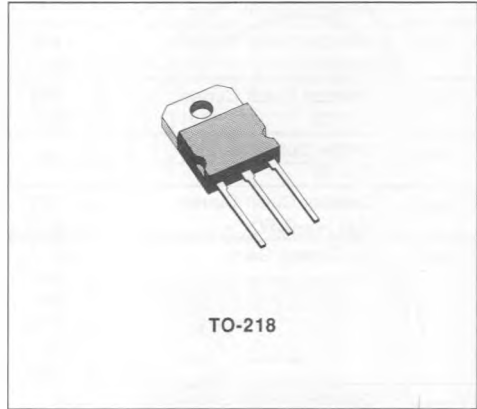


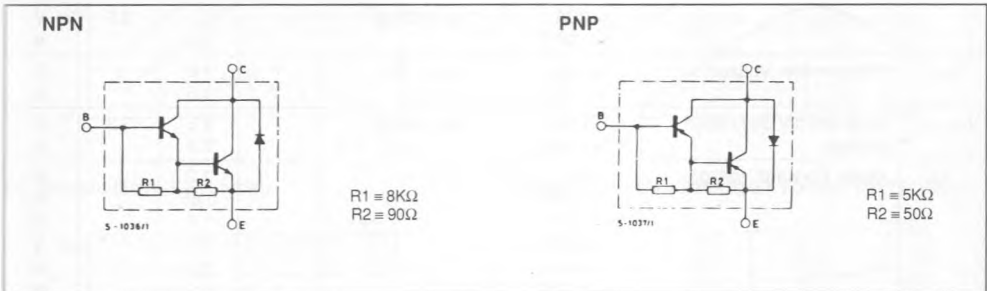
HIGH CURRENT DARLINGTONS

DESCRIPTION

The SGSD100 is a silicon epitaxial-base NPN transistors in TO-218 plastic package, intended for use in general purpose high current amplifier applications. The complementary PNP type is the SGSD200.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-emitter Voltage	80	V
V_{CBO}	Collector-base Voltage	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
V_{EBO}	Emitter Base-voltage	10	V
P_{tot}	Total Power Dissipation	130	W
T_j	Junction Temperature	150	$^{\circ}C$

For PNP types voltage and current values are negative.

THERMAL DATA

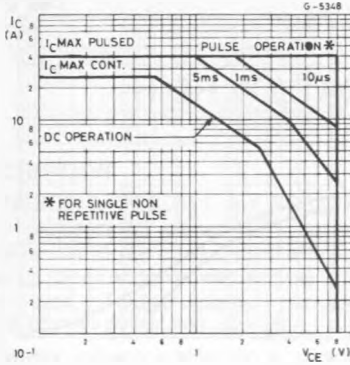
$R_{th(j-case)}$	Thermal Resistance Junction-case	Max	0.96	$^{\circ}C/W$
------------------	----------------------------------	-----	------	---------------

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

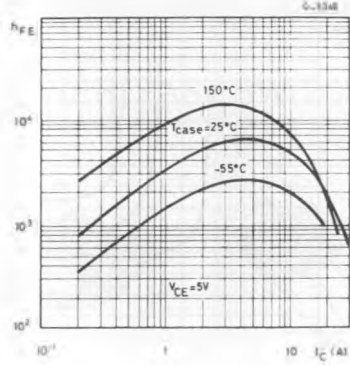
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
$V_{CE0(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = 50mA$	80			V	
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	$V_{CE} = 60V$ $T_j = 100^{\circ}C$			500 1.5	μA mA	
I_{CBO}	Collector Cutoff Current ($I_E = 0$)	$V_{CE} = 80V$ $T_j = 100^{\circ}C$			500 1.5	μA mA	
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5V$			2	mA	
I_{CEV}	Collector Cutoff Current ($V_{BE} = -0.3V$)	$V_{CE} = 80V$ $T_j = 100^{\circ}C$			100 2	μA mA	
h_{FE}^*	DC Current Gain	$I_C = 5A$ $T_j = 100^{\circ}C$ $I_C = 10A$ $T_j = 100^{\circ}C$ $I_C = 20A$ $T_j = 100^{\circ}C$	$V_{CE} = 3V$ $V_{CE} = 3V$ $V_{CE} = 3V$	600 500 300	5K 8K 4K 8K 2K 2K	15K 10K 5K	
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 5A$ $T_j = 100^{\circ}C$ $I_C = 10A$ $T_j = 100^{\circ}C$ $I_C = 20A$ $T_j = 100^{\circ}C$	$I_B = 20mA$ $I_B = 40mA$ $I_B = 80mA$		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}^*	Base-emitter Voltage	$I_C = 10A$ $T_j = 100^{\circ}C$	$V_{CE} = 3V$	1	1.8 1.6	3	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 20A$ $T_j = 100^{\circ}C$	$I_B = 80mA$		2.6 2.5	3.3	V V
V_F	Diode Forward Voltage	$I_F = 5A$ $T_j = 100^{\circ}C$ $I_F = 10A$ $T_j = 100^{\circ}C$ $I_F = 20A$ $T_j = 100^{\circ}C$			1.2 0.85 1.6 1.4 2.3 1.3		V V V V V V
$E_{s/b}$	Second Breakdown Energy	$L = 3mH$ $V_{CC} = 30V$ $T_j = 100^{\circ}C$		250			mJ mJ
$I_{s/b}$	Second Breakdown Collector Current	$V_{CE} = 25V$	$t = 500ms$	6			A

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

Safe Operating Areas.



DC Current Gain (NPN type).



DC Current Gain (PNP type).

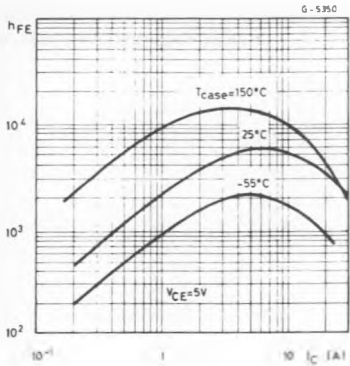
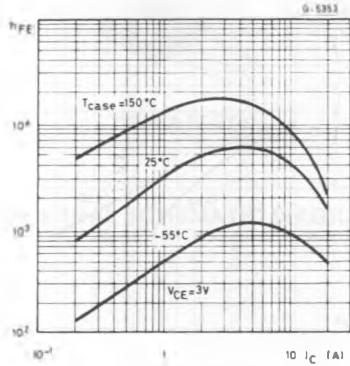
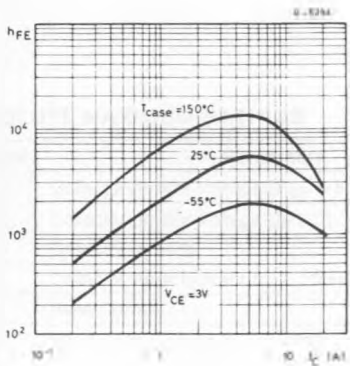


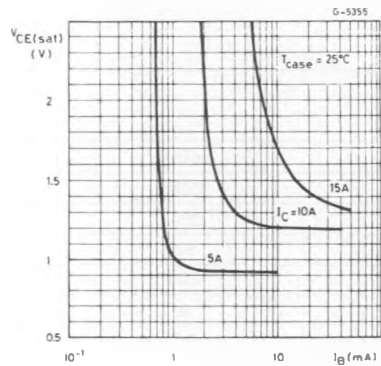
Figure 4 : DC Current Gain (NPN type).



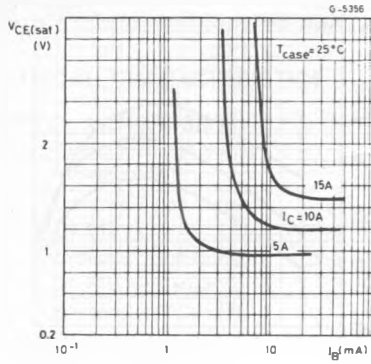
DC Current Gain (PNP type).



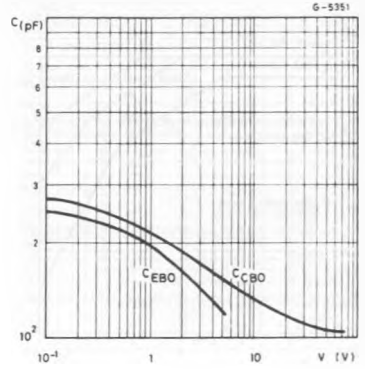
Collector-emitter Saturation Voltage (NPN type).



Collector-emitter Saturation Voltage (PNP type).



Capacitances (NPN type).



Capacitances (PNP type).

