

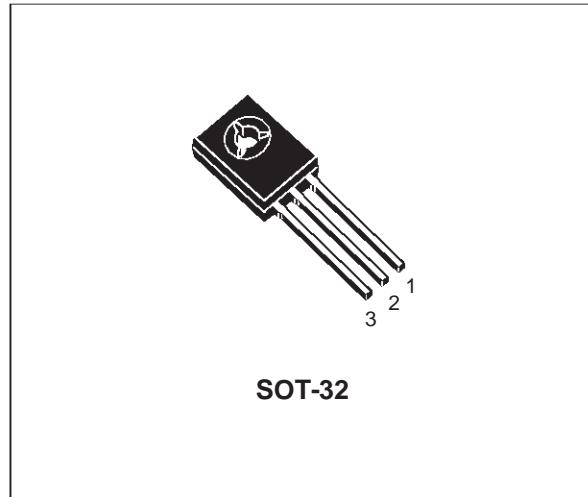
NPN SILICON TRANSISTORS

- STMicroelectronics PREFERRED SALES TYPES

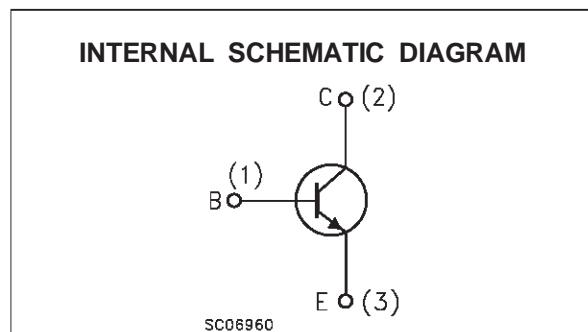
DESCRIPTION

The BD135 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 BD136 and BD140 respectively.



SOT-32



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BD135	BD139	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	45	80	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	45	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		$^\circ\text{C}$

BD135 / BD139

THERMAL DATA

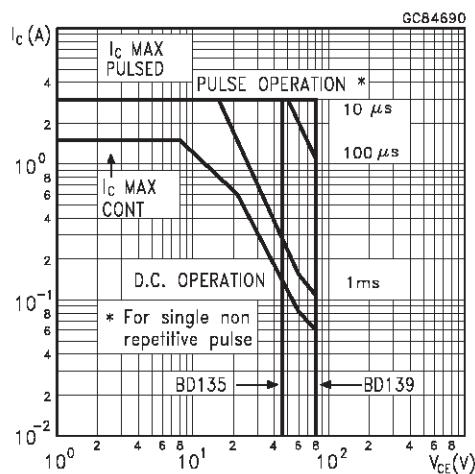
$R_{thj-case}$	Thermal Resistance Junction-case	Max	10	$^{\circ}\text{C/W}$
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ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25 \text{ }^{\circ}\text{C}$ unless otherwise specified)

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

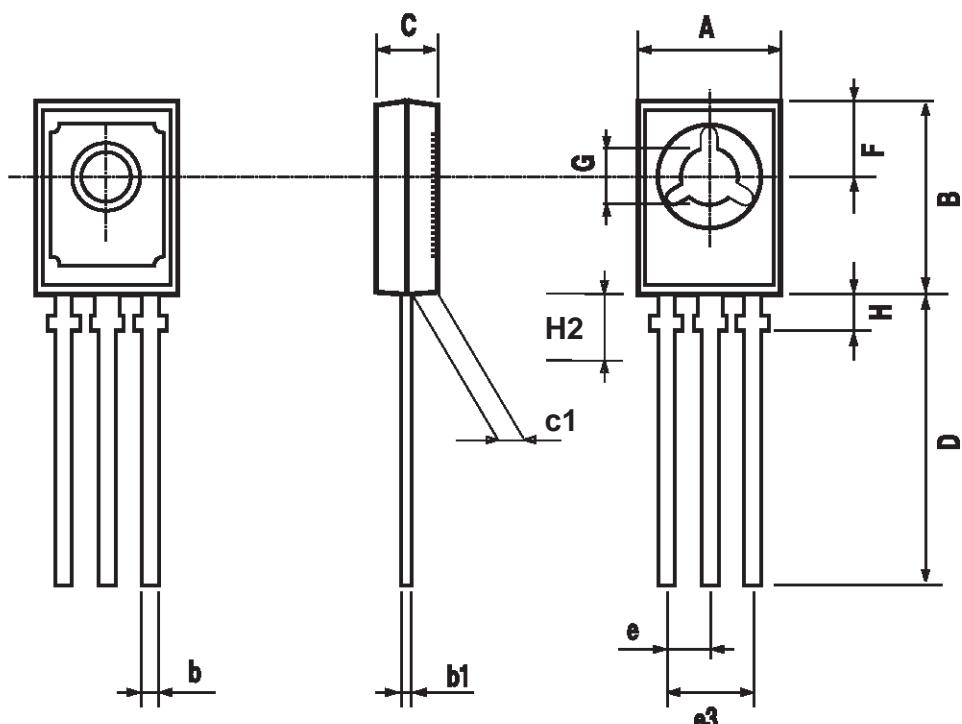
* Pulsed: Pulse duration = 300 μs , duty cycle 1.5 %

Safe Operating Area



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



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