

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES
- MONOLITHIC DARLINGTON CONFIGURATION

APPLICATIONS:

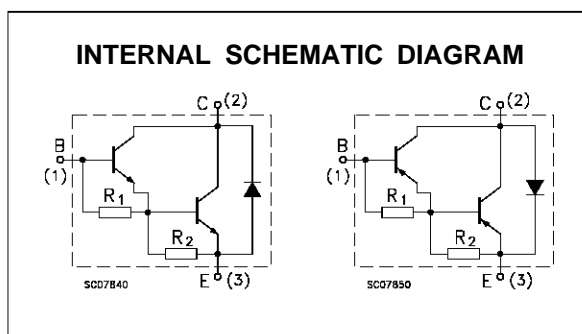
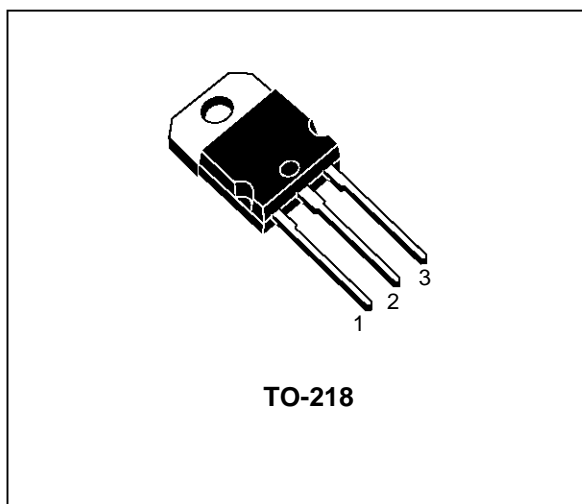
- GENERAL PURPOSE SWITCHING APPLICATION
- GENERAL PURPOSE AMPLIFIERS

DESCRIPTION

The SGSD100 is silicon epitaxial-base NPN power transistor in monolithic Darlington configuration mounted in TO-218 plastic package.

It is intended for use in general purpose and high current amplifier applications.

The complementary PNP type is the SGSD200.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	SGSD100	
		PNP	SGSD200	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)		80	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)		80	V
I_C	Collector Current		25	A
I_{CM}	Collector Peak Current		40	A
I_B	Base Current		6	A
I_{BM}	Base Peak Current		10	A
P_{tot}	Total Dissipation at $T_c \leq 25^\circ C$		130	W
T_{stg}	Storage Temperature		-65 to 150	$^\circ C$
T_j	Max. Operating Junction Temperature		150	$^\circ C$

For PNP types voltage and current values are negative.

SGSD100/SGSD200

THERMAL DATA

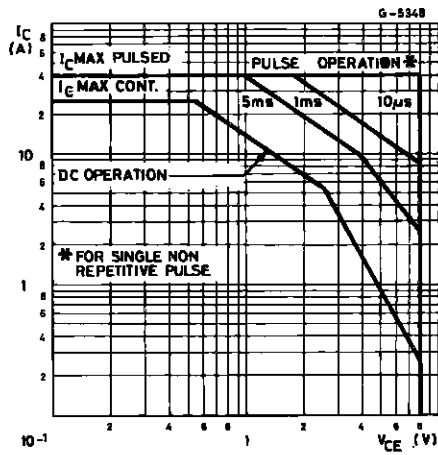
R _{thj-case}	Thermal Resistance Junction-case	Max	0.96	°C/W
-----------------------	----------------------------------	-----	------	------

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

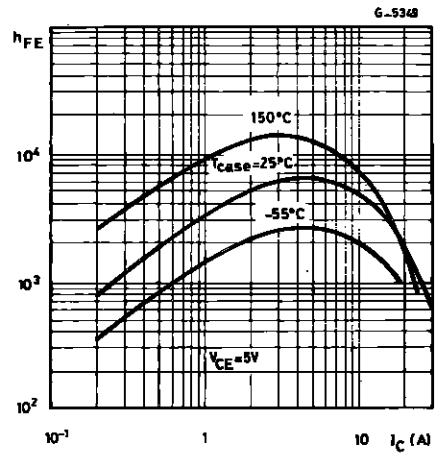
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CBO}	Collector Cut-off Current (I _E = 0)	V _{CE} = 80 V V _{CE} = 80 V T _c = 100 °C			0.5 1.5	mA mA
I _{CEV}	Collector Cut-off Current (V _{BE} = -0.3V)	V _{CE} = 80 V V _{CE} = 80 V T _c = 100 °C			0.1 2	mA mA
I _{CEO}	Collector Cut-off Current (I _B = 0)	V _{CE} = 60 V V _{CE} = 60 V T _c = 100 °C			0.5 1.5	mA mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V			2	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage	I _C = 50 mA	80			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 5 A I _B = 20 mA I _C = 5 A I _B = 20 mA T _c = 100 °C I _C = 10 A I _B = 40 mA I _C = 10 A I _B = 40 mA T _c = 100 °C I _C = 20 A I _B = 80 mA I _C = 20 A I _B = 80 mA T _c = 100 °C		0.95 0.8 1.2 1.3 2 2.3	1.2 1.75 3.5	V V V V V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 20 A I _B = 80 mA I _C = 20 A I _B = 80 mA T _c = 100 °C		2.6 2.5	3.3	V V
V _{BE*}	Base-Emitter Voltage	I _C = 10 A V _{CE} = 3 V I _C = 10 A V _{CE} = 3 V T _c = 100 °C	1	1.8 1.6	3	V V
h _{FE*}	DC Current Gain	I _C = 5 A V _{CE} = 3 V I _C = 5 A V _{CE} = 3 V T _c = 100 °C I _C = 10 A V _{CE} = 3 V I _C = 10 A V _{CE} = 3 V T _c = 100 °C I _C = 20 A V _{CE} = 3 V I _C = 20 A V _{CE} = 3 V T _c = 100 °C	600 500 300	5000 8000 4000 8000 2000 2000	15000 12000 6000	
V _{F*}	Diode Forward Voltage	I _F = 5 A I _F = 5 A T _c = 100 °C I _F = 10 A I _F = 10 A T _c = 100 °C I _F = 20 A I _F = 20 A T _c = 100 °C		1.2 0.85 1.6 1.4 2.3 1.3		V V V V V V
E _{s/b}	Second Breakdown Energy	V _{CC} = 30 V L = 3 mH V _{CC} = 30 V L = 3 mH T _c = 100 °C	250 250			mJ mJ
I _{s/b}	Second Breakdown Current	V _{CE} = 25 V t = 500 ms	6			A

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %
For PNP type voltage and current values are negative.

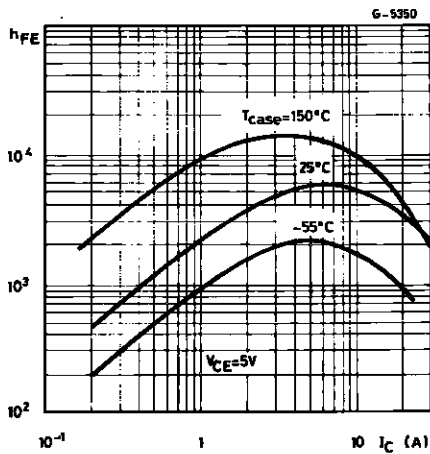
Safe Operating Areas



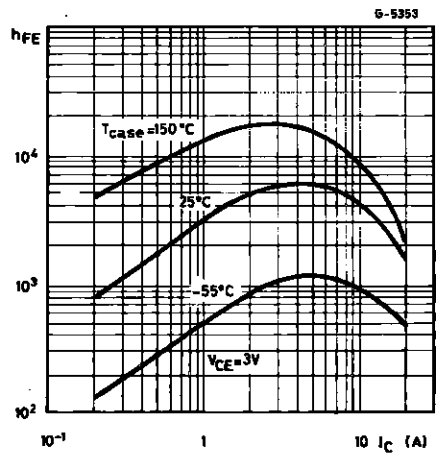
DC Current Gain (NPN type)



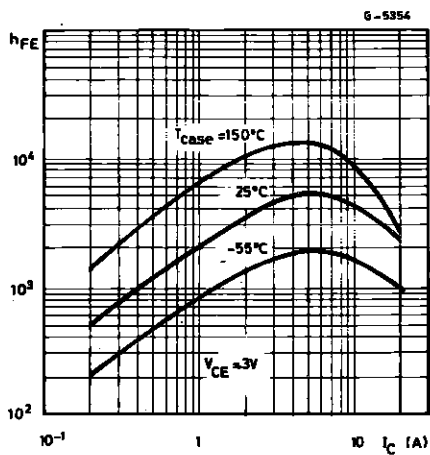
DC Current Gain (PNP type)



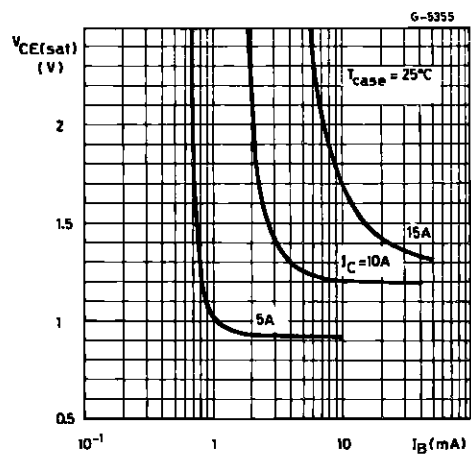
DC Current Gain (NPN type)



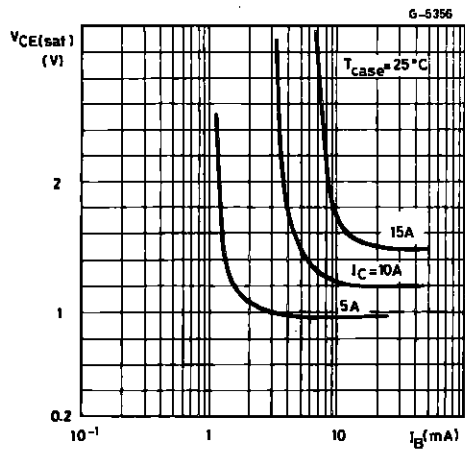
DC Current Gain (PNP type)



Collector-Emitter Saturation Voltage (NPN type)

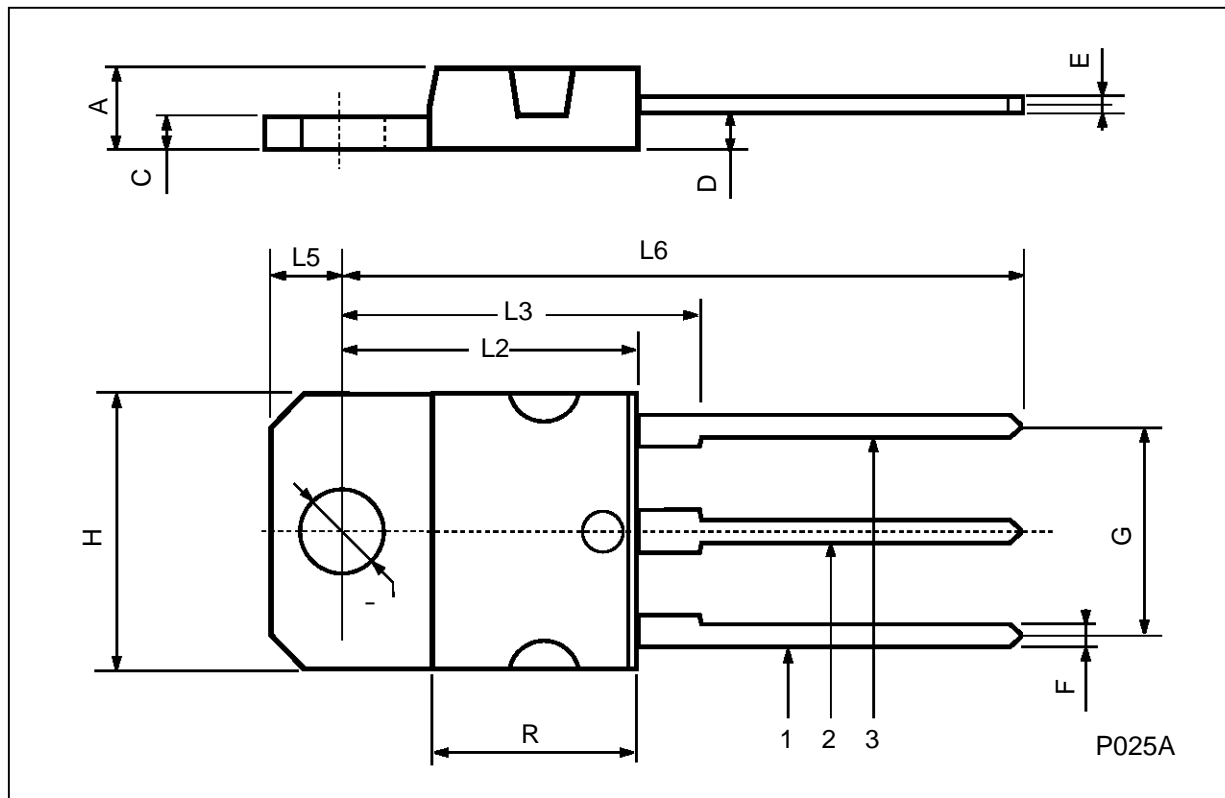


Collector-Emitter Saturation Voltage (PNP type)



TO-218 (SOT-93) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	-		16.2	-		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	-		12.2	-		0.480
Ø	4		4.1	0.157		0.161



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics 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 SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1997 SGS-THOMSON Microelectronics - Printed in Italy - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES
Australia - Brazil - Canada - China - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A
...