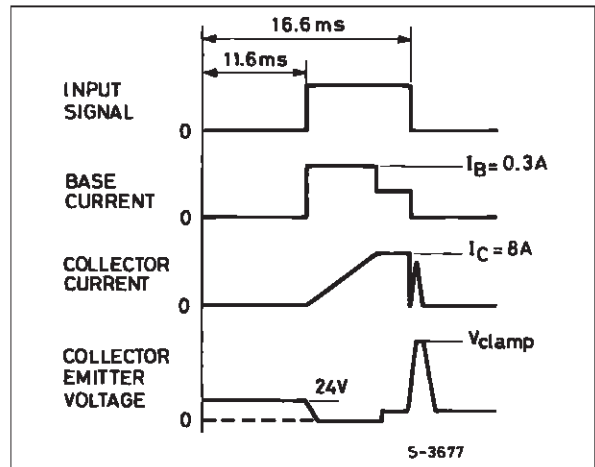


FIGURE 3: Switching Time Test Circuit

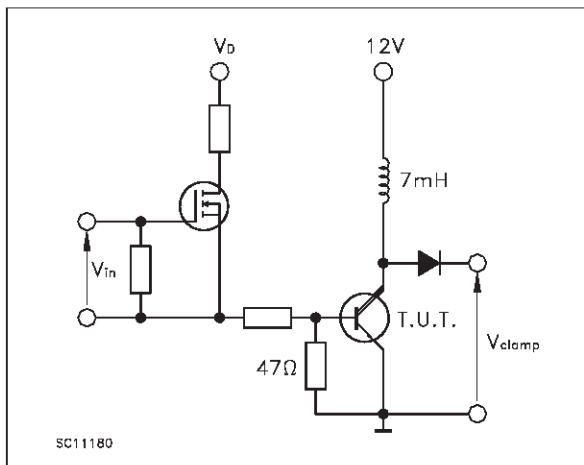
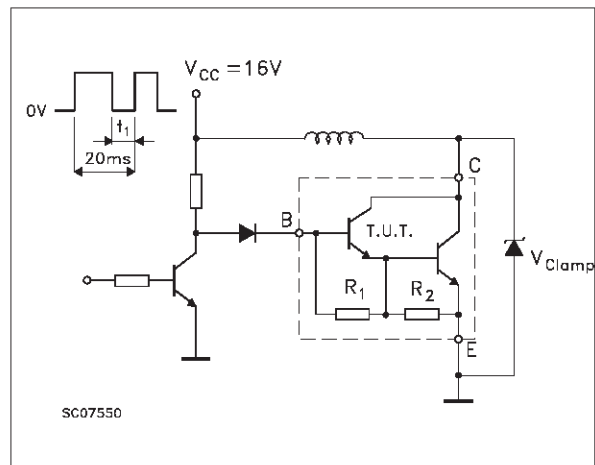
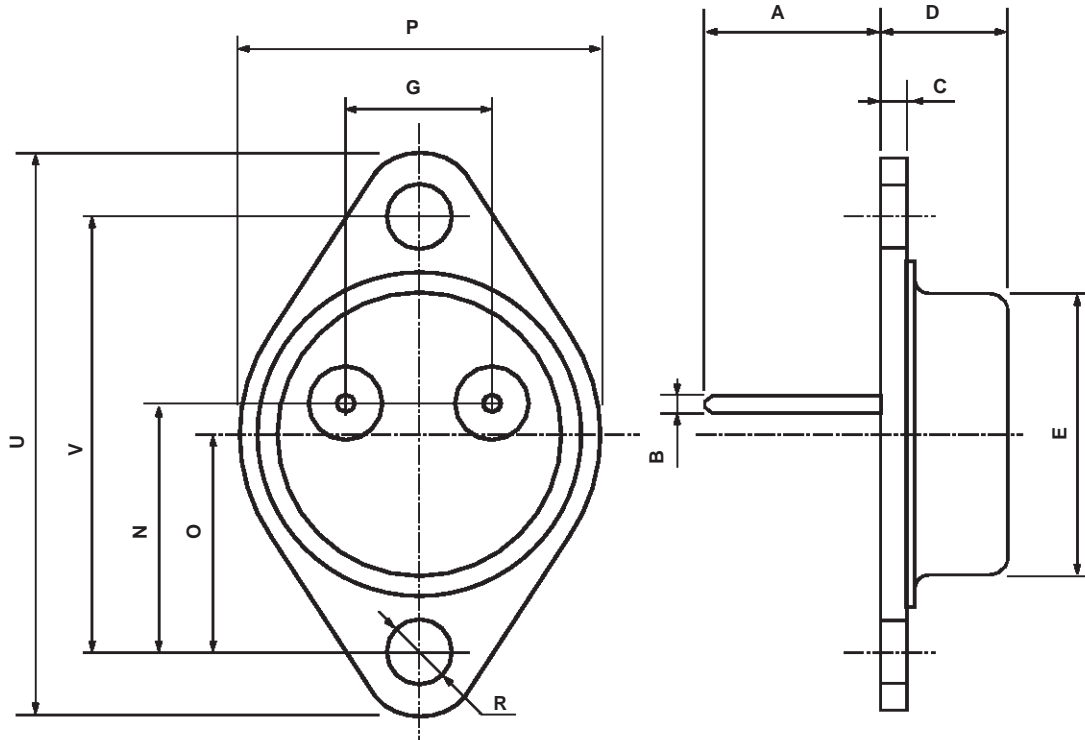


FIGURE 4: Sustaining Voltage Test Circuit



## TO-3 MECHANICAL DATA

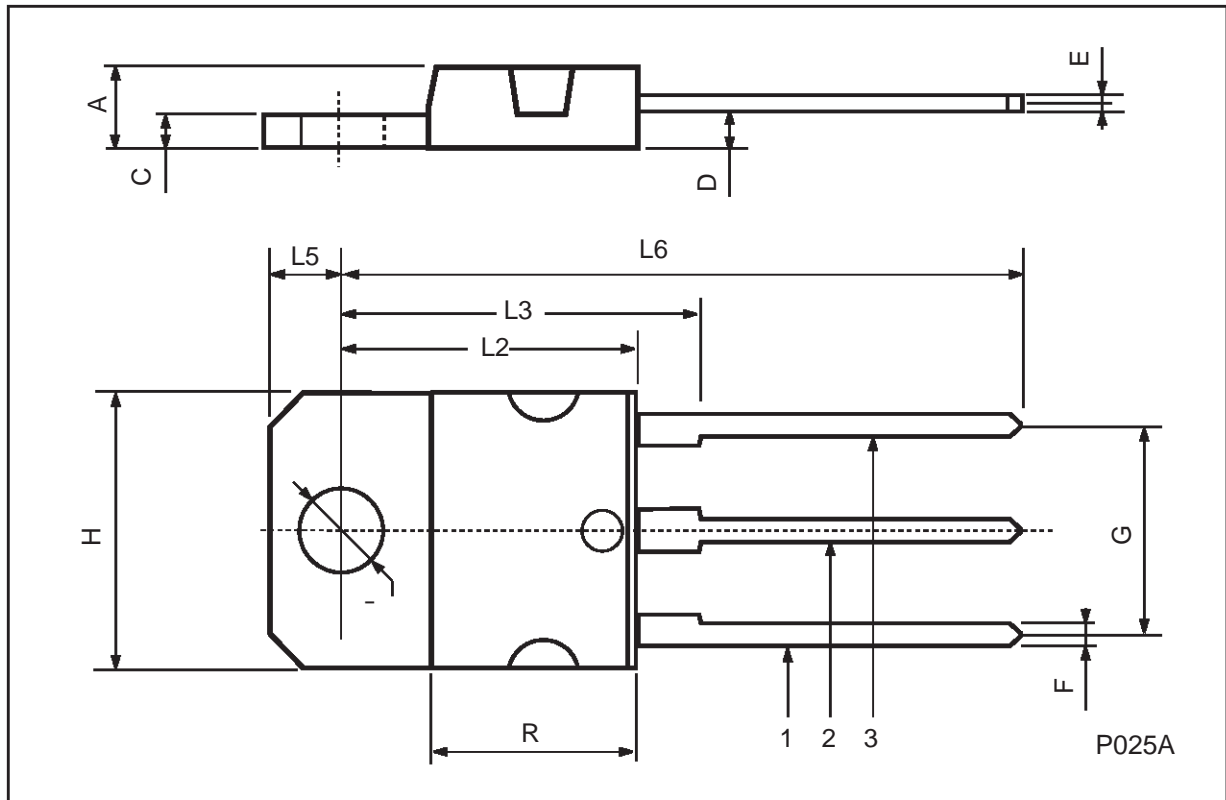
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50		39.30	1.515		1.547
V	30.00		30.30	1.187		1.193



P003F

**TO-218 (SOT-93) MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	-		16.2	-		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	-		12.2	-		0.480
Ø	4		4.1	0.157		0.161



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 - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>



This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.