

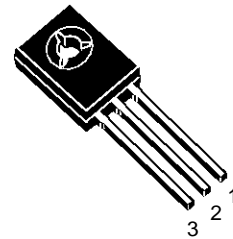
NPN SILICON TRANSISTORS

■ SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

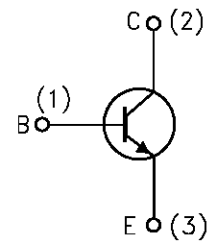
The BD135, BD137 and BD139 are silicon epitaxial planar NPN transistors in Jedec SOT-32 plastic package, designed for audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

The complementary PNP types are the BD136, BD138 and BD140.



SOT-32

INTERNAL SCHEMATIC DIAGRAM



SC06960

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BD135	BD137	BD139	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	45	60	80	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	45	60	80	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	5			V
I_C	Collector Current	1.5			A
I_{CM}	Collector Peak Current	3			A
I_B	Base Current	0.5			A
P_{tot}	Total Dissipation at $T_c \leq 25^\circ\text{C}$	12.5			W
P_{tot}	Total Dissipation at $T_{amb} \leq 25^\circ\text{C}$	1.25			W
T_{stg}	Storage Temperature	-65 to 150			$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150			$^\circ\text{C}$

THERMAL DATA

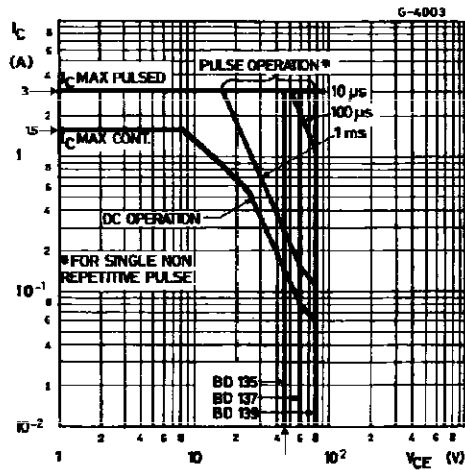
$R_{thj-case}$	Thermal Resistance Junction-case	Max	10	$^{\circ}C/W$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

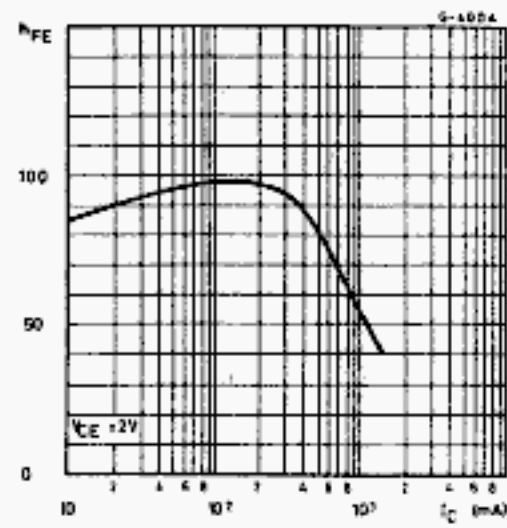
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 30 V$ $V_{CB} = 30 V \quad T_C = 125^{\circ}C$			0.1 10	μA μA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5 V$			10	μA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage	$I_C = 30 mA$ for BD135 for BD137 for BD139	45 60 80			V V V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 0.5 A \quad I_B = 0.05 A$			0.5	V
V_{BE}^*	Base-Emitter Voltage	$I_C = 0.5 A \quad V_{CE} = 2 V$			1	V
h_{FE}^*	DC Current Gain	$I_C = 5 mA \quad V_{CE} = 2 V$ $I_C = 0.5 A \quad V_{CE} = 2 V$ $I_C = 150 mA \quad V_{CE} = 2 V$	25 25 40		250	
h_{FE}	h_{FE} Groups	$I_C = 150 mA \quad V_{CE} = 2 V$ for BD139 group 10	63		160	

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

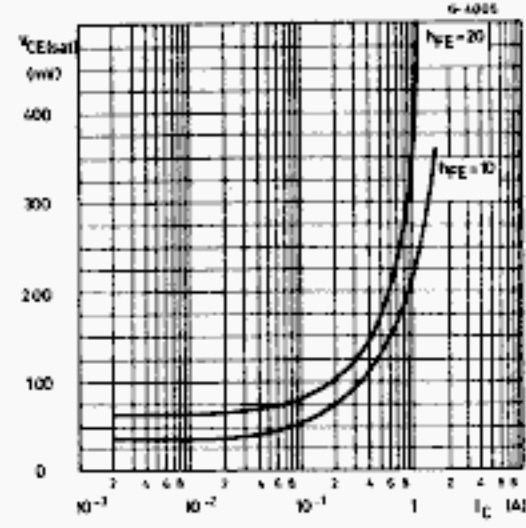
Safe Operating Area



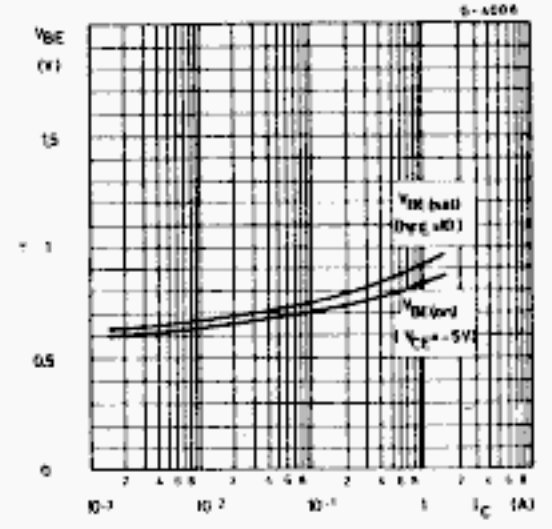
DC Current Gain



Collector-emitter Saturation Voltage.

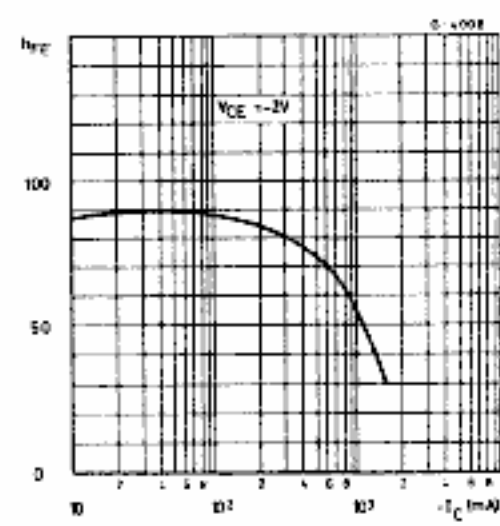


Base-emitter Voltage.

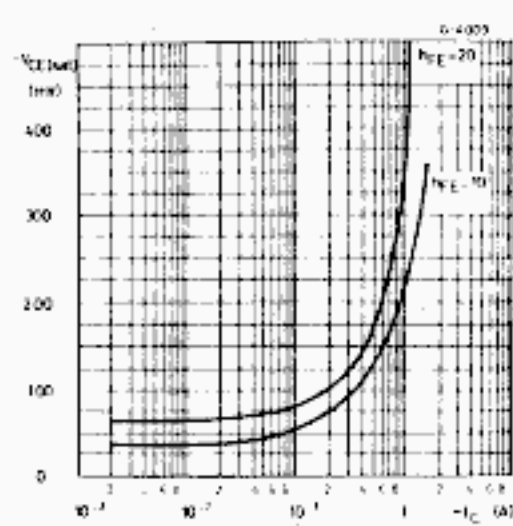


BD 136 - BD 138 - BD 140

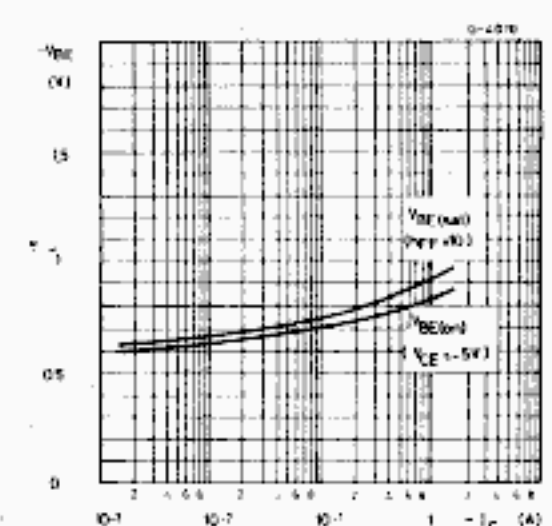
DC Current Gain.



Collector-emitter Saturation Voltage.

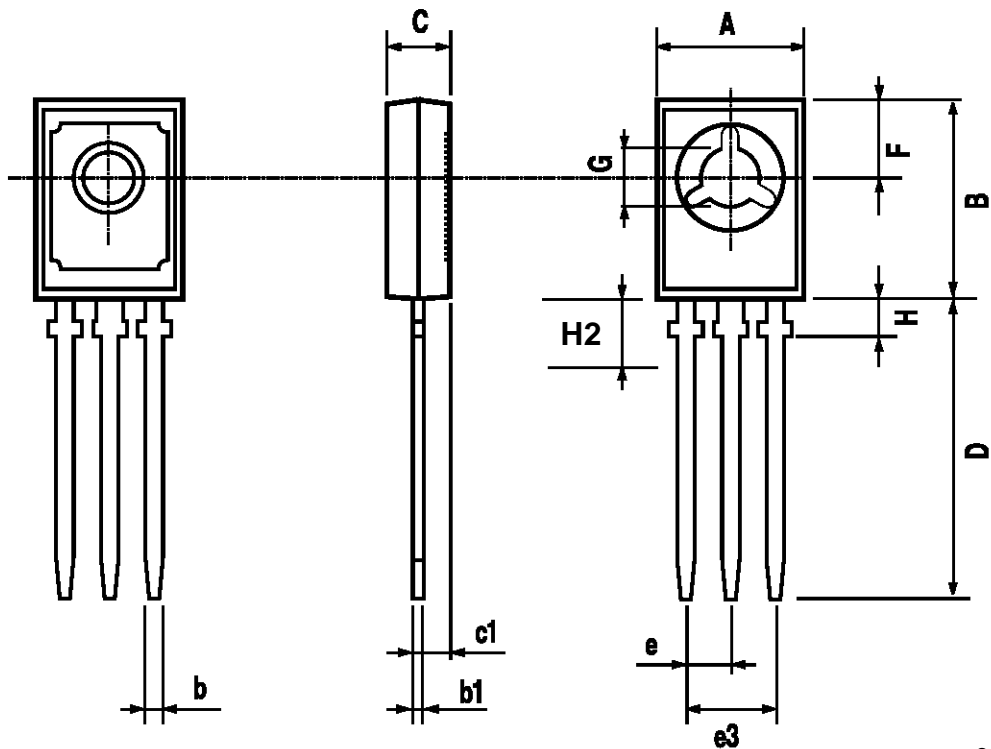


Base-emitter Voltage.



SOT-32 (TO-126) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.040		0.106
c1	1.0		1.3	0.039		0.050
D	15.4		16.0	0.606		0.629
e		2.2			0.087	
e3	4.15		4.65	0.163		0.183
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100
H2		2.15			0.084	



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