BUL49D

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- NPN TRANSISTOR
- HIGH VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED
- HIGH RUGGEDNESS

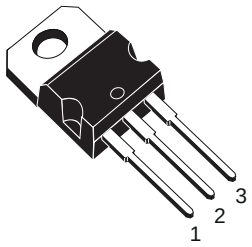
APPLICATIONS

- ELECTRONIC TRANSFORMERS FOR HALOGEN LAMPS
- FLYBACK AND FORWARD SINGLE TRANSISTOR LOW POWER CONVERTERS

DESCRIPTION

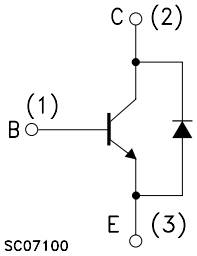
The BUL49D is manufactured using high voltage Multi Epitaxial Planar technology for high switching speeds and medium voltage capability.

The BUL49D is designed for use in electronic transformers for halogen lamps.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage (V_{BE} = 0)	850	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	450	V
V_{EBO}	Emitter-Base Voltage (I_C = 0, I_B < 2.5 A, t_p < 10µs, T_J < 150 °C)	BV_{EBO}	V
I_C	Collector Current	5	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	10	A
I_B	Base Current	2	A
I_{BM}	Base Peak Current (t_p < 5 ms)	4	A
P_{tot}	Total Dissipation at Tc = 25 °C	80	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

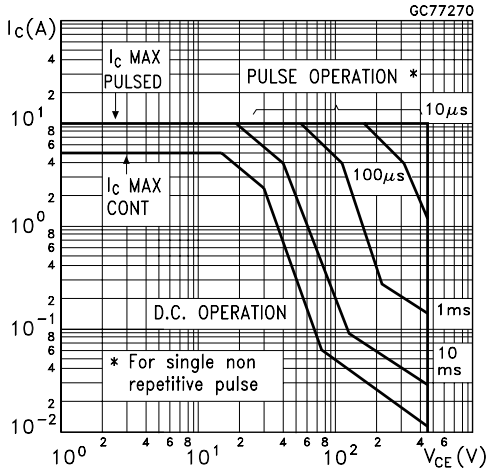
$R_{thj\text{-}case}$	Thermal Resistance Junction-Case Max	1.56	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-Ambient Max	62.5	°C/W

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

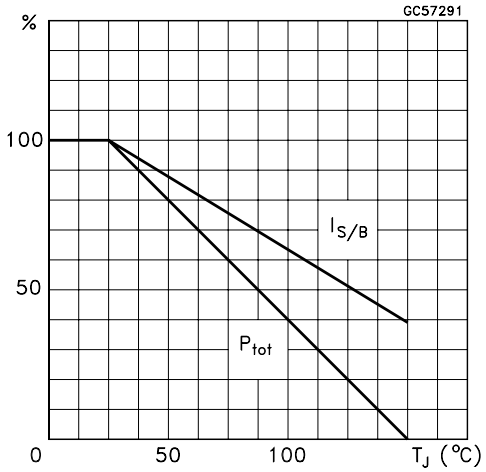
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 850 V V_{CE} = 850 V T_j = 125 °C			100 500	µA µA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 9 V			100	µA
BV_{EBO}	Emitter-Base Breakdown Voltage (I_C = 0)	I_E = 10mA	10		18	V
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 10 mA L = 25 mH	450			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 1 A I_B = 0.2 A I_C = 2 A I_B = 0.4 A I_C = 4 A I_B = 0.8 A		0.1	0.3 0.6 1.2	V V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 1 A I_B = 0.2 A I_C = 4 A I_B = 0.8 A			1.0 1.3	V V
h_{FE}*	DC Current Gain	I_C = 10 mA V_{CE} = 5 V I_C = 0.5 A V_{CE} = 5 V I_C = 7 A V_{CE} = 10 V	10 4		 60 10	
V_{CEW}	Maximum Collector Emitter Voltage Without Snubber	I_C = 8 A R_{BB} = 0 Ω V_{BB} = -2.5 V L = 50µH t_p = 10 µs	450			V
t_s t_f	RESISTIVE LOAD Storage Time Fall Time	I_C = 2 A V_{CC} = 250 V $I_{B(on)}$ = $I_{B(off)}$ = 0.4 A	 2		 3 0.8	 µs µs
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 4 A $I_{B(on)}$ = 0.8 A $V_{BE(off)}$ = -5 V R_{BB} = 0 Ω V_{CL} = 300 V L = 1 mH		 0.6 50	 1.3 100	 µs ns
V_f	Diode Forward Voltage	I_C = 3 A			1.5	V

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

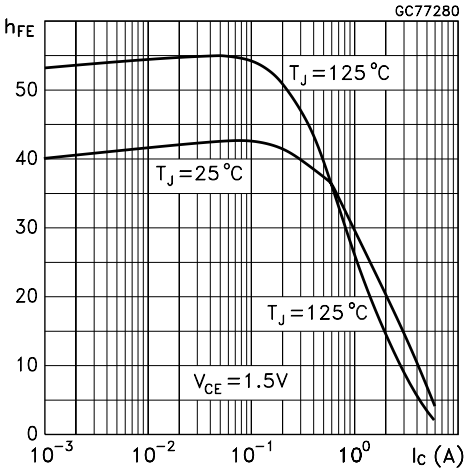
Safe Operating Areas



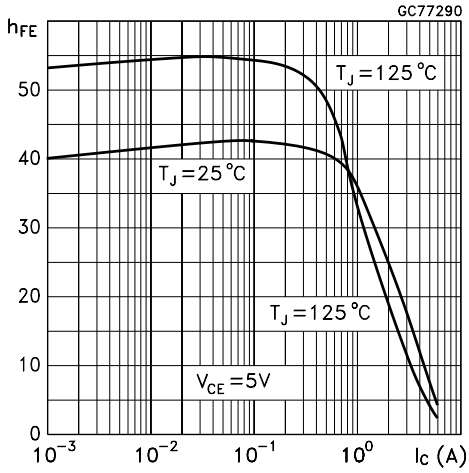
Derating Curve



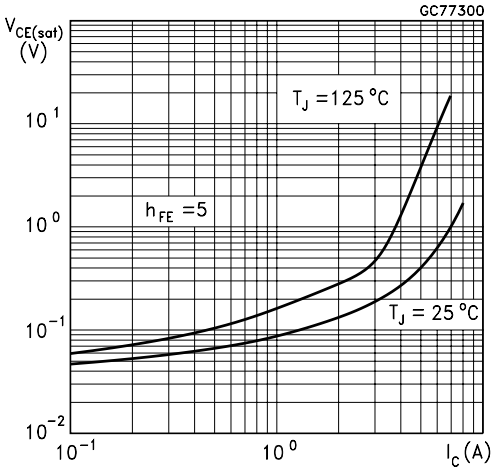
DC Current Gain



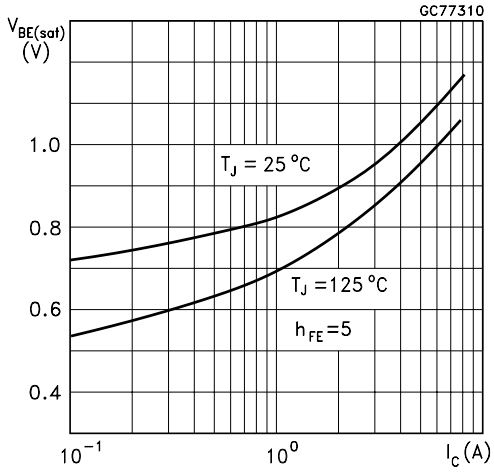
DC Current Gain



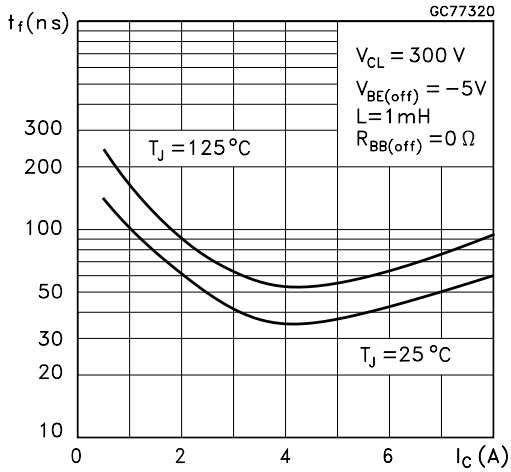
Collector Emitter Saturation Voltage



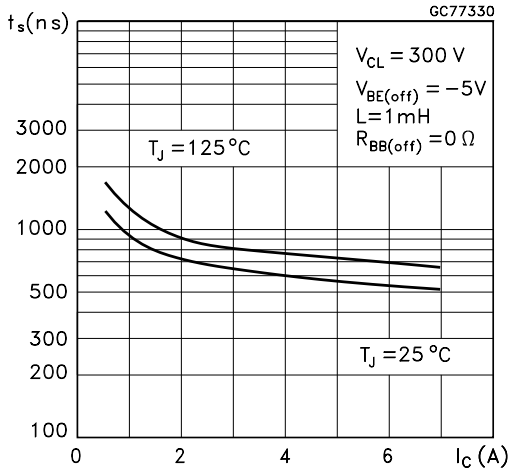
Base Emitter Saturation Voltage



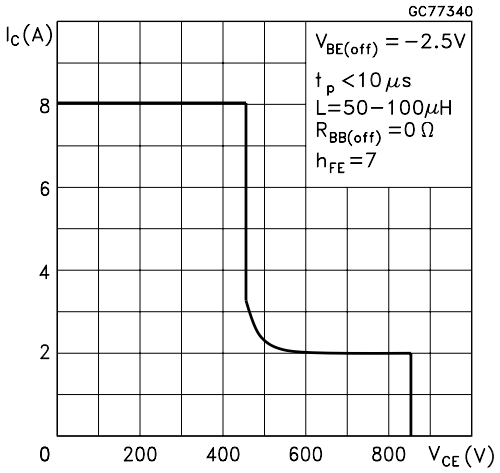
Inductive Fall Time



Inductive Storage Time

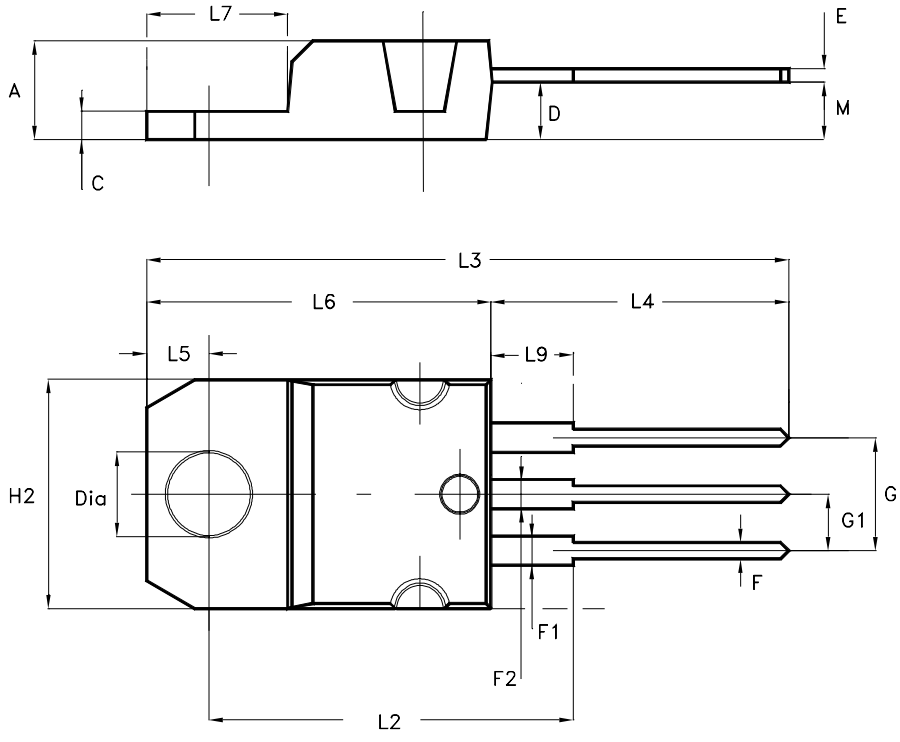


Reverse Biased SOA



TO-220 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.052
D	2.40		2.72	0.094		0.107
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.202
G1	2.40		2.70	0.094		0.106
H2	10.00		10.40	0.394		0.409
L2		16.40			0.645	
L4	13.00		14.00	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.20		6.60	0.244		0.260
L9	3.50		3.93	0.137		0.154
M		2.60			0.102	
DIA.	3.75		3.85	0.147		0.151



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