



## ST1802HI

# HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

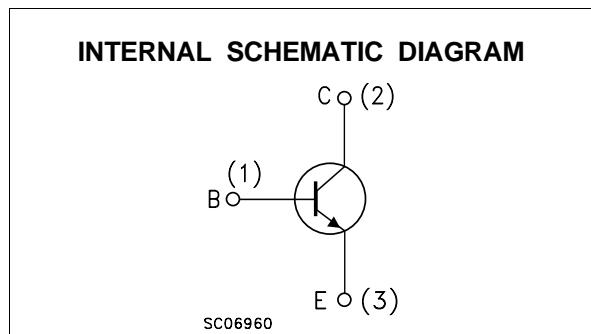
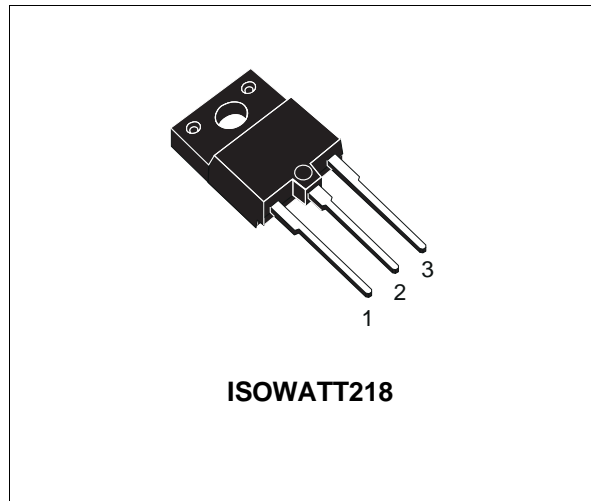
- NEW SERIES, ENHANCED PERFORMANCE
- FULLY INSULATED PACKAGE FOR EASY MOUNTING
- HIGH VOLTAGE CAPABILITY
- HIGH SWITCHING SPEED
- TIGHTER  $h_{fe}$  CONTROL
- IMPROVED RUGGEDNESS

### APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOR TV

### DESCRIPTION

The ST1802HI is manufactured using collector diffused technology for more stable operation Vs base drive circuit variations resulting in very low worst case dissipation.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	1500	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	600	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	7	V
$I_C$	Collector Current	8	A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	15	A
$I_B$	Base Current	4	A
$P_{tot}$	Total Dissipation at $T_c = 25$ °C	50	W
$T_{stg}$	Storage Temperature	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	150	°C

# ST1802HI

## THERMAL DATA

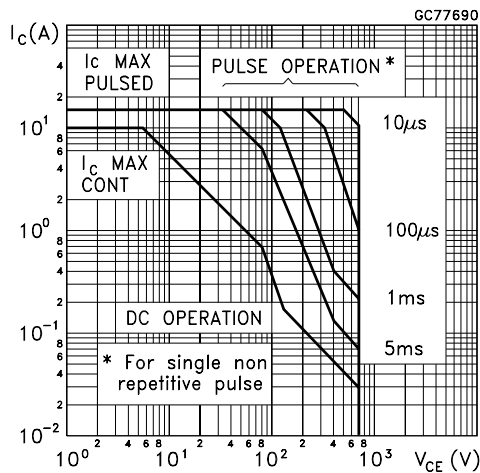
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	2.5	°C/W
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## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

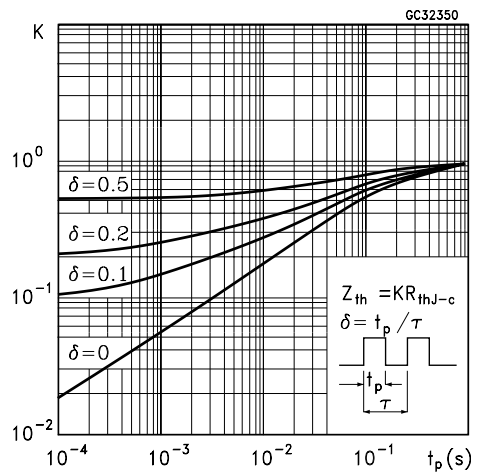
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 1500 V			1	mA
		V <sub>CE</sub> = 1500 V T <sub>j</sub> = 125 °C			2	mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 7 V			1	mA
V <sub>CEO(sus)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 100 mA L = 25 mH	600			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 4 A I <sub>B</sub> = 0.8 A			5	V
		I <sub>C</sub> = 4 A I <sub>B</sub> = 1.2 A			1.5	V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 4.5 A I <sub>B</sub> = 1 A			1.2	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 1 A V <sub>CE</sub> = 5 V		25		
		I <sub>C</sub> = 5 A V <sub>CE</sub> = 5 V	4		9	
t <sub>s</sub> t <sub>f</sub>	INDUCTIVE LOAD Storage Time Fall Time	I <sub>C</sub> = 4 A I <sub>BON(END)</sub> = 1 A		5	6	μs
		L <sub>B</sub> = 5 μH V <sub>BB</sub> = -2.5 V f = 16 KHz		0.3	0.5	μs

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

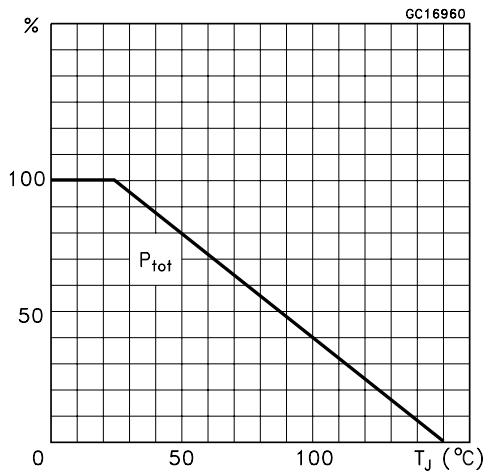
## Safe Operating Areas



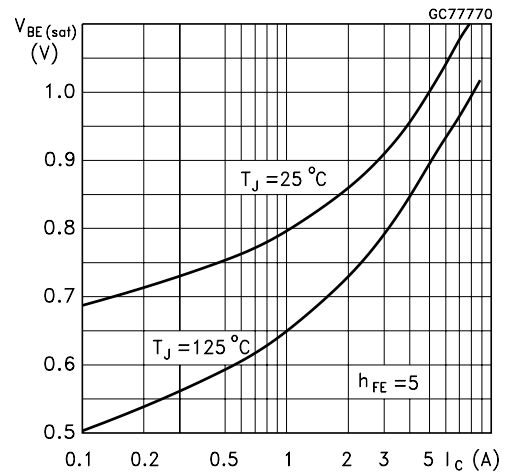
## Thermal Impedance



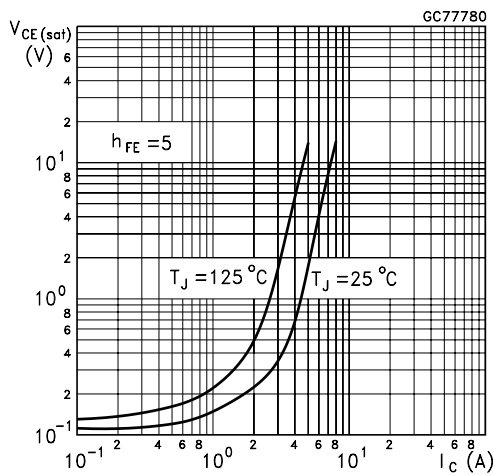
Derating Curve



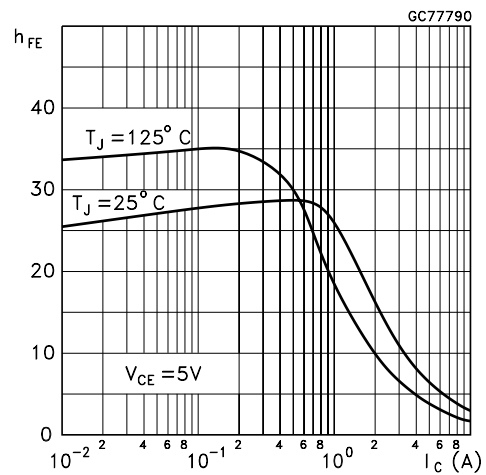
Base Emitter Saturation Voltage



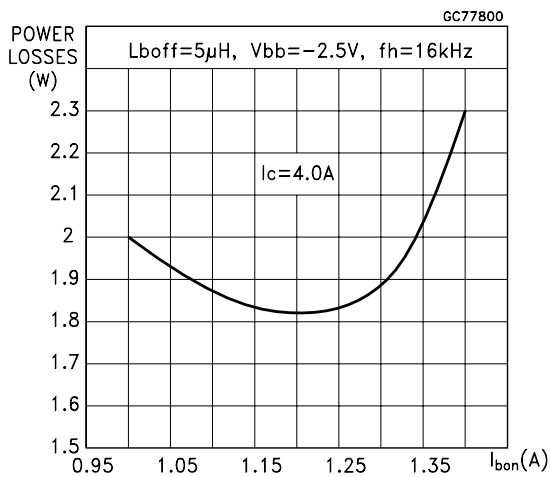
Collector Emitter Saturation Voltage



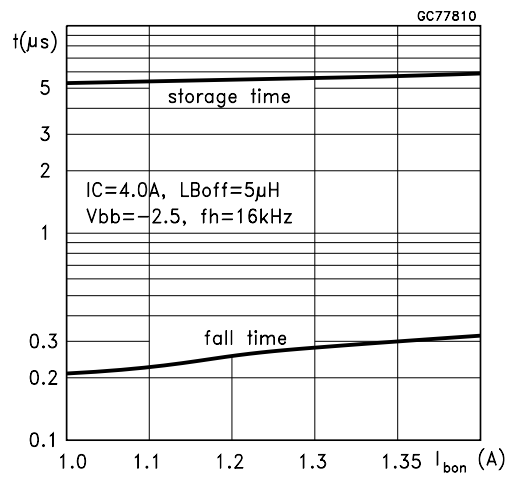
DC Current Gain



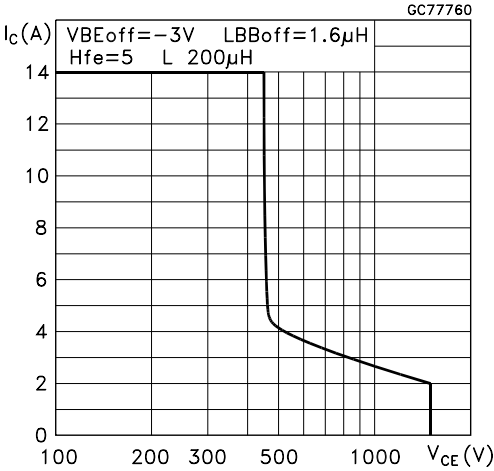
Power Losses At 16 KHz



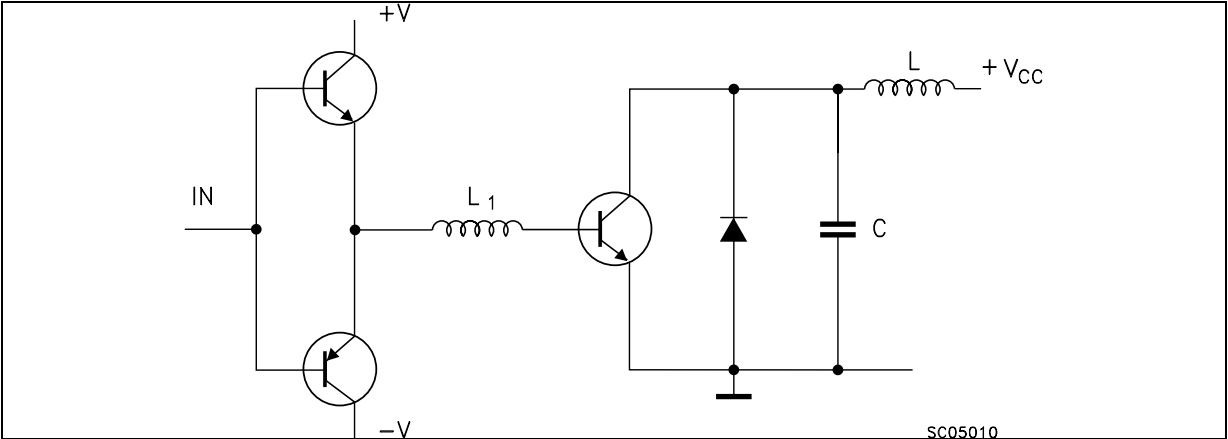
Switching Time Inductive Load



Reverse Biased SOA

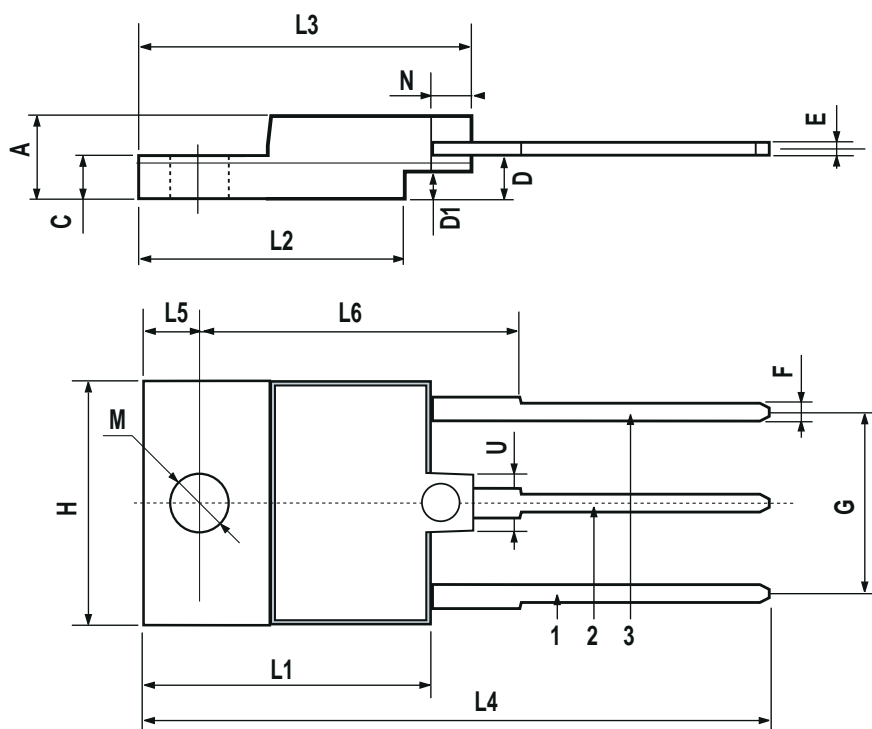


Inductive Load Switching Test Circuits.



## ISOWATT218 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.210		0.222
C	3.3		3.8	0.130		0.149
D	2.9		3.1	0.114		0.122
D1	1.88		2.08	0.074		0.081
E	0.75		1	0.029		0.039
F	1.05		1.25	0.041		0.049
G	10.8		11.2	0.425		0.441
H	15.8		16.2	0.622		0.637
L1	20.8		21.2	0.818		0.834
L2	19.1		19.9	0.752		0.783
L3	22.8		23.6	0.897		0.929
L4	40.5		42.5	1.594		1.673
L5	4.85		5.25	0.190		0.206
L6	20.25		20.75	0.797		0.817
M	3.5		3.7	0.137		0.145
N	2.1		2.3	0.082		0.090
U		4.6			0.181	



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