



BUL742C

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

Ordering Code	Marking	Package / Shipment
BUL742C	BUL742C	TO-220 / Tube

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

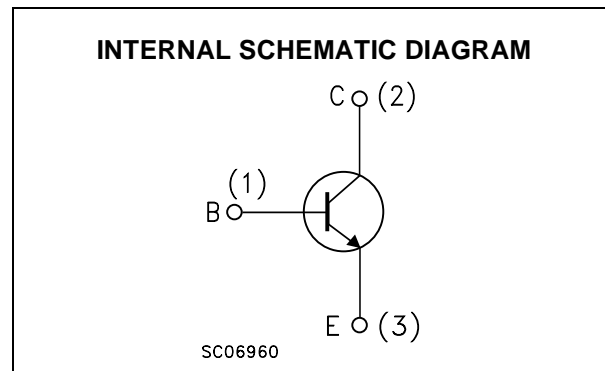
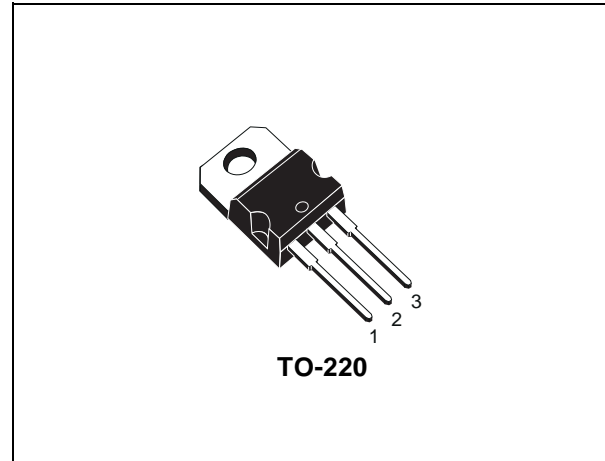
APPLICATIONS:

- ELECTRONIC BALLAST FOR FLUORESCENT LIGHTING
- SWITCH MODE POWER SUPPLIES

DESCRIPTION

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

Thanks to an increased intermediate layer, it has an intrinsic ruggedness which enables the transistor to withstand an high collector current level during breakdown condition, without using the transient protection usually necessary in typical converters for lamp ballast.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	1050	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	400	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0, I_B < 2 \text{ A}, t_p < 10 \text{ ms}$)	$V_{(BR)EBO}$	V
I_C	Collector Current	4	A
I_{CM}	Collector Peak Current ($t_p < 5 \text{ ms}$)	8	A
I_B	Base Current	2	A
I_{BM}	Base Peak Current ($t_p < 5 \text{ ms}$)	4	A
P_{tot}	Total Dissipation at $T_C = 25 \text{ }^\circ\text{C}$	70	W
T_{stg}	Storage Temperature	-65 to 150	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150	$^\circ\text{C}$

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THERMAL DATA

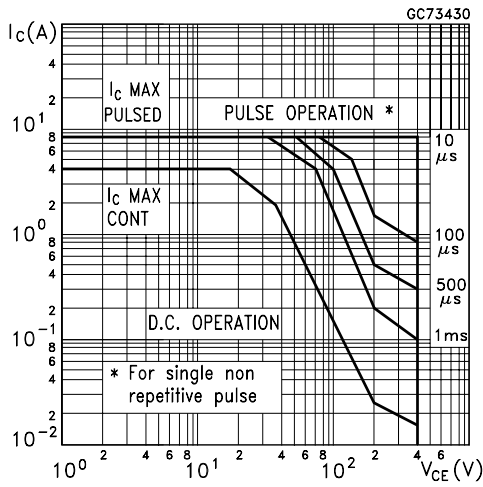
$R_{thj-case}$	Thermal Resistance Junction-case	Max	1.79	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	62.5	°C/W

ELECTRICAL CHARACTERISTICS ($T_j = 25\text{ °C}$ unless otherwise specified)

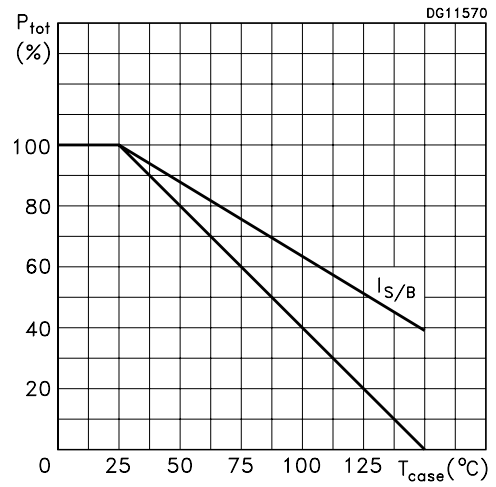
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = 1050\text{ V}$				100	μA
I_{CEO}	Collector Cut-off Current ($I_B = 0$)	$V_{CE} = 400\text{ V}$				250	μA
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_E = 1\text{ mA}$		12		24	V
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 10\text{ mA}$		400			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 1\text{ A}$ $I_C = 3.5\text{ A}$	$I_B = 0.2\text{ A}$ $I_B = 1\text{ A}$			0.5 1.5	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 3.5\text{ A}$	$I_B = 1\text{ A}$			1.5	V
h_{FE}^*	DC Current Gain	$I_C = 0.1\text{ A}$ $I_C = 0.8\text{ A}$	$V_{CE} = 5\text{ V}$ $V_{CE} = 3\text{ V}$	48 25		100 50	
t_s t_f	RESISTIVE LOAD Storage Time Fall Time	$I_C = 2\text{ A}$ $I_{B1} = -I_{B2} = 400\text{ mA}$ $V_{BB(off)} = -5\text{ V}$	$V_{CC} = 125\text{ V}$ $t_p = 300\text{ }\mu\text{s}$ (See Figure 1)		2.4 350		μs ns
E_{ar}	Repetitive Avalanche Energy	$L = 2\text{ mH}$ $V_{BE} = -5\text{ V}$	$C = 1.8\text{ nF}$ (See Figure 2)	6			mJ

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

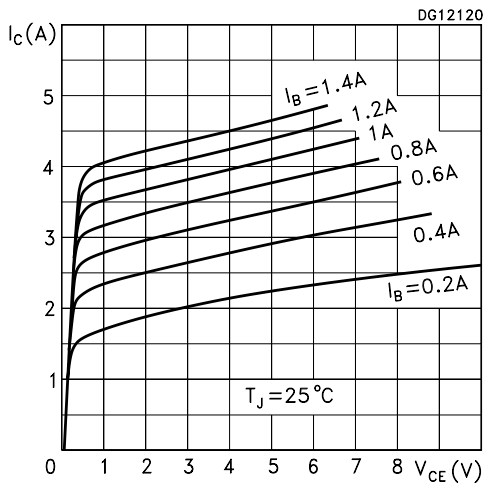
Safe Operating Area



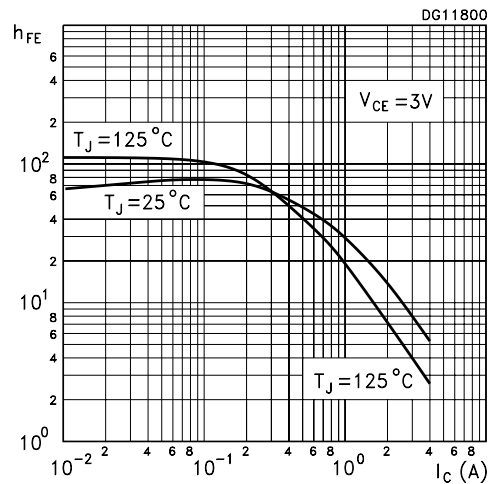
Derating Curve



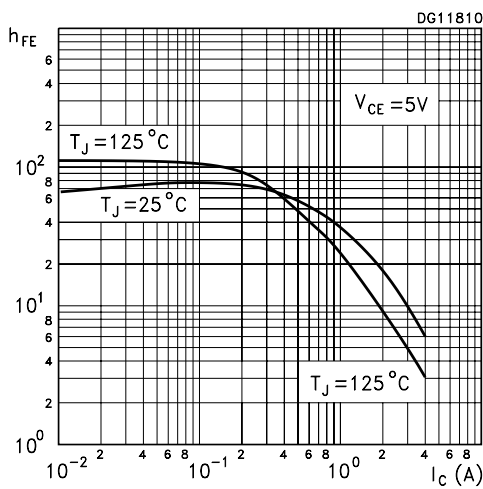
Output Characteristics



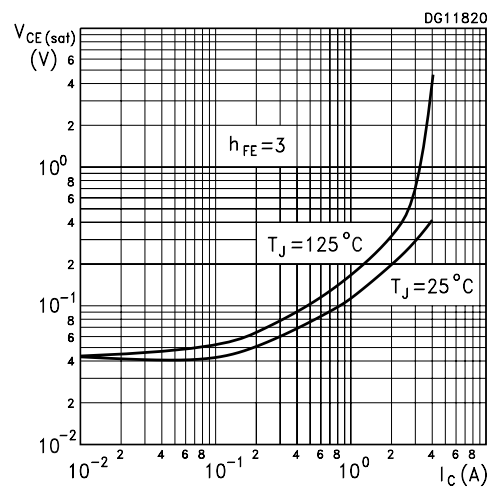
DC Current Gain



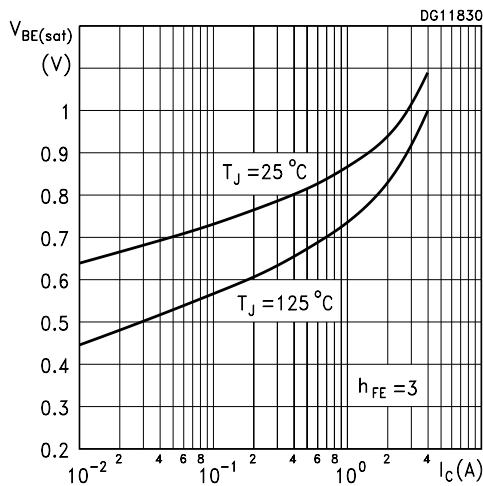
DC Current Gain



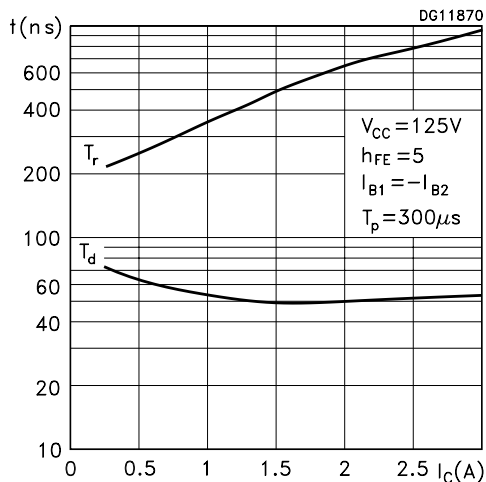
Collector-Emitter Saturation Voltage



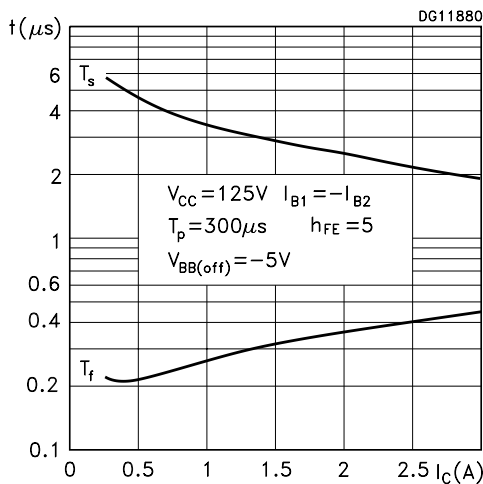
Base-Emitter Saturation Voltage



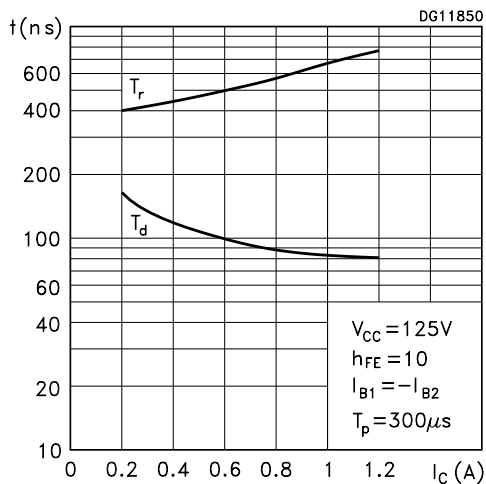
Resistive Load Switching On Times



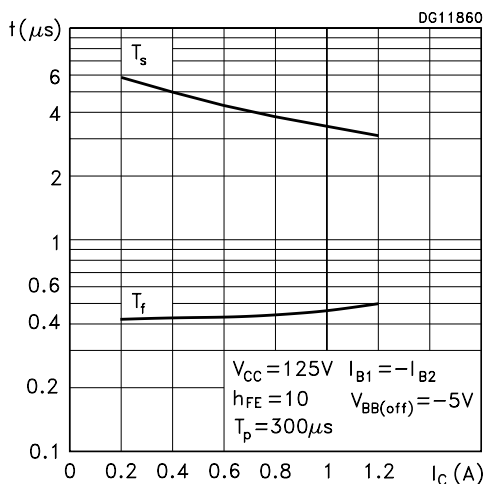
Resistive Load Switching Off Times



Resistive Load Switching On Times



Resistive Load Switching Off Times



Reverse Biased Safe Operating Area

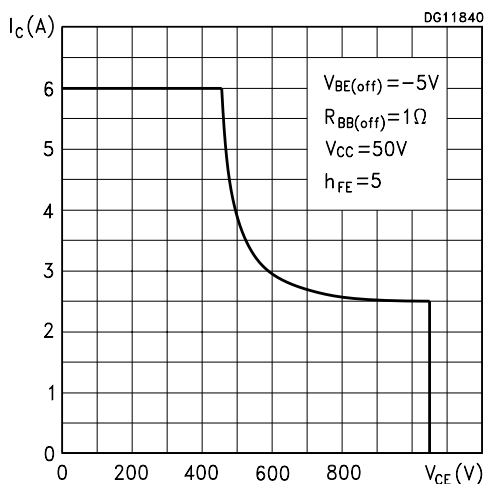


Figure 1: Resistive Load Switching Test Circuit

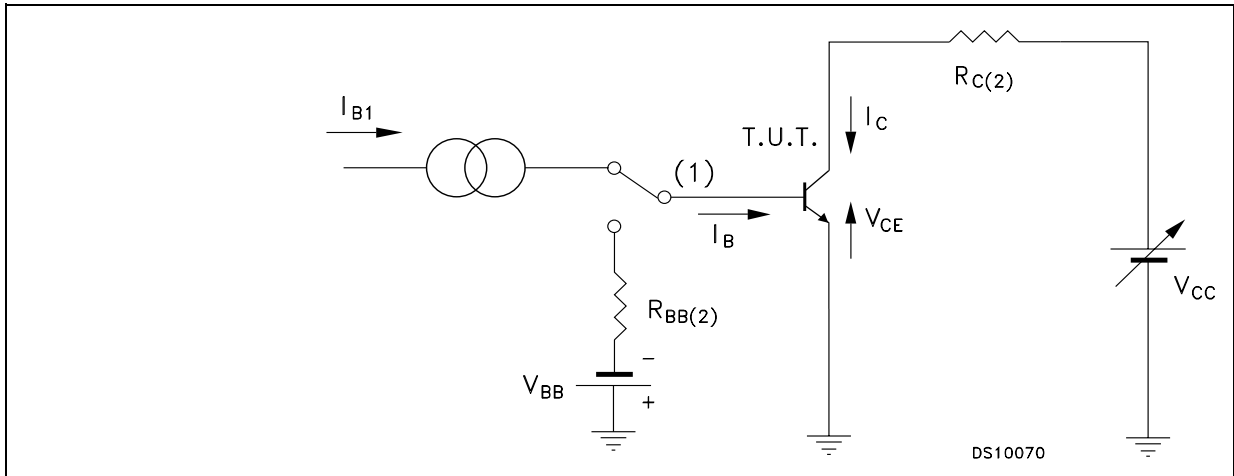
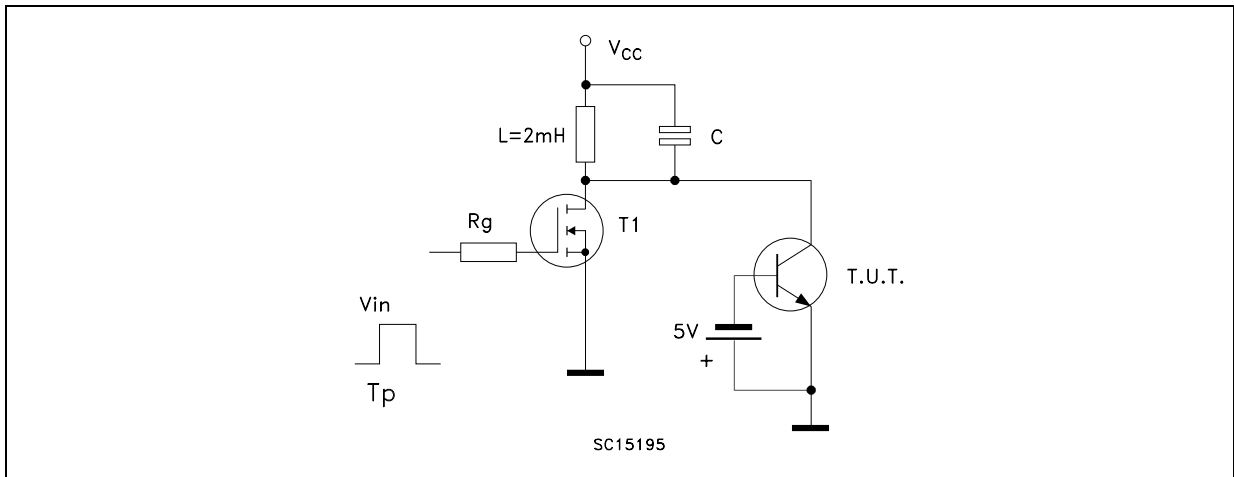
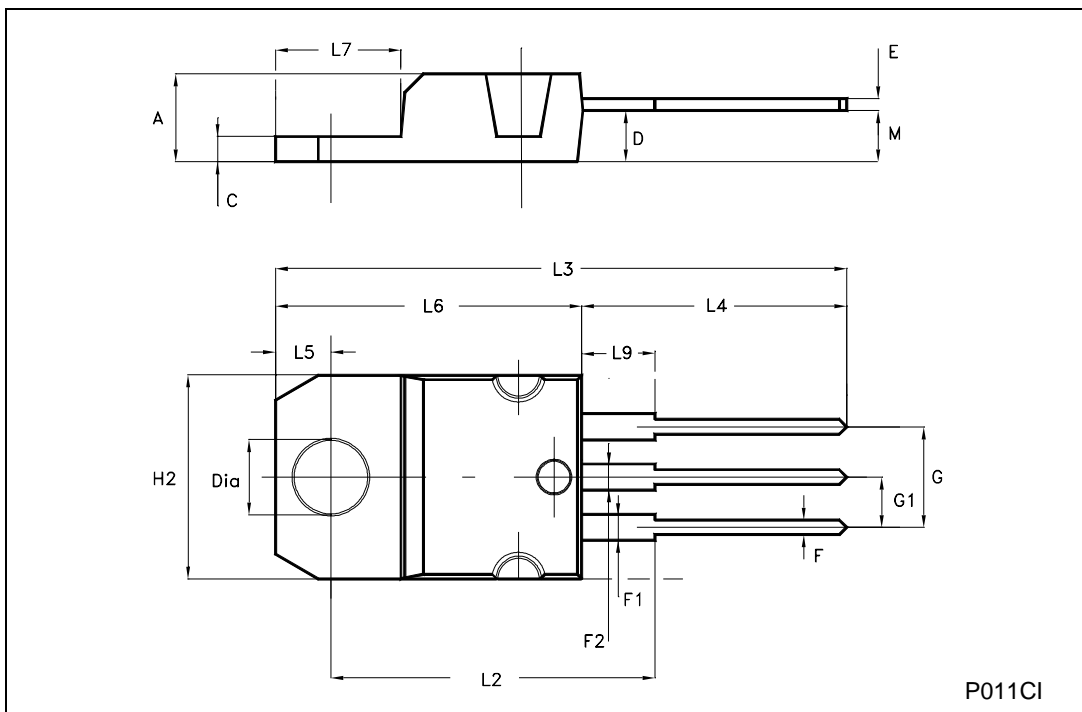


Figure 2: Energy Rating Test Circuit



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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