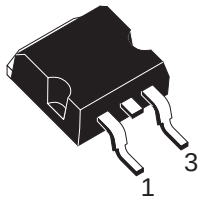
BULB49D

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

Ordering Code	Marking	Package / Shipment
BULB49DT4	BULB49D	D^2PAK / Tape & Reel

- HIGH VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED
- HIGH RUGGEDNESS
- SURFACE MOUNTING TO-263 (D^2PAK) POWER PACKAGE IN TAPE & REEL (SUFFIX “T4”)



TO-263
D^2PAK
(Suffix ”T4”)

APPLICATIONS:

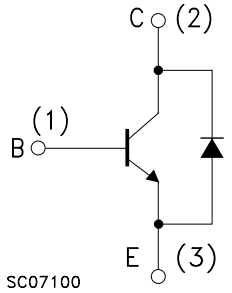
- ELECTRONIC TRANSFORMERS FOR HALOGEN LAMPS
- FLYBACK AND FORWARD SINGLE TRANSISTOR LOW POWER CONVERTERS

DESCRIPTION

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

The BULB49D is designed for use in electronic transformers for halogen lamps.

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 A, t_p < 10 ms)	$V_{(BR)EBO}$	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 T_c = 25 °C	80	W
T_{stg}	Storage Temperature	–65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

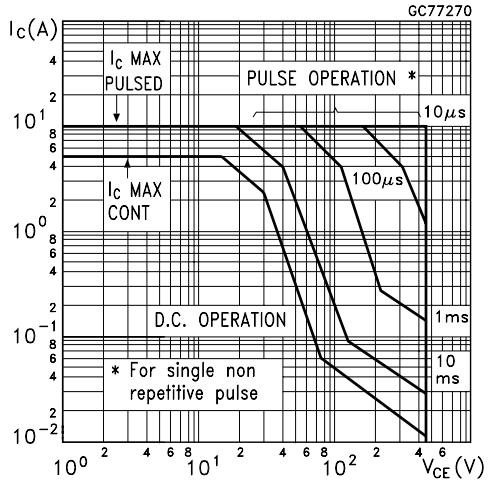
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.56	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	62.5	°C/W

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

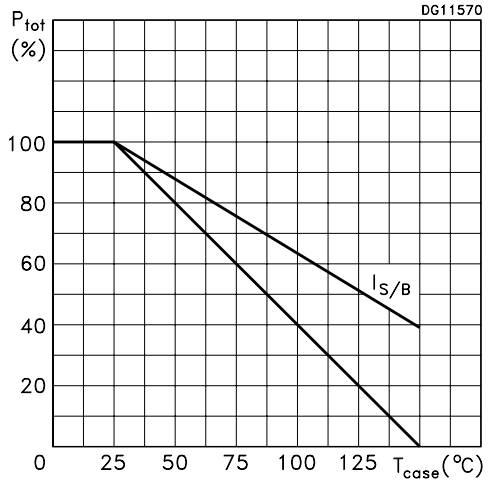
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 850 V V_{CE} = 850 V	 T_j = 125 °C			100 500	µA µA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 9 V				100	µA
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_E = 10 mA		10		18	V
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 10 mA		450			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 1 A I_C = 2 A I_C = 4 A	I_B = 0.2 A I_B = 0.4 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_C = 4 A	I_B = 0.2 A I_B = 0.8 A			1 1.3	V V
h_{FE}*	DC Current Gain	I_C = 10 mA I_C = 500 mA I_C = 7 A	V_{CE} = 5 V V_{CE} = 5 V V_{CE} = 10 V	10 4		 60 10	
V_{CEW}*	Maximum Collector-Emitter Voltage Whithout Snubber	I_C = 8 A L = 50 µH t_p = 10 µs	V_{BB} = -2.5 V R_{BB} = 0	450			V
t_s t_f	RESISTIVE LOAD Storage Time Fall Time	I_C = 2 A I_{B1} = -I_{B2} = 400 mA (See Figure 1)	V_{CC} = 250 V	2		3 0.8	µs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 4 A $I_{B(on)}$ = 800 mA $V_{BE(off)}$ = -5 V (See Figure 2)	V_{CL} = 300 V $R_{BB(off)}$ = 0 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 %.

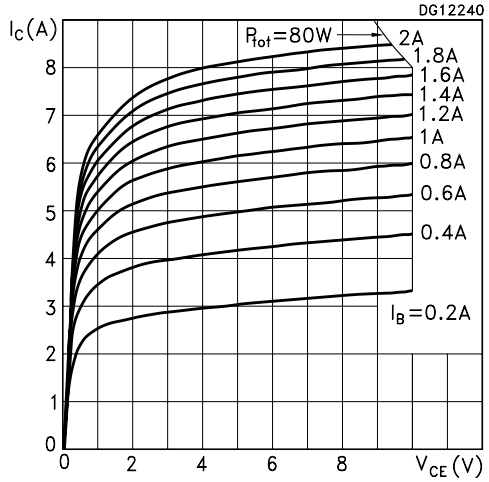
Safe Operating Area



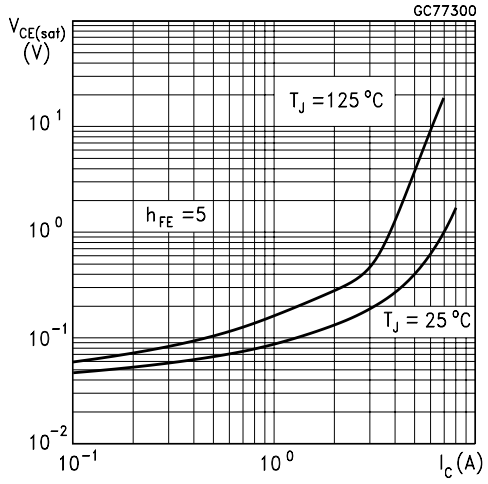
Derating Curve



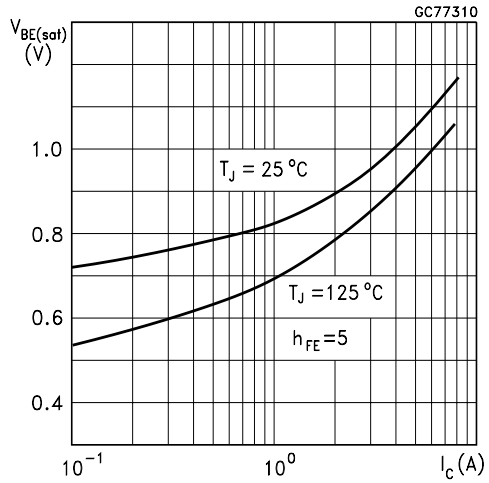
Output Characteristics



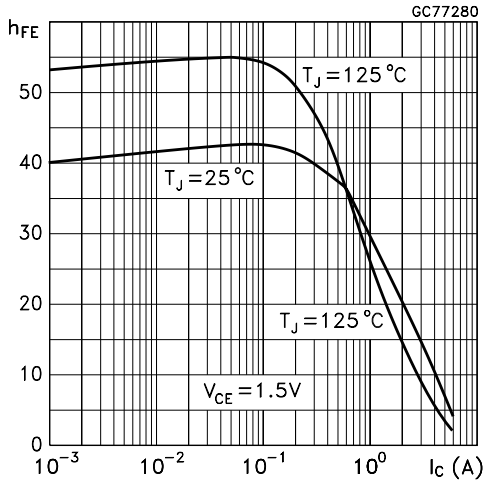
Collector-Emitter Saturation Voltage



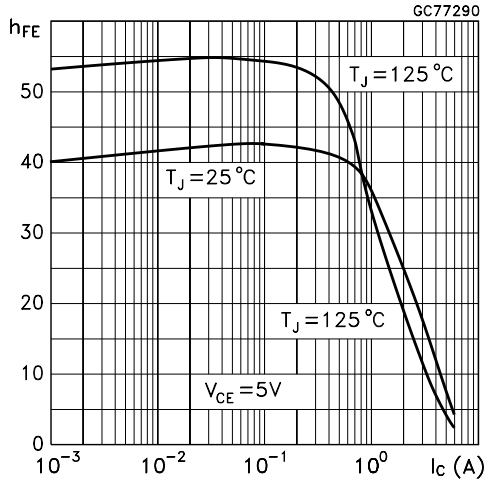
Base-Emitter Saturation Voltage



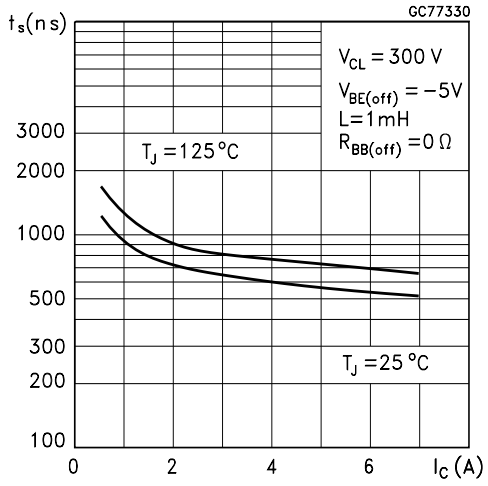
DC Current Gain



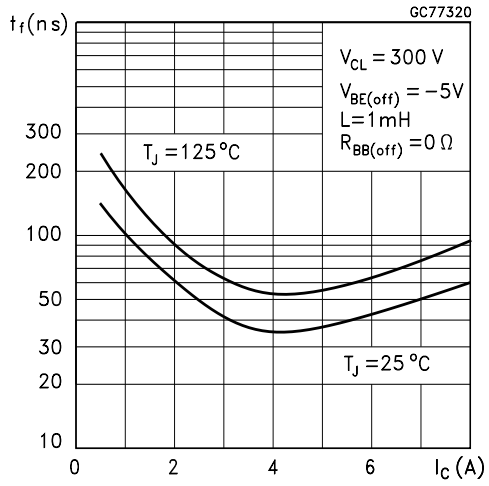
DC Current Gain



Inductive Load Storage Time



Inductive Load Fall Time



Reverse Biased Safe Operating Area

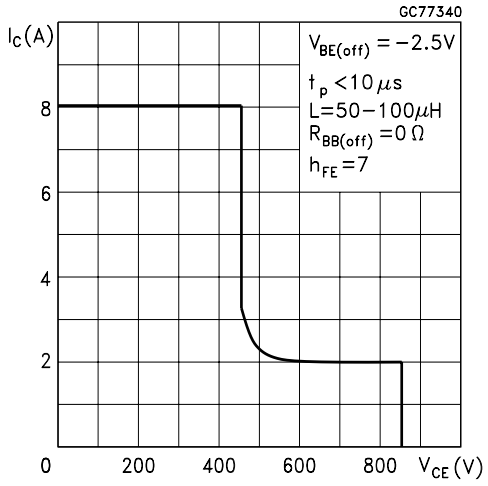


Figure 1: Resistive Load Switching Test Circuit

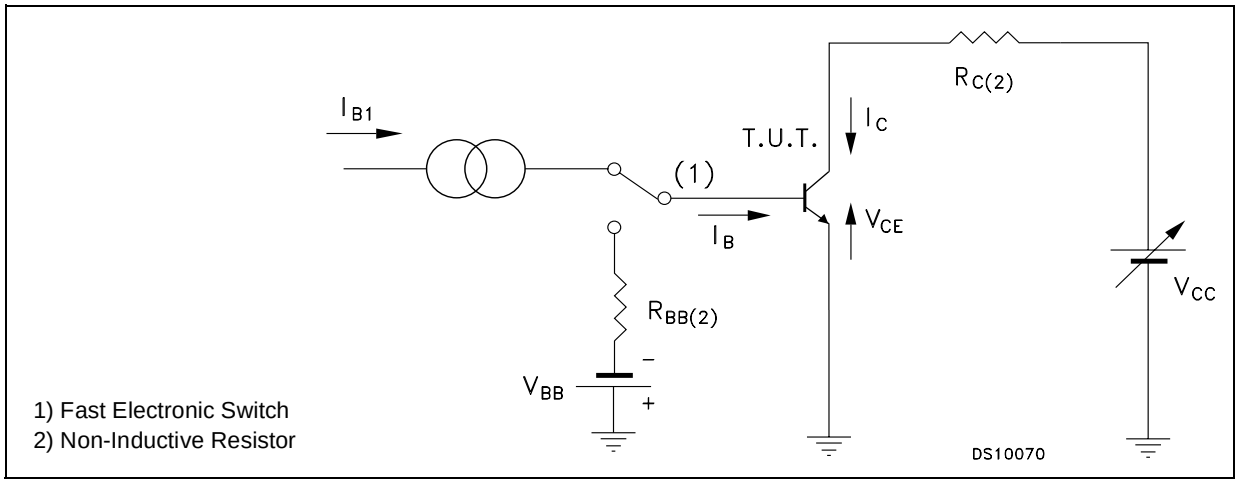
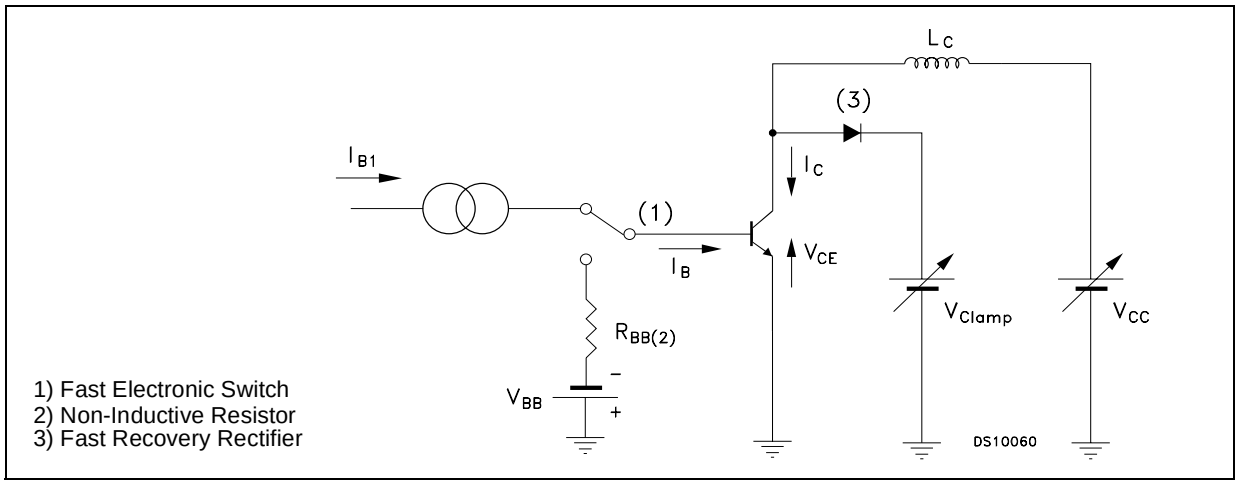
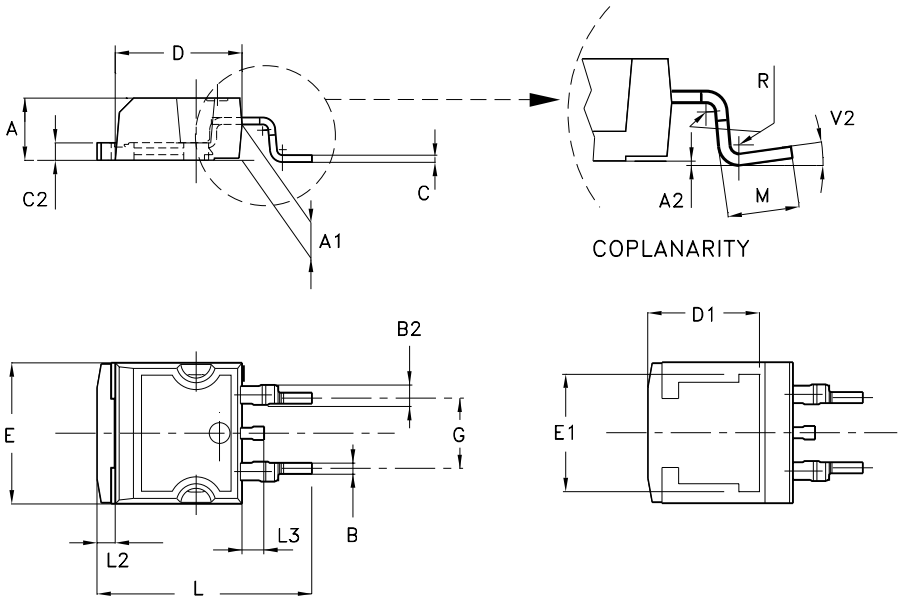


Figure 2: Inductive Load Switching Test Circuit



TO-263 (D^2PAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.036
B2	1.14		1.70	0.044		0.067
C	0.45		0.60	0.017		0.023
C2	1.23		1.36	0.048		0.053
D	8.95		9.35	0.352		0.368
D1		8.00			0.315	
E	10.00		10.40	0.393		0.409
E1		8.50			0.334	
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.4	0.050		0.055
L3	1.40		1.75	0.055		0.068
M	2.40		3.2	0.094		0.126
R		0.40			0.016	
V2	0^o		8^o	0^o		8^o



- Weight : 1.38 g (typ.)
- The planaty of the slug must be within 30 μm

P011P6/G