



BUL312FH

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

Ordering Code	Marking	Shipment
BUL312FH	BUL312FH	Tube

- HIGH VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED
- FULLY CHARACTERIZED AT 125 °C
- LARGE R.B.S.O.A.
- FULLY INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING

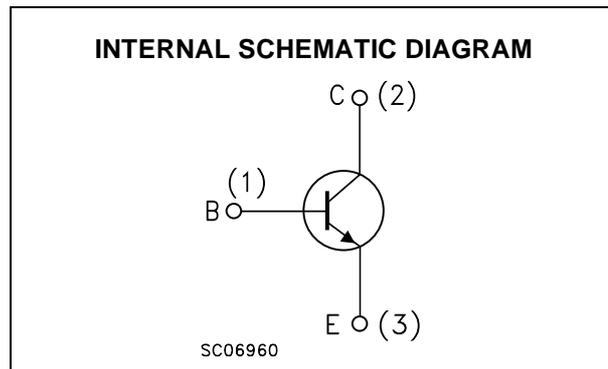
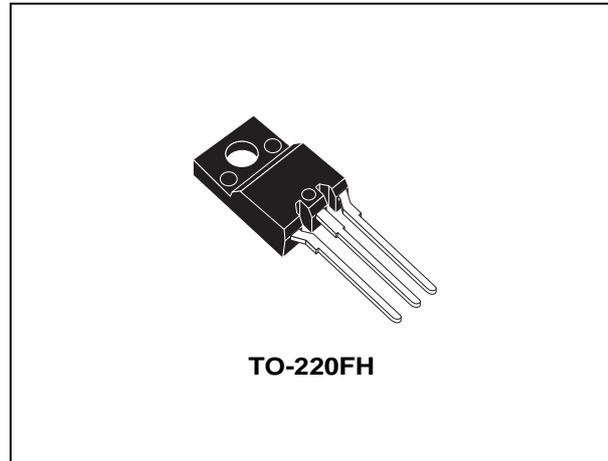
APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOR TV
- SWITCH MODE POWER SUPPLIES
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING

DESCRIPTION

The device is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage capability.

It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining a wide R.B.S.O.A.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	1150	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	500	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	9	V
I_C	Collector Current	5	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	10	A
I_B	Base Current	3	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	4	A
P_{tot}	Total Dissipation at $T_c = 25$ °C	36	W
V_{isol}	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	2500	V
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

BUL312FH

THERMAL DATA

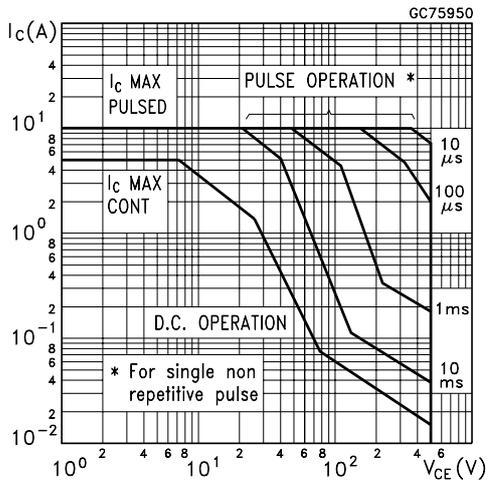
R _{thj-case}	Thermal Resistance Junction-case	Max	3.47	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	Max	62.5	°C/W

ELECTRICAL CHARACTERISTICS (T_j = 25 °C unless otherwise specified)

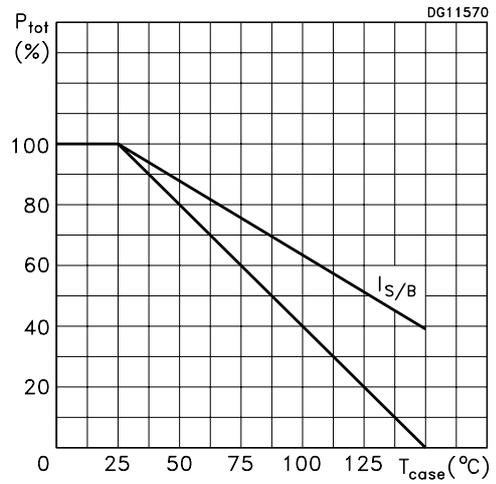
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CES}	Collector Cut-off Current (V _{BE} = 0)	V _{CE} = 1150 V V _{CE} = 1150 V T _j = 125 °C			1 2	mA mA
I _{CEO}	Collector Cut-off Current (I _B = 0)	V _{CE} = 500 V			250	μA
V _{EBO}	Emitter-Base Voltage (I _C = 0)	I _E = 10 mA	9			V
V _{CEO(sus)} *	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 100 mA	500			V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	I _C = 1 A I _C = 2 A I _C = 3 A I _B = 200 mA I _B = 400 mA I _B = 600 mA			0.5 0.7 1.1	V V V
V _{BE(sat)} *	Base-Emitter Saturation Voltage	I _C = 1 A I _C = 2 A I _C = 3 A I _B = 200 mA I _B = 400 mA I _B = 600 mA			1 1.1 1.2	V V V
h _{FE} *	DC Current Gain	I _C = 10 mA I _C = 3 A V _{CE} = 5 V V _{CE} = 2.5 V	8 8		16	
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	I _C = 2 A I _{B1} = 400 mA L = 200 μH (See Figure 1) V _{clamp} = 250 V V _{BE(off)} = -5 V R _{BB} = 0		1.2 80	1.9 160	μs ns
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	I _C = 2 A I _{B1} = 400 mA L = 200 μH T _j = 125 °C V _{clamp} = 250 V V _{BE(off)} = -5 V R _{BB} = 0 (See Figure 1)		1.8 150		μs ns

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

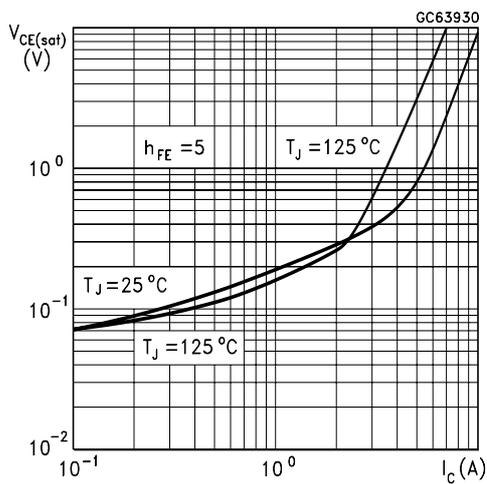
Safe Operating Area



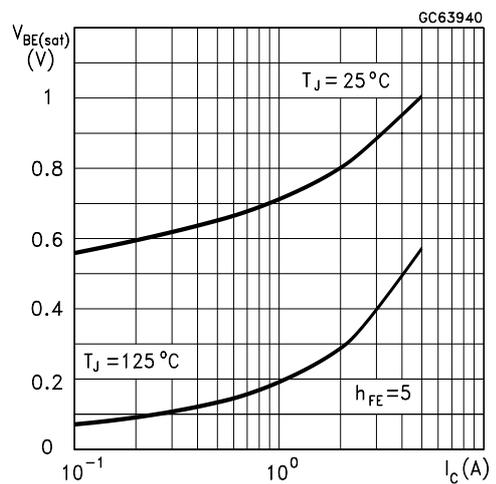
Derating Curve



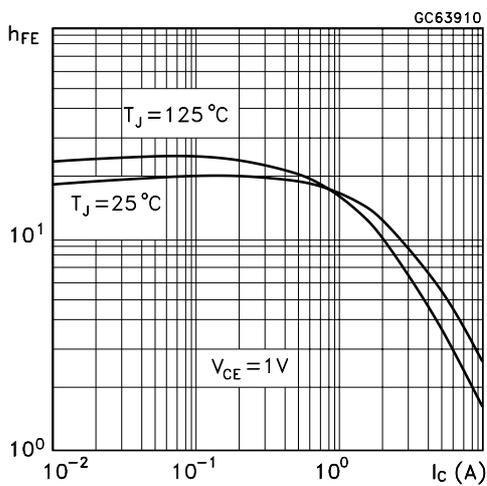
Collector-Emitter Saturation Voltage



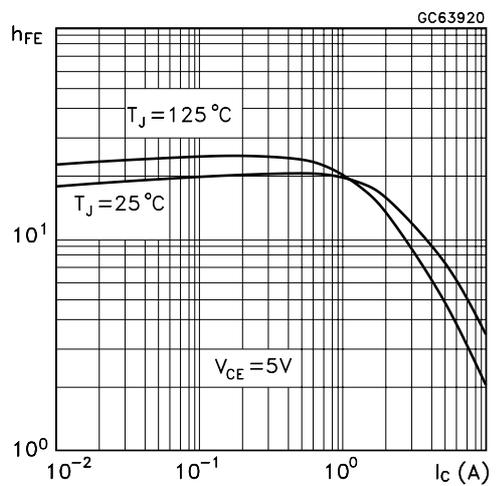
Base-Emitter Saturation Voltage



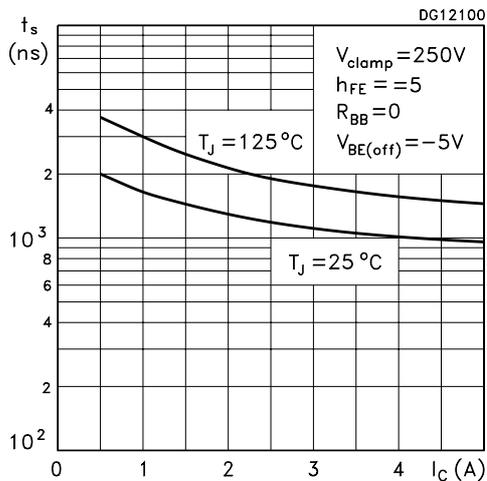
DC Current Gain



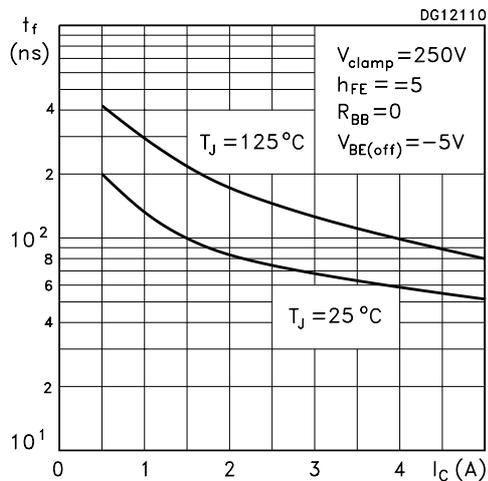
DC Current Gain



Inductive Load Storage Time



Inductive Load Fall Time



Reverse Biased Safe Operating Area

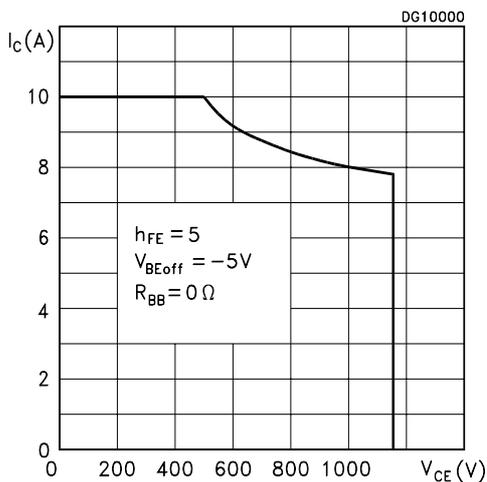
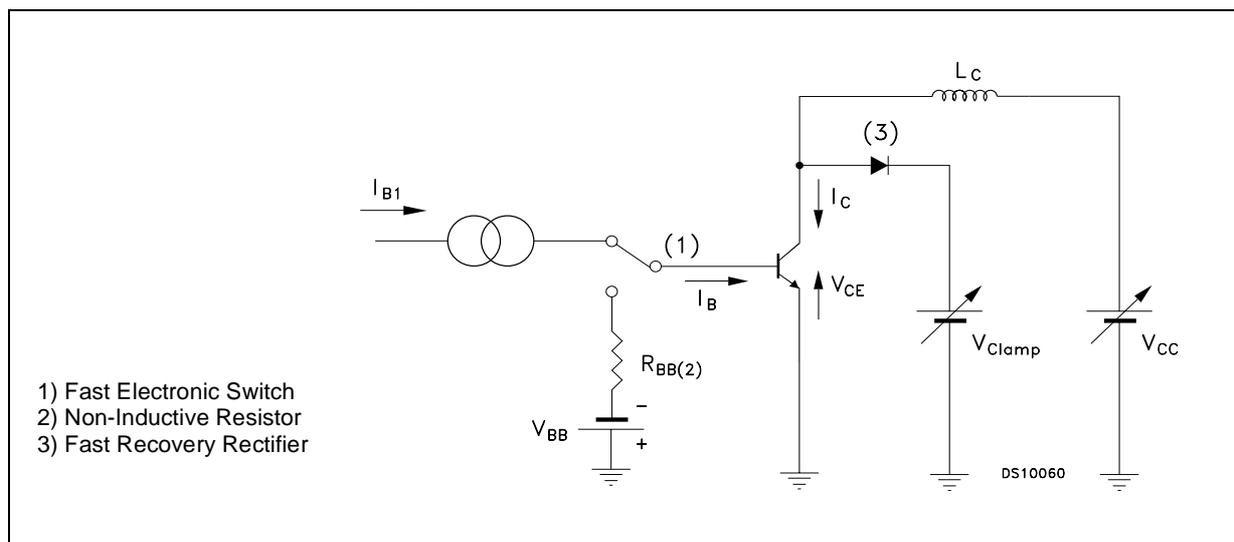
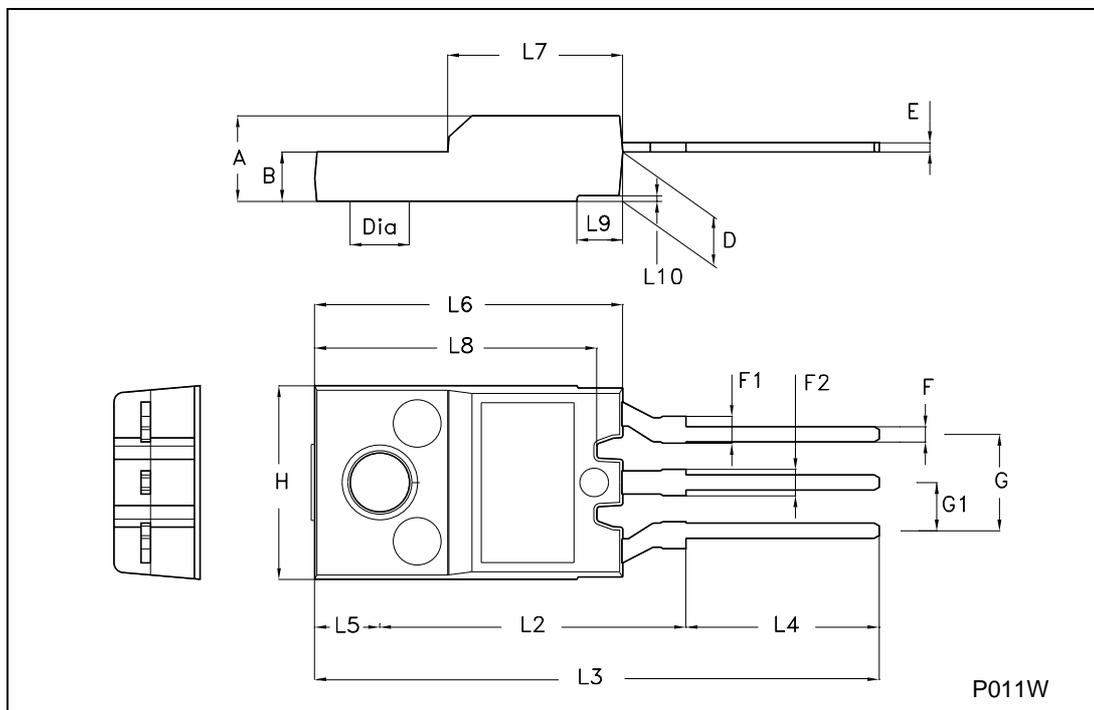


Figure 1: Inductive Load Switching Test Circuit



TO-220FH (Fully plastic High voltage) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
B	2.5		2.7	0.098		0.106
D	2.5		2.75	0.098		0.108
E	0.45		0.7	0.017		0.027
F	0.75		1	0.030		0.039
F1	1.3		1.8	0.051		0.070
F2	1.3		1.8	0.051		0.070
G	4.95		5.2	0.195		0.204
G1	2.4		2.7	0.094		0.106
H	10		10.4	0.393		0.409
L2		16			0.630	
L3	28.6		30.6	1.126		1.204
L4	9.8		10.6	0.385		0.417
L5		3.4			0.134	
L6	15.9		16.4	0.626		0.645
L7	9		9.3	0.354		0.366
L8	14.5		15	0.570		0.590
L9		2.4			0.094	



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. Specifications 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 registered trademark of STMicroelectronics

© 2002 STMicroelectronics - Printed in Italy - All Rights Reserved
STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco
Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

© <http://www.st.com>