



ST8812FX

High voltage fast-switching
NPN Power transistor

Features

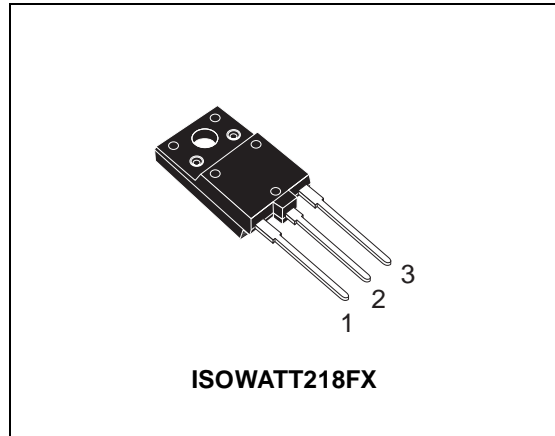
- High voltage capability
- Very high switching speed
- Tight hfe control
- Large R.B.S.O.A.
- Fully insulated Package U.L. compliant for easy mounting

Applications

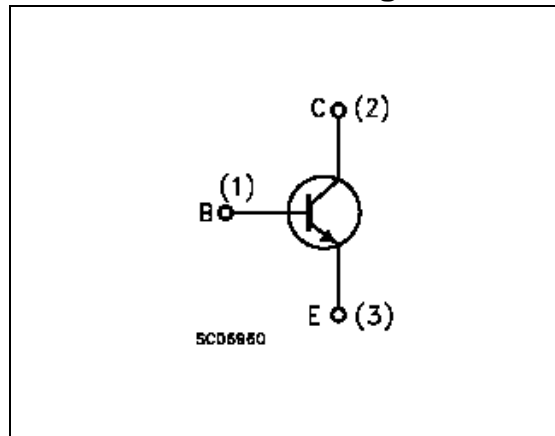
- Switch mode power supplies for crt TV

Description

The ST8812FX is manufactured using latest Multi Epitaxial Planar technology with high voltage capability. It shows wide R.B.S.O.A. and high switching speed thanks to its Cellular Emitter structure with planar edge termination and deep base diffusion.



Internal schematic diagram



Order codes

Part Number	Marking	Package	Packing
ST8812FX	ST8812FX	ISOWATT218FX	TUBE

1 Electrical ratings

Table 1. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	1150	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	600	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	15	V
I_C	Collector Current	7	A
I_{CM}	Collector Peak Current ($t_p < 5\text{ms}$)	12	A
I_B	Base Current	4	A
P_{TOT}	Total dissipation at $T_c = 25^\circ\text{C}$	50	W
V_{isol}	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	2500	V
T_{STG}	Storage Temperature	-65 to 150	$^\circ\text{C}$
T_J	Max. Operating Junction Temperature	150	$^\circ\text{C}$

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{thJ-case}$	Thermal Resistance Junction-Case Max	2.5	$^\circ\text{C}/\text{W}$

2 Electrical characteristics

($T_{CASE} = 25^{\circ}C$; unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = 1150V$			1	mA
		$V_{CE} = 1150V$ $T_C = 125^{\circ}C$			2	mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 14V$			1	mA
$V_{CEO(sus)}$ <i>Note: 1</i>	Collector-Emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100mA$	600			V
$V_{CE(sat)}$ <i>Note: 1</i>	Collector-Emitter Saturation Voltage	$I_C = 4A$ $I_B = 0.8A$			3	V
		$I_C = 4A$ $I_B = 1.2A$			1.5	V
$V_{BE(sat)}$ <i>Note: 1</i>	Base-Emitter Saturation Voltage	$I_C = 4A$ $I_B = 0.8A$			1.3	V
h_{FE}	DC Current Gain	$I_C = 1A$ $V_{CE} = 5V$		25		
		$I_C = 5A$ $V_{CE} = 1V$		5		
		$I_C = 5A$ $V_{CE} = 5V$	4.5		9	
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 4A$ $R_{BB} = 0$		1	1.6	μs
		$V_{Clamp} = 480V$ $V_{BE(off)} = -5V$ $I_{B1} = 0.8A$ $L_C = 220\mu H$ (See Figure 8)		60	120	ns

Note: 1 Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$.

2.1 Typical characteristics test circuit

Figure 1. DC current gain

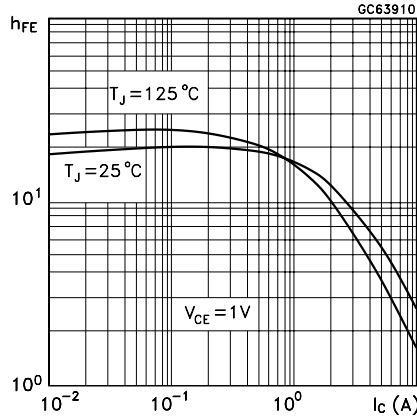


Figure 2. DC current gain

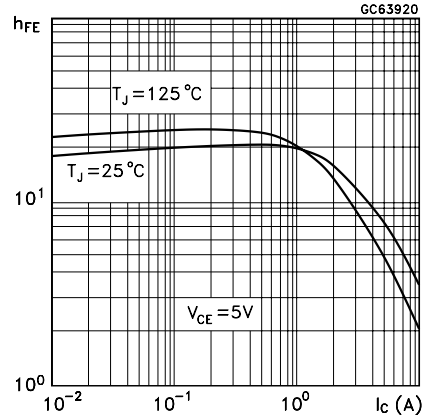


Figure 3. Collector emitter saturation voltage

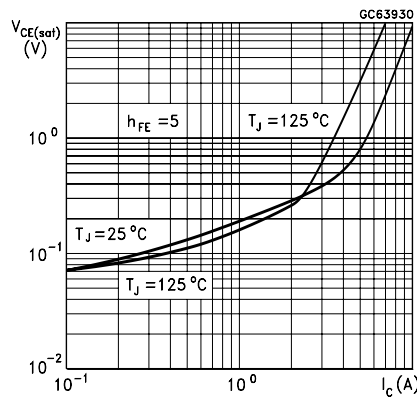


Figure 4. Base emitter saturation voltage

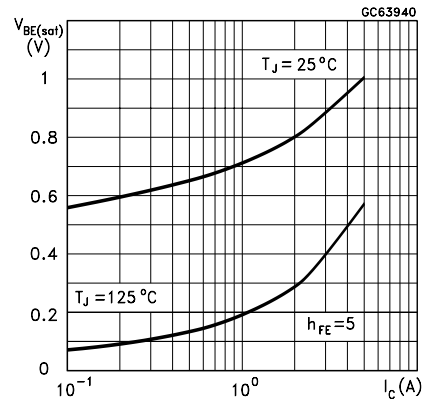


Figure 5. Inductive load storage time

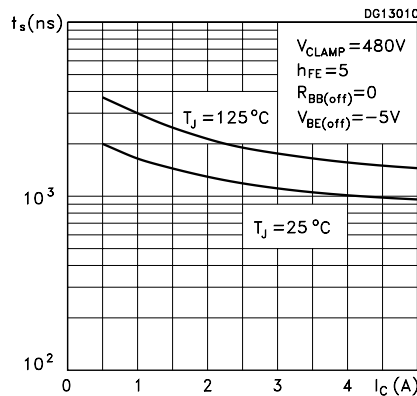


Figure 6. Inductive load fall time

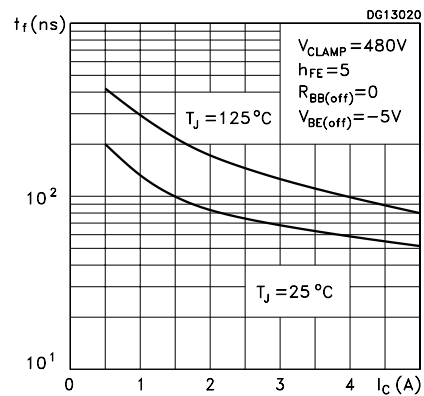


Figure 7. Reverse biased S.O.A.

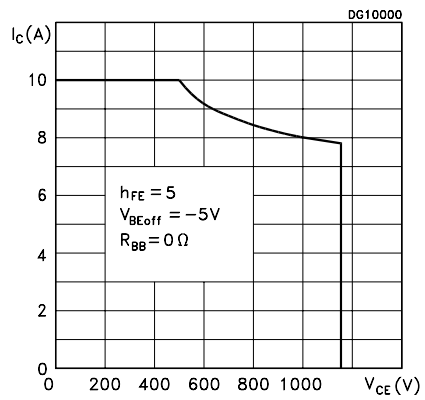
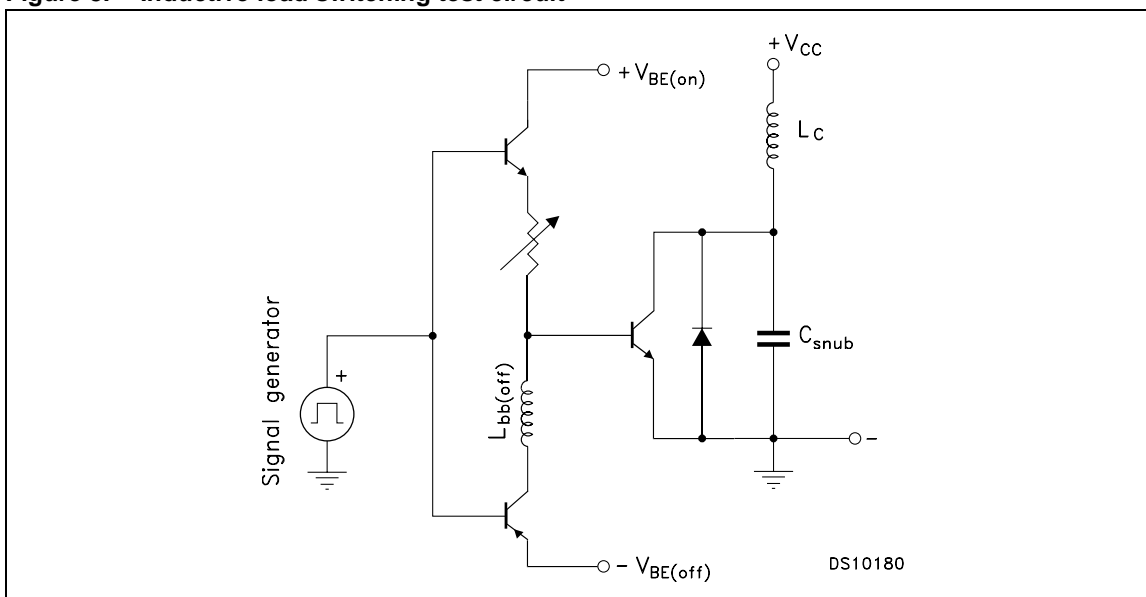


Figure 8. Inductive load switching test circuit

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.

4 Revision History

Table 4. Revision history

Date	Revision	Changes
23-Feb-2006	1	Initial release.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED REPRESENTATIVE OF ST, ST PRODUCTS ARE NOT DESIGNED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS, WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2006 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com