



SGSIF344FP

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE
- HIGH VOLTAGE CAPABILITY
- VERY HIGH SWITCHING SPEED
- LOW BASE-DRIVE REQUIREMENTS

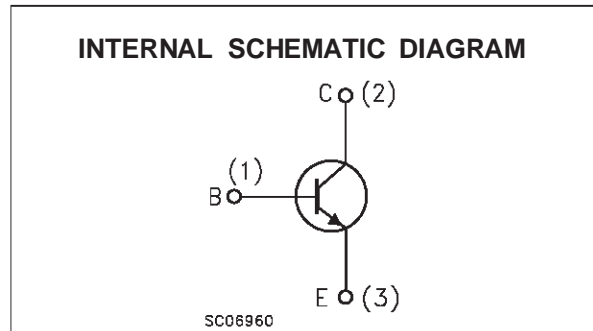
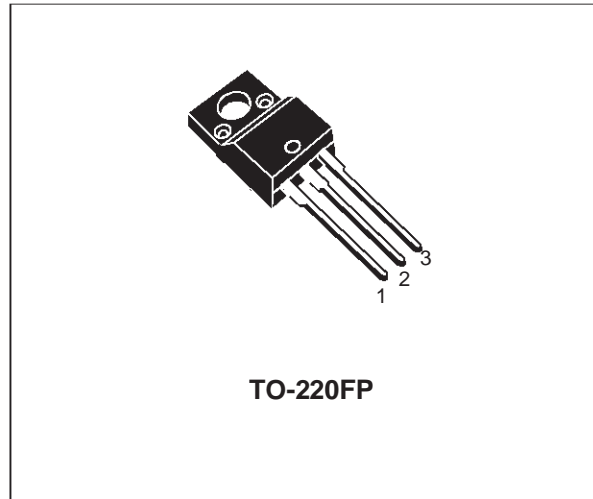
APPLICATIONS:

- SWITCH MODE POWER SUPPLIES
- HORIZONTAL DEFLECTION FOR COLOUR TVS AND MONITORS

DESCRIPTION

The device is manufactured using Multi-epitaxial Mesa technology for cost-effective high performance and uses a Hollow Emitter structure to enhance switching speeds.

It is designed for high speed switching applications such as power supplies and horizontal deflection circuits in TVs and monitors.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	1200	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	7	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	12	A
I_B	Base Current	5	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	8	A
P_{tot}	Total Dissipation at $T_c = 25$ °C	40	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

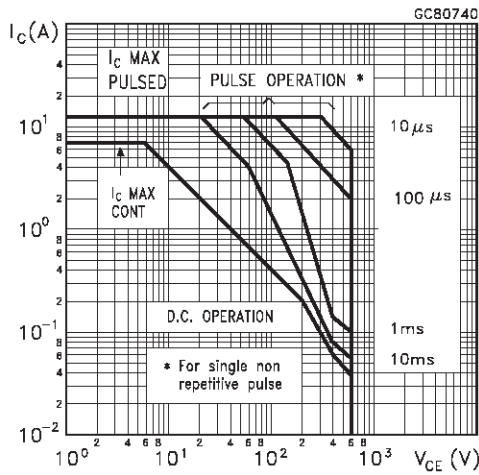
R _{thj-case}	Thermal Resistance Junction-case	Max	3.12	°C/W
-----------------------	----------------------------------	-----	------	------

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

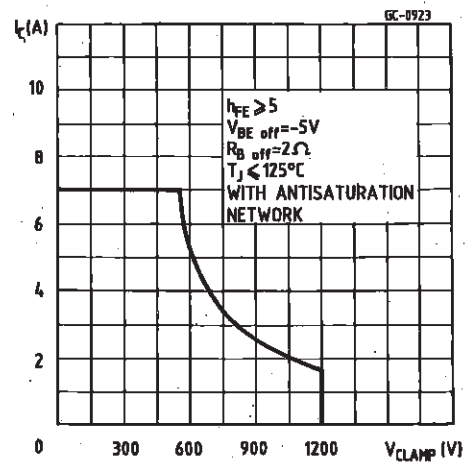
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CES}	Collector Cut-off Current (V _{BE} = 0)	V _{CE} = 1200 V			200	μA
I _{CEO}	Collector Cut-off Current (I _B = 0)	V _{EC} = 380 V V _{EC} = 600 V			200 2	μA mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{BE} = 7 V			1	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage	I _C = 100 mA	600			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 3.5 A I _B = 0.7 A I _C = 2.5 A I _B = 0.35 A			1.5 1.5	V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 3.5 A I _B = 0.7 A I _C = 2.5 A I _B = 0.35 A			1.5 1.5	V V
t _{on} t _s t _f	RESISTIVE LOAD Turn-on Time Storage Time Fall Time	V _{CC} = 250 V I _C = 3.5 A I _{B1} = 0.7 A I _{B1} = -1.4 A		0.7 2.2 0.18	1.2 3.5 0.4	μs μs μs
t _{on} t _s t _f	RESISTIVE LOAD Turn-on Time Storage Time Fall Time	V _{CC} = 250 V I _C = 3.5 A I _{B1} = 0.7 A I _{B1} = -1.4 A With Antisaturation Network		0.7 1.5 0.2		μs μs μs
t _{on} t _s t _f	RESISTIVE LOAD Turn-on Time Storage Time Fall Time	V _{CC} = 250 V I _C = 3.5 A I _{B1} = 0.7 A V _{BE(off)} = -5 V		0.7 1 0.2		μs μs μs
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	I _C = 3.5 A h _{FE} = 5 V _{CLAMP} = 450 V V _{BE(off)} = -5 V L = 300 μH R _{BB} = 1.2 Ω		1.4 0.1	2.8 0.2	μs μs
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	I _C = 3.5 A h _{FE} = 5 V _{CLAMP} = 450 V V _{BE(off)} = -5 V L = 300 μH R _{BB} = 1.2 Ω T _C = 100 °C			4 0.3	μs μs

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

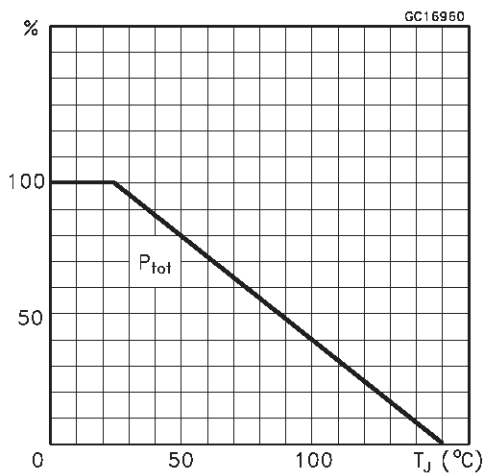
Safe Operating Area



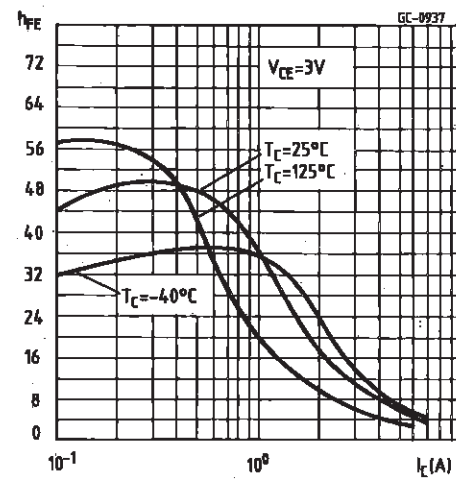
Reverse Biased SOA



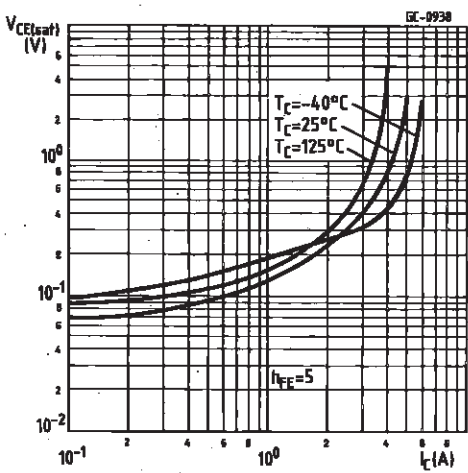
Derating Curve



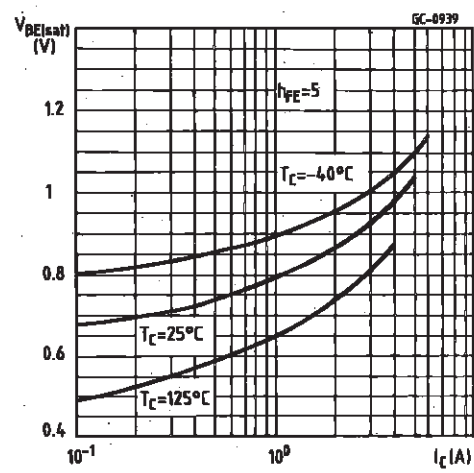
DC Current Gain



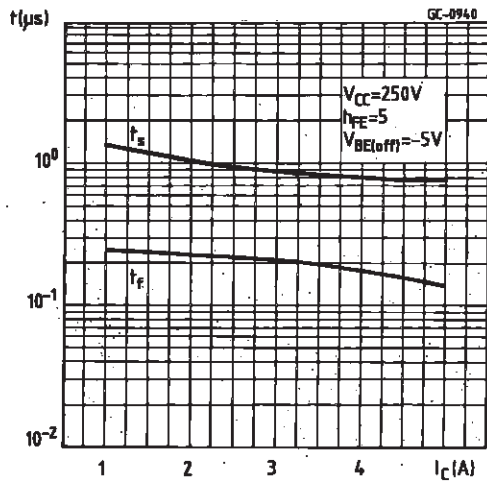
Collector Emitter Saturation Voltage



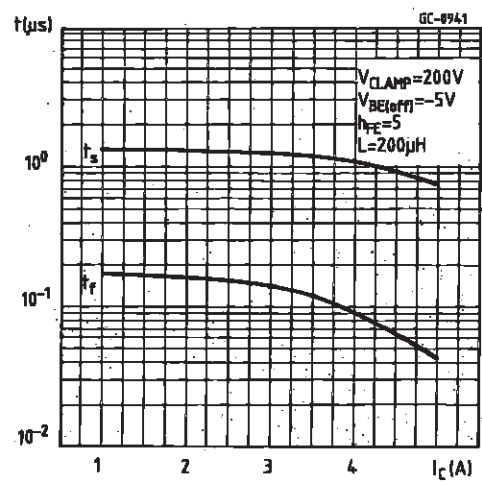
Base Emitter Saturation Voltage



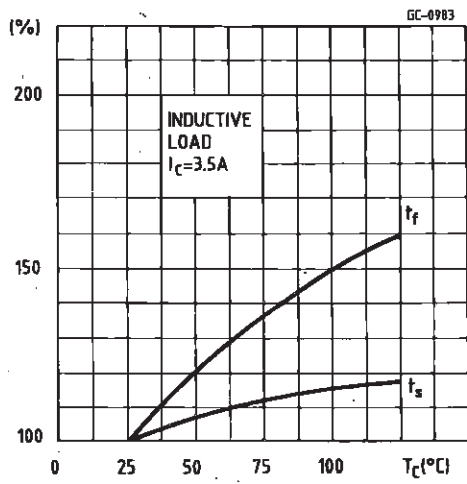
Resistive Load Switching Times



Inductive Load Switching Times

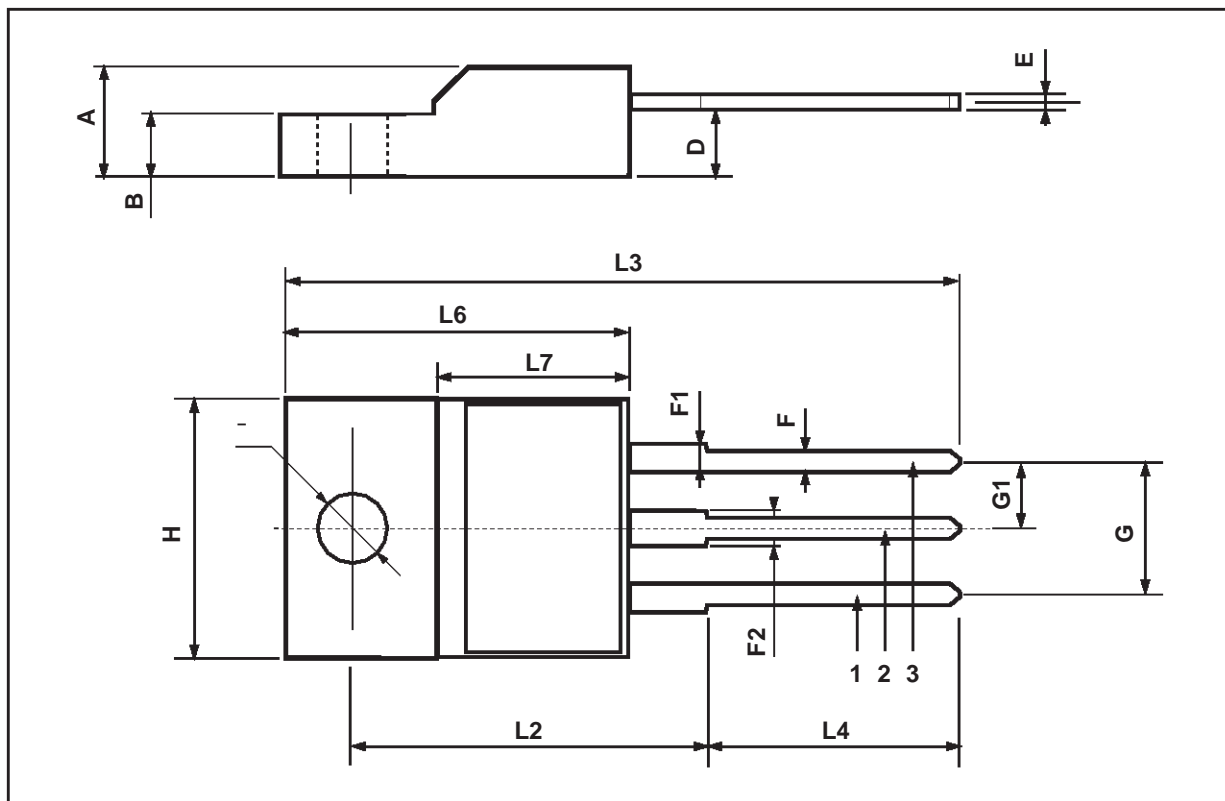


Switching Times Percentance Variation



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	0.385		0.417
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



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 1999 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

<http://www.st.com>