SGS-THOMSON MICROELECTRONICS

SGSD100
SGSD200

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

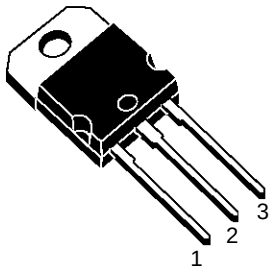
- SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

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

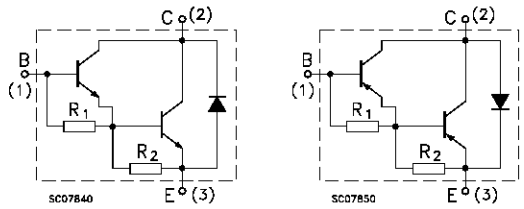
It is inteded for use in general purpose and high current amplifier applications.

The complementary PNP type is the SGSD200.



TO-218

INTERNAL SCHEMATIC DIAGRAM



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 $T_c \leq 25\ ^oC$		130	W
T_{stg}	Storage Temperature		-65 to 150	^oC
T_j	Max. Operating Junction Temperature		150	^oC

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	0.96	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC 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 ^oC			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 ^oC			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 ^oC			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 ^oC I_C = 10 A I_B = 40 mA I_C = 10 A I_B = 40 mA T_c = 100 ^oC I_C = 20 A I_B = 80 mA I_C = 20 A I_B = 80 mA T_c = 100 ^oC		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 ^oC		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 ^oC	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 ^oC I_C = 10 A V_{CE} = 3 V I_C = 10 A V_{CE} = 3 V T_c = 100 ^oC I_C = 20 A V_{CE} = 3 V I_C = 20 A V_{CE} = 3 V T_c = 100 ^oC	600 500 300 	5000 8000 4000 8000 2000 2000	15000 10000 5000 	
V_F*	Diode Forward Voltage	I_F = 5 A I_F = 5 A T_c = 100 ^oC I_F = 10 A I_F = 10 A T_c = 100 ^oC I_F = 20 A I_F = 20 A T_c = 100 ^oC		1.2 0.85 1.6 1.4 2.3 1.3		V V
$E_{s/b}$	Second Breakdown Energy	V_{CC} = 3 V L = 3 mH V_{CC} = 3 V L = 3 mH T_c = 100 ^oC	250 250			mJ mJ
$I_{s/b}$	Second Breakdown Current	V_{CE} = 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