



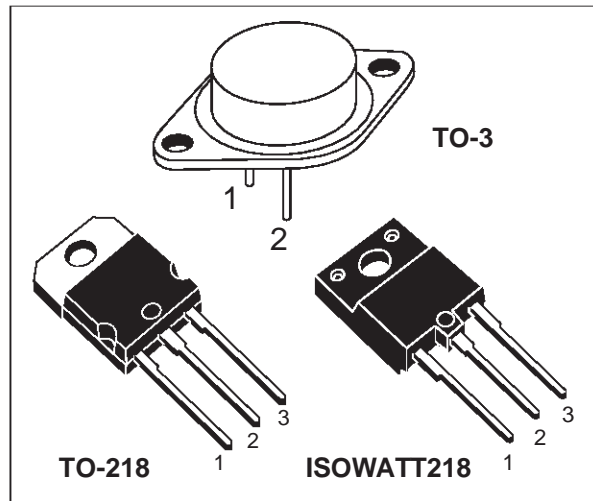
# BU941Z/BU941ZP BU941ZPFI

## HIGH VOLTAGE IGNITION COIL DRIVER NPN POWER DARLINGTON

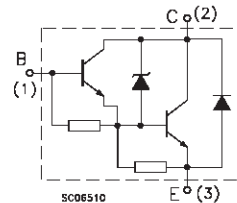
- VERY RUGGED BIPOLAR TECHNOLOGY
- BUILT IN CLAMPING ZENER
- HIGH OPERATING JUNCTION TEMPERATURE
- WIDE RANGE OF PACKAGES

### APPLICATIONS

- HIGH RUGGEDNESS ELECTRONIC IGNITIONS



### INTERNAL SCHEMATIC DIAGRAM



for TO-3  
Emitter: pin 2  
Base: pin 1  
Collector: tab

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BU941Z	BU941ZP	BUB941ZPFI	
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	350			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 $T_C = 25^\circ\text{C}$	180	155	65	W
$T_{stg}$	Storage Temperature	-65 to 200	-65 to 175	-65 to 175	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	200	175	175	$^\circ\text{C}$

# BU941Z/BU941ZP/BU941ZPFI

## THERMAL DATA

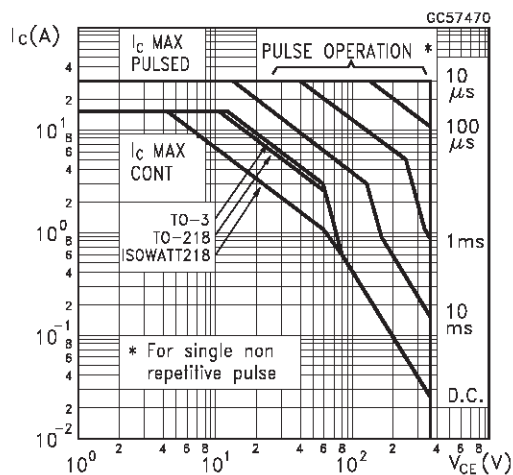
		TO-3	TO-218	ISOWATT218	
$R_{thj-case}$	Thermal Resistance Junction-case Max	0.97	0.97	2.3	$^{\circ}C/W$

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

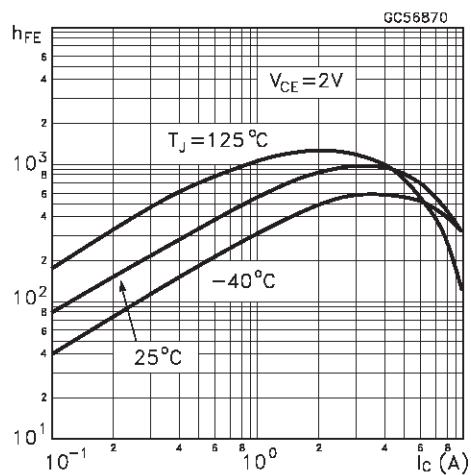
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = 300 V$ $V_{CE} = 300 V$ $T_j = 125^{\circ}C$			100 0.5	$\mu A$ mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5 V$			20	mA
$V_{CL}^*$	Clamping Voltage	$I_C = 100 mA$	350		500	V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 8 A$ $I_B = 100 mA$ $I_C = 10 A$ $I_B = 250 mA$ $I_C = 12 A$ $I_B = 300 mA$			1.8 1.8 2	V V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 8 A$ $I_B = 100 mA$ $I_C = 10 A$ $I_B = 250 mA$ $I_C = 12 A$ $I_B = 300 mA$			2.2 2.5 2.7	V V V
$h_{FE}^*$	DC Current Gain	$I_C = 5 A$ $V_{CE} = 10 V$	300			
$V_F$	Diode Forward Voltage	$I_F = 10 A$			2.5	V
	Functional Test (see fig. 1)	$V_{CC} = 24 V$ $L = 7 mH$	10			A
$t_s$ $t_f$	INDUCTIVE LOAD Storage Time Fall Time (see fig. 3)	$V_{CC} = 12 V$ $L = 7 mH$ $V_{BE} = 0$ $R_{BE} = 47 \Omega$ $V_{clamp} = 300 V$ $I_C = 7 A$ $I_B = 70 mA$		15 0.5		$\mu s$ $\mu s$

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

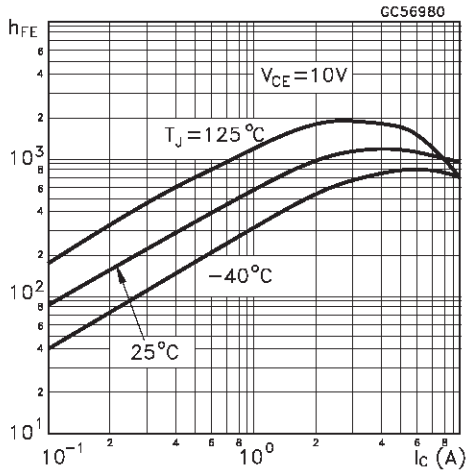
### Safe Operating Area



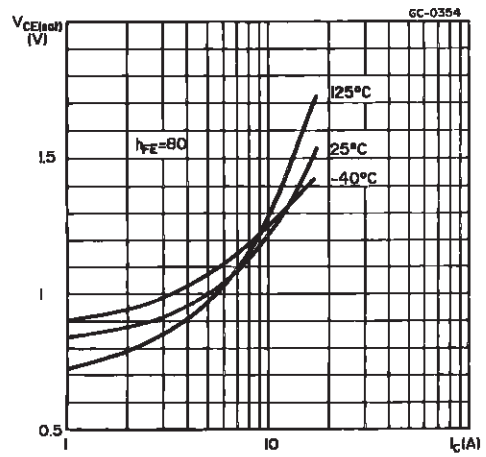
### DC Current Gain



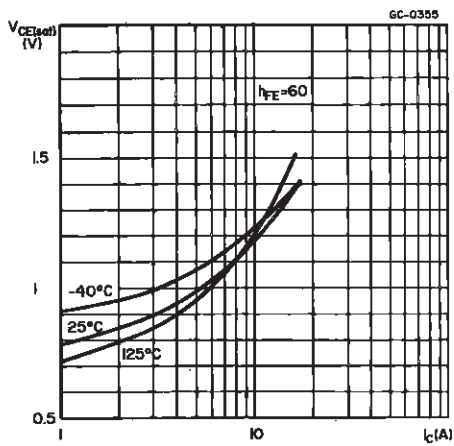
DC Current Gain



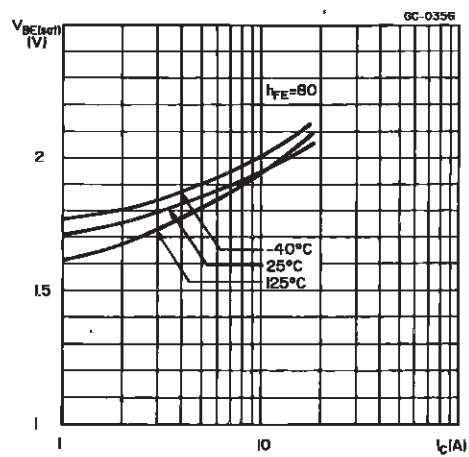
Collector-emitter Saturation Voltage



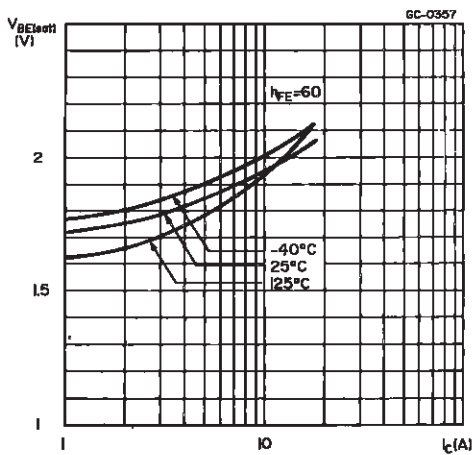
Collector-emitter Saturation Voltage



Base-emitter Saturation Voltage



Base-emitter Saturation Voltage



Collector-emitter Saturation Voltage

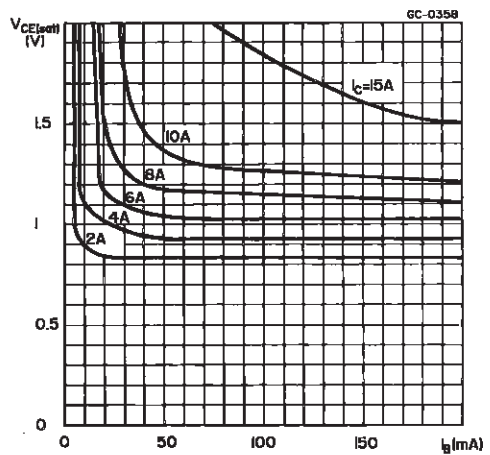


FIGURE 1: Functional Test Circuit

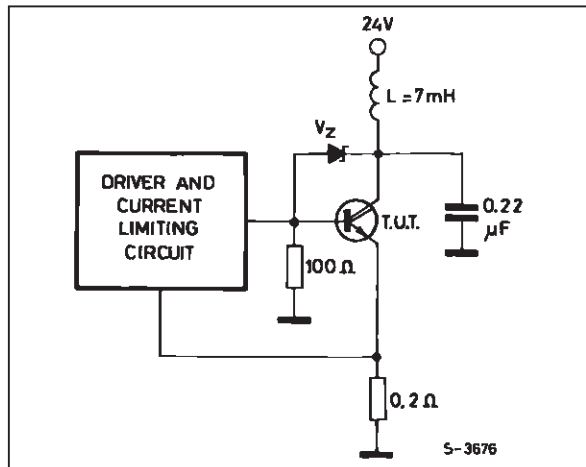


FIGURE 2: Functional Test Waveforms

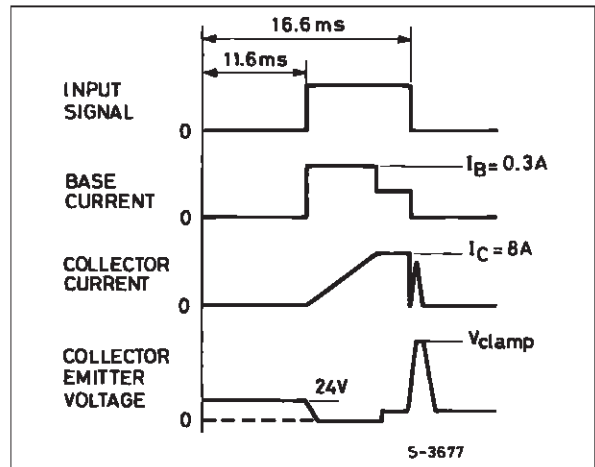
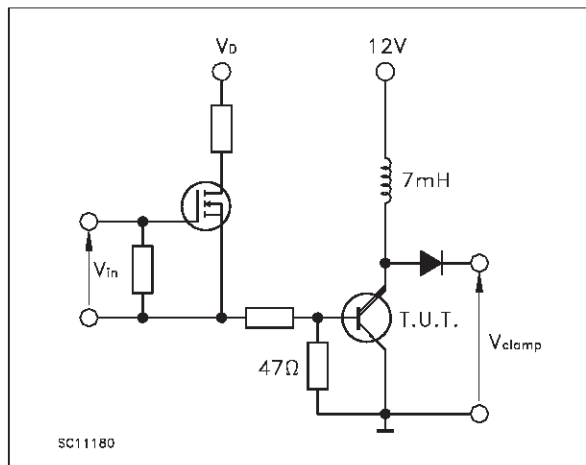
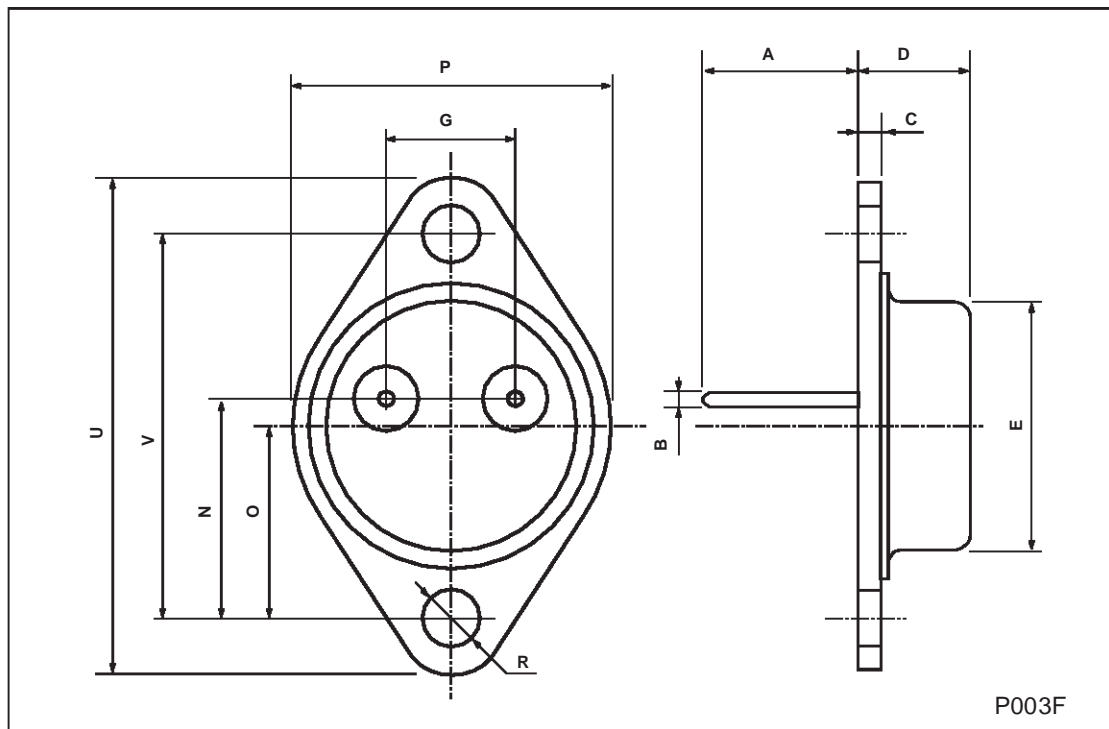


FIGURE 3: Switching Time Test Circuit



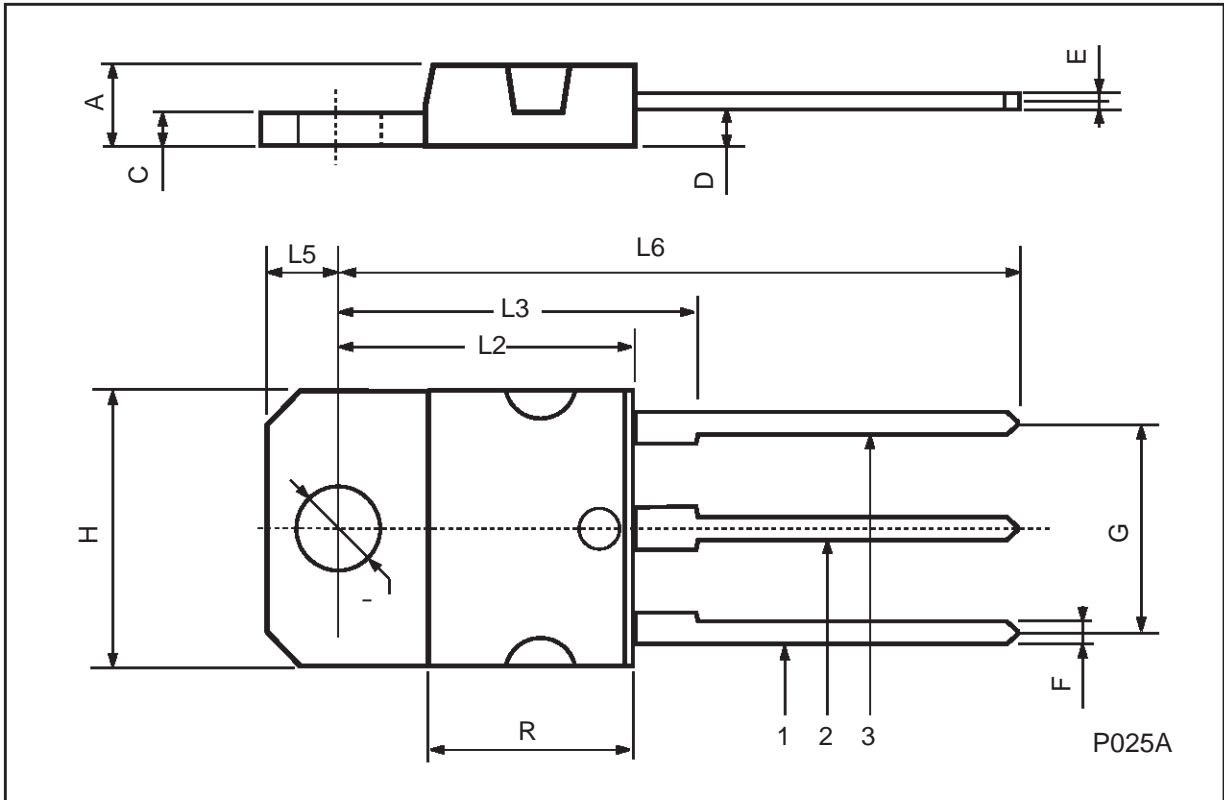
## TO-3 MECHANICAL DATA

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



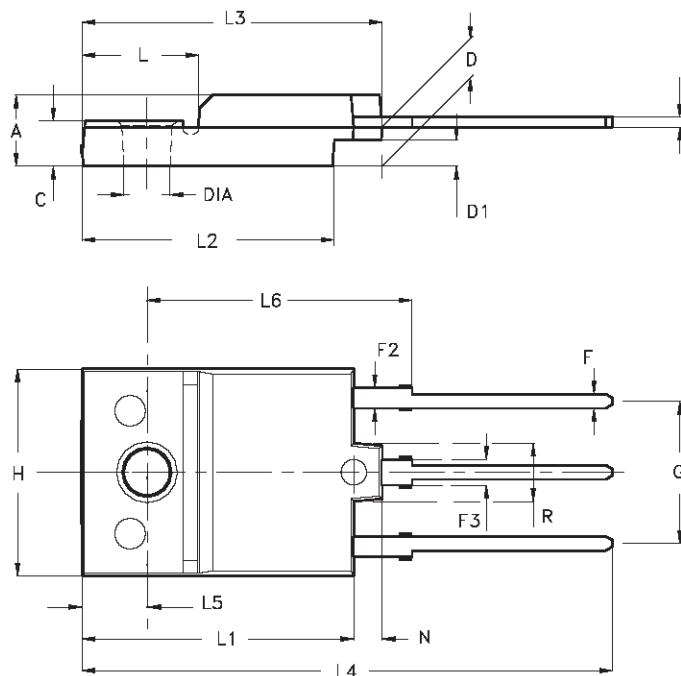
**TO-218 (SOT-93) MECHANICAL DATA**

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



**ISOWATT218 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.211		0.222
C	3.30		3.80	0.130		0.150
D	2.90		3.10	0.114		0.122
D1	1.88		2.08	0.074		0.082
E	0.75		0.95	0.030		0.037
F	1.05		1.25	0.041		0.049
F2	1.50		1.70	0.059		0.067
F3	1.90		2.10	0.075		0.083
G	10.80		11.20	0.425		0.441
H	15.80		16.20	0.622		0.638
L		9			0.354	
L1	20.80		21.20	0.819		0.835
L2	19.10		19.90	0.752		0.783
L3	22.80		23.60	0.898		0.929
L4	40.50		42.50	1.594		1.673
L5	4.85		5.25	0.191		0.207
L6	20.25		20.75	0.797		0.817
N	2.1		2.3	0.083		0.091
R		4.6			0.181	
DIA	3.5		3.7	0.138		0.146



- Weight : 4.9 g (typ.)
- Maximum Torque (applied to mounting flange) Recommended 0.8 Nm; Maximum: 1 Nm
- The side of the dissipator must be flat within 80 µm

P025C/A

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

© 2000 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>