



STBV45

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

Ordering Code	Marking	Package / Shipment
STBV45	BV45	TO-92 / Bulk
STBV45-AP	BV45	TO-92 / Ammopack

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

APPLICATIONS:

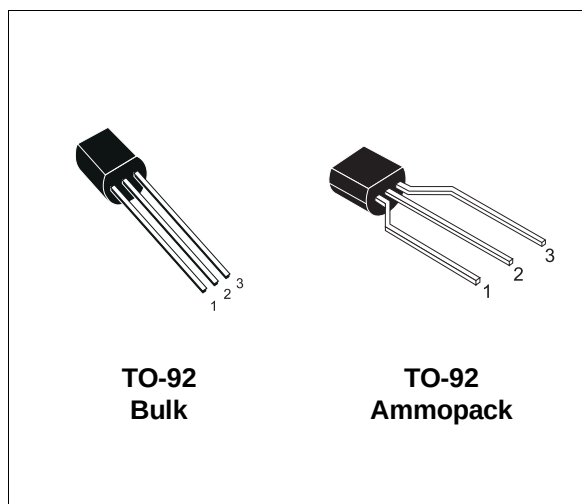
- COMPACT FLUORESCENT LAMPS (CFLS)

DESCRIPTION

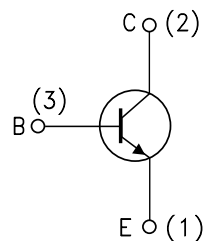
The device is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage capability.

It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining the wide RBSOA.

The STBV series is designed for use in Compact Fluorescent Lamps.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	600	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	0.75	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	1.5	A
I_B	Base Current	0.4	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	0.75	A
P_{tot}	Total Dissipation at $T_{amb} = 25$ °C	0.95	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

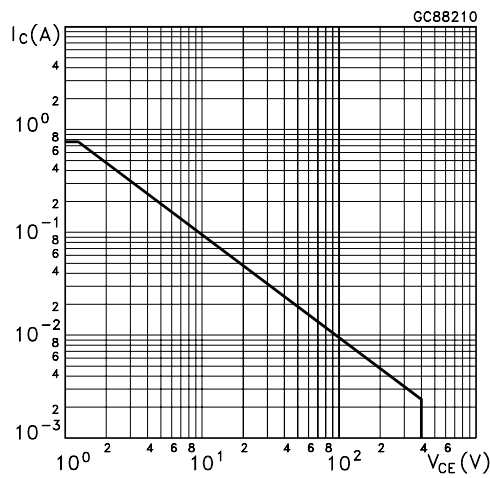
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	131.6	$^{\circ}\text{C/W}$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

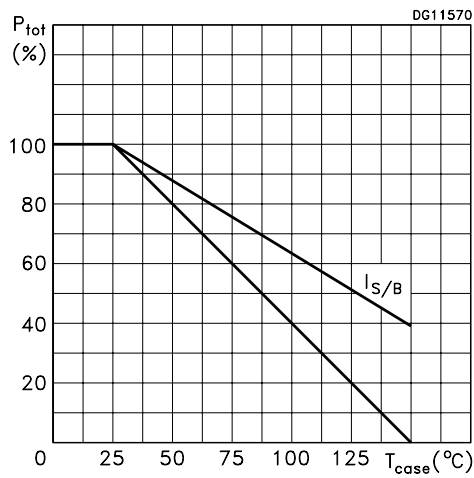
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5\text{V}$)	$V_{CE} = 600\text{ V}$				250	μA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 9\text{ V}$				1	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 1\text{ mA}$		400			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 0.2\text{ A}$	$I_B = 40\text{ mA}$		0.2	0.5	V
		$I_C = 0.3\text{ A}$	$I_B = 75\text{ mA}$		0.3	1	V
		$I_C = 0.4\text{ A}$	$I_B = 135\text{ mA}$		0.4	1.5	V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 0.2\text{ A}$	$I_B = 40\text{ mA}$			1	V
		$I_C = 0.3\text{ A}$	$I_B = 75\text{ mA}$			1.2	V
h_{FE}^*	DC Current Gain	$I_C = 0.2\text{ A}$	$V_{CE} = 5\text{ V}$	10		30	
		$I_C = 0.4\text{ A}$	$V_{CE} = 5\text{ V}$	5		20	
t_f	INDUCTIVE LOAD Fall Time	$I_C = 0.2\text{ A}$ $I_{B1} = -I_{B2} = 40\text{ mA}$ (see figure 1)	$V_{clamp} = 300\text{ V}$ $L = 3\text{ mH}$		0.3		μs

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

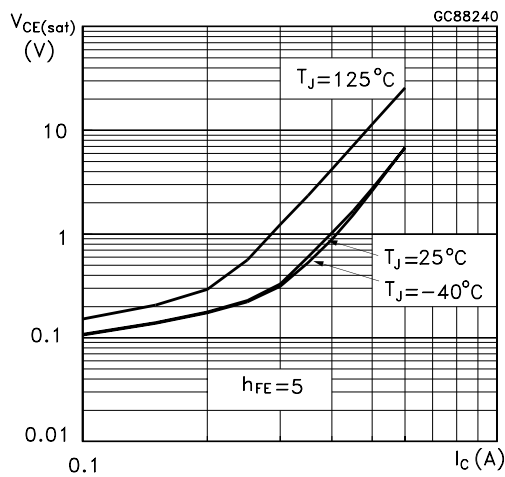
Safe Operating Area



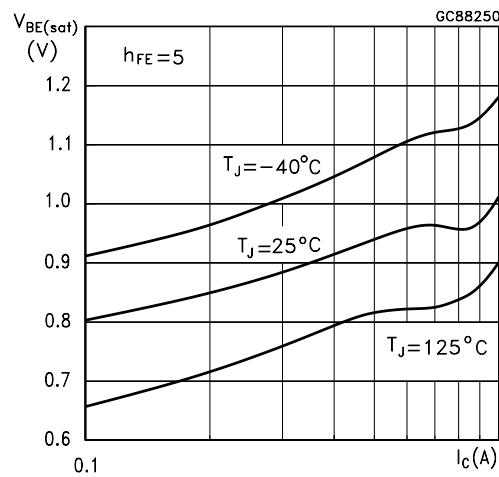
Derating Curve



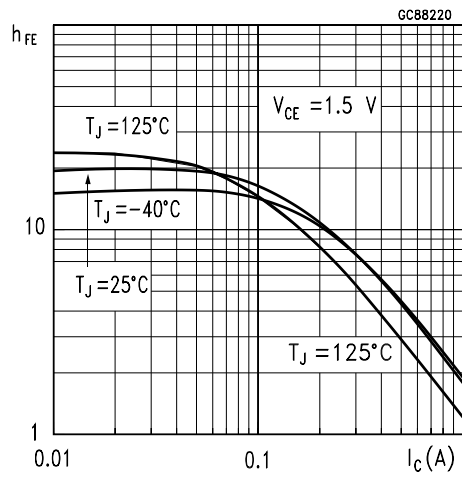
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage



DC Current Gain



DC Current Gain

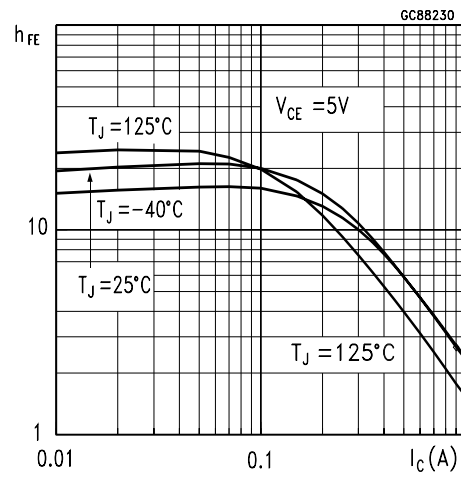
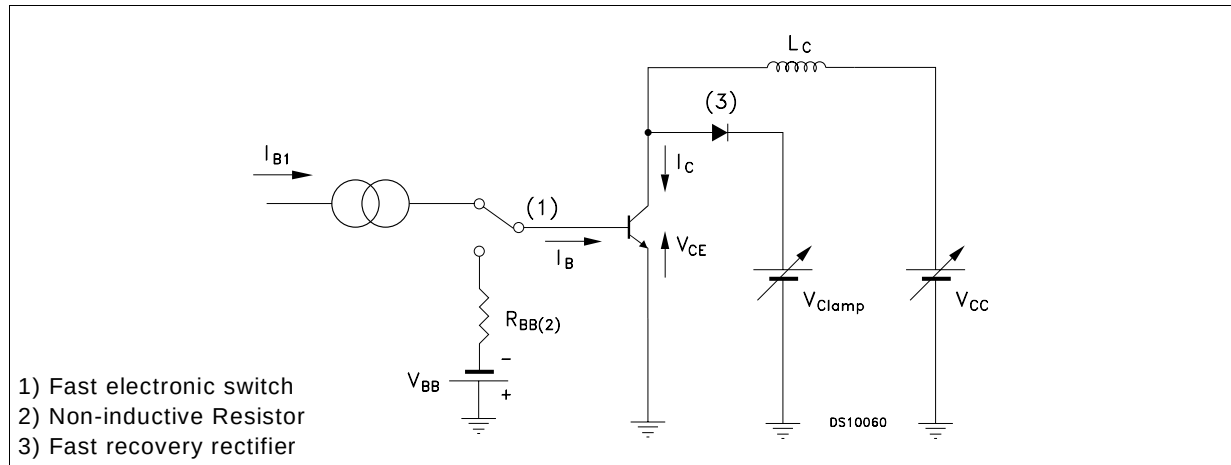
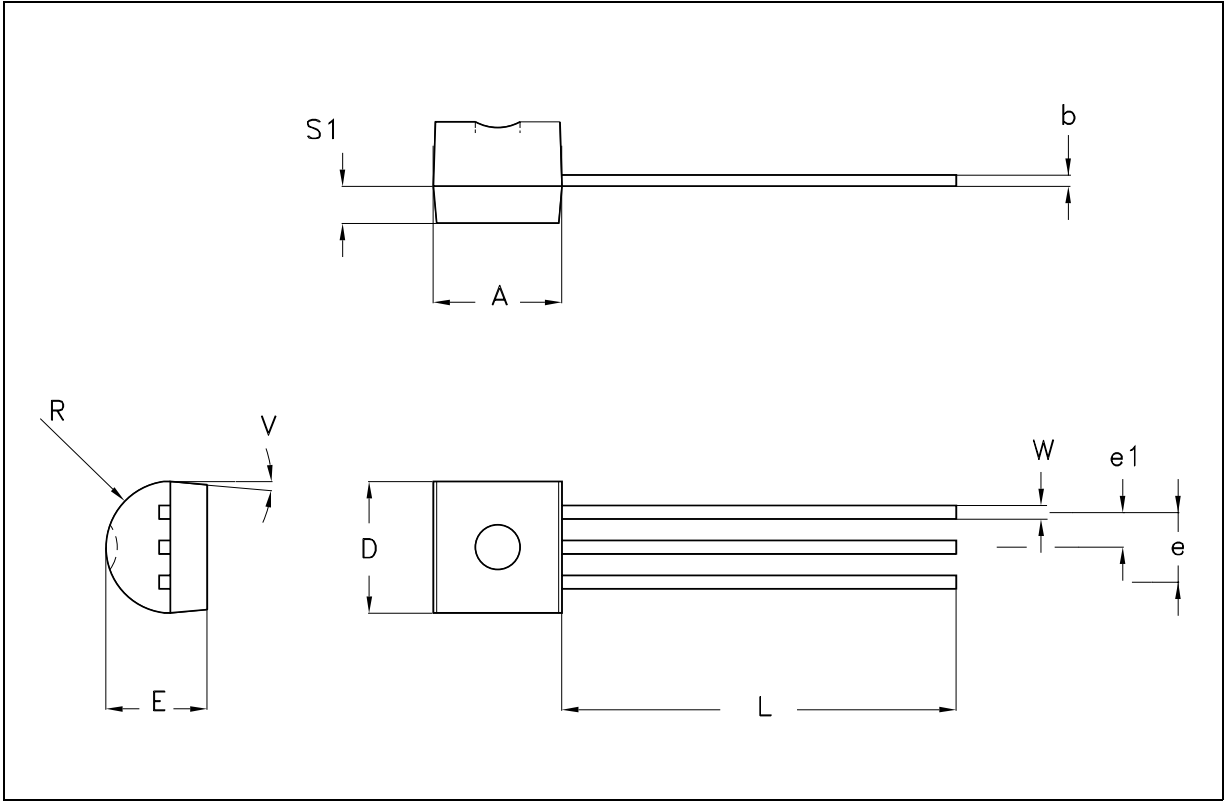


Figure 1: Inductive Load Switching Test Circuit.

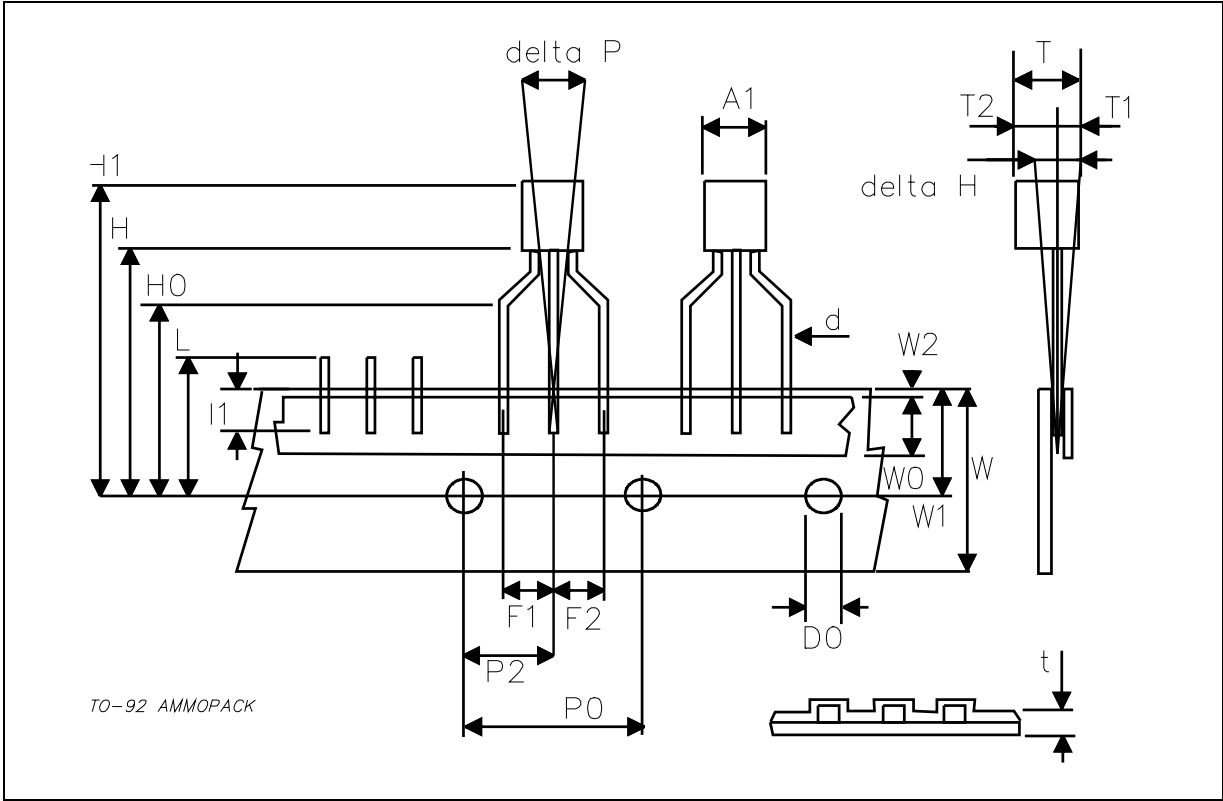
TO-92 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.32		4.95	0.170		0.195
b	0.36		0.51	0.014		0.020
D	4.45		4.95	0.175		0.194
E	3.30		3.94	0.130		0.155
e	2.41		2.67	0.095		0.105
e1	1.14		1.40	0.045		0.055
L	12.70		15.49	0.500		0.609
R	2.16		2.41	0.085		0.094
S1	1.14		1.52	0.045		0.059
W	0.41		0.56	0.016		0.022
V	4 degree		6 degree	4 degree		6 degree



TO-92 AMMOPACK SHIPMENT (Suffix"-AP") MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A1			4.80			0.189
T			3.80			0.150
T1			1.60			0.063
T2			2.30			0.091
d			0.48			0.019
P0	12.50	12.70	12.90	0.492	0.500	0.508
P2	5.65	6.35	7.05	0.222	0.250	0.278
F1,F2	2.44	2.54	2.94	0.096	0.100	0.116
delta H	-2.00		2.00	-0.079		0.079
W	17.50	18.00	19.00	0.689	0.709	0.748
W0	5.70	6.00	6.30	0.224	0.236	0.248
W1	8.50	9.00	9.25	0.335	0.354	0.364
W2			0.50			0.020
H	18.50		20.50	0.728		0.807
H0	15.50	16.00	16.50	0.610	0.630	0.650
H1			25.00			0.984
D0	3.80	4.00	4.20	0.150	0.157	0.165
t			0.90			0.035
L			11.00			0.433
I1	3.00			0.118		
delta P	-1.00		1.00	-0.039		0.039



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