



STBV32

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- ST13003 SILICON IN TO-92 PACKAGE
- MEDIUM VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED

APPLICATIONS:

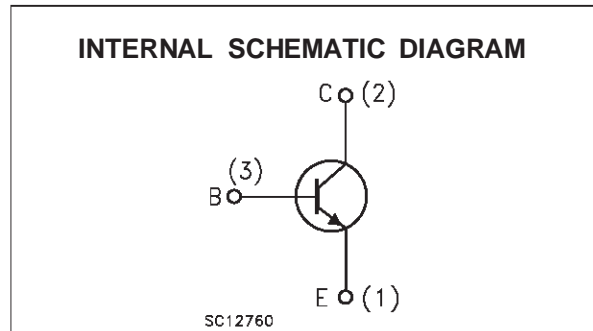
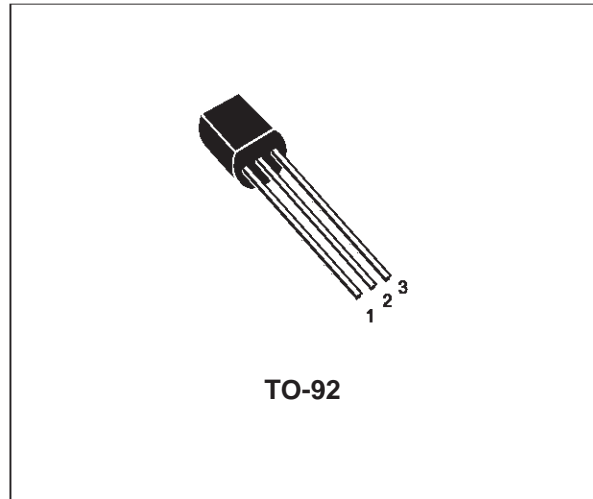
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING

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 STBV32 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	1.5	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	3	A
I_B	Base Current	0.75	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	1.5	A
P_{tot}	Total Dissipation at $T_C = 25$ °C	1.1	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

STBV32

THERMAL DATA

R_{thj-a}	Thermal Resistance Junction-ambient	Max	112	$^{\circ}\text{C}/\text{W}$
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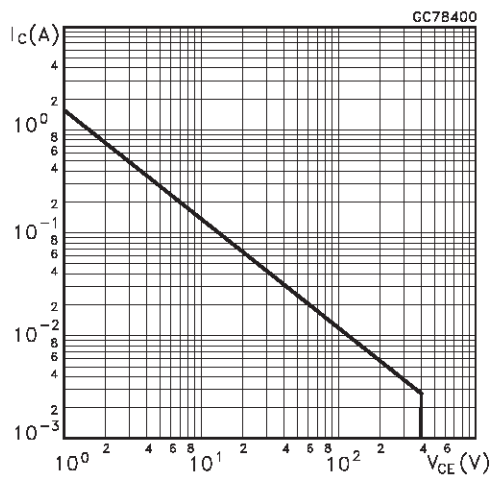
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5\text{V}$)	$V_{CE} = 700\text{V}$ $V_{CE} = 700\text{V}$ $T_j = 125^{\circ}\text{C}$			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 ($I_B = 0$)	$I_C = 10\text{mA}$ $L = 25\text{mH}$	400			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 0.5\text{A}$ $I_B = 0.1\text{A}$ $I_C = 1\text{A}$ $I_B = 0.25\text{A}$ $I_C = 1.5\text{A}$ $I_B = 0.5\text{A}$			0.5 1 3	V V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 0.5\text{A}$ $I_B = 0.1\text{A}$ $I_C = 1\text{A}$ $I_B = 0.25\text{A}$			1.0 1.2	V V
h_{FE}	DC Current Gain	$I_C = 0.5\text{A}$ $V_{CE} = 2\text{V}$ Group A Group B $I_C = 1\text{A}$ $V_{CE} = 2\text{V}$	8 15 5		20 35 25	
t_r t_s t_f	RESISTIVE LOAD Rise Time Storage Time Fall Time	$I_C = 1\text{A}$ $V_{CC} = 125\text{V}$ $I_{B1} = 0.2\text{A}$ $I_{B2} = -0.2\text{A}$ $T_p = 25\mu\text{s}$			1.0 4.0 0.7	μs μs μs
t_s	INDUCTIVE LOAD Storage Time	$I_C = 1\text{A}$ $I_{B1} = 0.2\text{A}$ $V_{BE} = -5\text{V}$ $L = 50\text{mH}$ $V_{clamp} = 300\text{V}$		0.8		μs

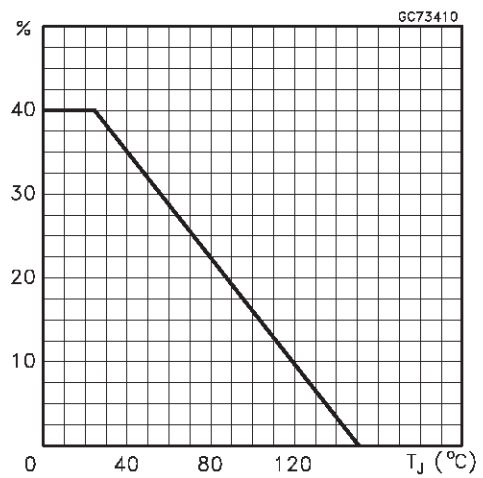
* Pulsed: Pulse duration = $300\mu\text{s}$, duty cycle = 1.5 %

Note : Product is pre-selected in DC current gain (GROUP A and GROUP B). STMicroelectronics reserves the right to ship either groups according to production availability. Please contact your nearest STMicroelectronics sales office for delivery details.

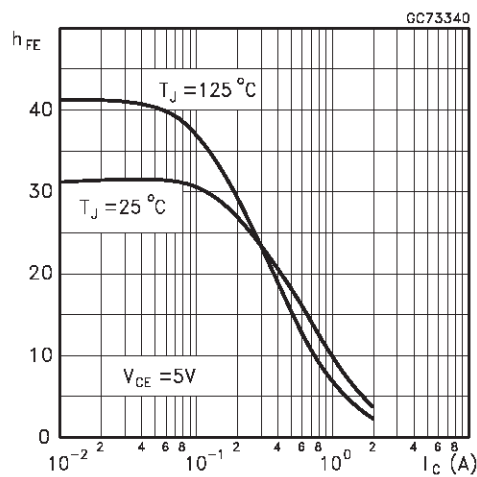
Safe Operating Areas



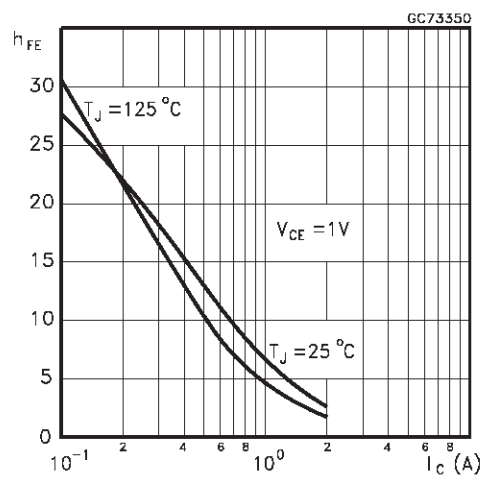
Derating Curve



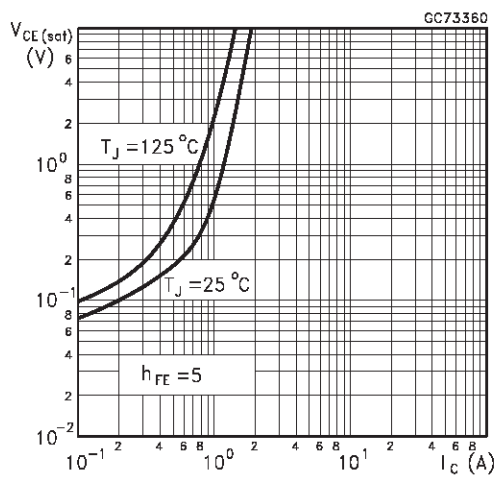
DC Current Gain



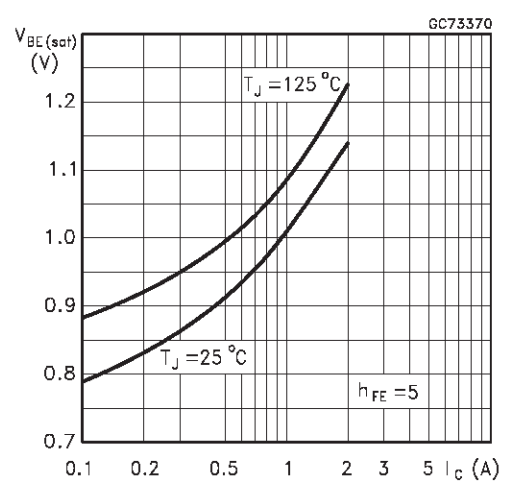
DC Current Gain



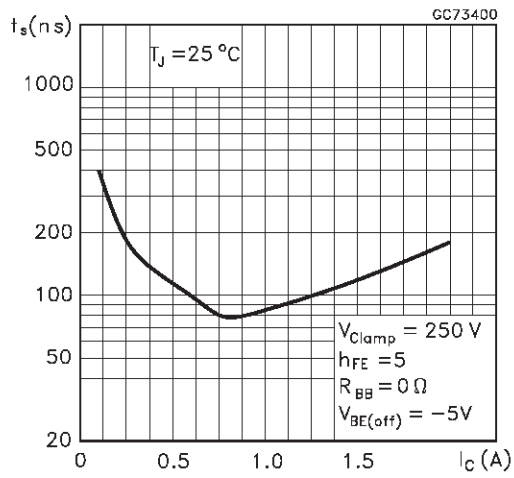
Collector Emitter Saturation Voltage



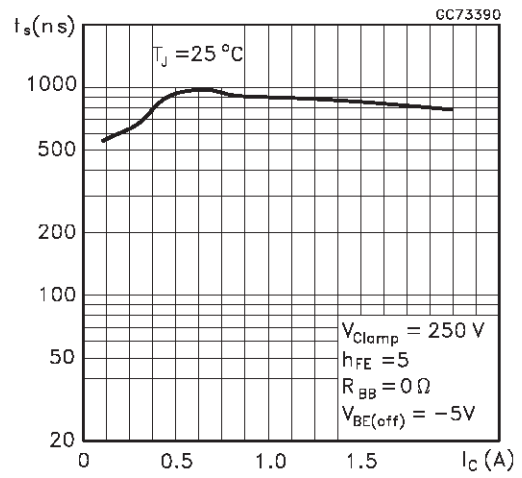
Base Emitter Saturation Voltage



Inductive Fall Time



Inductive Storage Time



Reverse Biased SOA

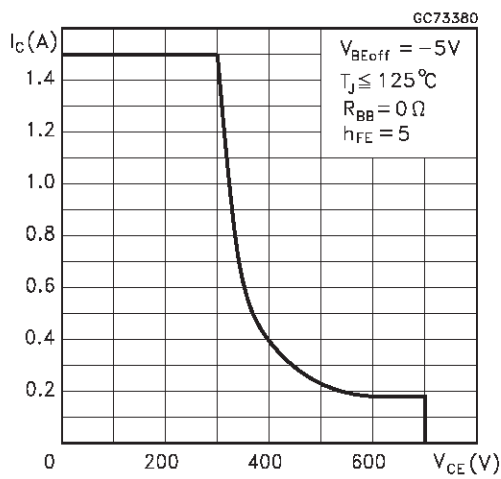


Figure 1: Inductive Load Switching Test Circuits.

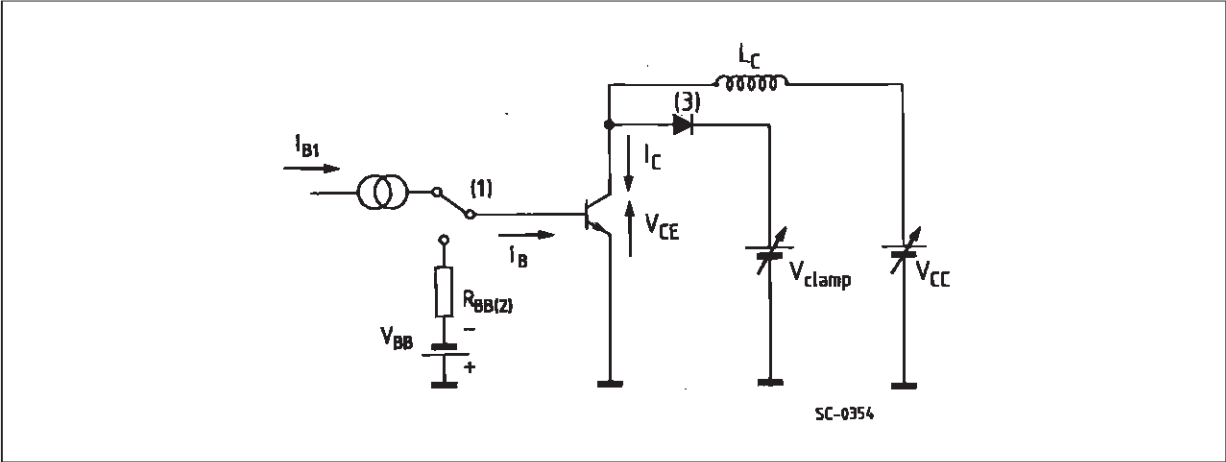
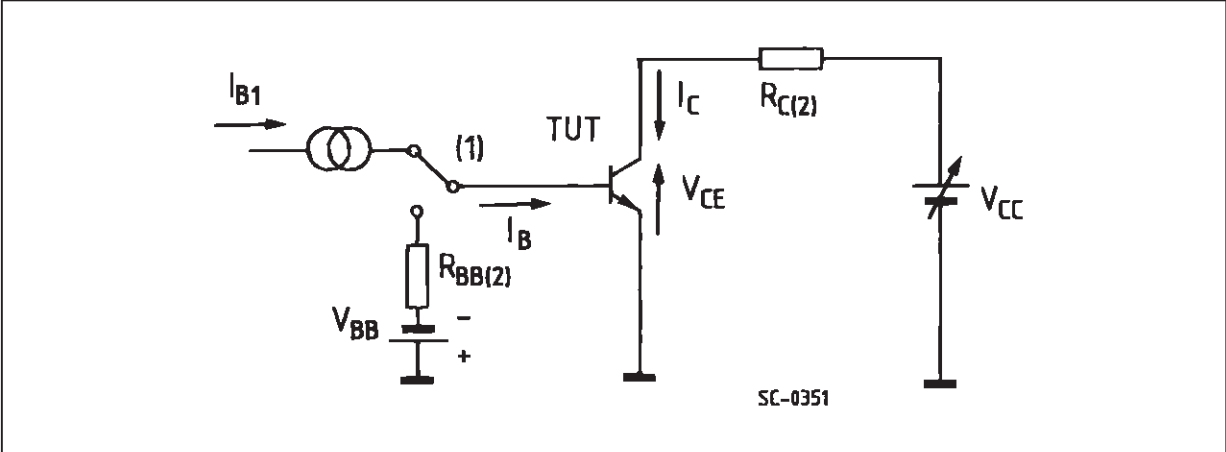
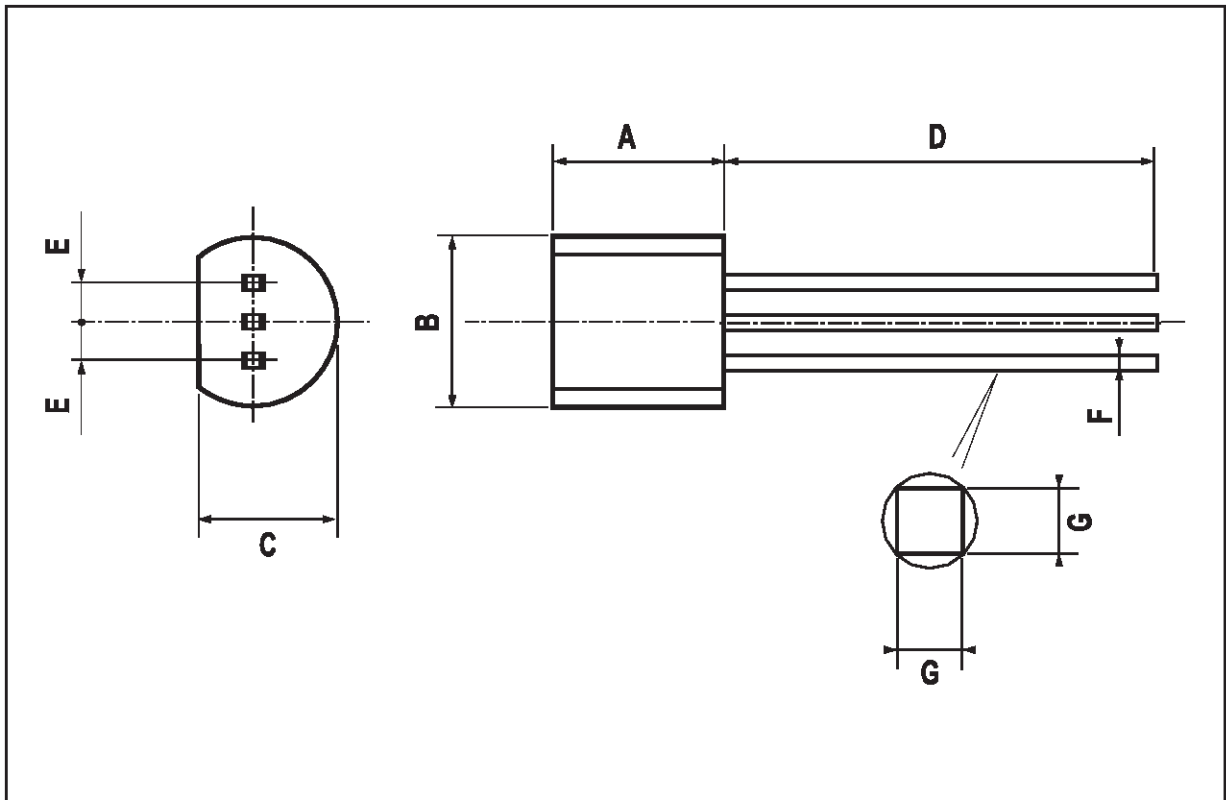


Figure 2: Resistive Load Switching Test Circuits.



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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