SGS-THOMSON MICROELECTRONICS

THD200FI

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

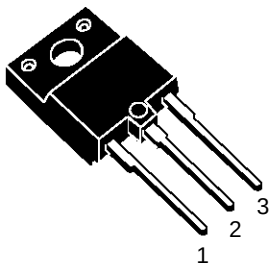
- SGS-THOMSON PREFERRED SALESTYPE
- HIGH VOLTAGE CAPABILITY
- VERY HIGH SWITCHING SPEED
- U.L. RECOGNISED ISOWATT218 PACKAGE (U.L. FILE # E81734 (N))

APPLICATIONS:

- HORIZONTAL DEFLECTION FOR MONITORS

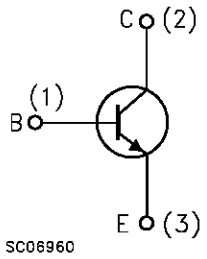
DESCRIPTION

The THD200FI is manufactured using Multiepitaxial Mesa technology for cost-effective high performance and uses a Hollow Emitter structure to enhance switching speeds.
The THD series is designed for use in horizontal deflection circuits in televisions and monitors.



ISOWATT218

INTERNAL SCHEMATIC DIAGRAM



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)	700	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	10	V
I_C	Collector Current	10	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	20	A
I_B	Base Current	5	A
I_{BM}	Base Peak Current (t_p < 5 ms)	10	A
P_{tot}	Total Dissipation at T_c = 25 °C	57	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

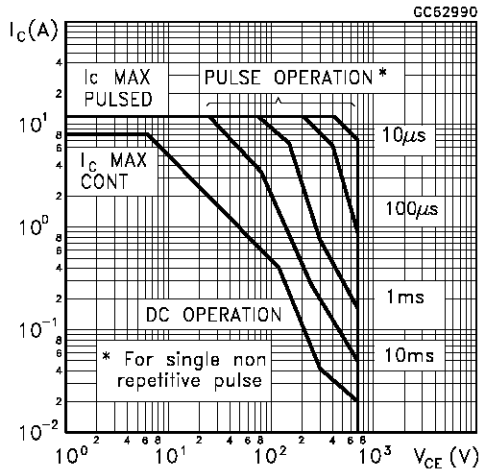
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	2.2	$^oC/W$

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

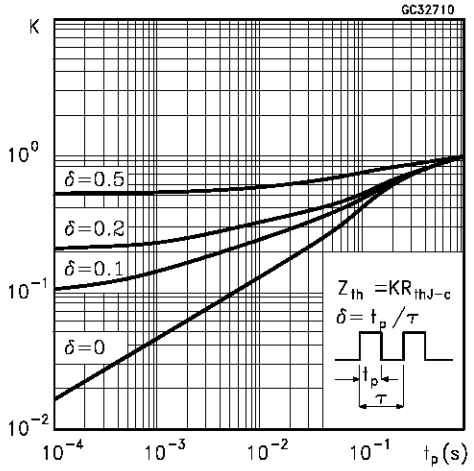
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 1500 V V_{CE} = 1500 V T_j = 125 ^oC			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			100	µA
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	I_C = 100 mA	700			V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	I_E = 10 mA	10			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 7 A I_B = 1.5 A			1.5 5	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 7 A I_B = 1.5 A			1.3	V
h_{FE}*	DC Current Gain	I_C = 7 A V_{CE} = 5 V I_C = 7 A V_{CE} = 5 V T_j = 100 ^oC	6.5 4		13	
t_s t_f	RESISTIVE LOAD Storage Time Fall Time	V_{CC} = 400 V I_C = 7 A I_{B1} = 1.5 A I_{B2} = 3.5 A		2.1 140	3.1 210	µs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 7 A f = 15625 Hz I_{B1} = 1.5 A I_{B2} = -3.5 A $V_{ceflyback} = 1050 \sin\left(\frac{\pi}{10} 10^6\right) t$ V		3.5 350		µs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 7 A f = 31250 Hz I_{B1} = 1.5 A I_{B2} = -3.5 A $V_{ceflyback} = 1200 \sin\left(\frac{\pi}{5} 10^6\right) t$ V		3.5 320		µs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 7 A f = 64 KHz I_{B1} = 1.5 A I_{B2} = -3.5 A $V_{ceflyback} = 1200 \sin\left(\frac{\pi}{5} 10^6\right) t$ V		1.7 215		µs ns

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

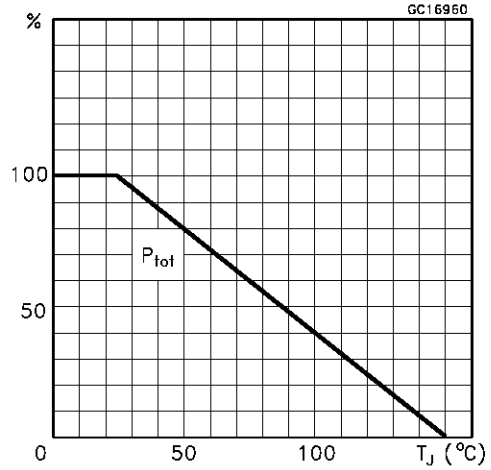
Safe Operating AreaDerating Curve



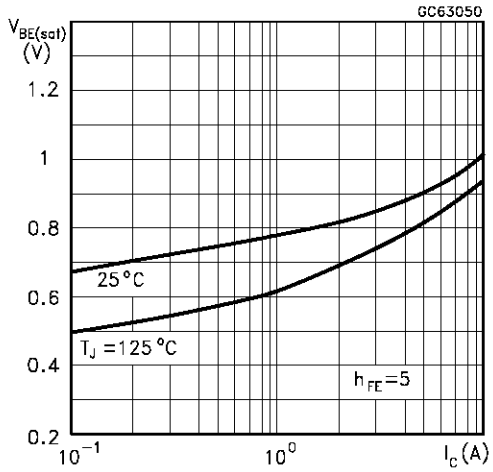
Thermal Impedance



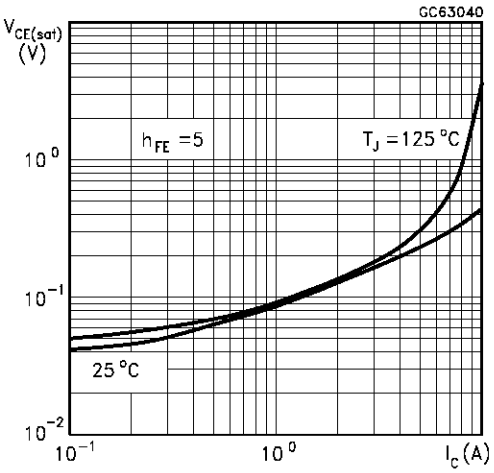
Derating Curve



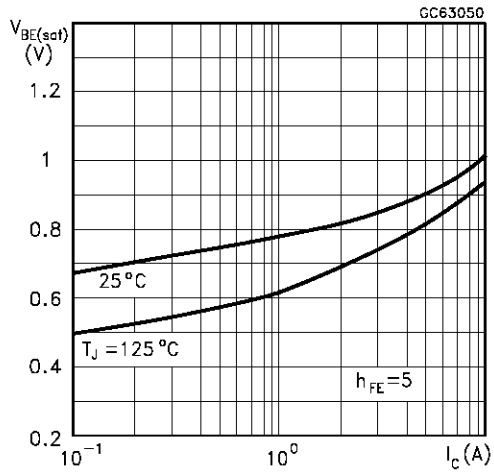
DC Current Gain



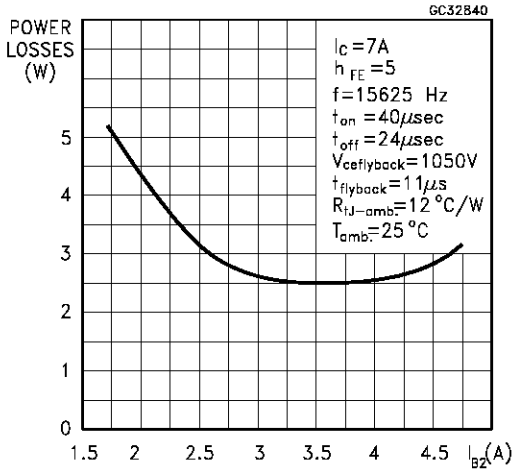
Collector Emitter Saturation Voltage



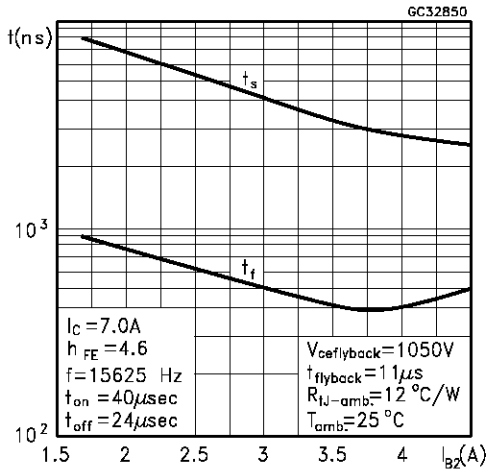
Base Emitter Saturation Voltage



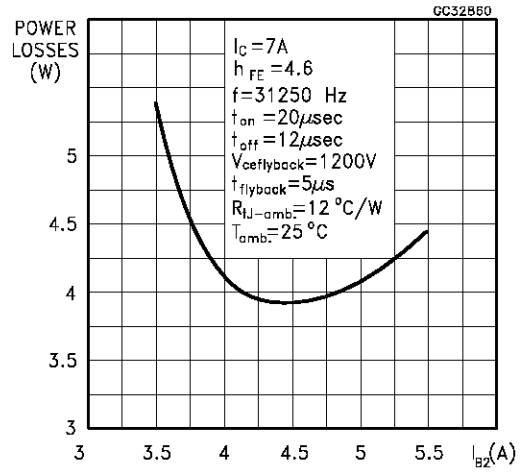
Power Losses at 16 KHz



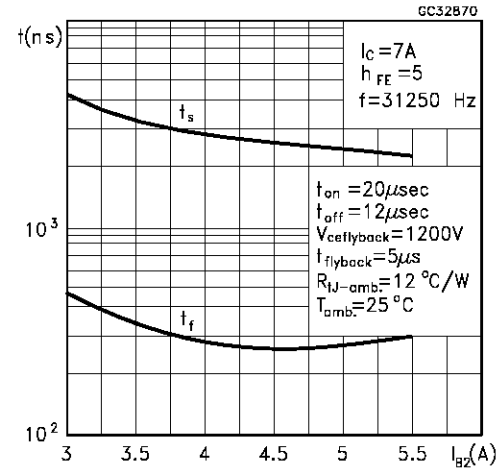
Switching Time Inductive Load at 16 KHz (see figure 2)



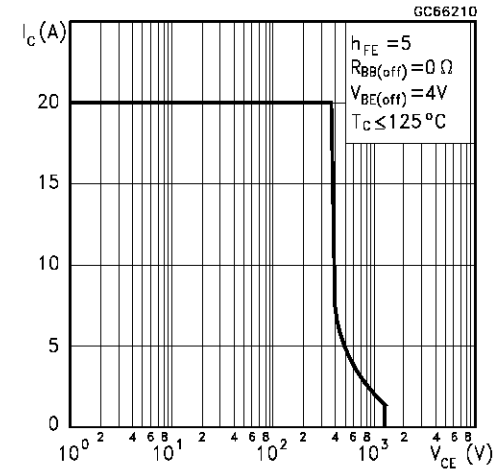
Power Losses at 32 KHz



Switching Time Inductive Load at 32 KHz (see figure 2)



Reverse Biased SOA



BASE DRIVE INFORMATION

Figure 1: Inductive Load Switching Test Circuits.

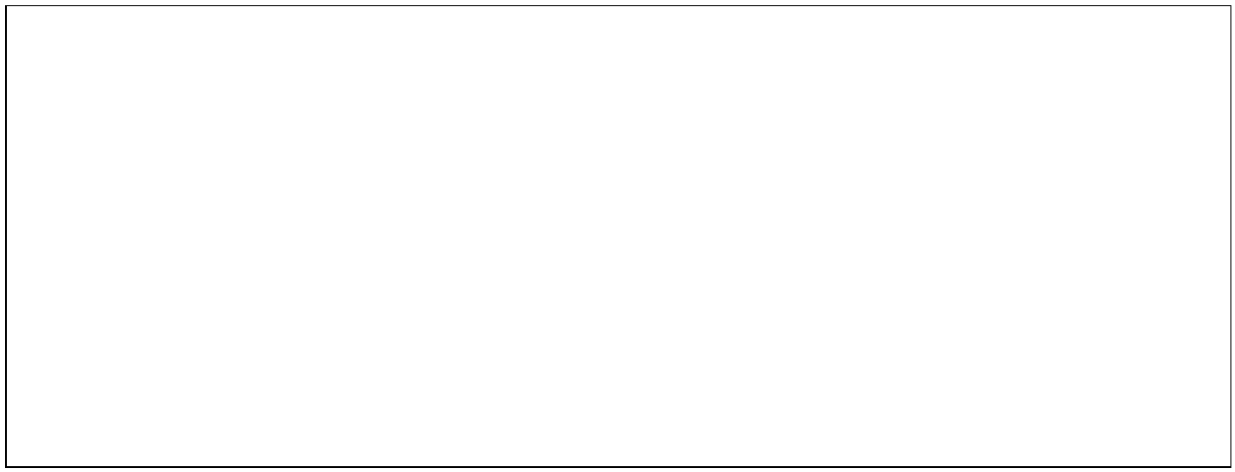
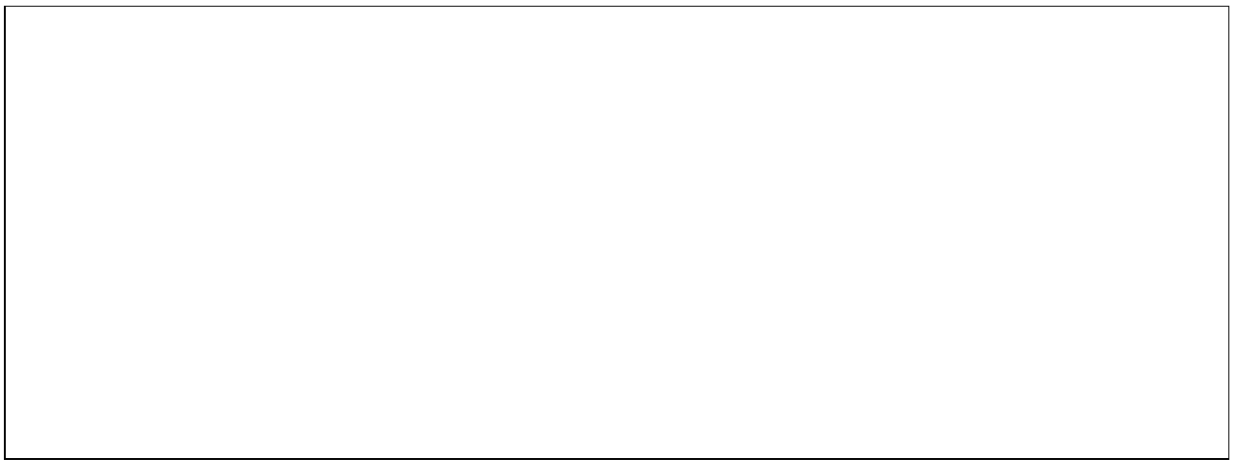
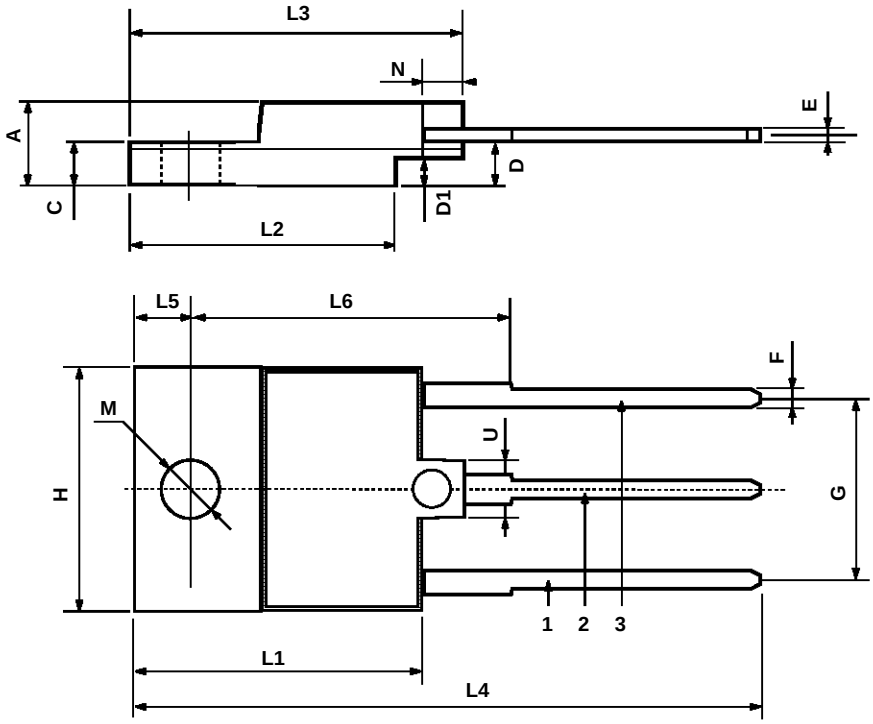


Figure 2: Switching Waveforms in a Deflection Circuit



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	



P025C