



# BU208D BU508DFI

## HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTORS

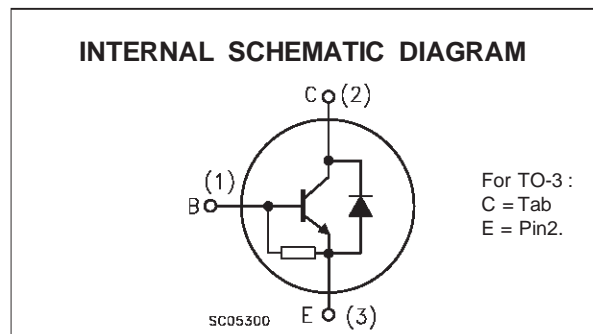
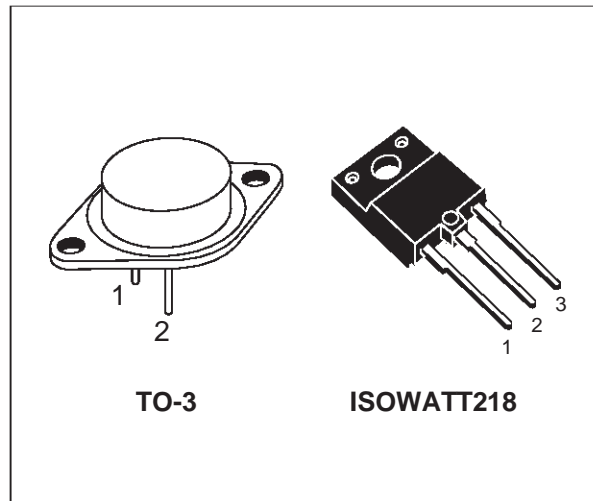
- STMicroelectronics PREFERRED SALESTYPES
- HIGH VOLTAGE CAPABILITY
- U.L. RECOGNISED ISOWATT218 PACKAGE (U.L. FILE # E81734 (N))
- JEDEC TO-3 METAL CASE
- NPN TRANSISTOR WITH INTEGRATED FREEWHEELING DIODE

### APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOUR TV

### DESCRIPTION

The BU208D and BU508DFI are manufactured using Multiepitaxial Mesa technology for cost-effective high performance and use a Hollow Emitter structure to enhance switching speeds.



### 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
		<b>TO - 3</b>	<b>ISOWATT218</b>	
$P_{tot}$	Total Dissipation at $T_c = 25$ °C	150	50	W
$T_{stg}$	Storage Temperature	-65 to 175	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	175	150	°C

# BU208D / BU508DFI

## THERMAL DATA

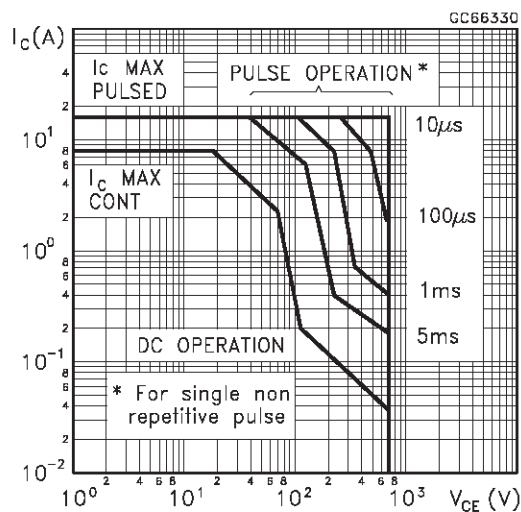
			TO-3	ISOWATT218	
$R_{thj-case}$	Thermal Resistance Junction-case	Max	1	2.5	°C/W

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

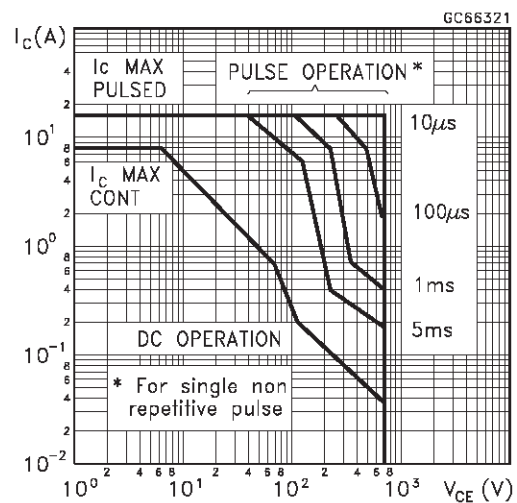
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = 1500\text{ V}$ $V_{CE} = 1500\text{ V}$ $T_j = 125\text{ }^{\circ}\text{C}$			1 2	mA mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			300	mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 100\text{ m A}$	700			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 4.5\text{ A}$ $I_B = 2\text{ A}$			1	V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 4.5\text{ A}$ $I_B = 2\text{ A}$			1.3	V
$t_s$ $t_f$	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 4.5\text{ A}$ $h_{FE} = 2.5$ $V_{CC} = 140\text{ V}$ $L_C = 0.9\text{ mH}$ $L_B = 3\text{ }\mu\text{H}$		7 550		$\mu\text{s}$ ns
$V_F$	Diode Forward Voltage	$I_F = 4\text{ A}$			2	V
$f_T$	Transition Frequency	$I_C = 0.1\text{ A}$ $V_{CE} = 5\text{ V}$ $f = 5\text{ MHz}$		7		MHz

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

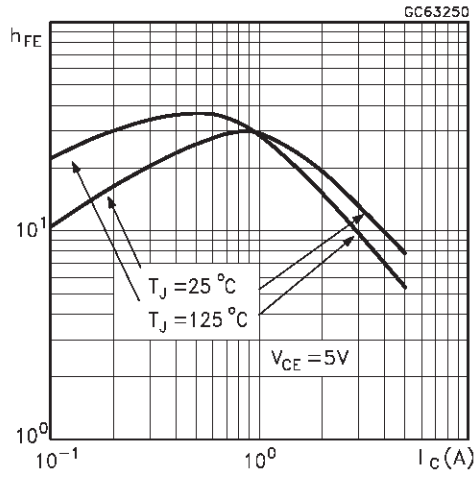
Safe Operating Area (TO-3)



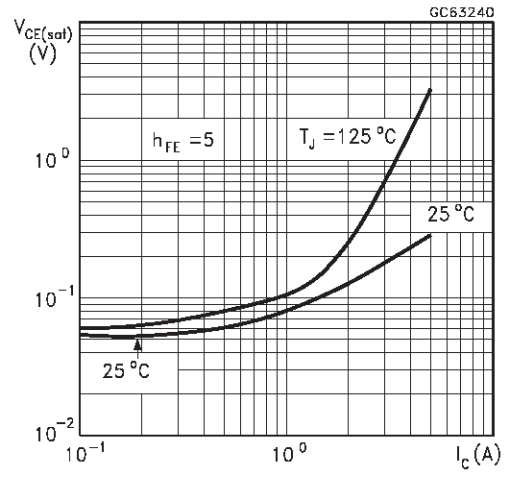
Safe Operating Area (ISOWATT218)



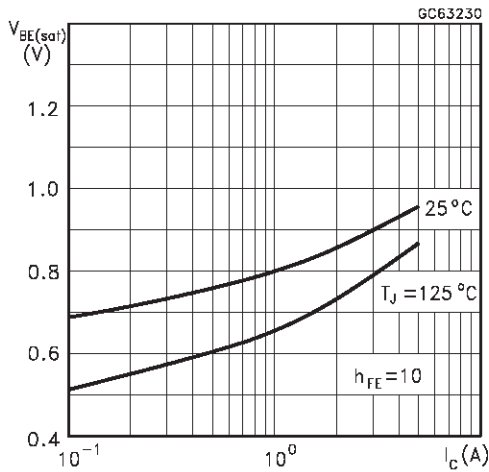
DC Current Gain



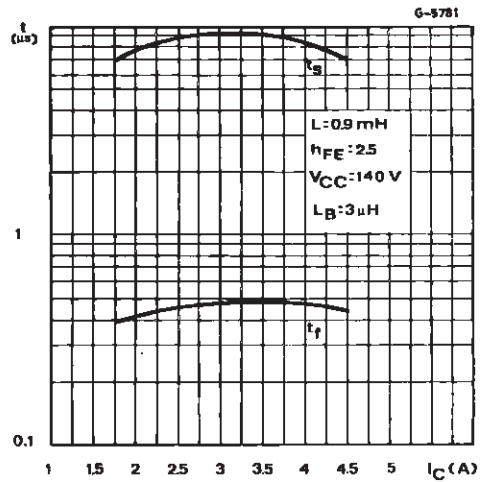
Collector Emitter Saturation Voltage



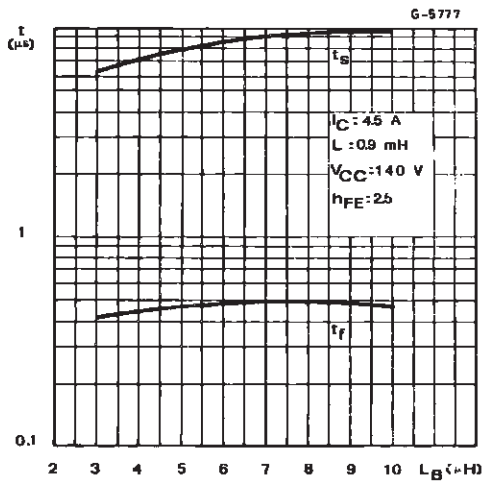
Base Emitter Saturation Voltage



Switching Time Inductive Load



Switching Time Inductive Load (see figure 1)



Switching Time Percentance vs. Case

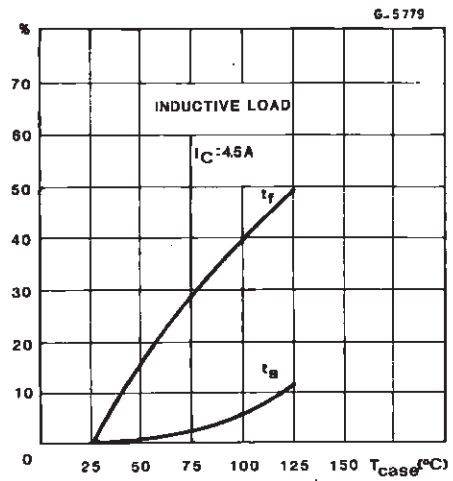
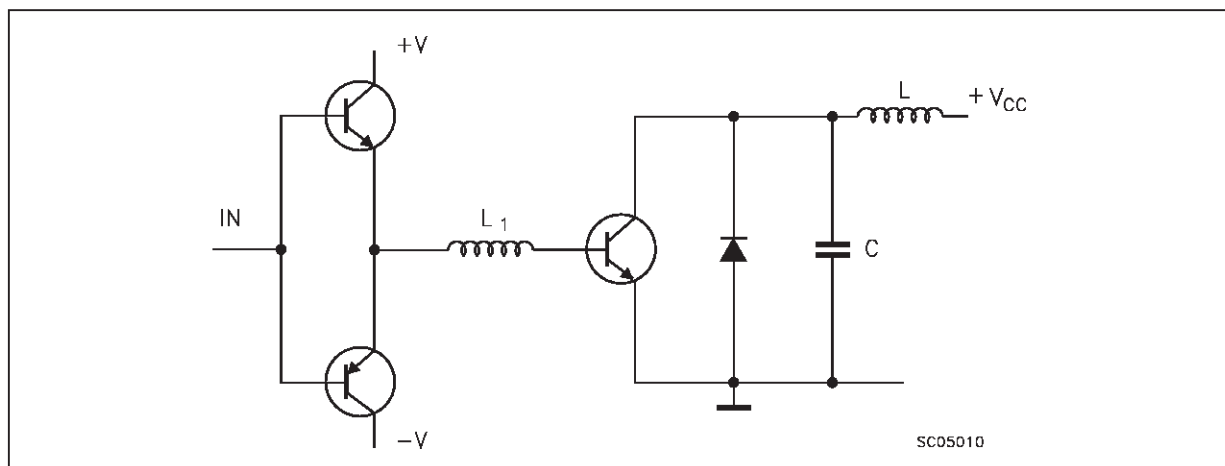
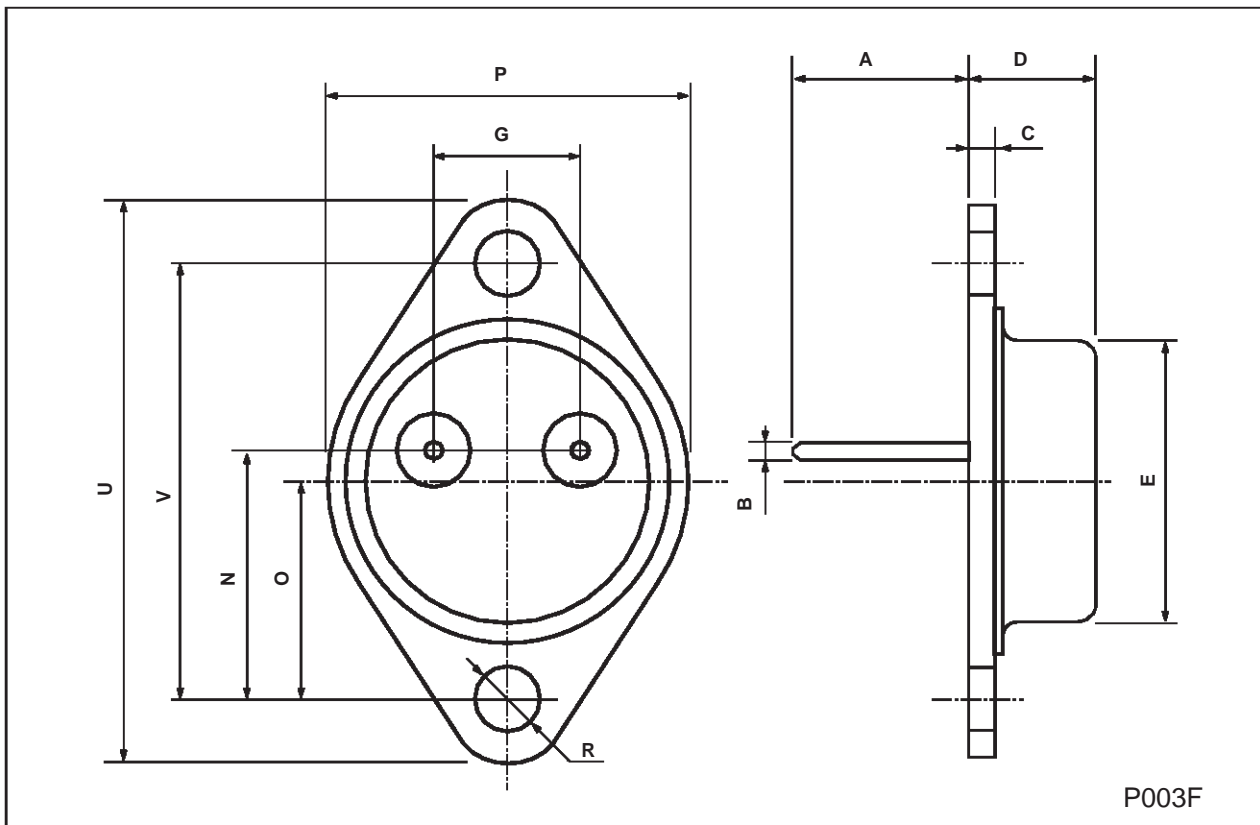


Figure 1: Inductive Load Switching Test Circuit.



## TO-3 MECHANICAL DATA

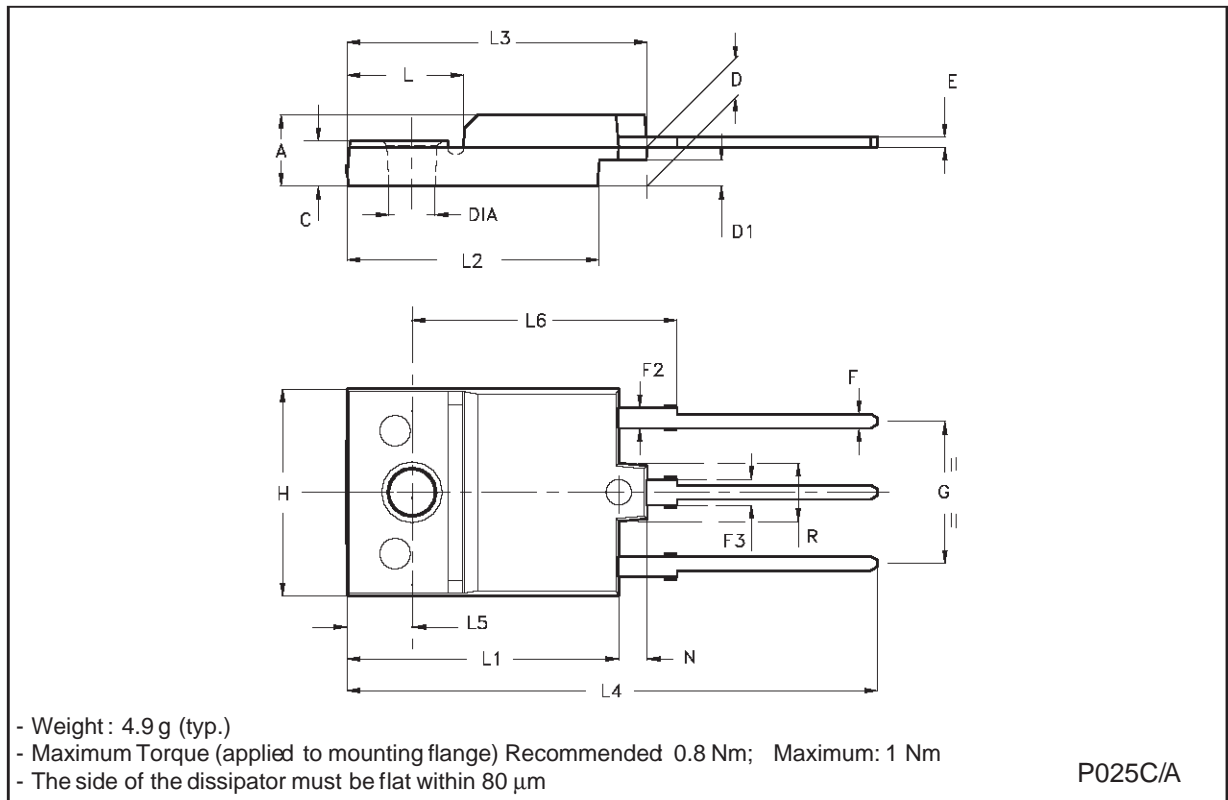
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50	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



P003F

**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



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