



## ST13007FP

### HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- HIGH VOLTAGE CAPABILITY
- NPN TRANSISTOR
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED
- FULLY CHARACTERIZED AT 125 °C
- LARGE RBSOA

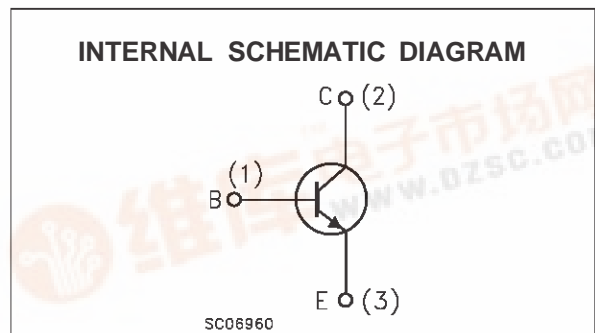
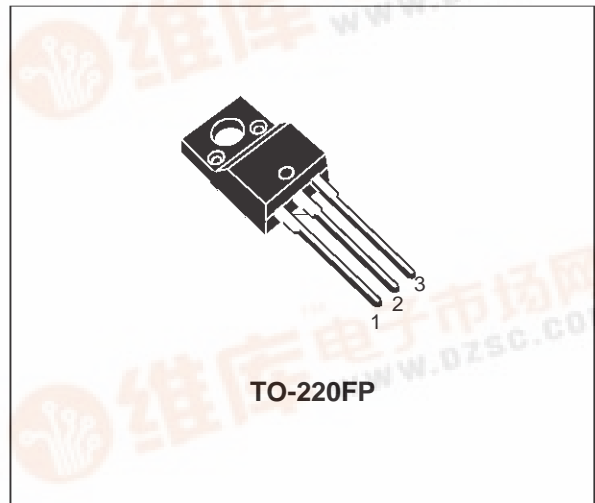
#### APPLICATIONS

- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING
- SWITCH MODE POWER SUPPLIES

#### DESCRIPTION

The device is manufactured using high voltage Multi Epitaxial Planar technology for high switching speeds and high voltage capability.

They use a Cellular Emitter structure to enhance switching speeds.



#### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CEV}$	Collector-Emitter Voltage ( $V_{BE} = -1.5V$ )	700	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	400	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	9	V
$I_C$	Collector Current	8	A
$I_{CM}$	Collector Peak Current	16	A
$I_B$	Base Current	4	A
$I_{BM}$	Base Peak Current	8	A
$P_{tot}$	Total Dissipation at $T_c \leq 25\text{ °C}$	36	W
$T_{stg}$	Storage Temperature	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	150	°C

## ST13007FP

### THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	3.47	$^{\circ}\text{C}/\text{W}$
----------------	----------------------------------	-----	------	-----------------------------

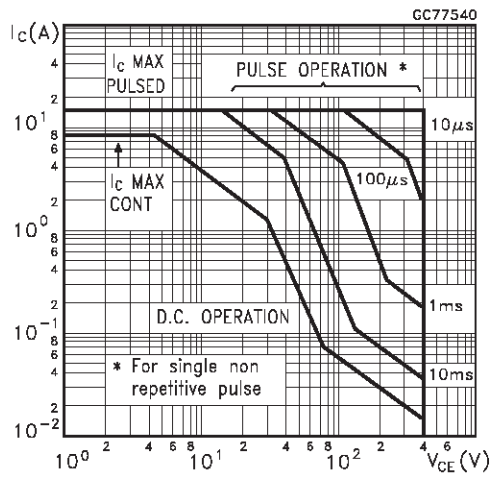
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEV}$	Collector Cut-off Current ( $V_{BE} = -1.5\text{V}$ )	$V_{CE} = \text{rated } V_{CEV}$ $V_{CE} = \text{rated } V_{CEV} \quad T_c = 100^{\circ}\text{C}$			1 5	mA mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 9\text{V}$			1	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{mA}$	400			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 2\text{A} \quad I_B = 0.4\text{A}$ $I_C = 5\text{A} \quad I_B = 1\text{A}$ $I_C = 8\text{A} \quad I_B = 2\text{A}$ $I_C = 5\text{A} \quad I_B = 1\text{A} \quad T_c = 100^{\circ}\text{C}$			1 2 3 3	V V V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 2\text{A} \quad I_B = 0.4\text{A}$ $I_C = 5\text{A} \quad I_B = 1\text{A}$ $I_C = 5\text{A} \quad I_B = 1\text{A} \quad T_c = 100^{\circ}\text{C}$			1.2 1.6 1.5	V V V
$h_{FE}^*$	DC Current Gain	$I_C = 2\text{A} \quad V_{CE} = 5\text{V}$ Group A Group B $I_C = 5\text{A} \quad V_{CE} = 5\text{V}$	15 26 5		28 40 30	
$t_s$ $t_f$	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 5\text{A} \quad V_{CL} = 250\text{V}$ $I_{B1} = 1\text{A} \quad I_{B2} = -2\text{A}$ $L = 200\mu\text{H}$		1.6 60	2.5 110	ms ns
$t_s$ $t_f$	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 5\text{A} \quad V_{CL} = 250\text{V}$ $I_{B1} = 1\text{A} \quad I_{B2} = -2\text{A}$ $L = 200\mu\text{H} \quad T_c = 125^{\circ}\text{C}$		2.3 110		$\mu\text{s}$ ns

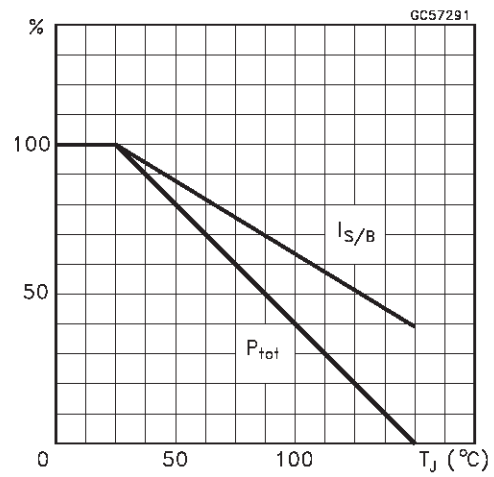
\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 2 %

Note : Product is pre-selected in DC current gain (GROUP A and GROUP B). STMicroelectronics reserves the right to ship either groups according to production availability. Please contact your nearest STMicroelectronics sales office for delivery details.

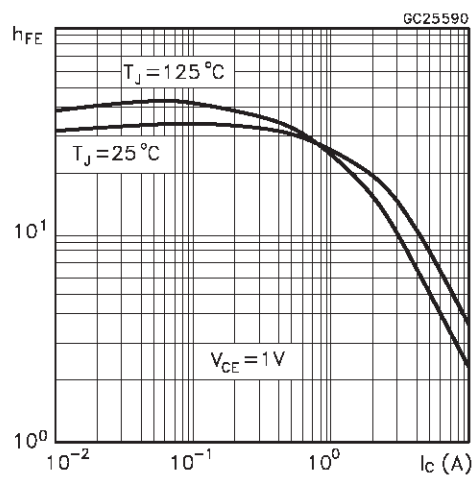
Safe Operating Areas



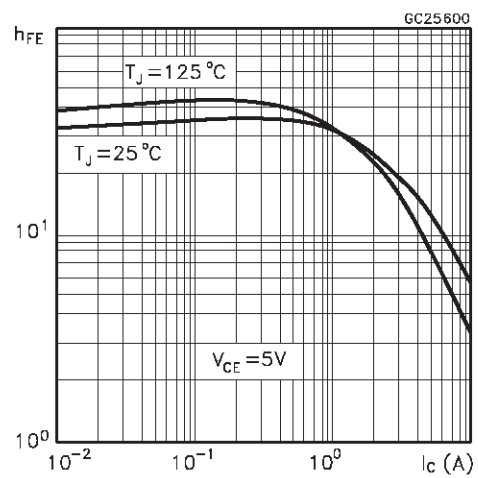
Derating Curve



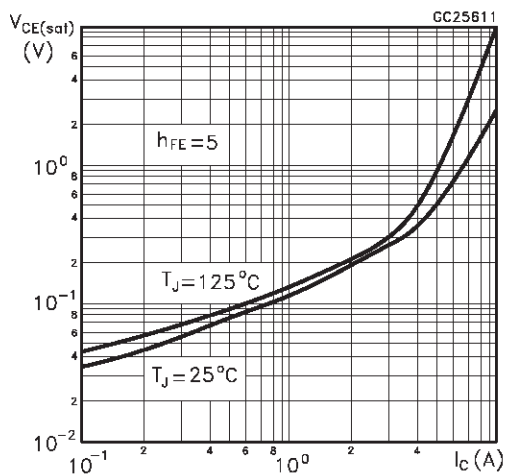
DC Current Gain



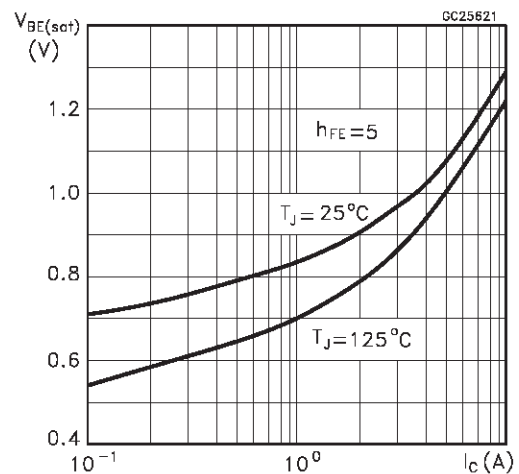
DC Current Gain



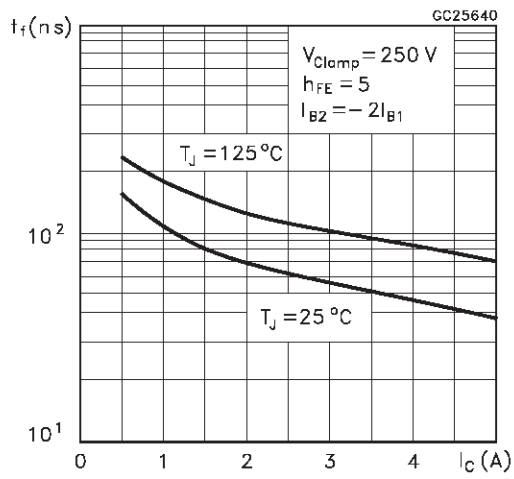
Collector Emitter Saturation Voltage



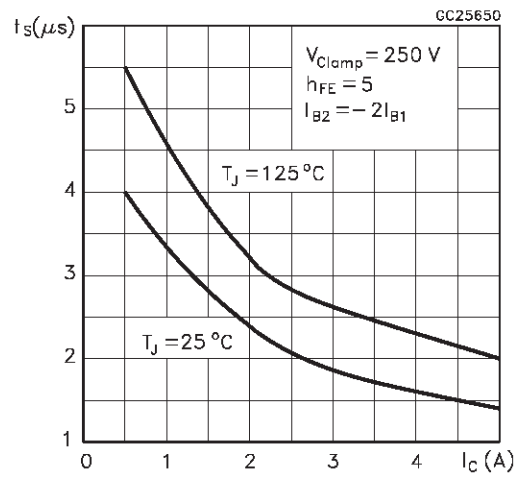
Base Emitter Saturation Voltage



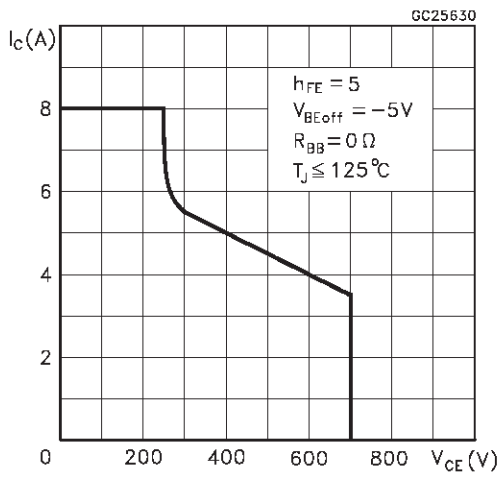
Inductive Fall Time



Inductive Storage Time

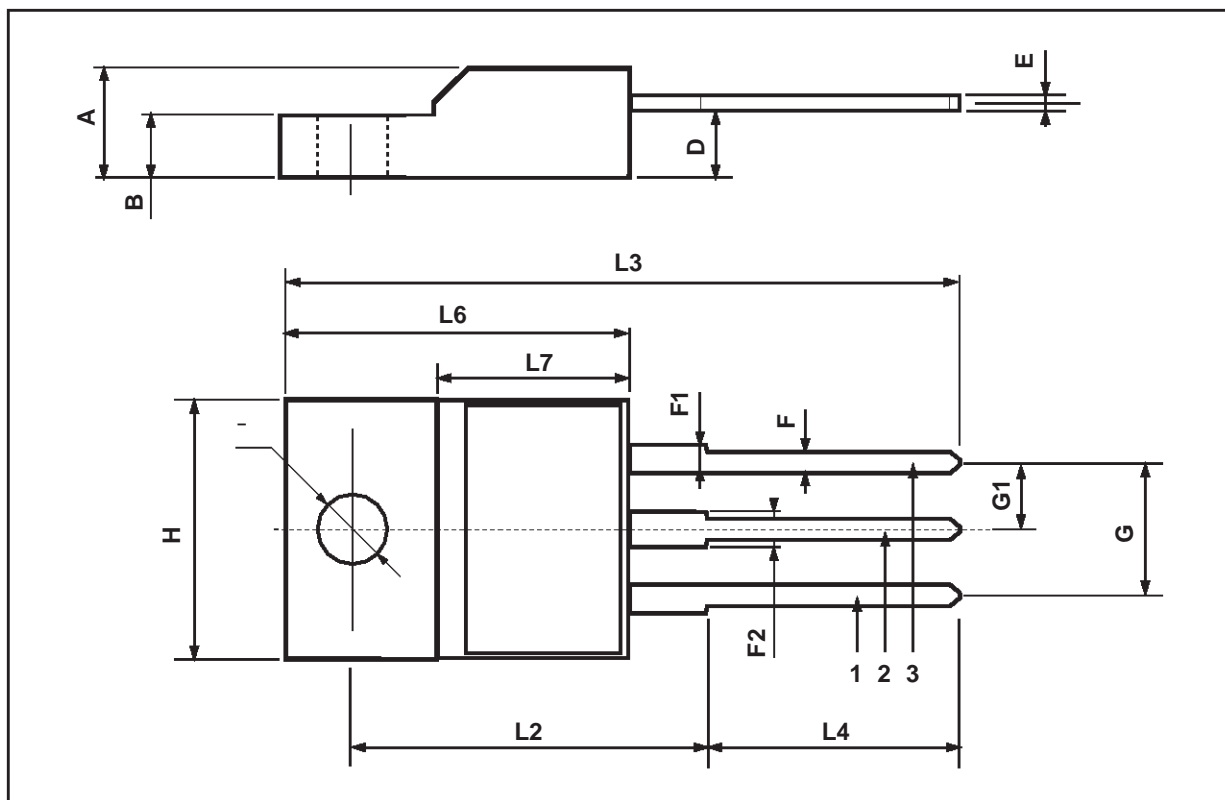


Reverse Biased SOA



## 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

© 1998 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.