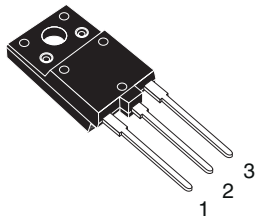
ST4460FX

High voltage fast-switching NPN Power transistor

General features

- High voltage and high current capability
- Low spread of dynamic parameters
- Low base-drive requirements
- Very high switching speed
- High ruggedness
- Fully insulated power package U.L. compliant



ISOWATT218FX

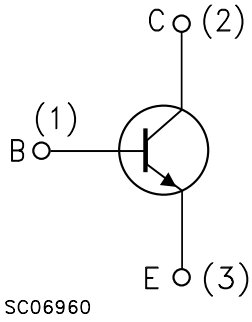
Applications

- Switch mode power supplies for CRT TV

Description

The device is manufactured using high voltage Multi Epitaxial Mesa technology adopting Hollow Emitter structure to enhance switching performances.

Internal schematic diagram



Order codes

Part Number	Marking	Package	Packing
ST4460FX	4460FX	ISOWATT218FX	Tube

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1 Electrical ratings

Table 1. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CES}	Collector-emitter voltage (V_{BE} = 0)	1000	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	500	V
V_{EBO}	Collector-base voltage (I_C = 0)	9	V
I_C	Collector current	15	A
I_{CM}	Collector peak current (t_P < 5ms)	30	A
I_B	Base current	7	A
P_{TOT}	Total dissipation at T_c = 25°C	63	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	°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} = 1000V V_{CE} = 1000V; T_C= 125°C			100 500	µA µA
I_{CEO}	Collector cut-off current (I_B =0)	V_{CE} = 500V			250	µA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B =0)	I_C = 10mA	500			V
V_{EBO}	Emitter-base voltage (I_c =0)	I_E = 10mA	9			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 6A I_B = 1.2A I_C = 8A I_B = 1.6A I_C = 10A I_B = 2A			1 1.5 3	V V V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 6A I_B = 1.2A I_C = 8A I_B = 1.6A			1.5 1.6	V V
h_{FE} (1)	DC current gain	I_C = 1.2A V_{CE} = 5V I_C = 6A V_{CE} = 5V	28 10		45	
t_s t_f	Inductive load Storage time Fall time	I_C = 8A I_{B1} = 1.6A $V_{BE(off)}$ = -5V R_{BB} = 0.4Ω V_{CL} = 350V L = 200µH		1.5 55	2.3 100	µs ns
t_s t_f	Inductive load Storage time Fall time	I_C = 8A I_{B1} = 1.6A $V_{BE(off)}$ = -5V R_{BB} = 0.4Ω V_{CL} = 350V L = 200µH T_C = 100°C		1.9 80		µs ns

1. Pulsed: Pulse duration = 300 ms, duty cycle 1.5 %

2.1 Electrical characteristics (curve)

Figure 1. Safe operating area

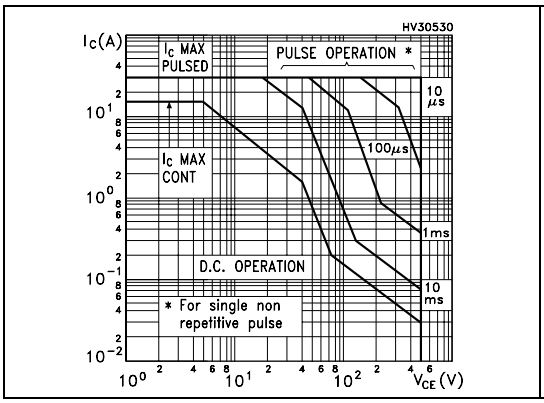


Figure 2. Derating curve

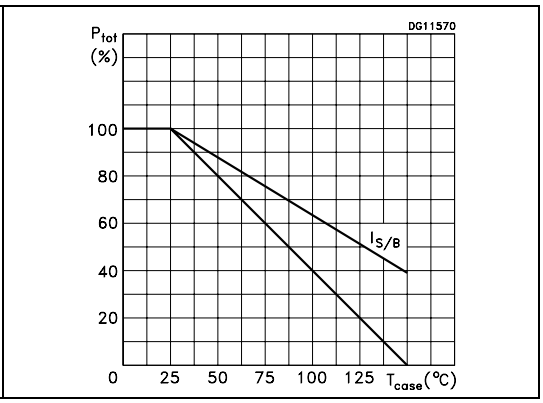


Figure 3. DC current gain

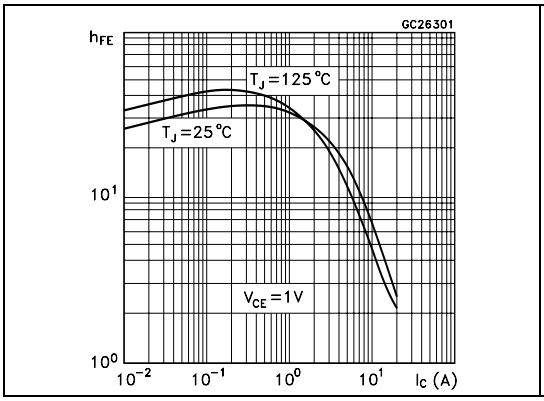


Figure 4. DC current gain

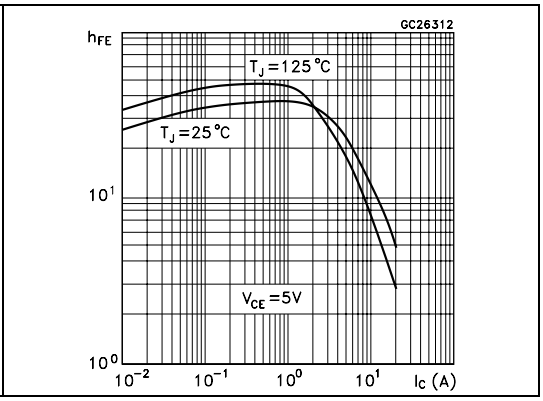


Figure 5. Collector emitter saturation voltage

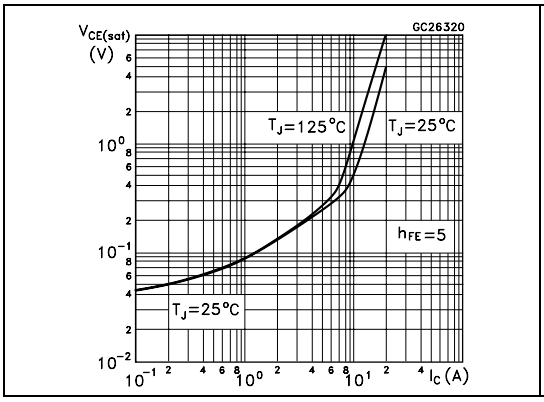


Figure 6. Base emitter saturation voltage

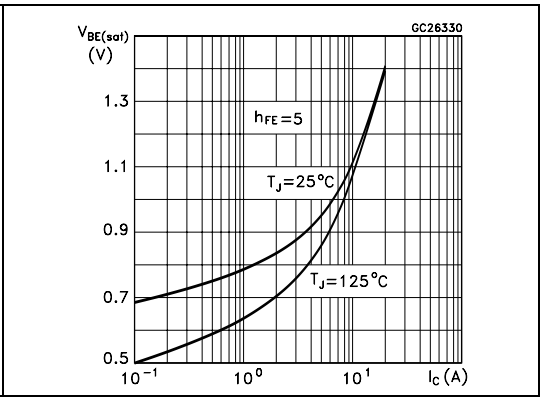


Figure 7. Inductive fall time

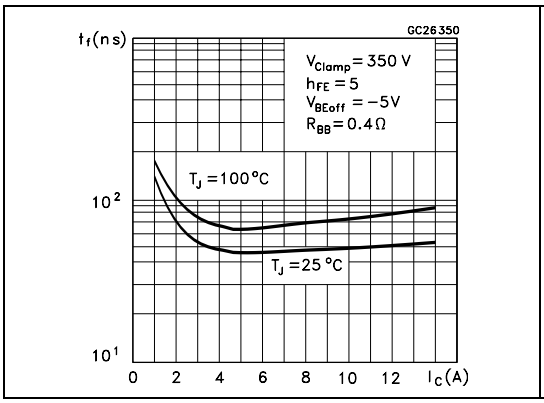


Figure 8. Inductive storage time

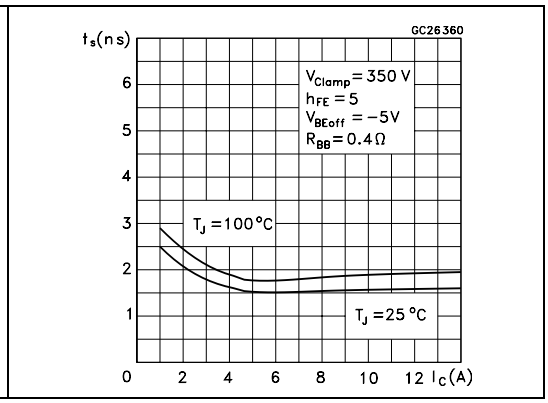
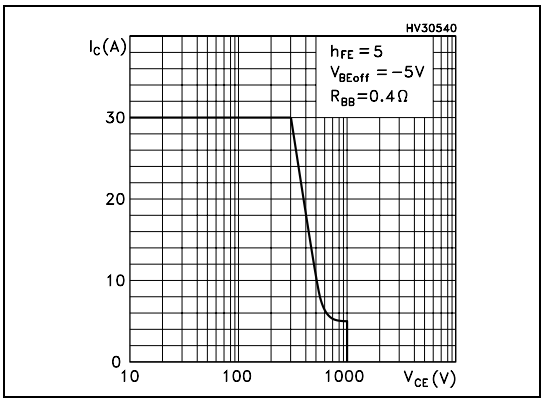


Figure 9. Reverse biased SOA



2.2 Test circuits

Figure 10. Power losses and inductive load switching

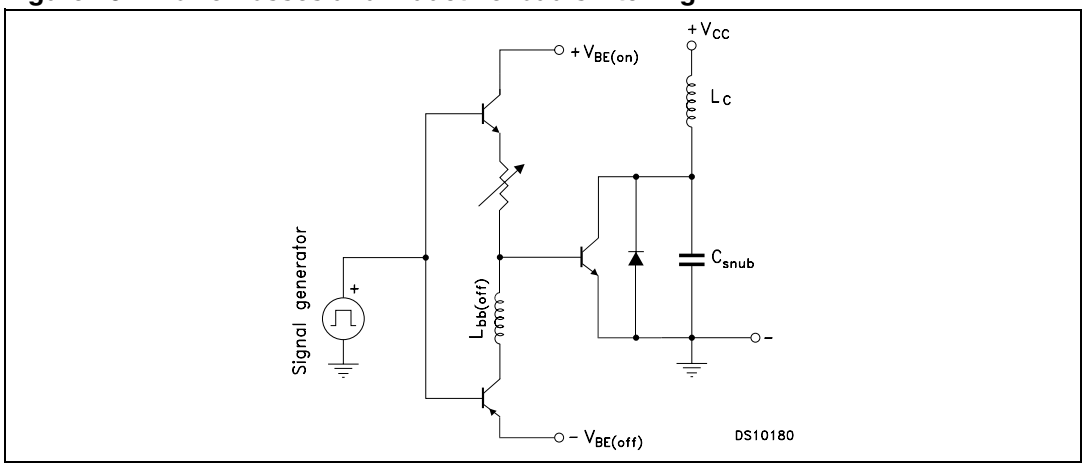
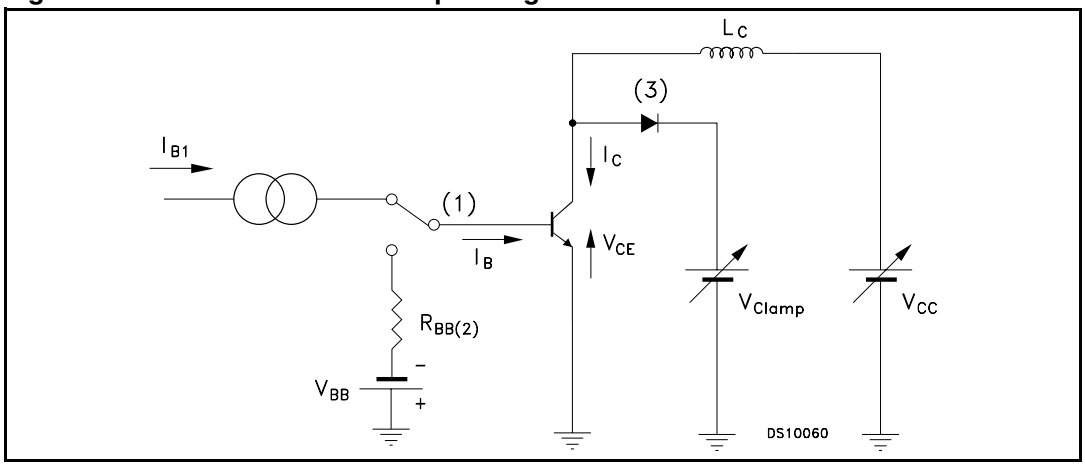


Figure 11. Reverse biased safe operating area

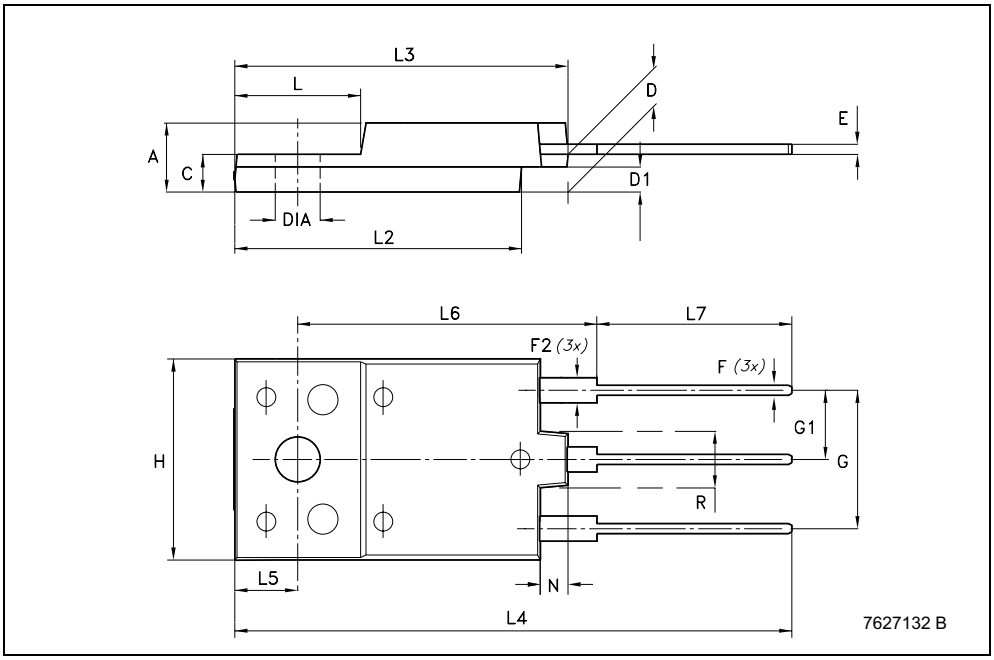


3 Package mechanical data

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



4 Revision history

Table 4. Revision history

Date	Revision	Changes
18-Dec-2006	1	Initial release.

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