



STBV42

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

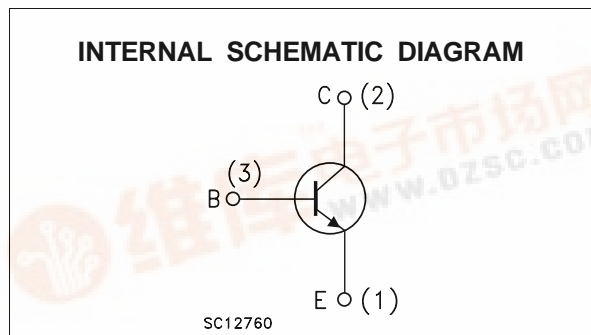
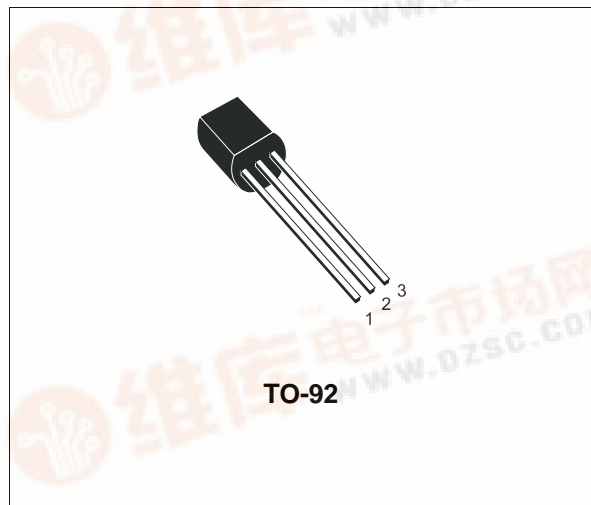
- MEDIUM VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED

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 STBV42 is designed for use in compact fluorescent lamp application.



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
I_C	Collector Current	1	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	2	A
I_B	Base Current	0.5	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	1	A
P_{tot}	Total Dissipation at $T_{amb} = 25$ °C	1	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

STBV42

THERMAL DATA

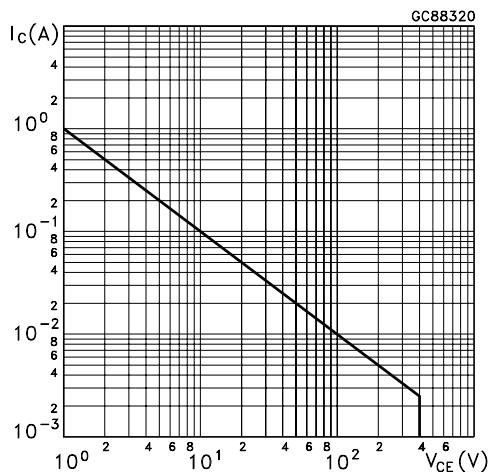
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	120	°C/W
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ °C}$ unless otherwise specified)

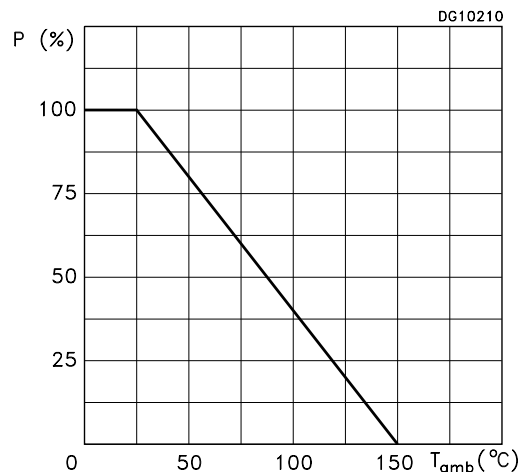
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5V$)	$V_{CE} = 700\text{ V}$ $V_{CE} = 700\text{ V}$ $T_j = 125^\circ$			1 5	mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 9\text{ V}$			1	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 1\text{ mA}$ $L = 25mH$	400			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 0.25\text{ A}$ $I_B = 0.05\text{ A}$ $I_C = 0.5\text{ A}$ $I_B = 0.125\text{ A}$ $I_C = 0.75\text{ A}$ $I_B = 0.25\text{ A}$		0.2 0.3 0.4	0.5 1 1.5	V V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 0.25\text{ A}$ $I_B = 0.05\text{ A}$ $I_C = 0.5\text{ A}$ $I_B = 0.125\text{ A}$			1 1.2	V V
h_{FE}^*	DC Current Gain	$I_C = 0.4\text{ A}$ $V_{CE} = 5\text{ V}$ $I_C = 0.8\text{ A}$ $V_{CE} = 5\text{ V}$	10 5		30 20	
t_f	INDUCTIVE LOAD Fall Time	$I_C = 0.25\text{ A}$ $V_{clamp} = 300\text{ V}$ $I_{B1} = -I_{B2} = 50\text{ mA}$ $L = 3\text{ mH}$		0.3		μs

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

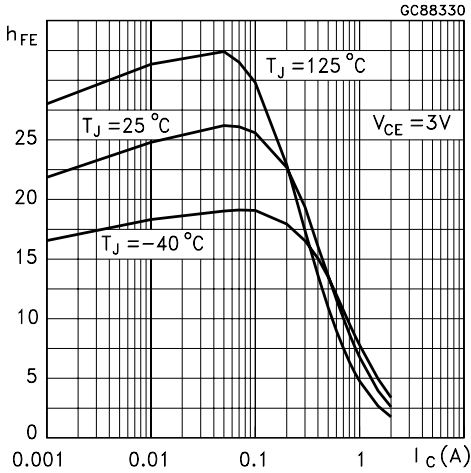
Safe Operating Area



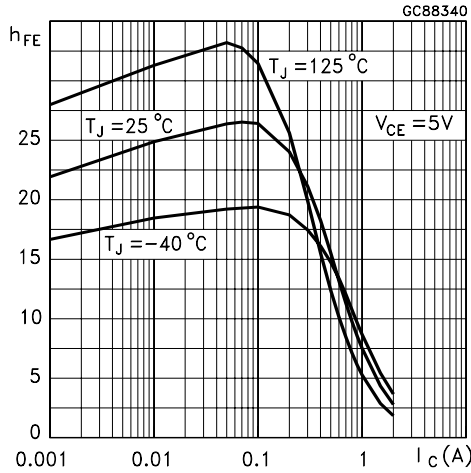
Derating Curve



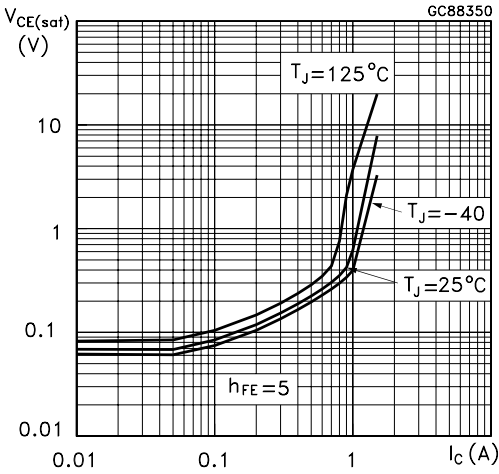
DC Current Gain



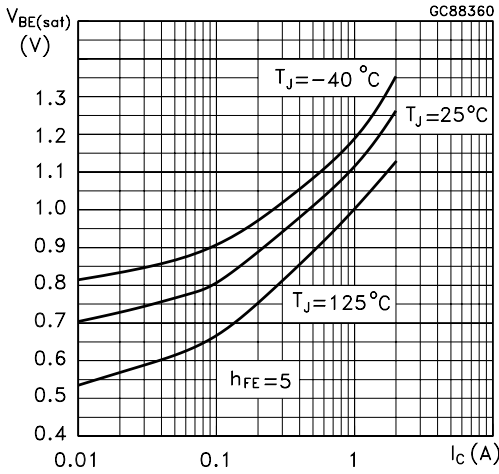
DC Current Gain



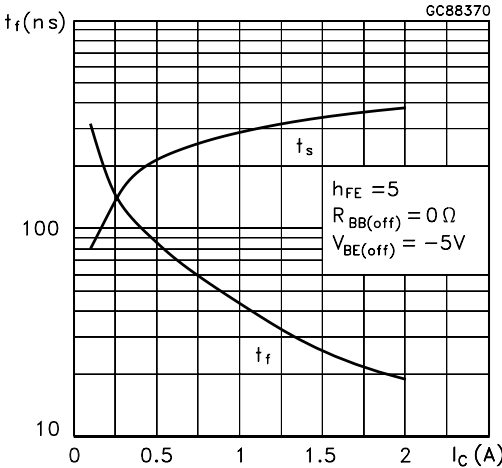
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage

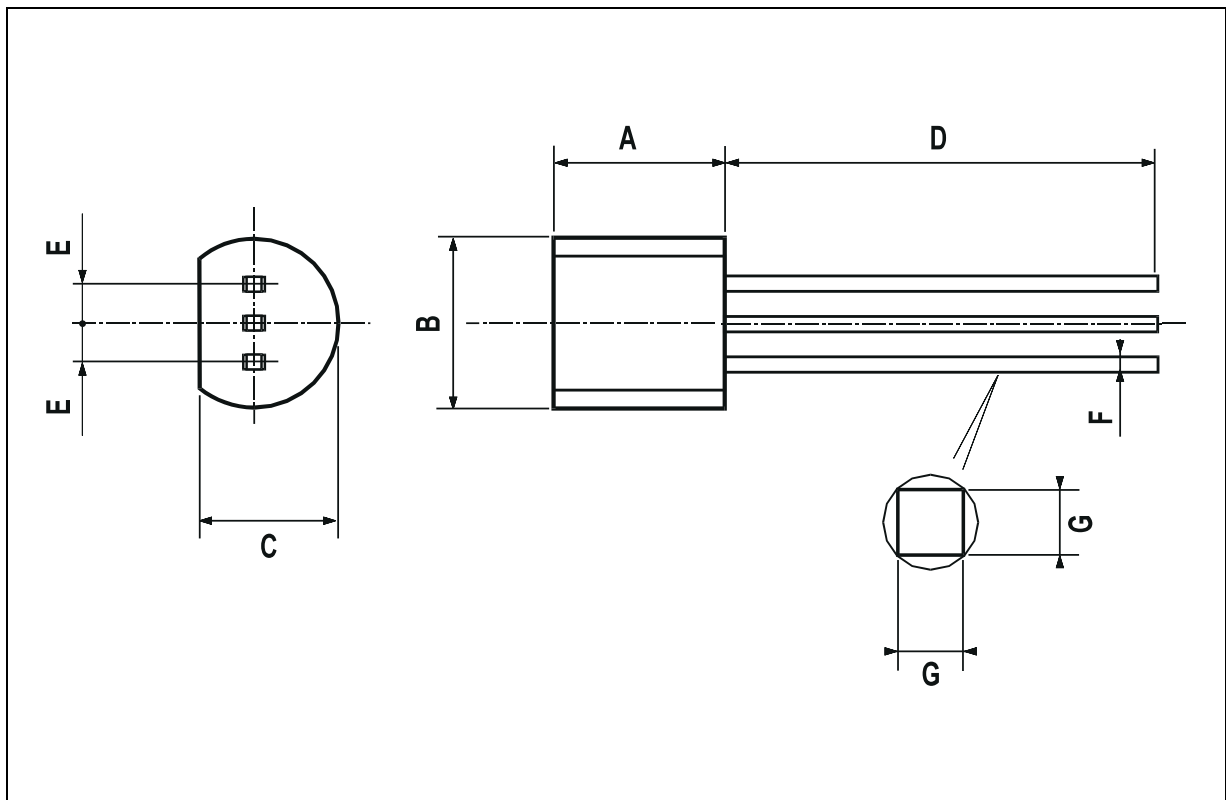


Switching Time Inductive Load



TO-92 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.58		5.33	0.180		0.210
B	4.45		5.2	0.175		0.204
C	3.2		4.2	0.126		0.165
D	12.7			0.500		
E		1.27			0.050	
F	0.4		0.51	0.016		0.020
G	0.35			0.14		



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