

**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:**

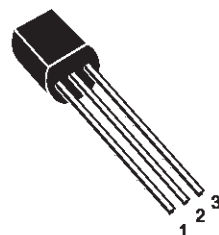
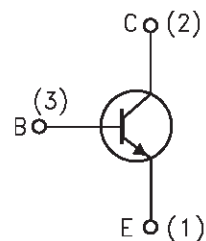
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING

**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.

**TO-92****INTERNAL SCHEMATIC DIAGRAM****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

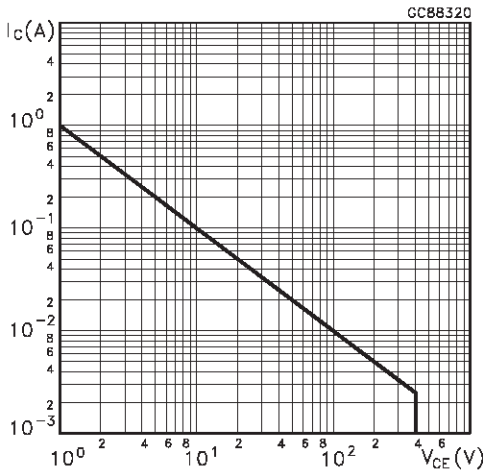
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	120	$^{\circ}\text{C}/\text{W}$
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## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

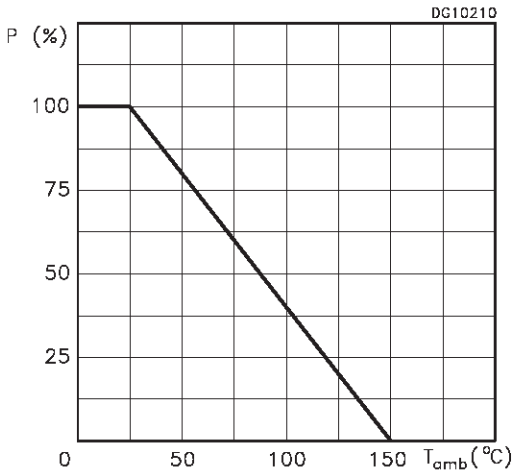
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEV}$	Collector Cut-off Current ( $V_{BE} = -1.5\text{V}$ )	$V_{CE} = 700\text{ V}$ $V_{CE} = 700\text{ V}$ $T_j = 125^{\circ}$			1 5	$\text{mA}$ $\text{mA}$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 9\text{ V}$			1	$\text{mA}$
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 1\text{ mA}$ $L = 25\text{mH}$	400			$\text{V}$
$V_{CE(sat)}^*$	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	$\text{V}$ $\text{V}$ $\text{V}$
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 0.25\text{ A}$ $I_B = 0.05\text{ A}$ $I_C = 0.5\text{ A}$ $I_B = 0.125\text{ A}$			1.0 1.2	$\text{V}$ $\text{V}$
$h_{FE}^*$	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		$\mu\text{s}$

\* Pulsed: Pulse duration = 300 $\mu\text{s}$ , duty cycle = 1.5 %

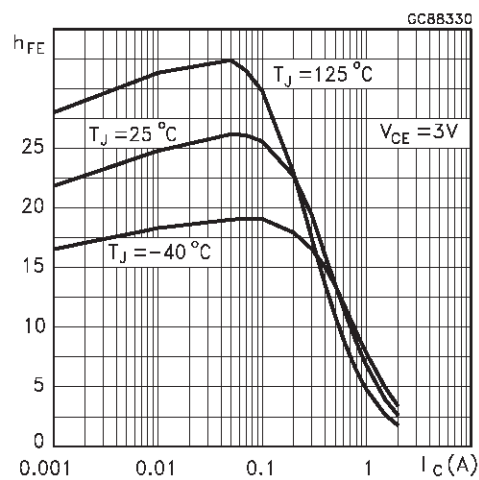
Safe Operating Area



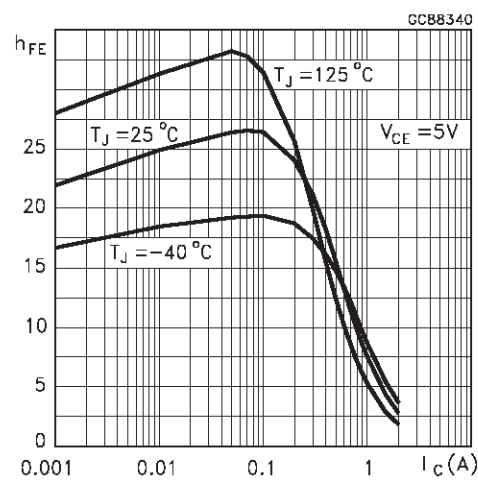
Derating Curve



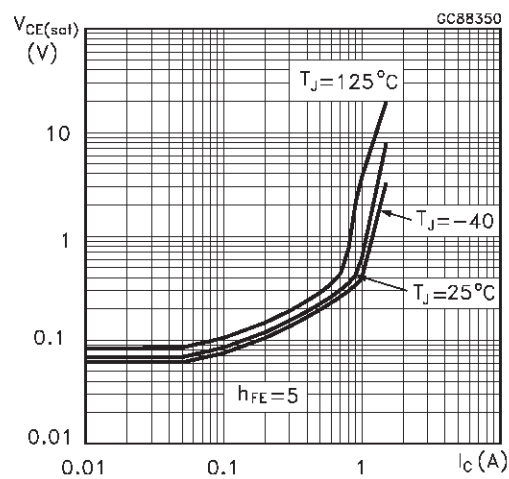
DC Current Gain



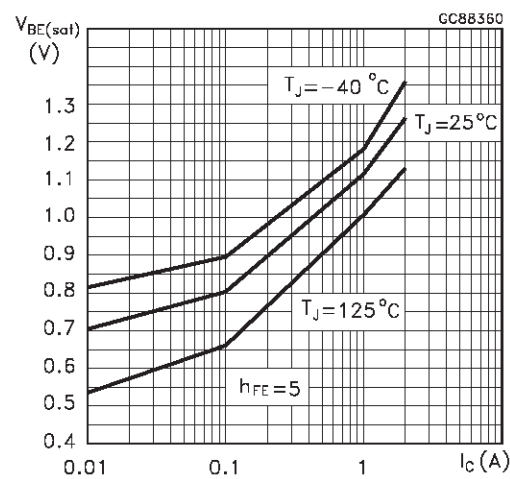
DC Current Gain



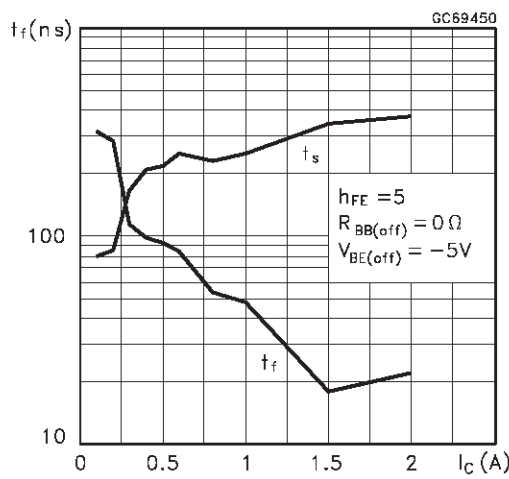
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage

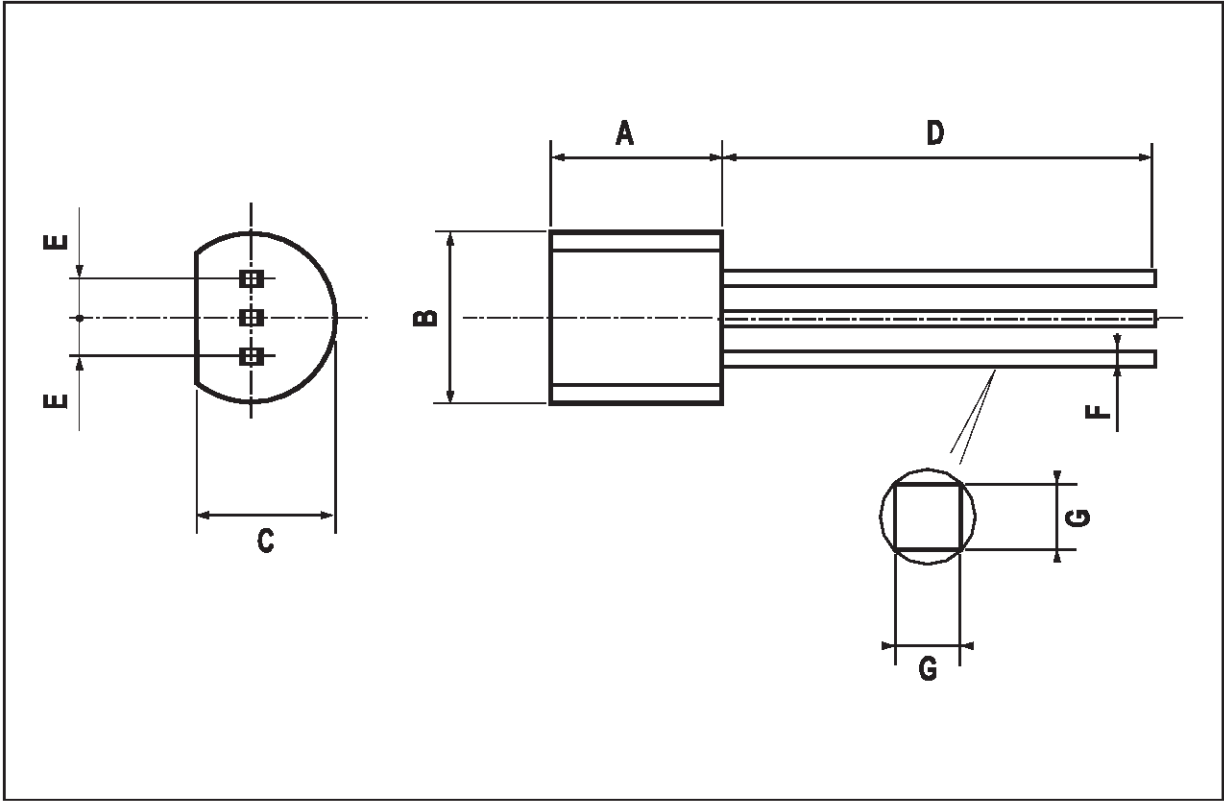


Switching Time Inductive Load



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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