



BUL810

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- HIGH VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- LOW BASE-DRIVE REQUIREMENTS
- VERY HIGH SWITCHING SPEED
- FULLY CHARACTERIZED AT 125°C

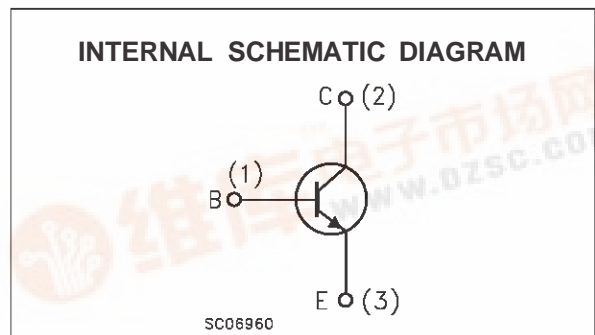
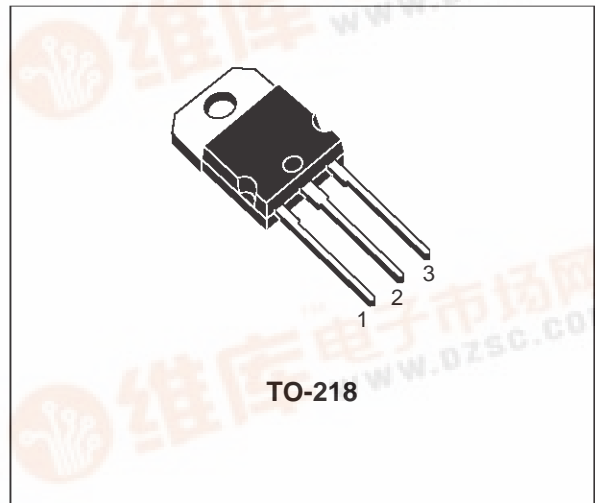
APPLICATIONS

- ELECTRONIC TRANSFORMER FOR HALOGEN LAMPS
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING
- SWITCH MODE POWER SUPPLIES

DESCRIPTION

The BUL810 is manufactured using high voltage Multi-epitaxial Mesa technology for cost-effective high performance. It uses a Hollow Emitter structure to enhance switching speeds.

The BUL series is designed for use in lighting applications and low cost switch-mode power supplies.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	1000	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	450	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	9	V
I_C	Collector Current	15	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	22	A
I_B	Base Current	5	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	10	A
P_{tot}	Total Dissipation at $T_c = 25$ °C	125	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

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THERMAL DATA

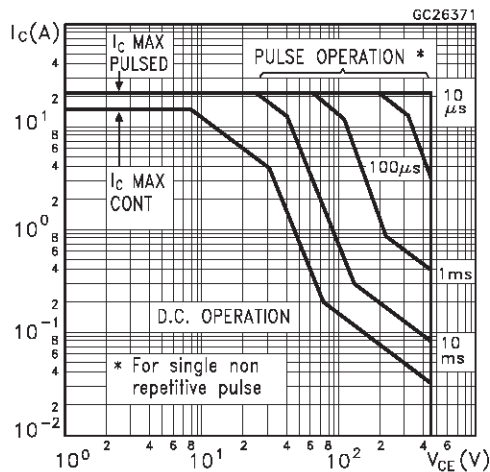
R _{thj-case}	Thermal Resistance Junction-Case	Max	1	°C/W
R _{thj-amb}	Thermal Resistance Junction-Ambient	Max	30	°C/W

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

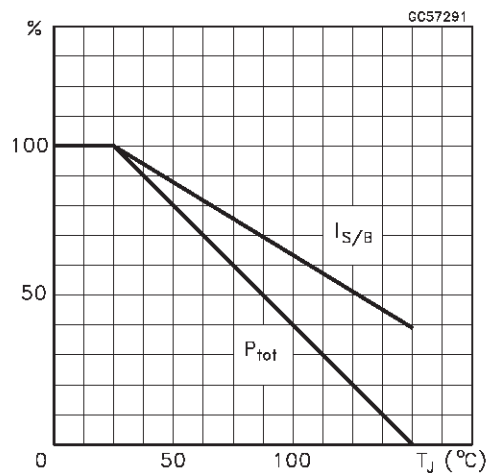
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CES}	Collector Cut-off Current (V _{BE} = 0)	V _{CE} = 1000 V V _{CE} = 1000 V T _j = 125 °C			100 500	μA μA
I _{CEO}	Collector Cut-off Current (I _B = 0)	V _{CE} = 450 V			250	μA
V _{CEO(sus)}	Collector-Emitter Sustaining Voltage	I _C = 100 mA L = 25 mH	450			V
V _{EBO}	Emitter-Base Voltage (I _C = 0)	I _E = 10 mA	9			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 5 A I _B = 1 A I _C = 8 A I _B = 1.6 A I _C = 12 A I _B = 2.4 A			1 1.5 5	V V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 5 A I _B = 1 A I _C = 8 A I _B = 1.6 A			1.3 1.6	V V
h _{FE*}	DC Current Gain	I _C = 5 A V _{CE} = 5 V I _C = 10 mA V _{CE} = 5 V	10 10		40	
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	I _C = 8 A I _{B1} = 1.6 A V _{BE(off)} = -5 V R _{BB} = 0.4 Ω V _{CL} = 350 V L = 200 μH		1.5 55	2.3 110	μs ns
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	I _C = 8 A I _{B1} = 1.6 A V _{BE(off)} = -5 V R _{BB} = 0.4 Ω V _{CL} = 350 V L = 200 μH T _j = 100 °C		1.9 80		μs ns

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

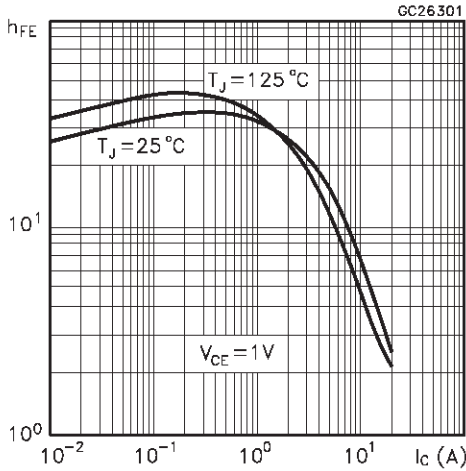
Safe Operating Areas



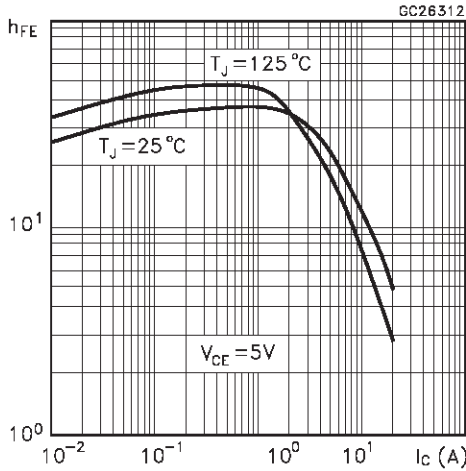
Derating Curve



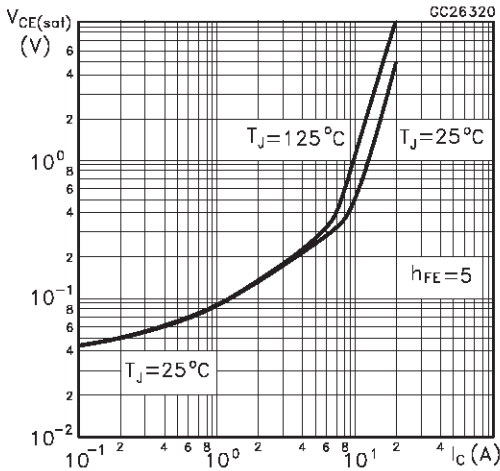
DC Current Gain



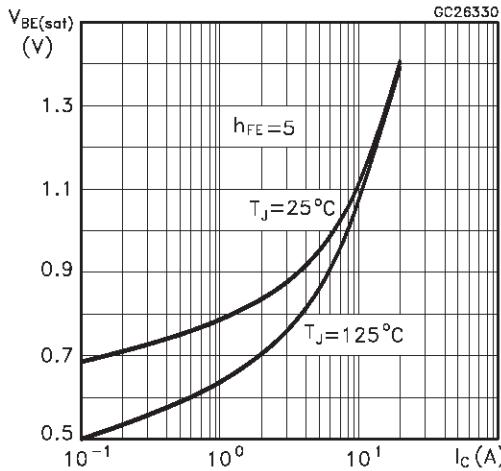
DC Current Gain



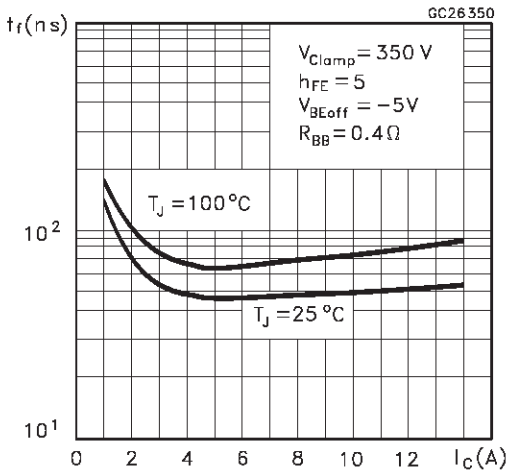
Collector Emitter Saturation Voltage



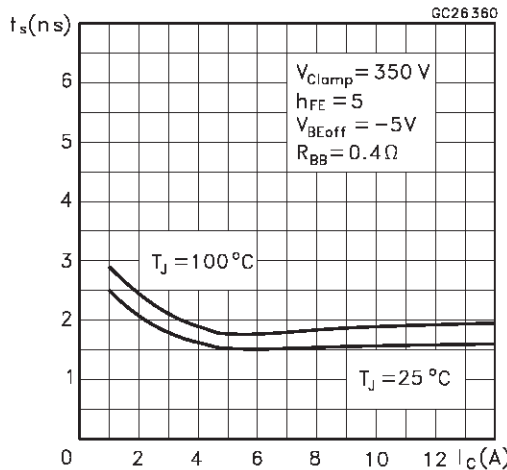
Base Emitter Saturation Voltage



Inductive Fall Time

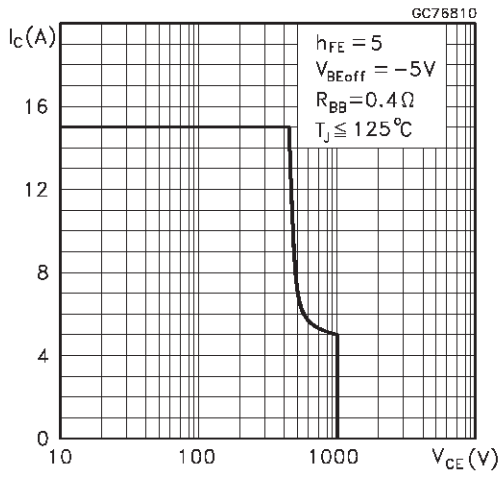


Inductive Storage Time

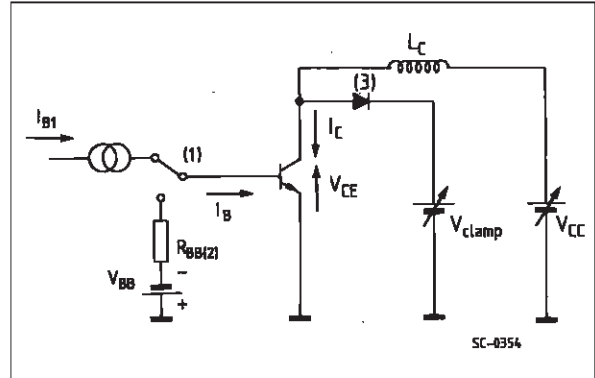


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Reverse Biased SOA



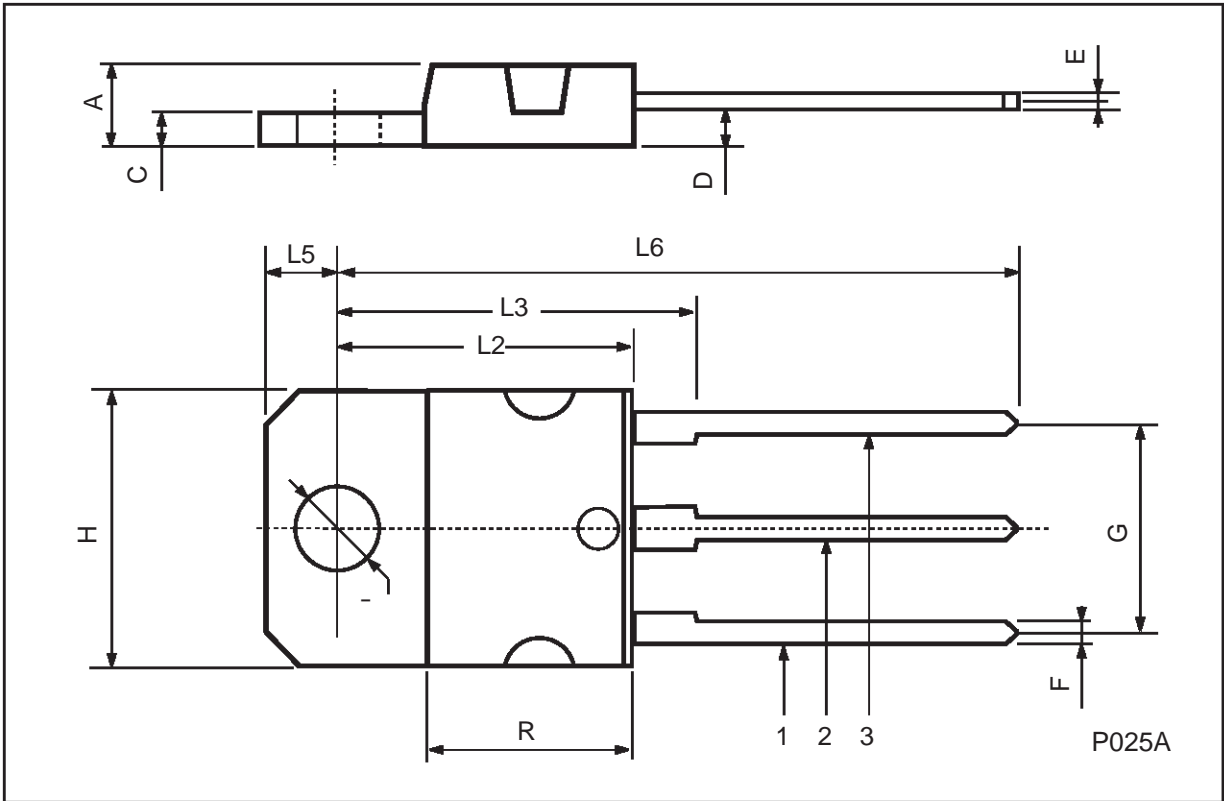
RBSOA and Inductive Load Switching Test Circuits



- (1) Fast electronic switch
- (2) Non-inductive Resistor
- (3) Fast recovery rectifier

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



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