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:

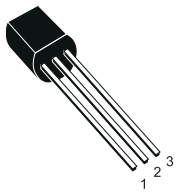
- COMPACT FLUORESCENT LAMPS (CFLS)

DESCRIPTION

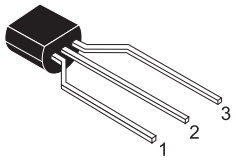
The device is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage capability.

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.

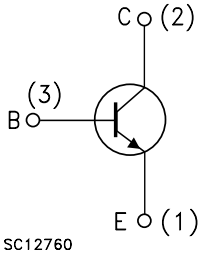


TO-92
Bulk



TO-92
Ammopack

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

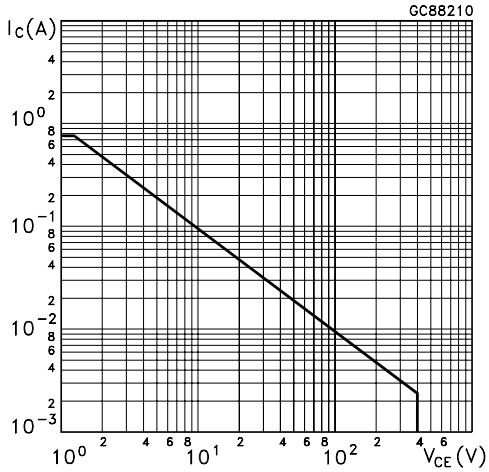
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	131.6	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

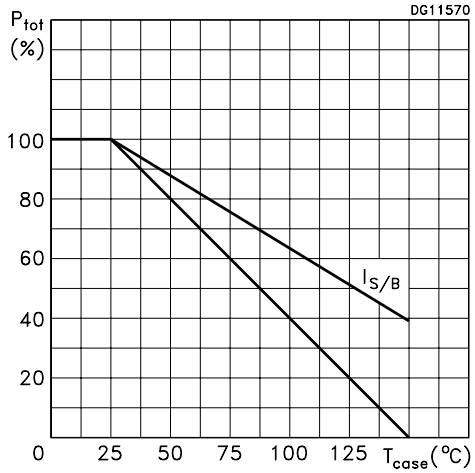
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current (V_{BE} = -1.5V)	V_{CE} = 600 V			250	µA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 9 V			1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 1 mA	400			V
$V_{CE(sat)}$*	Collector-Emitter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

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

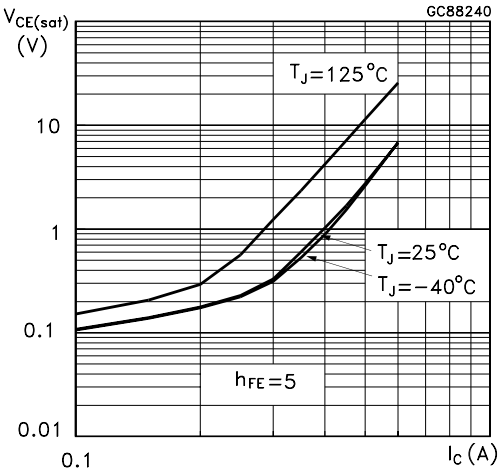
Safe Operating Area



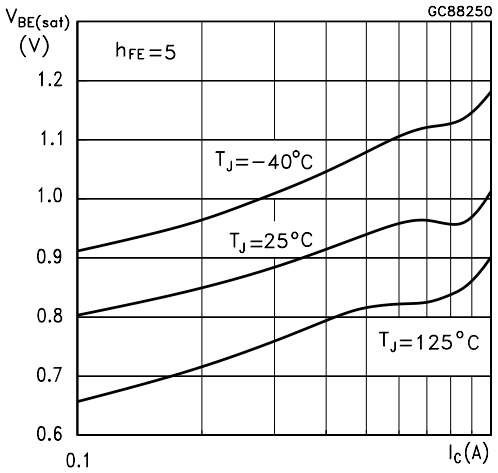
Derating Curve



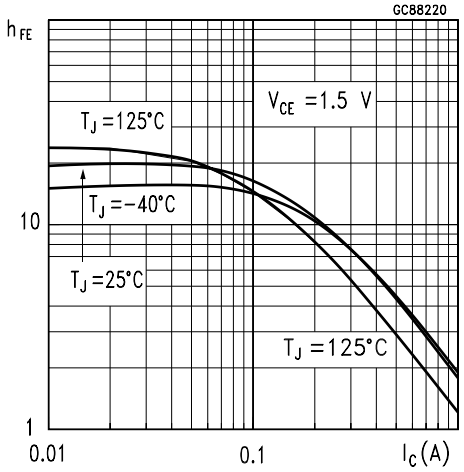
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage



DC Current Gain



DC Current Gain

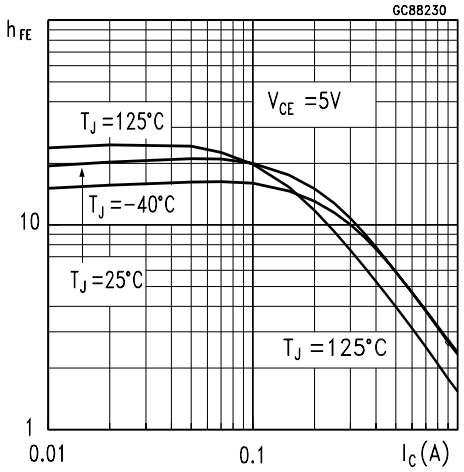
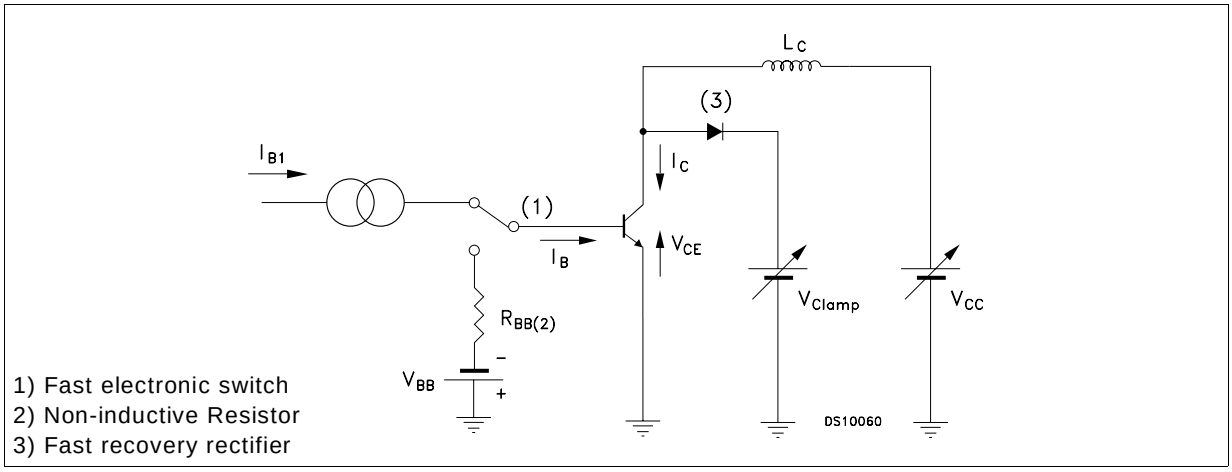
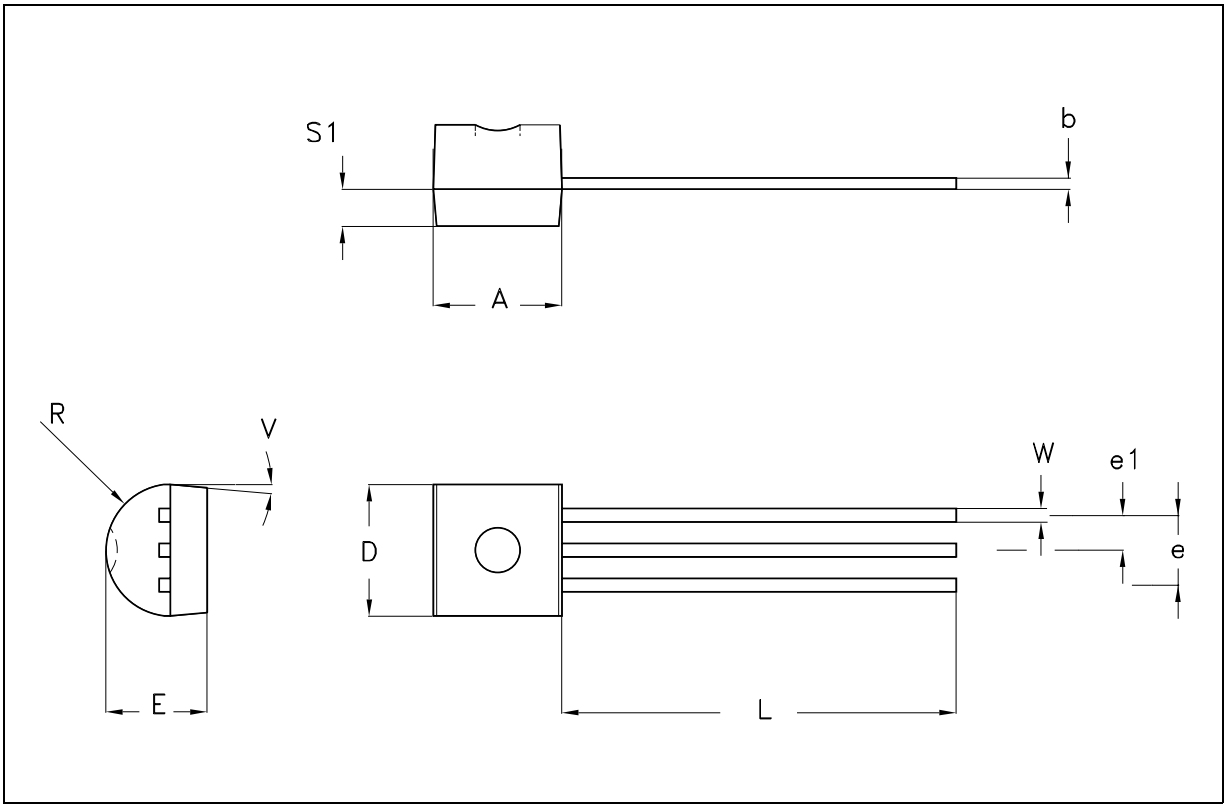


Figure 1: Inductive Load Switching Test Circuit.



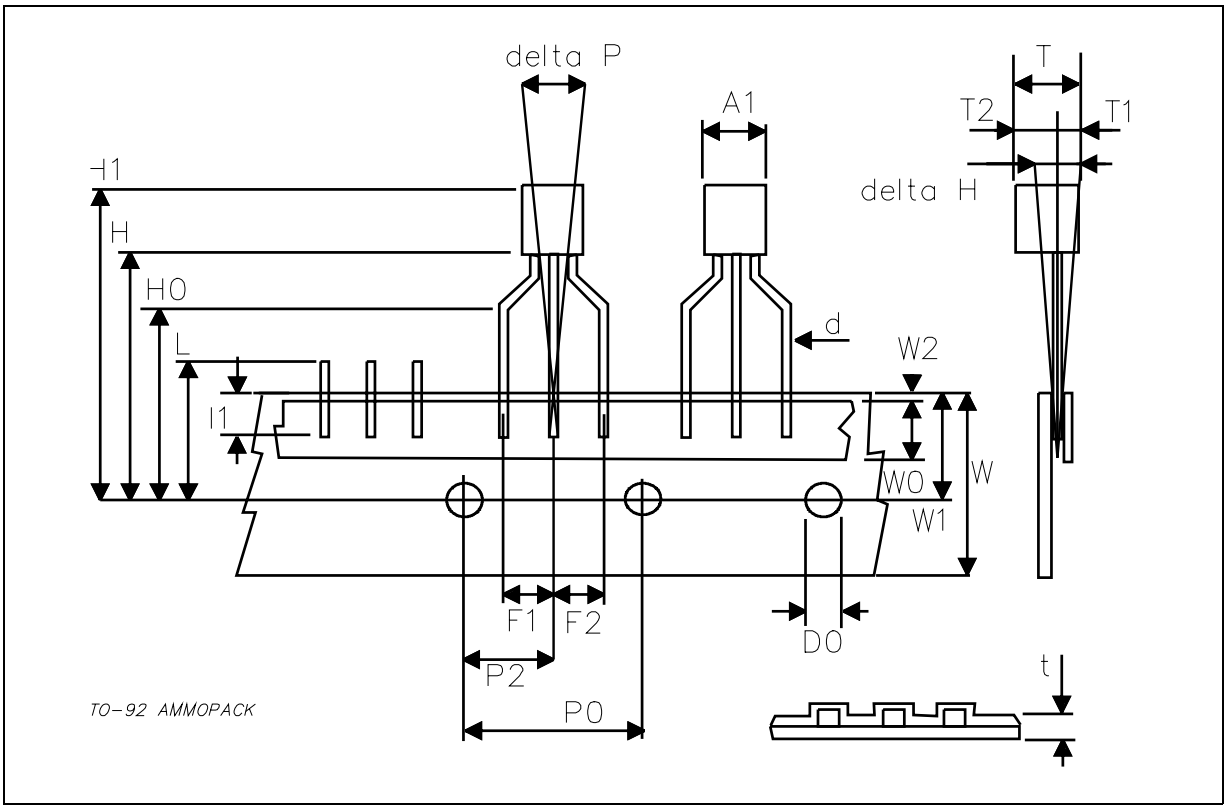
TO-92 MECHANICAL DATA

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
l1	3.00			0.118		
delta P	-1.00		1.00	-0.039		0.039



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 2003 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

http://www.st.com