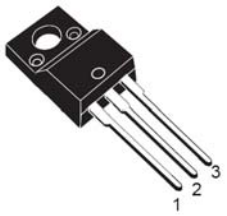
ST8812FP

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



TO-220FP

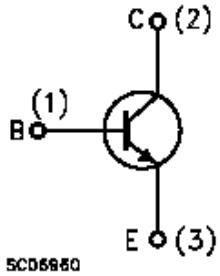
Applications

- SWITCH MODE POWER SUPPLIES FOR CRT TV

Description

The ST8812FP 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
ST8812FP	ST8812FP	TO-220FP	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}	Emitte-Base Voltage (I_C = 0)	15	V
I_C	Collector Current	7	A
I_{CM}	Collector Peak Current (t_P < 5ms)	12	A
I_B	Base Current	4	A
P_{TOT}	Total dissipation at T_c = 25°C	36	W
V_{isol}	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	1500	V
T_{STG}	Storage Temperature	-65 to 150	°C
T_J	Max. Operating Junction Temperature	150	°C

Table 2. Thermal Data

Symbol	Parameter		Value	Unit
$R_{thJ\text{-}case}$	Thermal Resistance Junction-Case	Max	3.47	°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} = 1150V V_{CE} = 1150V T_c= 125°C			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 14V			1	mA
$V_{CEO(sus)}$ *Note: 1*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100mA	600			V
$V_{CE(sat)}$ *Note: 1*	Collector-Emitter Saturation Voltage	I_C = 4A I_B = 0.8A I_C = 4A I_B = 1.2A			3 1.5	V V
$V_{BE(sat)}$ *Note: 1*	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 I_C = 5A V_{CE} = 1V I_C = 5A V_{CE} = 5V	 4.5	25 5 	 9	
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 4A R_{BB}= 0 V_{Clamp} = 480V $V_{BE(off)}$ = -5V I_{B1} = 0.8A L_C= 220µH (See *Figure 8*)		 1 60	 1.6 120	 µs ns

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

2.1 Typical characteristicsTest circuit

Figure 1. DC Current Gain

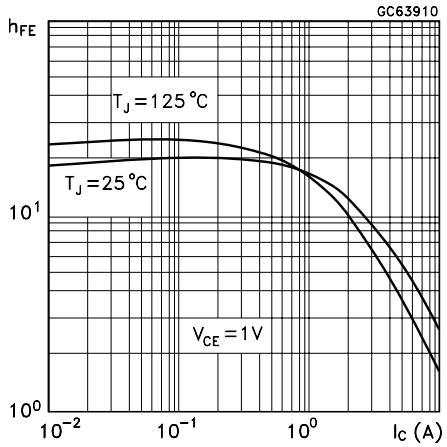


Figure 2. DC Current Gain

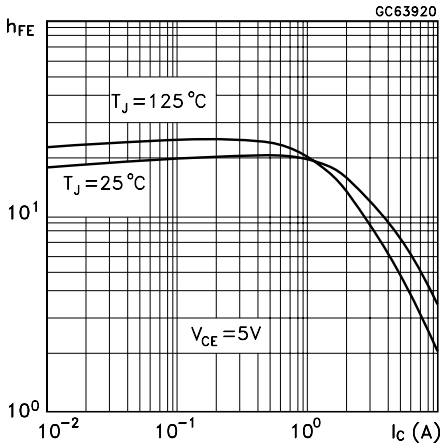


Figure 3. Collector Emitter Saturation Voltage

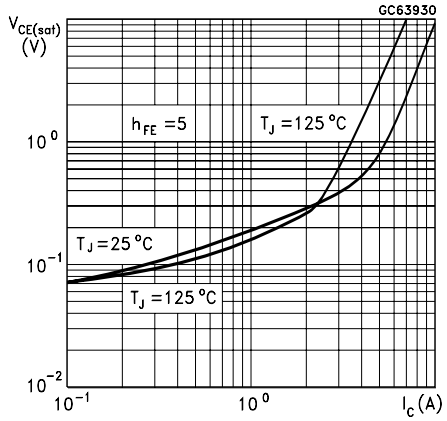


Figure 4. Base Emitter Saturation Voltage

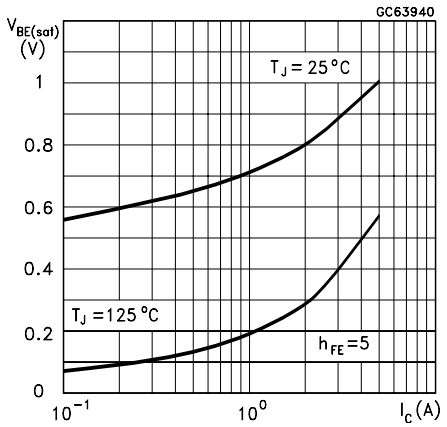


Figure 5. Inductive Load Storage Time

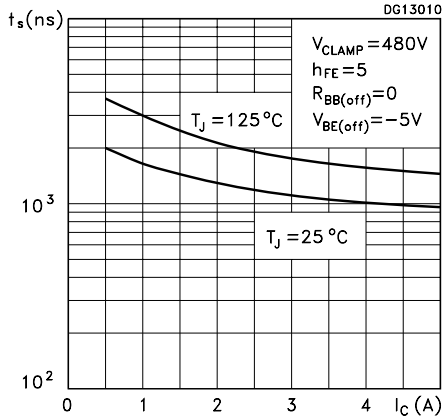


Figure 6. Inductive Load Fall Time

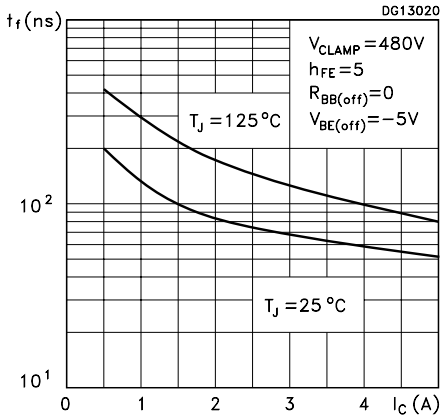


Figure 7. Reverse Biased S.O.A.

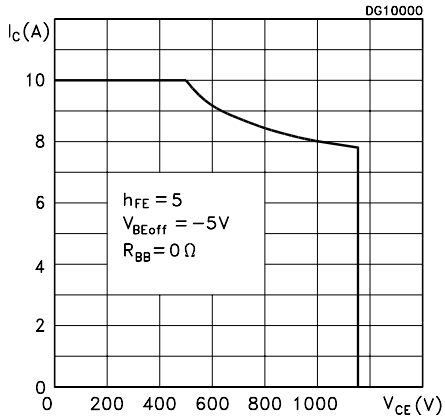
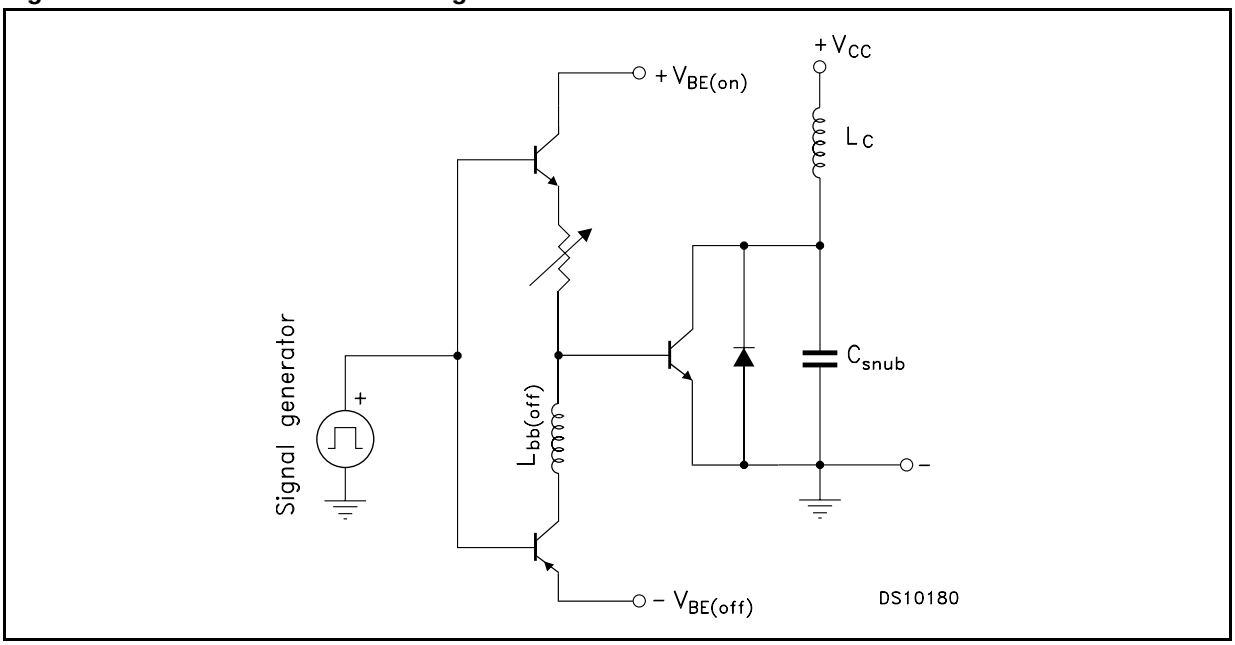


Figure 8. Inductive Load Switching Test Circuit

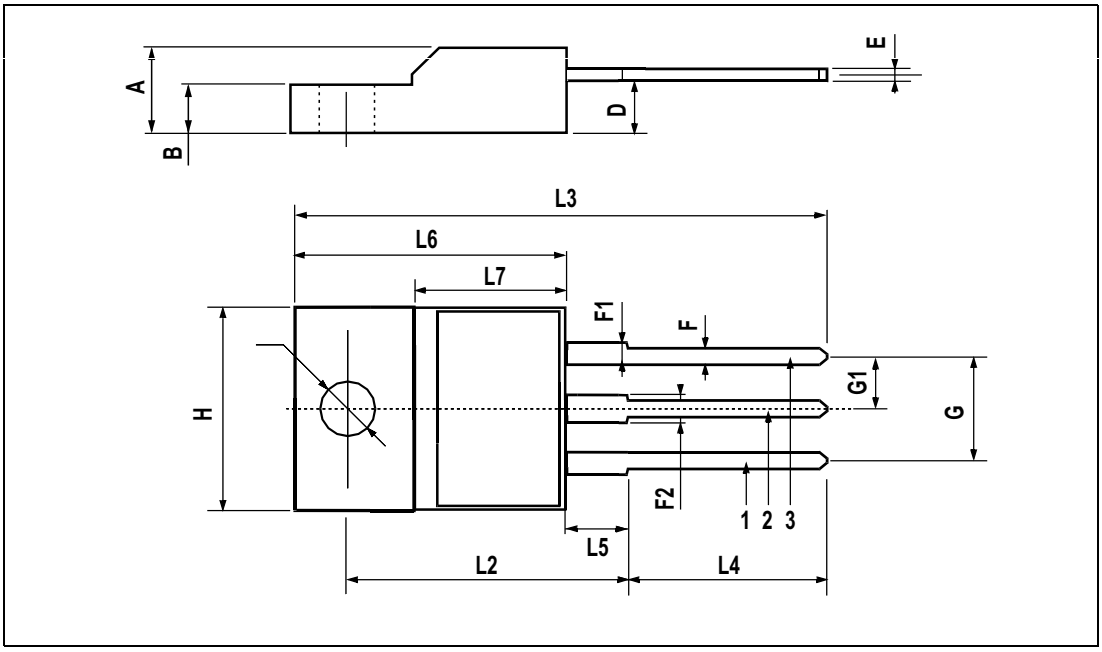


3 Package Mechanical Data

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.

TO-220FP MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
B	2.5		2.7	0.098		0.106
D	2.5		2.75	0.098		0.108
E	0.45		0.7	0.017		0.027
F	0.75		1	0.030		0.039
F1	1.15		1.7	0.045		0.067
F2	1.15		1.7	0.045		0.067
G	4.95		5.2	0.195		0.204
G1	2.4		2.7	0.094		0.106
H	10		10.4	0.393		0.409
L2		16			0.630	
L3	28.6		30.6	1.126		1.204
L4	9.8		10.6	.0385		0.417
L5	2.9		3.6	0.114		0.141
L6	15.9		16.4	0.626		0.645
L7	9		9.3	0.354		0.366
Ø	3		3.2	0.118		0.126



4 Revision History

Date	Revision	Changes
17-Nov-2005	1	Initial release.