

BUL118D

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

APPLICATIONS:

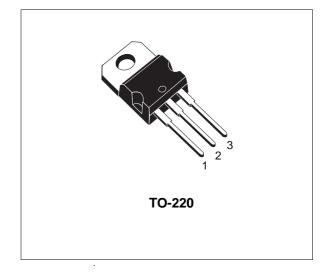
 ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING

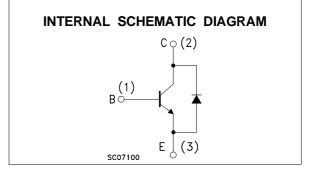
DESCRIPTION

The device is manufactured using high voltage Multi Epitaxial Planar technology for high switching speeds and medium voltage capability. It uses a Cellular Emitter structure with planar

edge termination to enhance switching speeds while maintaining the wide RBSOA.

The device 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 ($V_{BE} = 0$)	700	V
V _{CEO}	Collector-Emitter Voltage $(I_B = 0)$	400	V
V _{EBO}	Emitter-Base Voltage (I _C = 0)	9	V
lc	Collector Current	3	Α
I _{СМ}	Collector Peak Current (t _p < 5 ms)	6	А
Ι _Β	Base Current	1.5	A
I _{BM}	Base Peak Current (t _p < 5 ms)	3	А
P _{tot}	Total Dissipation at $T_c = 25$ °C	60	W
T _{stg}	Storage Temperature	-65 to 150	°C
Tj	Max. Operating Junction Temperature	150	°C

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-Case	Max	2.08	°C/W
R _{thj-amb}	Thermal Resistance Junction-Ambient	Max	62.5	°C/W

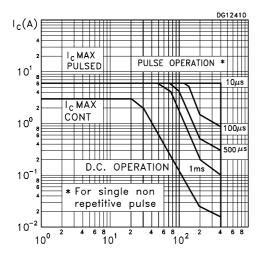
ELECTRICAL CHARACTERISTICS ($T_{case} = 25 \ ^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Co	Min.	Тур.	Max.	Unit	
ICES	Collector Cut-off Current ($V_{BE} = 0$)	V _{CE} = 700 V V _{CE} = 700 V	T _C = 125 °C			100 500	μΑ μΑ
ICEO	Collector Cut-off Current ($I_B = 0$)	V _{CE} = 400 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		400			V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	$I_{C} = 0.5 A$ $I_{C} = 1 A$ $I_{C} = 2 A$	$I_{B} = 0.1 A$ $I_{B} = 0.2 A$ $I_{B} = 0.4 A$			0.5 1 1.5	V V V
V _{BE(sat)} *	Base-Emitter Saturation Voltage	$I_{C} = 0.5 A$ $I_{C} = 1 A$ $I_{C} = 2 A$	$I_{B} = 0.1 A$ $I_{B} = 0.2 A$ $I_{B} = 0.4 A$			1 1.2 1.3	V V V
h _{FE} *	DC Current Gain	$I_{C} = 10 \text{ mA}$ $I_{C} = 0.5 \text{ A}$ $I_{C} = 2 \text{ A}$	V _{CE} = 5 V V _{CE} = 5 V V _{CE} = 5 V	10 10 8		50	
t _r t _s t _f	RESISTIVE LOAD Rise Time Storage Time Fall Time	$V_{CC} = 125 V$ $I_{B1} = 0.2 A$ $t_p = 20 \ \mu s$	$I_C = 1 A$ $I_{B2} = -0.2 A$ (see figure 2)		0.4 3.2 0.25	0.7 4.5 0.4	μs μs μs
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	$I_{C} = 1 A$ $V_{BE(off)} = -5 V$ $V_{clamp} = 300 V$ (see figure 1)	I _{B1} = 0.2 A L = 50 mH R _{BB} = 0 Ω		0.8 0.16		μs μs
V _f	Diode Forward Voltage	I _F = 1 A				2.5	V

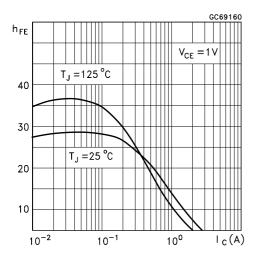
* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

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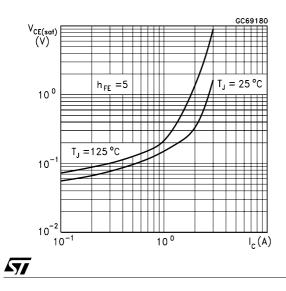
Safe Operating Area



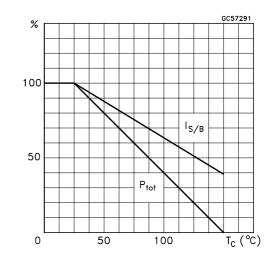
DC Current Gain



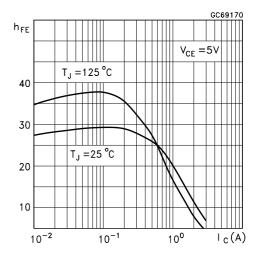
Collector Emitter Saturation Voltage



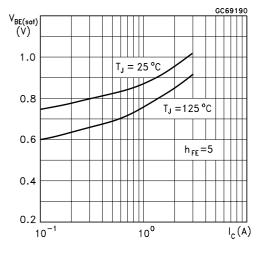
Derating Curve



DC Current Gain

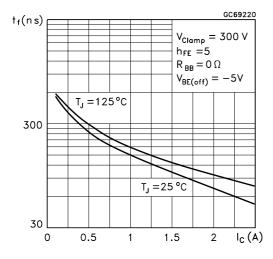




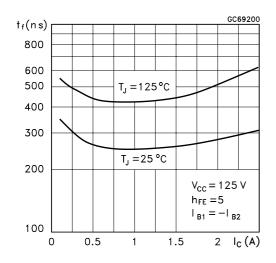


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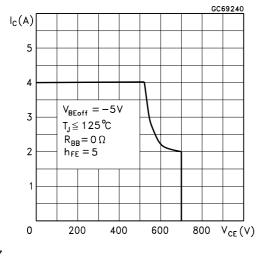
Inductive Load Fall Time



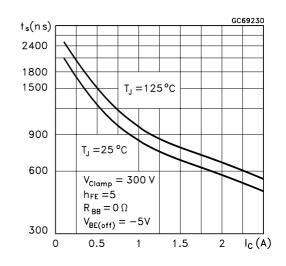
Resistive Load Fall Time

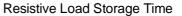


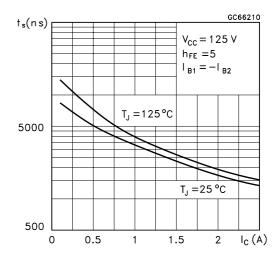




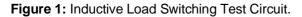
Inductive Load Storage Time







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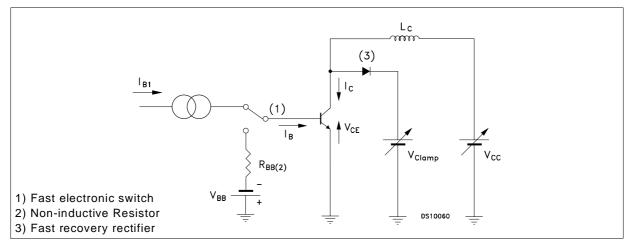
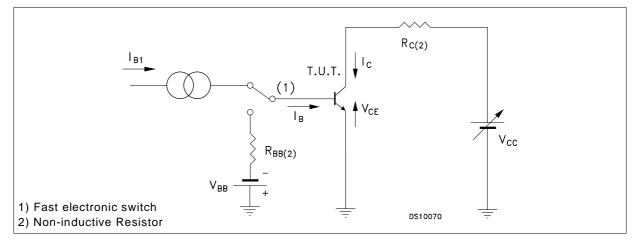
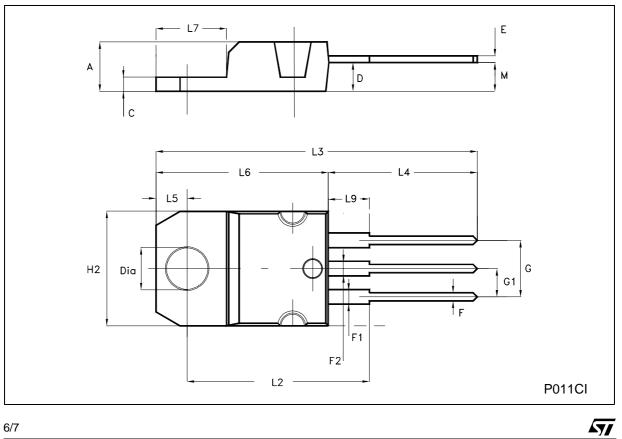


Figure 2: Resistive Load Switching Test Circuit.



DIM.		mm		inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
А	4.40		4.60	0.173		0.181	
С	1.23		1.32	0.048		0.052	
D	2.40		2.72	0.094		0.107	
Е	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	
М		2.60			0.102		

TO-220 MECHANICAL DATA



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