

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

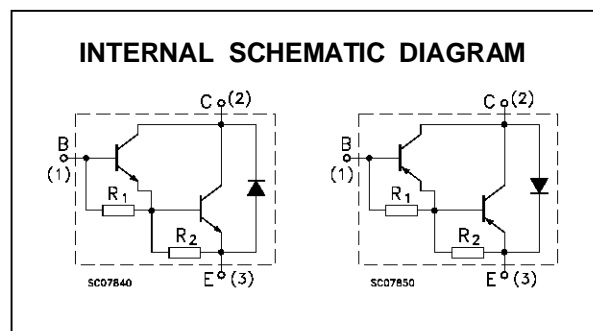
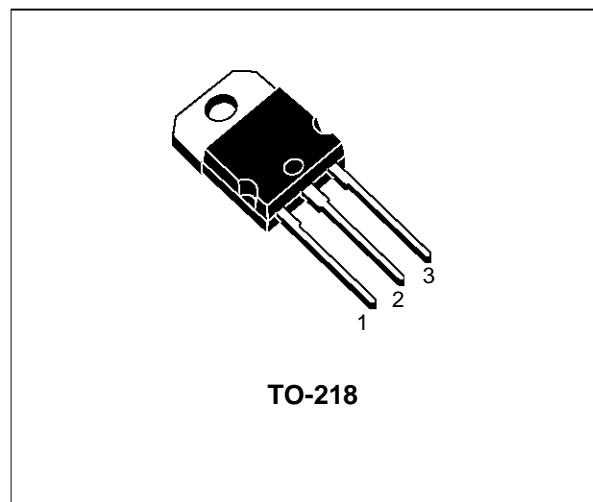
■ SGS-THOMSON PREFERRED SALESTYPES

**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 <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	0.96	°C/W
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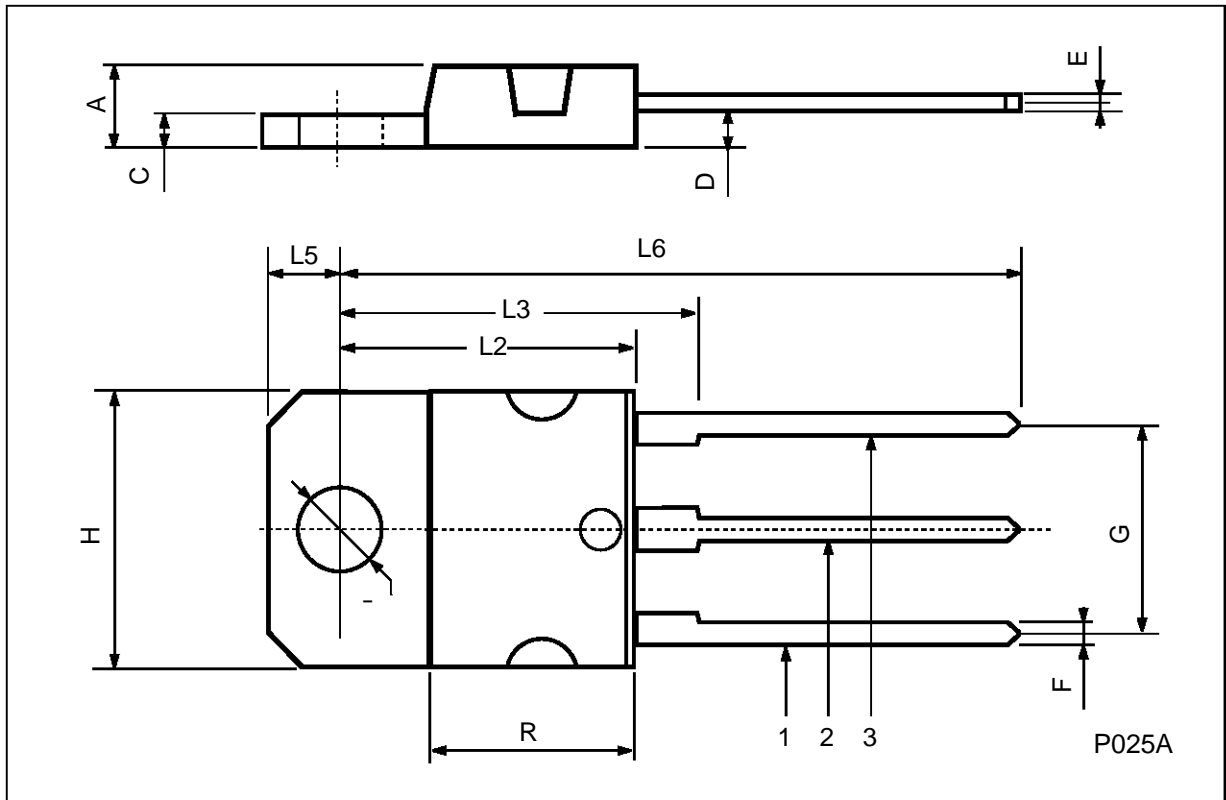
## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CE</sub> = 80 V V <sub>CE</sub> = 80 V T <sub>c</sub> = 100 °C			0.5 1.5	mA mA
I <sub>CEV</sub>	Collector Cut-off Current (V <sub>BE</sub> = -0.3V)	V <sub>CE</sub> = 80 V V <sub>CE</sub> = 80 V T <sub>c</sub> = 100 °C			0.1 2	mA mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 60 V V <sub>CE</sub> = 60 V T <sub>c</sub> = 100 °C			0.5 1.5	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			2	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 50 mA	80			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 5 A I <sub>B</sub> = 20 mA I <sub>C</sub> = 5 A I <sub>B</sub> = 20 mA T <sub>c</sub> = 100 °C I <sub>C</sub> = 10 A I <sub>B</sub> = 40 mA I <sub>C</sub> = 10 A I <sub>B</sub> = 40 mA T <sub>c</sub> = 100 °C I <sub>C</sub> = 20 A I <sub>B</sub> = 80 mA I <sub>C</sub> = 20 A I <sub>B</sub> = 80 mA T <sub>c</sub> = 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 <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 20 A I <sub>B</sub> = 80 mA I <sub>C</sub> = 20 A I <sub>B</sub> = 80 mA T <sub>c</sub> = 100 °C		2.6 2.5	3.3	V V
V <sub>BE*</sub>	Base-Emitter Voltage	I <sub>C</sub> = 10 A V <sub>CE</sub> = 3 V I <sub>C</sub> = 10 A V <sub>CE</sub> = 3 V T <sub>c</sub> = 100 °C	1	1.8 1.6	3	V V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 5 A V <sub>CE</sub> = 3 V I <sub>C</sub> = 5 A V <sub>CE</sub> = 3 V T <sub>c</sub> = 100 °C I <sub>C</sub> = 10 A V <sub>CE</sub> = 3 V I <sub>C</sub> = 10 A V <sub>CE</sub> = 3 V T <sub>c</sub> = 100 °C I <sub>C</sub> = 20 A V <sub>CE</sub> = 3 V I <sub>C</sub> = 20 A V <sub>CE</sub> = 3 V T <sub>c</sub> = 100 °C	600 500 300	5000 8000 4000 8000 2000 2000	15000 10000 5000	
V <sub>F*</sub>	Diode Forward Voltage	I <sub>F</sub> = 5 A I <sub>F</sub> = 5 A T <sub>c</sub> = 100 °C I <sub>F</sub> = 10 A I <sub>F</sub> = 10 A T <sub>c</sub> = 100 °C I <sub>F</sub> = 20 A I <sub>F</sub> = 20 A T <sub>c</sub> = 100 °C		1.2 0.85 1.6 1.4 2.3 1.3		V V
E <sub>s/b</sub>	Second Breakdown Energy	V <sub>CC</sub> = 3 V L = 3 mH V <sub>CC</sub> = 3 V L = 3 mH T <sub>c</sub> = 100 °C	250 250			mJ mJ
I <sub>s/b</sub>	Second Breakdown Current	V <sub>CE</sub> = 3 V t = 500 ms	6			A

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

**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



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