ST2310FX

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- NEW SERIES, ENHANCED PERFORMANCE
- FULLY INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING
- HIGH VOLTAGE CAPABILITY (1500 V)
- HIGH SWITCHING SPEED
- TIGTHER h_{fe} CONTROL
- IMPROVED RUGGEDNESS

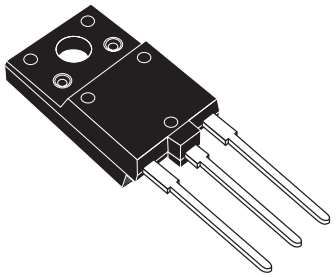
APPLICATION

- HORIZONTAL DEFLECTION FOR MONITORS 17 " AND HIGH END TVs

DESCRIPTION

The device is manufactured using Diffused Collector technology for more stable operation Vs base drive circuit variations resulting in very low worst case dissipation.

Figure 1: Package



ISOWATT218FX

Figure 2: Internal Schematic Diagram

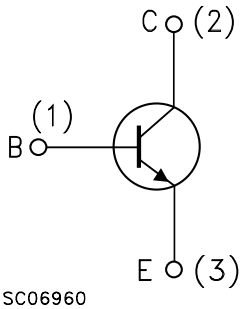


Table 1: Order Code

Part Number	Marking	Package	Packaging
ST2310FX	2310FX	ISOWATT218FX	TUBE

Table 2: Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage (V_{BE} = 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	12	A
I_{CM}	Collector Peak Current (t_p < 5ms)	25	A
I_B	Base Current	7	A
P_{tot}	Total Dissipation at T_C = 25 °C	65	W
V_{isol}	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	2500	V
T_{stg}	Storage Temperature	-65 to 150	°C
T_J	Max. Operating Junction Temperature	150	°C

Table 3: Thermal Data

Symbol	Parameter		Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-Case Max	1.9	°C/W

Table 4: Electrical Characteristics (T_{case} = 25 °C 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 °C			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 7 V			1	mA
$V_{CE(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA L = 25 mH	600			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 7 A I_B = 1.75 A			3	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 7 A I_B = 1.75 A			1.1	V
h_{FE}*	DC Current Gain	I_C = 1 A V_{CE} = 5 V I_C = 7 A V_{CE} = 1 V I_C = 7 A V_{CE} = 5 V	6.5	25 5.5	 9.5	
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 6 A f_h = 64 KHz $I_{B(on)}$ = 1 A $V_{BE(off)}$ = -2.5 V $L_{BB(off)}$ = 1.3 µH (see figure 14)		 2.3 0.16	 3 0.35	 µs µs

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

Figure 3: Safe Operating Area

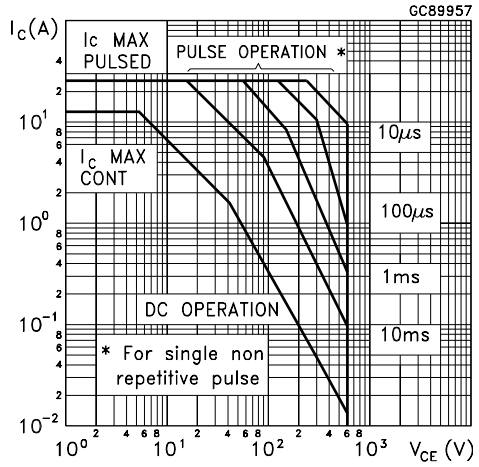


Figure 4: Derating Curve

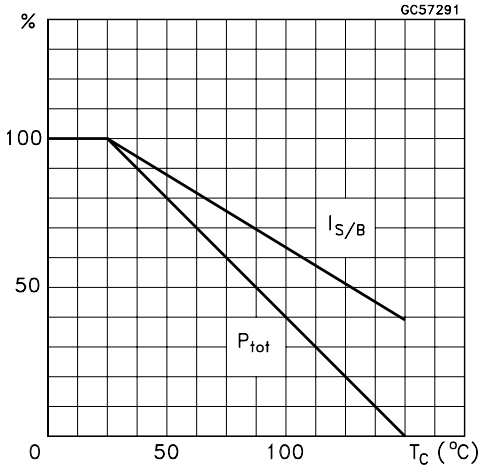


Figure 5: Collector-Emitter Saturation Voltage

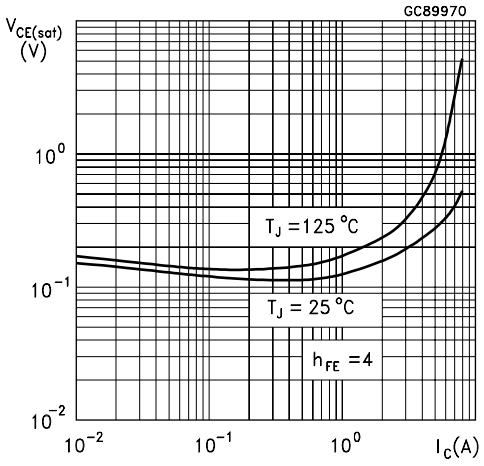


Figure 6: Thermal Impedance

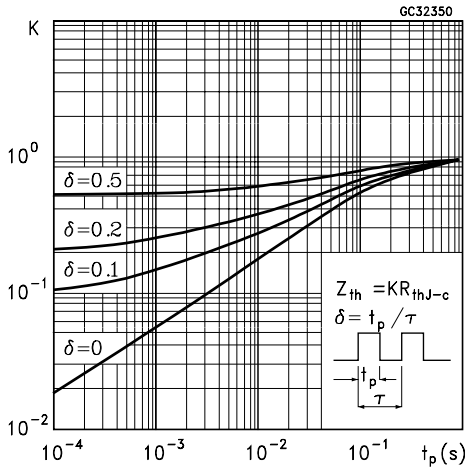


Figure 7: Output Chatacterisctics

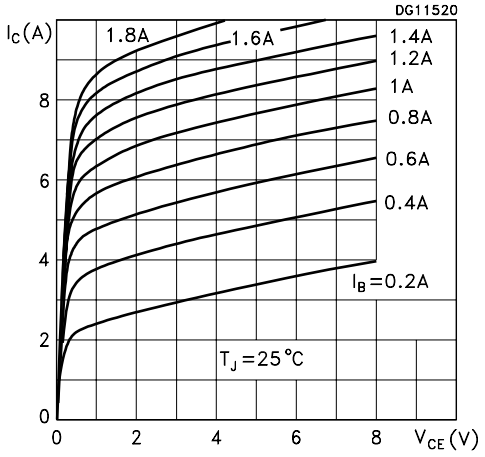


Figure 8: Base-Emitter Saturation Voltage

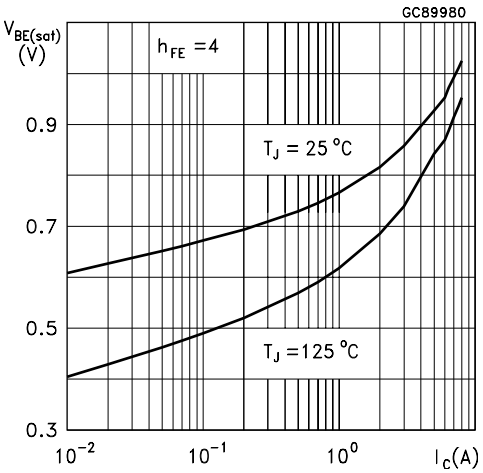


Figure 9: DC Current Gain

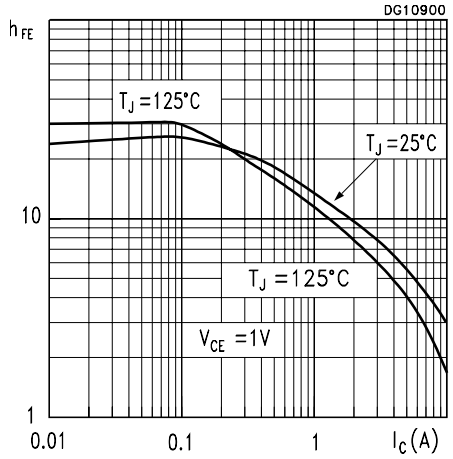


Figure 10: Power Losses

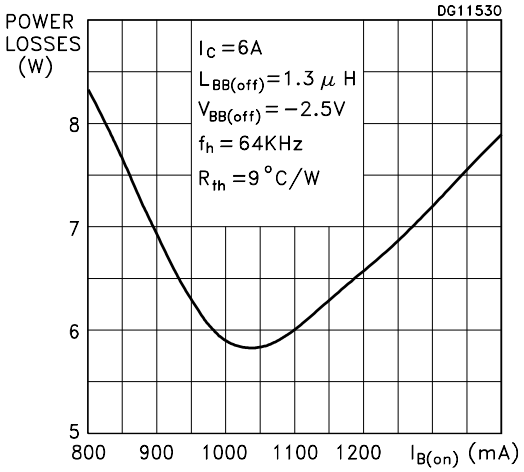


Figure 11: Reverse Biased Safe Operating Area

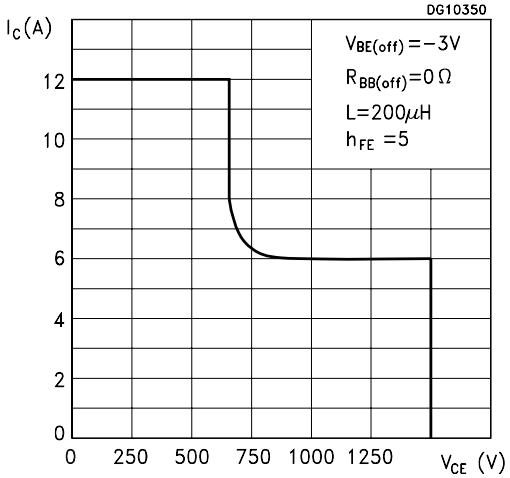


Figure 12: DC Current Gain

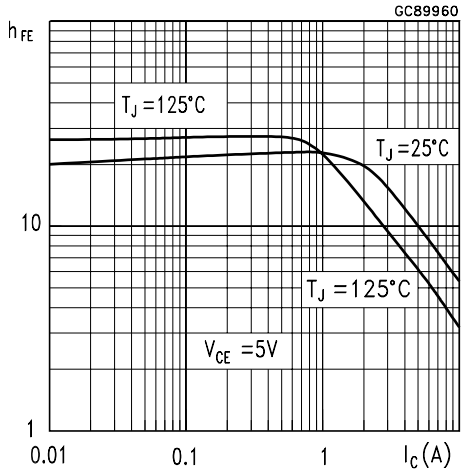


Figure 13: Switching Time Inductive Load

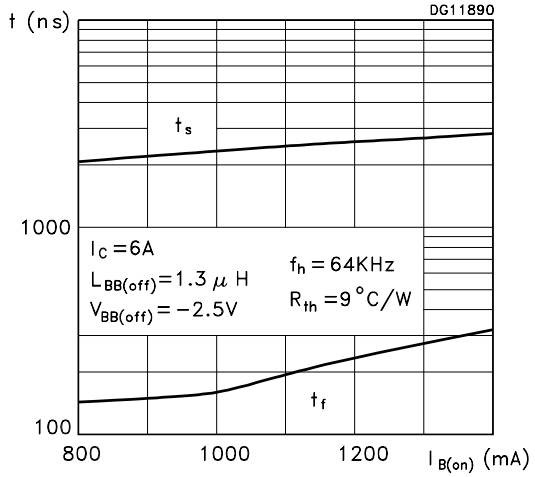
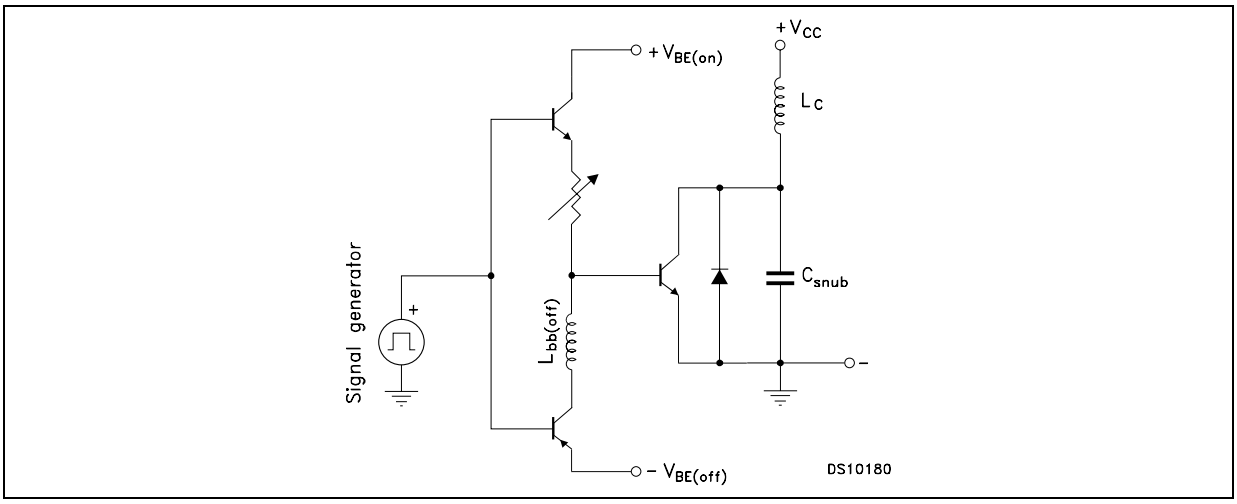


Figure 14: Inductive Load Switching test Circuit



ISOWATT218FX MECHANICAL DATA

DIM.	mm.		
	MIN.	TYP	MAX.
A	5.30		5.70
C	2.80		3.20
D	3.10		3.50
D1	1.80		2.20
E	0.80		1.10
F	0.65		0.95
F2	1.80		2.20
G	10.30		11.50
G1		5.45	
H	15.30		15.70
L	9		10.20
L2	22.80		23.20
L3	26.30		26.70
L4	43.20		44.40
L5	4.30		4.70
L6	24.30		24.70
L7	14.60		15
N	1.80		2.20
R	3.80		4.20
Dia	3.40		3.80

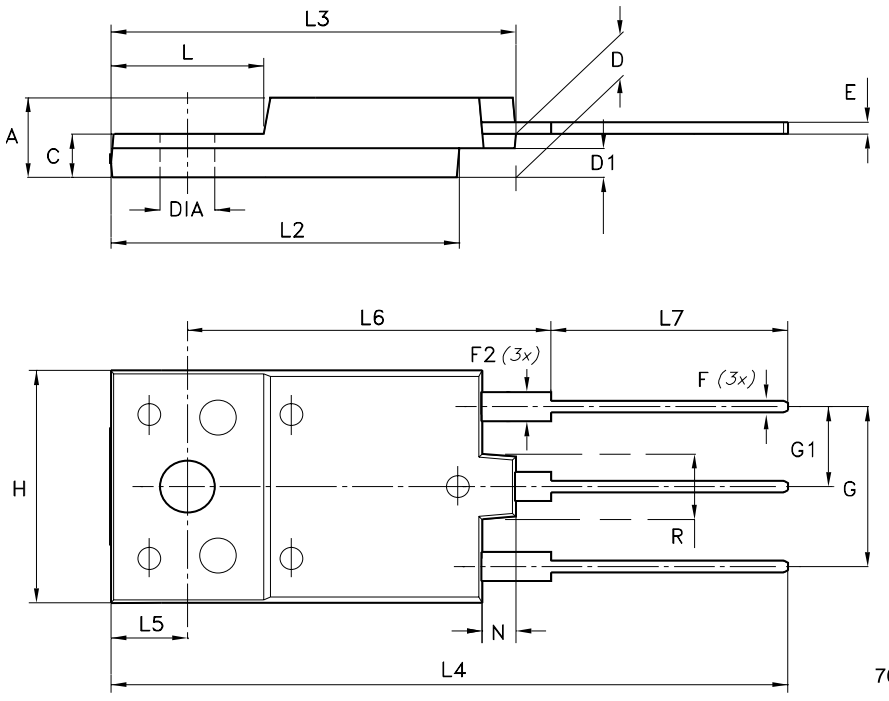


Table 5: Revision History

Date	Release	Change Designator
01-Jul-2004	1	First Release.
08-Feb-2005	2	Table 1 has been added on page 1.