SGS-THOMSON MICROELECTRONICS

SGSIF344

HIGH VOLTAGE FASTSWITCHING NPN POWER TRANSISTOR

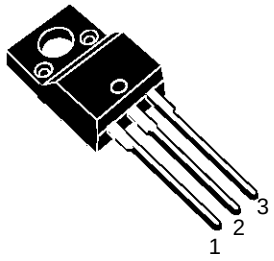
- SGS-THOMSON PREFERRED SALESTYPES
- HIGH VOLTAGE CAPABILITY
- VERY HIGH SWITCHING SPEED
- LOW BASE-DRIVE REQUIREMENTS

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

DESCRIPTION

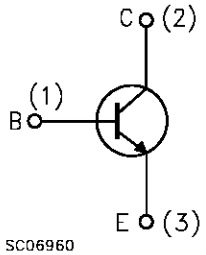
The SGSIF344 is manufactured using Multiepitaxial Mesa technology for cost-effective high performance and uses a Hollow Emitter structure to enhance switching speeds.

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



ISOWATT220

INTERNAL SCHEMATIC DIAGRAM



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

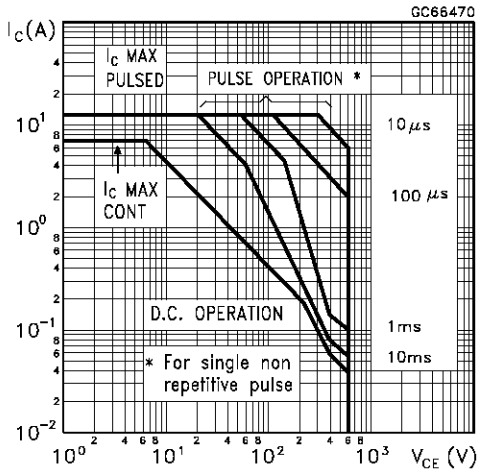
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.72	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC 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	Turn-on Time Storage Time Fall Time	RESISTIVE LOAD 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	Turn-on Time Storage Time Fall Time	RESISTIVE LOAD 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	Turn-on Time Storage Time Fall Time	RESISTIVE LOAD 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	Storage Time Fall Time	INDUCTIVE LOAD I_C = 3.5 A h_{FE} = 5 V_{CL} = 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	Storage Time Fall Time	INDUCTIVE LOAD I_C = 3.5 A h_{FE} = 5 V_{CL} = 450 V $V_{BE(off)}$ = -5 V L = 300 µH R_{BB} = 1.2 Ω T_c = 100 ^oC			4 0.3	µs µs

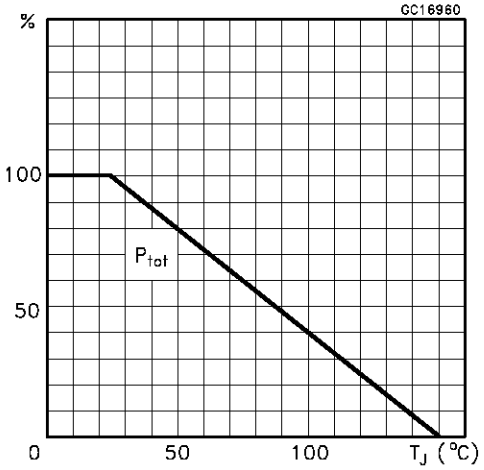
* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %

Safe Operating Area

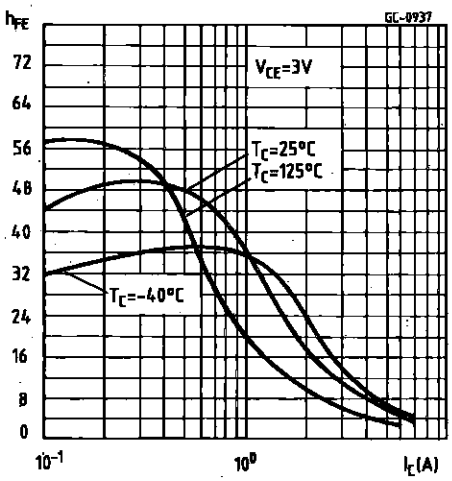


Thermal Impedance

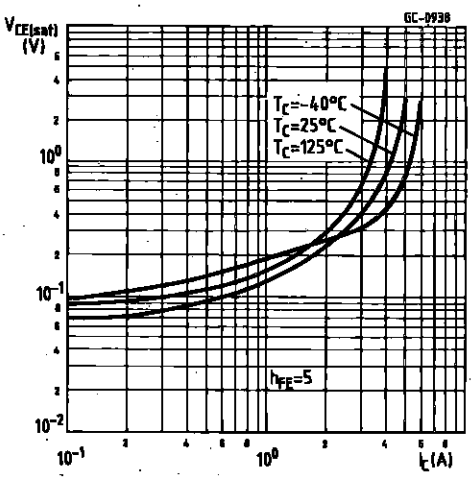
Derating Curve



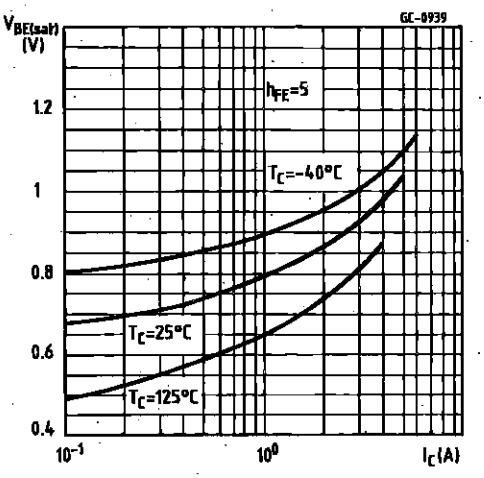
DC Current Gain



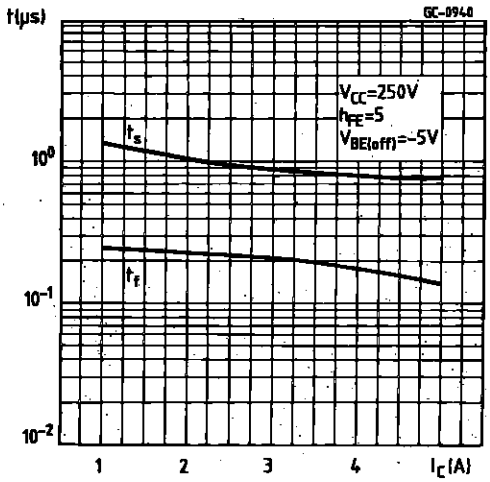
Collector Emitter Saturation Voltage



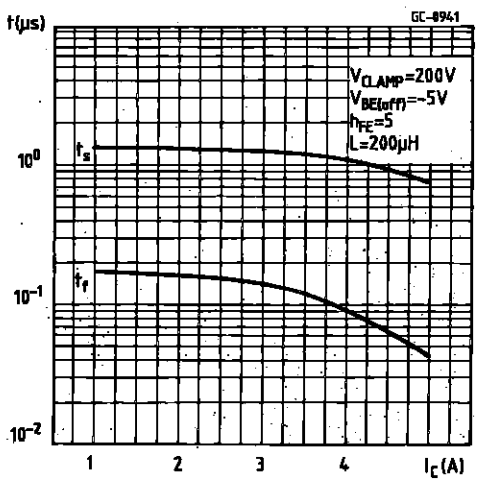
Base Emitter Saturation Voltage



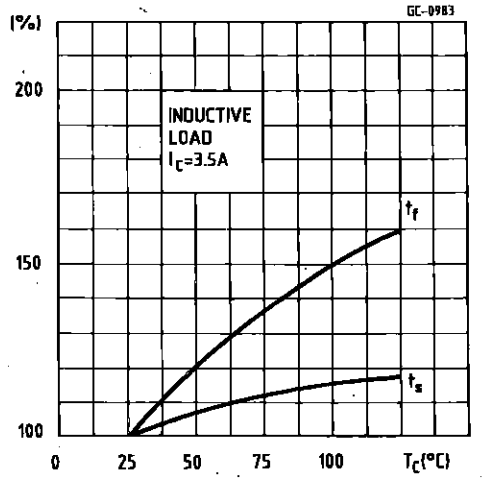
Resistive Load Switching Times



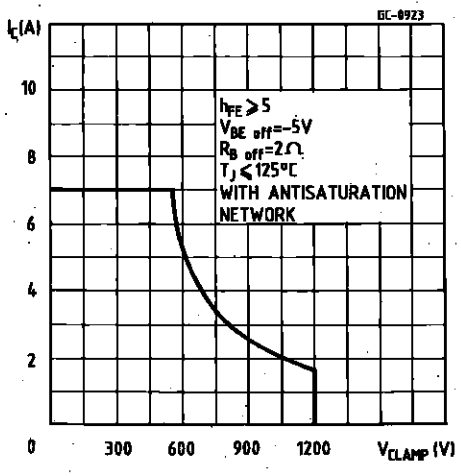
Inductive Load Switching Times



Switching Times Percentance Variation



Reverse Biased SOA



ISOWATT220 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	0.4		0.7	0.015		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