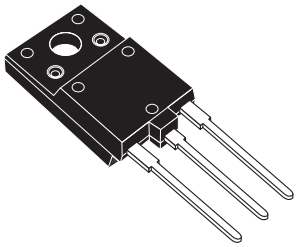
ST1802FX

HIGH VOLTAGE FAST - SWITCHING NPN POWER TRANSISTOR

Features

- NEW SERIES, ENHANCED PERFORMANCE
- FULLY INSULATED POWER PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING
- HIGH VOLTAGE CAPABILITY (>1500V)
- HIGH SWITCHING SPEED
- TIGTHER h_{FE} CONTROL
- IMPROVED RUGGEDNESS
- IN COMPLIANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE



ISOWATT218FX

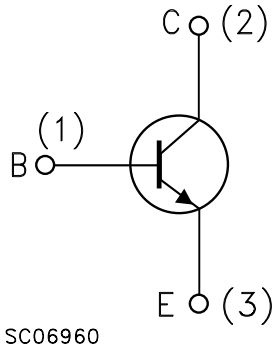
Applications

- HORIZONTAL DEFLECTION OUTPUT FOR COLOR TV UP TO 29-INCHES

Description

The ST1802FX is manufactured using new Diffused Collector Technology for more stable operation Vs base drive circuit variations resulting in very low worst case dissipation.

Internal Schematic Diagram



Order codes

Part Number	Marking	Package	Packing
ST1802FX	1802FX	ISOWATT218FX	TUBE

1 Electrical Ratings

Table 1. Absolute Maximum Rating

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}	Collector-Base Voltage (I_C = 0)	7	V
I_C	Collector Current	10	A
I_{CM}	Collector Peak Current (t_P < 5ms)	15	A
I_B	Base Current	4	A
P_{TOT}	Total dissipation at T_c = 25°C	60	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	

Table 2. Thermal Data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-Case	Max	2.1	°C/W

2 Electrical Characteristics

(T_{CASE} = 25°C; unless otherwise specified)

Table 3. Electrical Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 1500V V_{CE} = 1500V T_c= 125°C			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 7V			1	mA
$V_{CEO(sus)}$ *Note 1*)	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 700 mA L = 25 mH	600			V
$V_{CE(sat)}$ *Note 1*	Collector-Emitter Saturation Voltage	I_C = 4 A I_B = 0.8 A I_C = 4 A I_B = 1.2 A			5 1.5	V V
$V_{BE(sat)}$ *Note 1*	Base-Emitter Saturation Voltage	I_C = 4.5 A I_B = 1 A			1.2	V
h_{FE}	DC Current Gain	I_C = 1 A V_{CE} = 5 V I_C = 5 A V_{CE} = 1 V I_C = 5 A V_{CE} = 5 V	 4	25 4.5 	 9	
 t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 4A f_h = 16KHz $I_{Bon(END)}$ = 850mA $V_{BB(off)}$ = -2.5V L_B = 4.5µH		 2.6 0.2	 4 0.6	 µs µs

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

2.1 Electrical Characteristics (curves))

Figure 1. Safe Operating Area

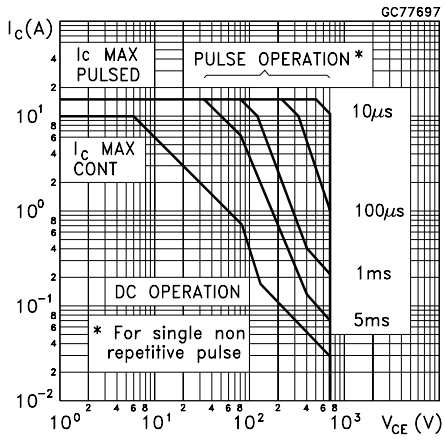


Figure 2. Thermal Impedance

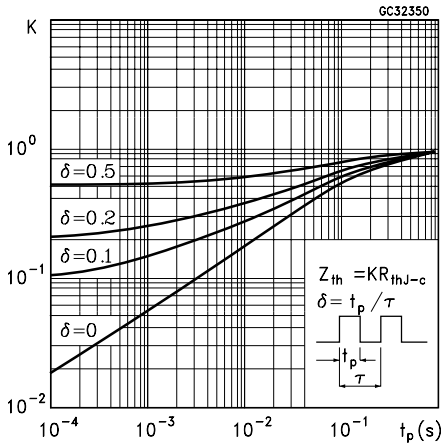


Figure 3. Collector-emitter saturation voltage

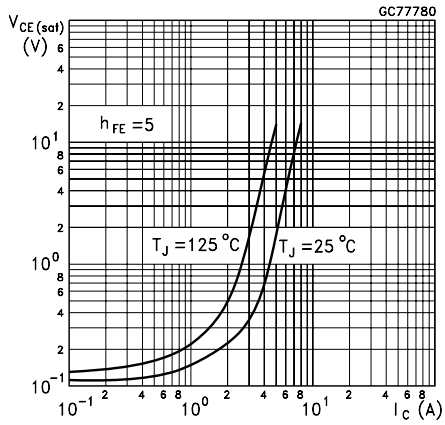


Figure 4. Base-emitter saturation voltage

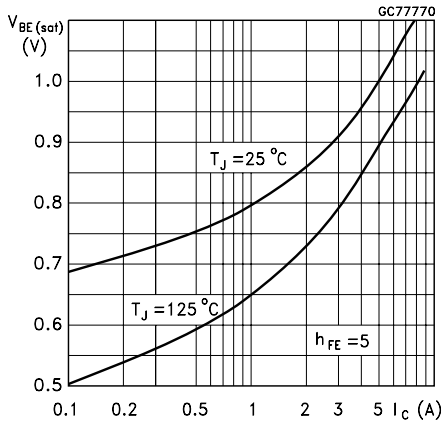


Figure 5. DC current gain

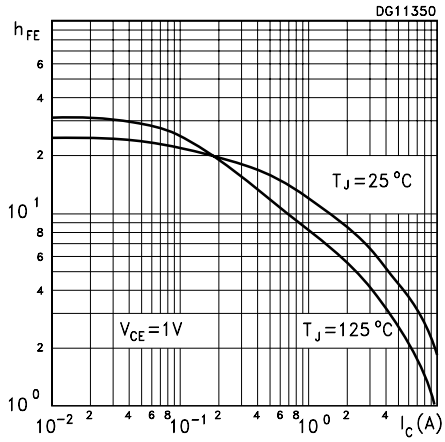


Figure 6. DC current gain

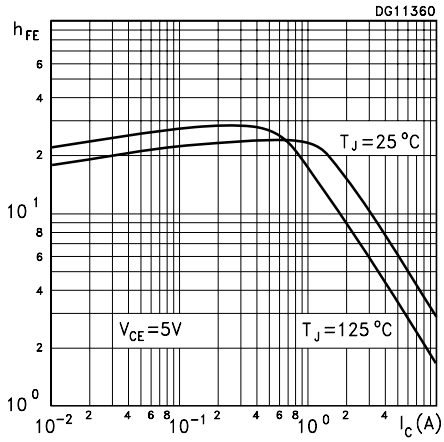


Figure 7. Power losses at 16KHz

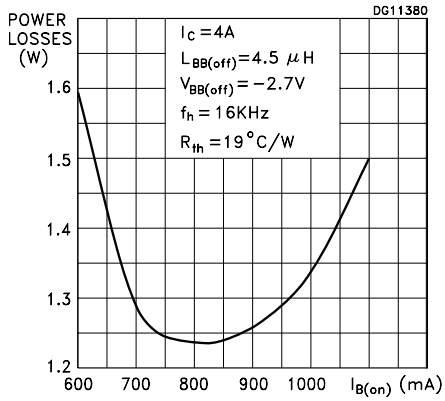


Figure 8. Switching time inductive load

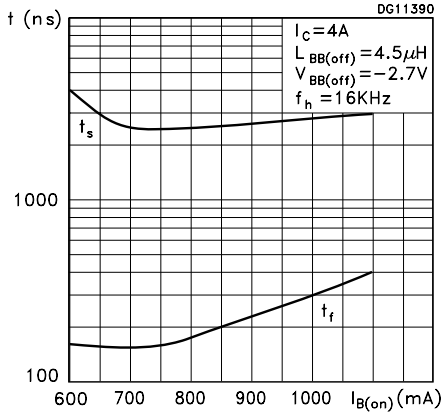
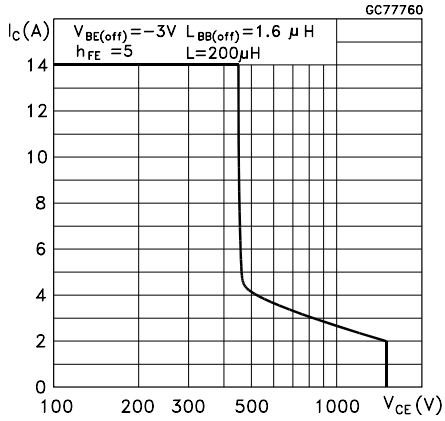
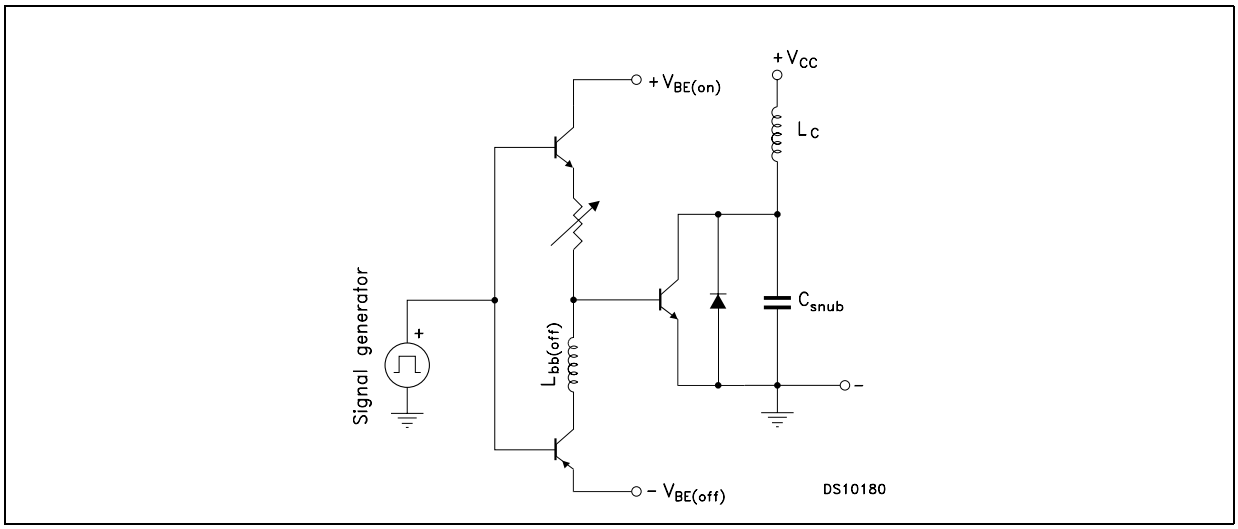


Figure 9. Reverse biased area



3 Test Circuit

Figure 10. Inductive load switching test circuit

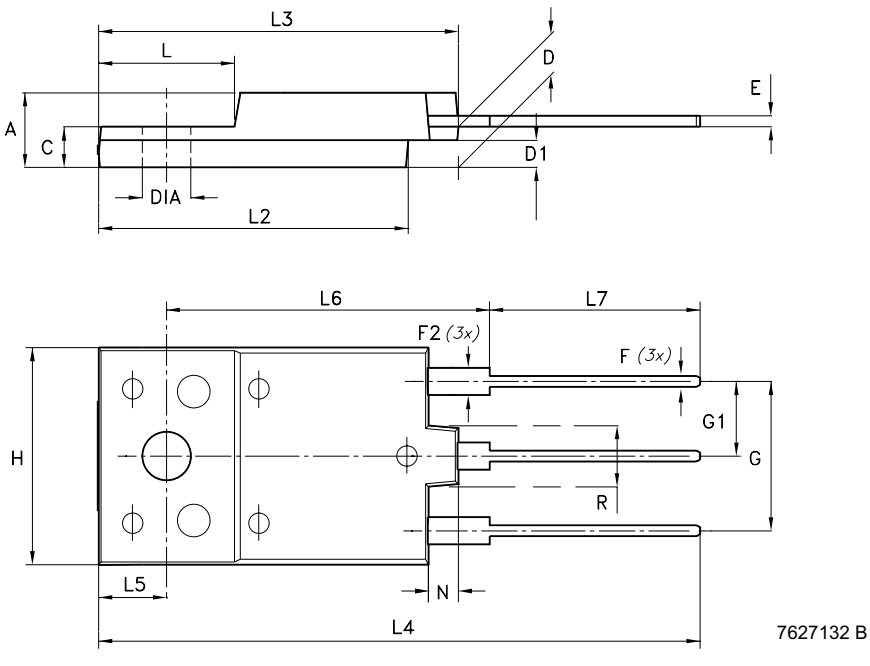


4 Package Mechanical Data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

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



5 Revision History

Date	Revision	Changes
18-Oct-2005	1	First release

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