BU208A
BU508A/BU508AFI

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTORS

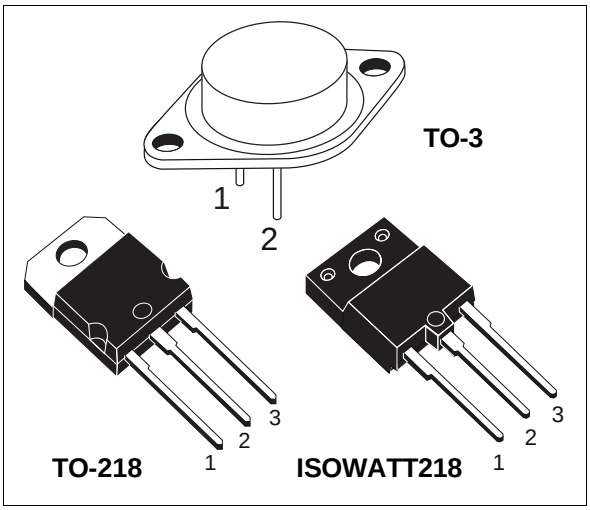
- STMicroelectronics PREFERRED SALESTYPES
- HIGH VOLTAGE CAPABILITY (> 1500 V)
- FULLY INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING

APPLICATIONS:

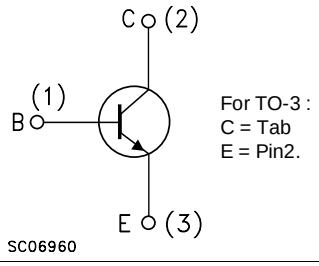
- HORIZONTAL DEFLECTION FOR COLOUR TV

DESCRIPTION

The BU208A, BU508A and BU508AFI are manufactured using Multiepitaxial Mesa technology for cost-effective high performance and use a Hollow Emitter structure to enhance switching speeds.



INTERNAL SCHEMATIC DIAGRAM



For TO-3 :
C = Tab
E = Pin2.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
V_{CES}	Collector-Emitter Voltage (V_{BE} = 0)	1500			V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	700			V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	10			V
I_C	Collector Current	8			A
I_{CM}	Collector Peak Current (t_p < 5 ms)	15			A
		BU208A	**BU508A**	**BU508AFI**	
		TO - 3	**TO - 218**	**ISOWATT218**	
P_{tot}	Total Dissipation at T_c = 25 °C	150	125	50	W
V_{isol}	Insulation Withstand Voltage (RMS) from All Three Leads to Exernal Heatsink			2500	V
T_{stg}	Storage Temperature	-65 to 175	-65 to 150	-65 to 150	°C
T_j	Max. Operating Junction Temperature	175	150	150	°C

THERMAL DATA

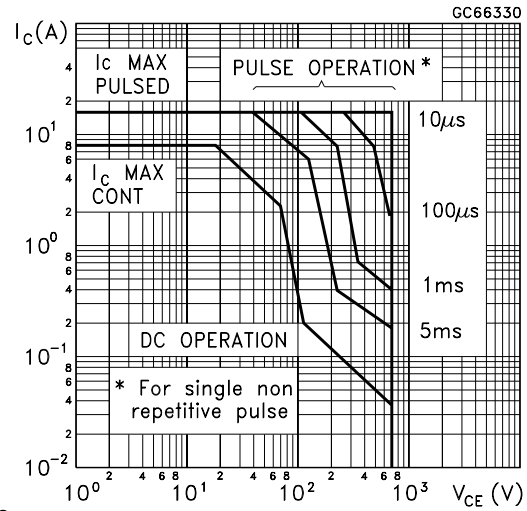
		TO-3	TO-218	ISOWATT218	
$R_{thj\text{-}case}$	Thermal Resistance Junction-case Max	1	1	2.5	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

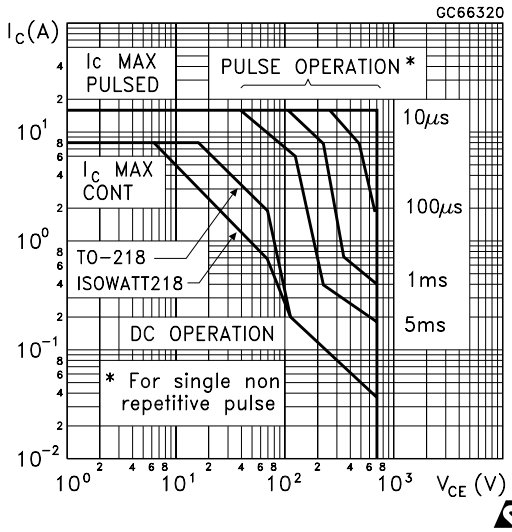
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 1500 V V_{CE} = 1500 V T_C = 125 °C			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			100	µA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA	700			V
V_{EBO}	Emitter Base Voltage (I_C = 0)	I_E = 10 mA	10			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 4.5 A I_B = 2 A			1	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 4.5 A I_B = 2 A			1.3	V
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 4.5 A h_{FE} = 2.5 V_{CC} = 140 V L_C = 0.9 mH L_B = 3 µH		7 550		µs ns
f_T	Transition Frequency	I_C = 0.1 A V_{CE} = 5 V f = 5 MHz		7		MHz

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

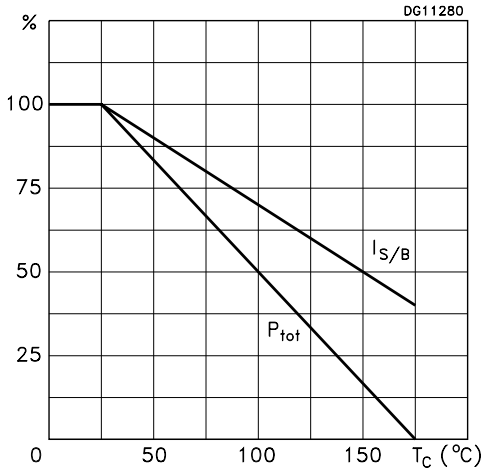
Safe Operating Area (TO-3)



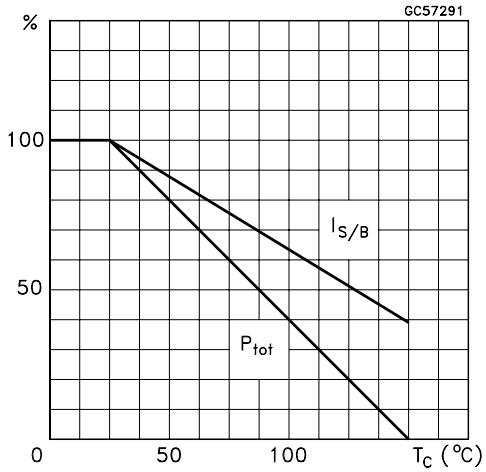
Safe Operating Areas (TO-218/ISOWATT218)



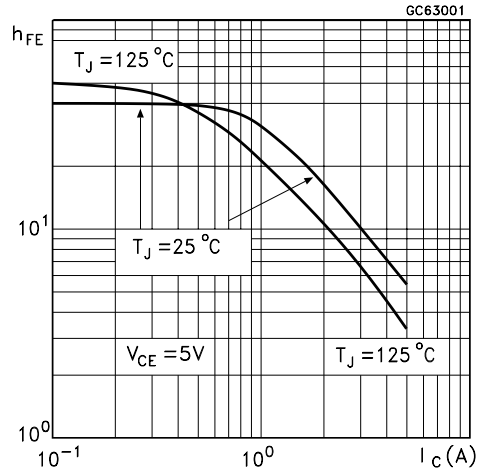
Derating Curves (TO-3)



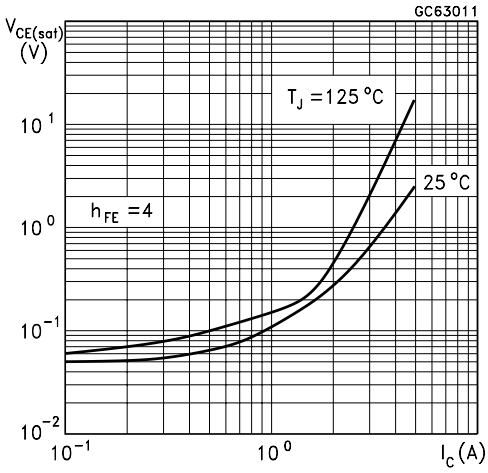
Derating Curves (TO-218/ISOWATT218)



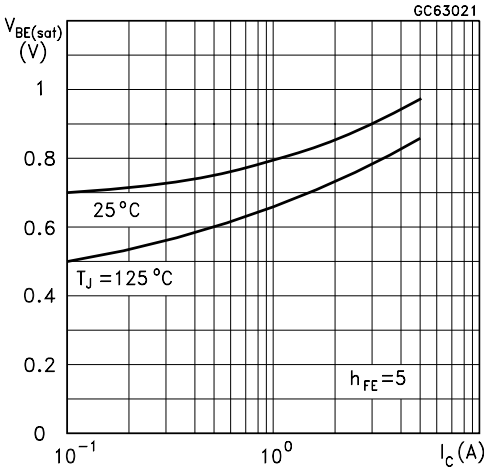
DC Current Gain



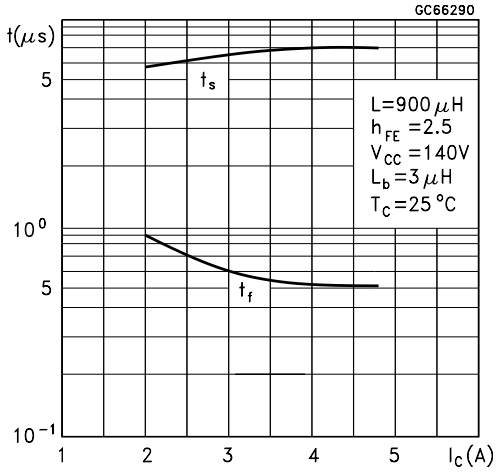
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage



Switching Time Inductive Load



Switching Time Inductive Load

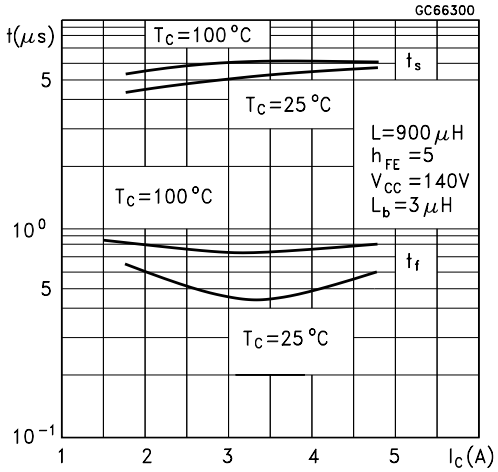
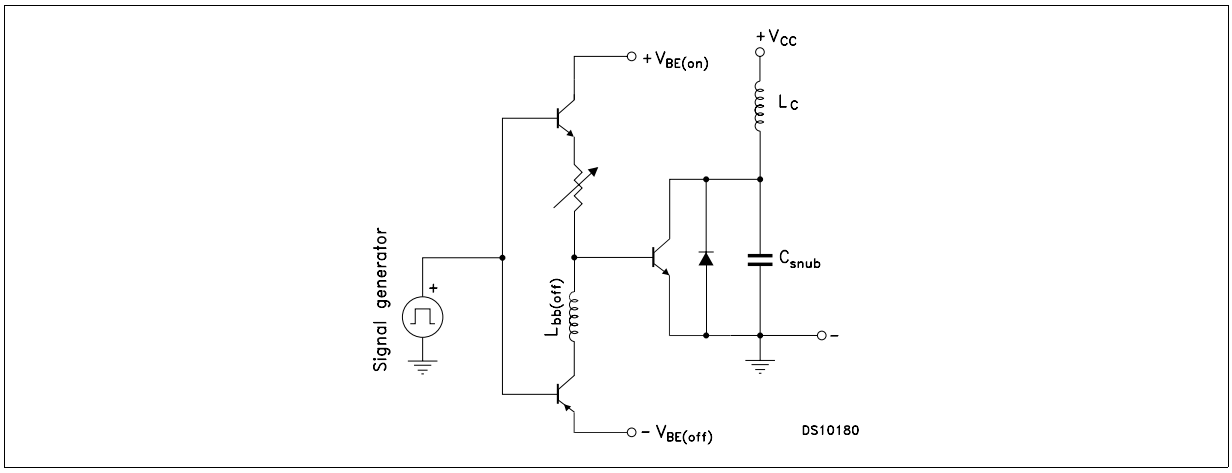
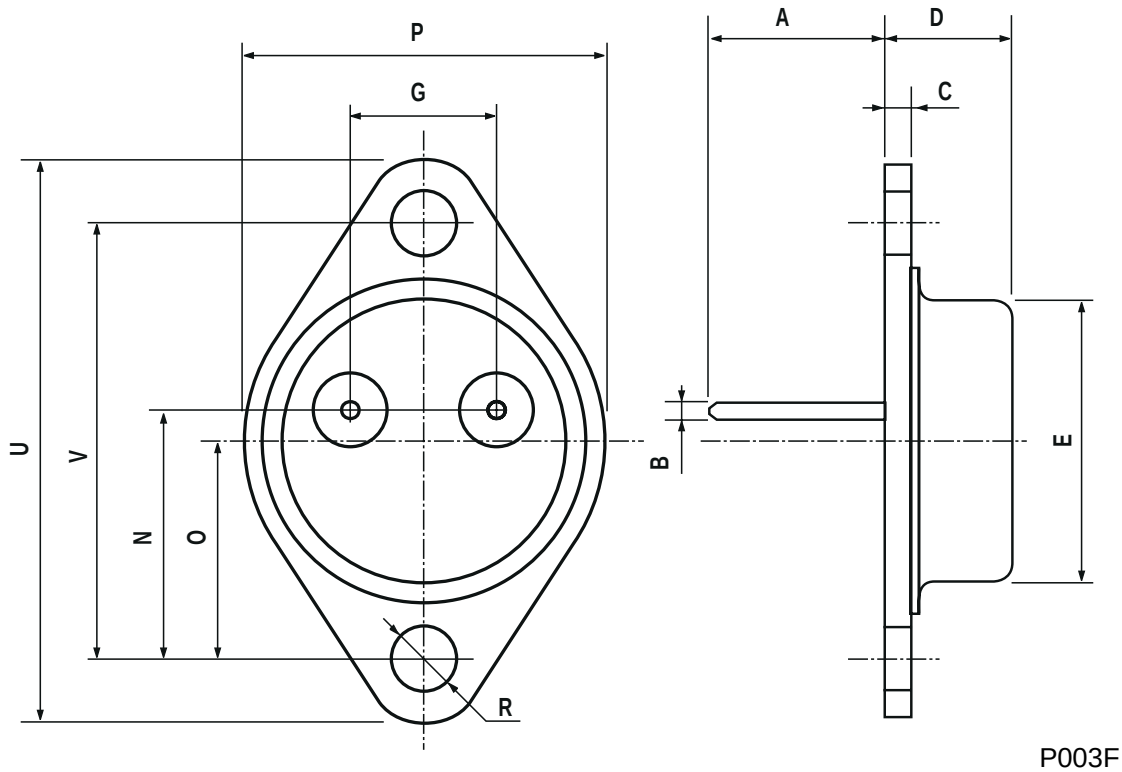


Figure 1: Inductive Load Switching Test Circuit.



TO-3 MECHANICAL DATA

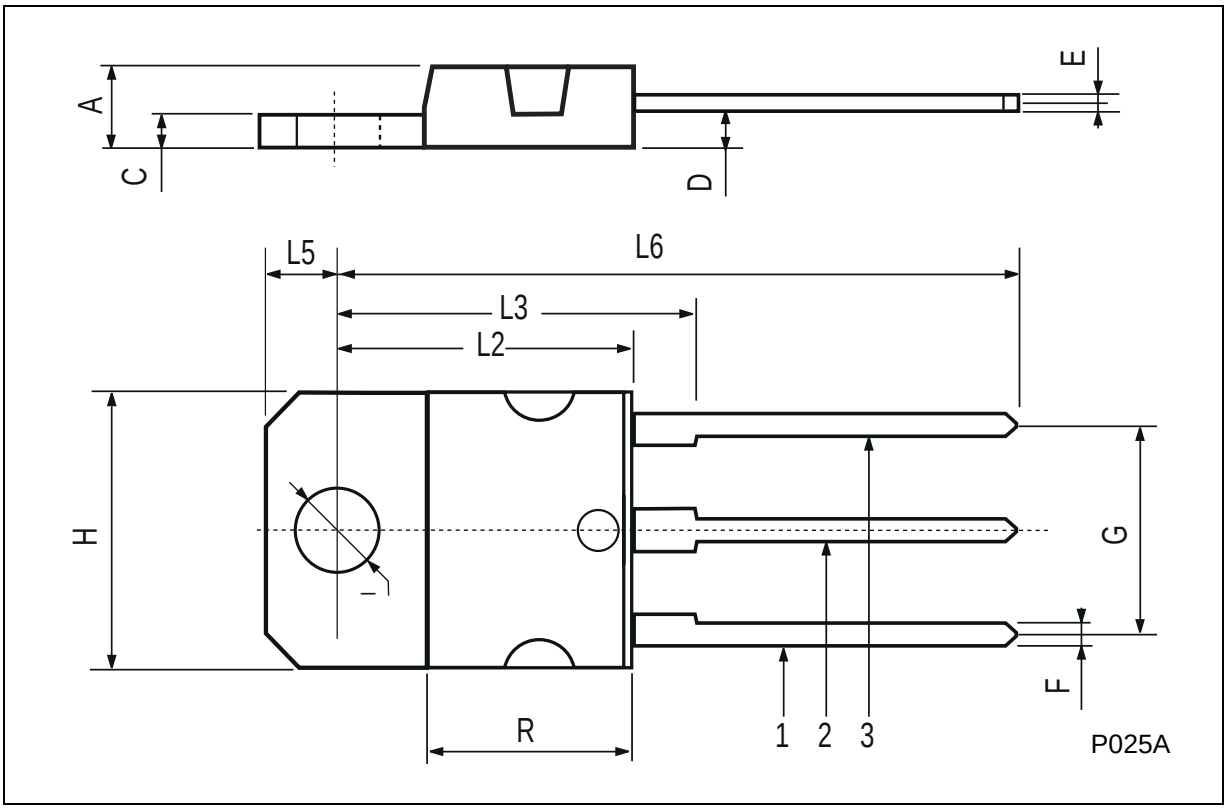
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50	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



P003F

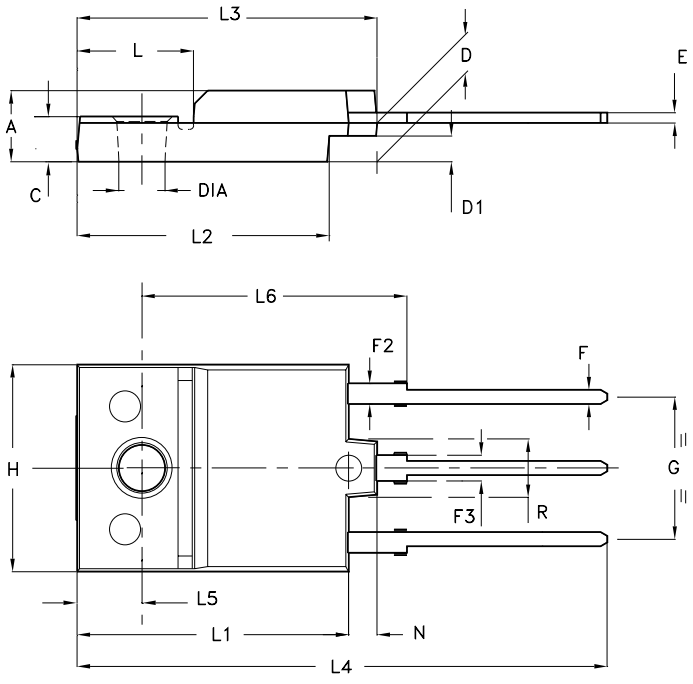
TO-218 (SOT-93) MECHANICAL DATA

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



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