



## BU508DFI

### HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

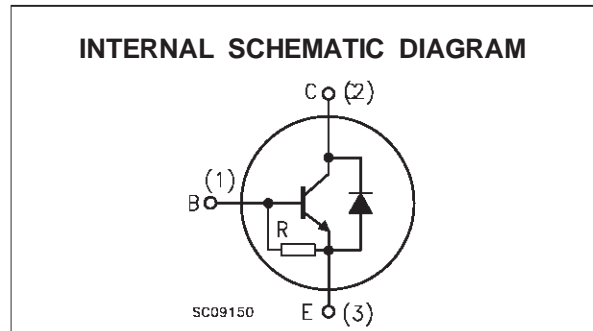
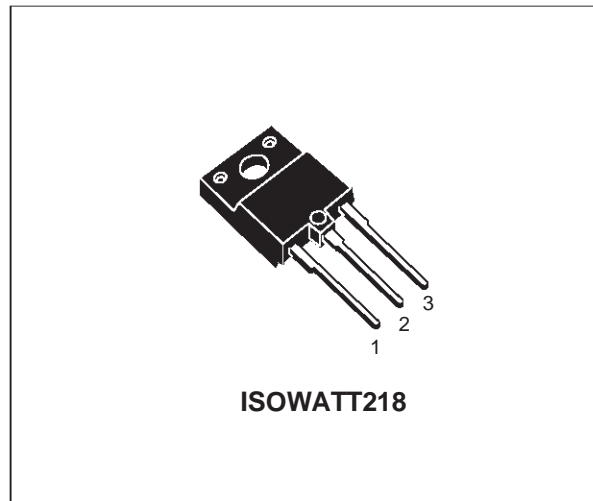
- STMicroelectronics PREFERRED SALESTYPE
- HIGH VOLTAGE CAPABILITY ( $> 1500\text{ V}$ )
- NPN TRANSISTOR WITH INTEGRATED FREEWHEELING DIODE
- FULLY INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING

#### APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOUR TV UP TO 25"

#### DESCRIPTION

The BU508DFI is manufactured using Multi-epitaxial Mesa technology for cost-effective high performance and uses 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 ( $t_p < 5\text{ ms}$ )	15	A
$I_B$	Base Current	5	A
$I_{BM}$	Base Peak Current ( $t_p < 5\text{ ms}$ )	8	A
$P_{tot}$	Total Dissipation at $T_c = 25\text{ }^\circ\text{C}$	50	W
$V_{isol}$	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	2500	V
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

# BU508DFI

## THERMAL DATA

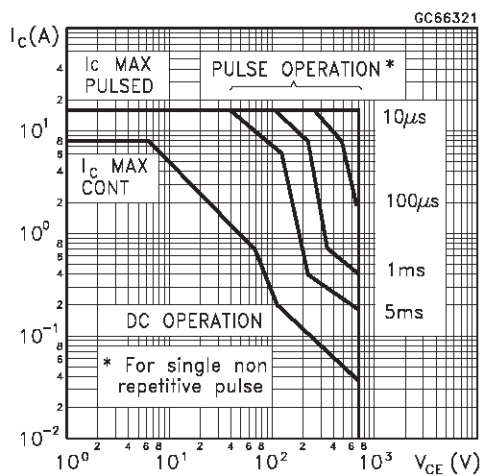
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	2.5	°C/W
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## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

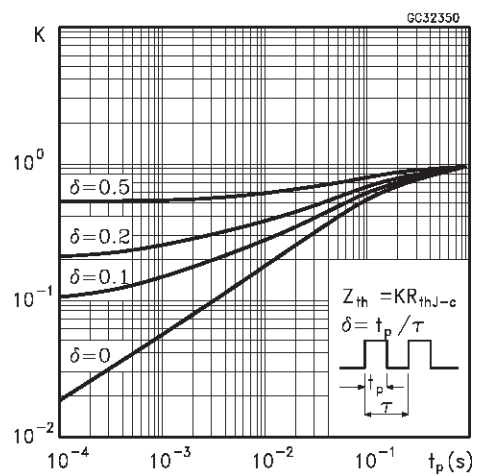
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 1500 V V <sub>CE</sub> = 1500 V      T <sub>j</sub> = 125 °C			1 2	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			300	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 m A	700			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 4.5 A      I <sub>B</sub> = 2 A			1	V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 4.5 A      I <sub>B</sub> = 2 A			1.3	V
t <sub>s</sub> t <sub>f</sub>	INDUCTIVE LOAD Storage Time Fall Time	I <sub>C</sub> = 4.5 A    h <sub>FE</sub> = 2.5    V <sub>CC</sub> = 140 V L <sub>C</sub> = 0.9 mH    L <sub>B</sub> = 3 μH (see figure 1)		7 550		μs ns
V <sub>F</sub>	Diode Forward Voltage	I <sub>F</sub> = 4 A			2	V
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 0.1 A    V <sub>CE</sub> = 5 V    f = 5 MHz		7		MHz

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

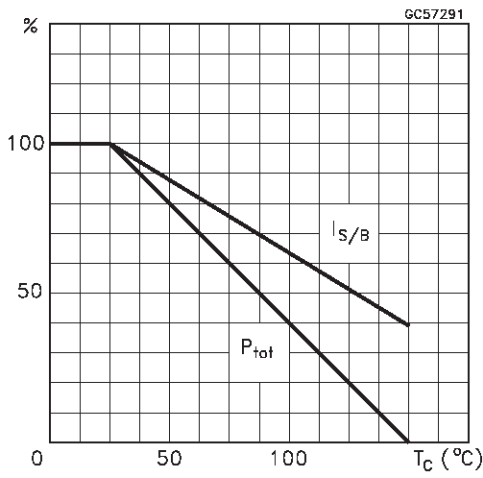
### Safe Operating Area



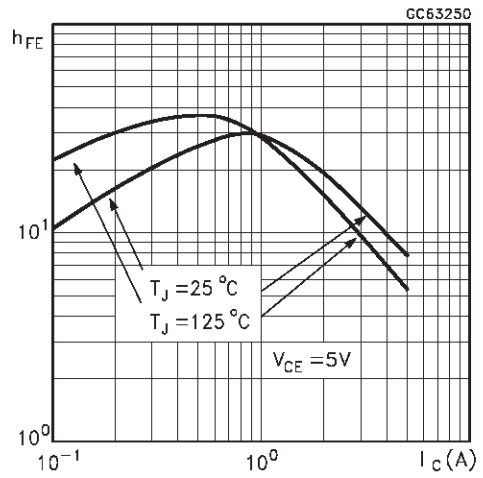
### Thermal Impedance



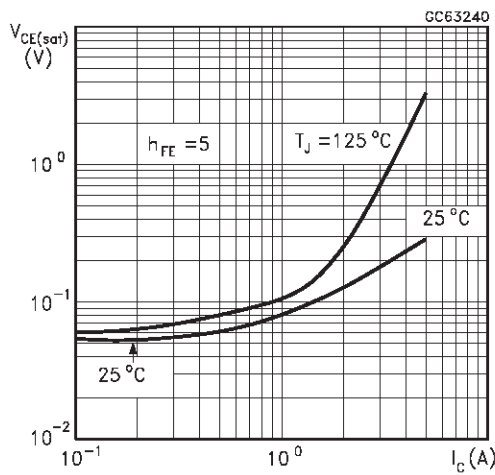
Derating Curve



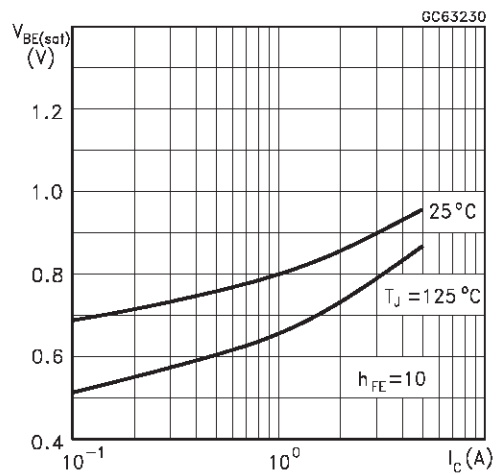
DC Current Gain



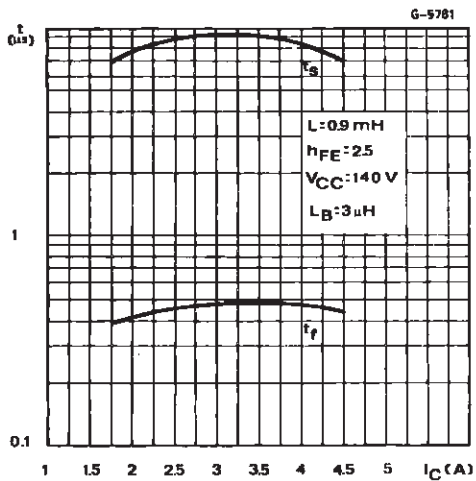
Collector Emitter Saturation Voltage



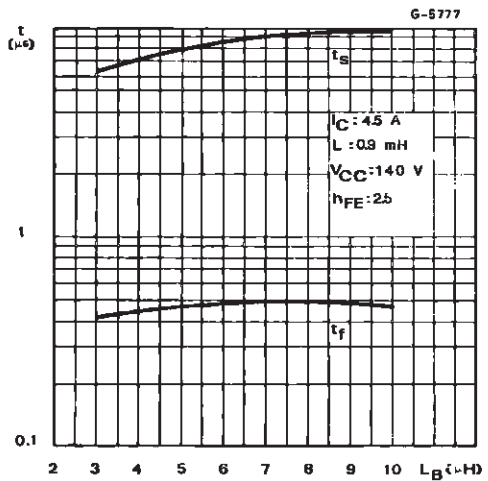
Base Emitter Saturation Voltage



Switching Time Inductive Load



Switching Time Inductive Load



Switching Time Percentance vs. Case

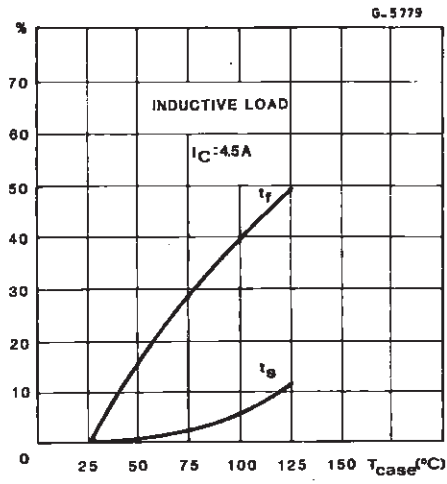
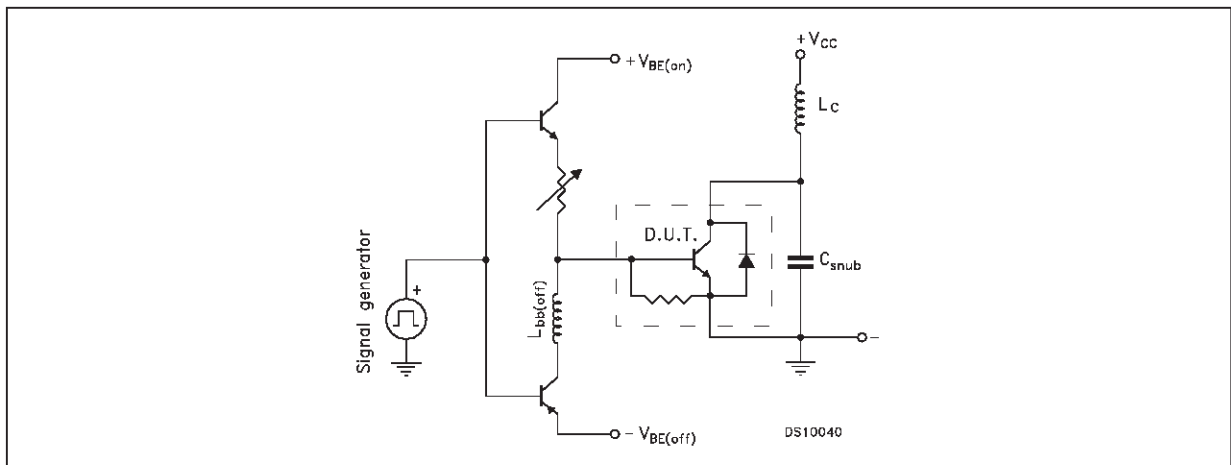
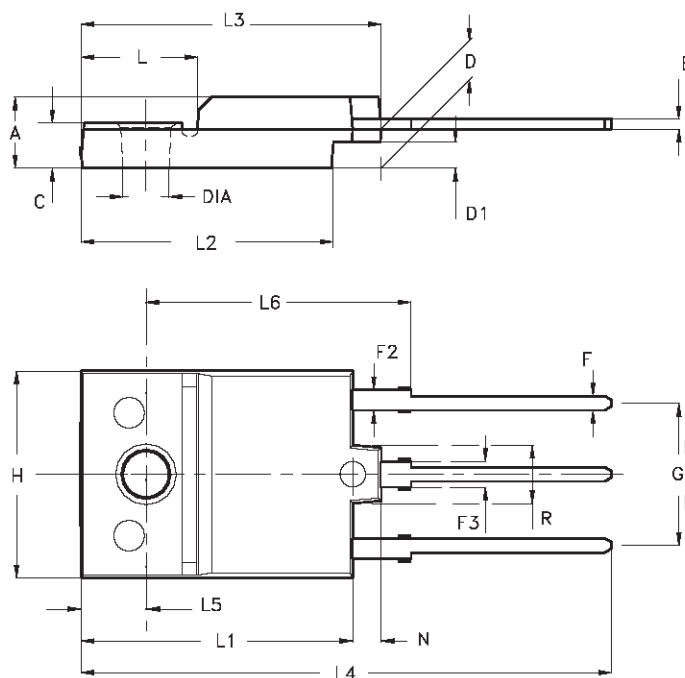


Figure 1: Inductive Load Switching Test Circuit.



## 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  $\mu$ m

P025C/A

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