

NPN SILICON TRANSISTORS

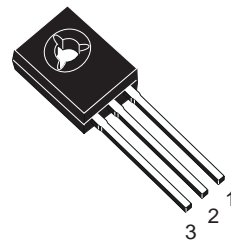
Type	Marking
BD135	BD135
BD135-10	BD135-10
BD135-16	BD135-16
BD139	BD139
BD139-10	BD139-10
BD139-16	BD139-16

- STMicroelectronics PREFERRED SALESTYPES

DESCRIPTION

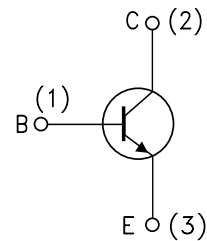
The BD135 and BD139 are silicon Epitaxial Planar NPN transistors mounted in Jedec SOT-32 plastic package, designed for audio amplifiers and drivers utilizing complementary or quasi-complementary circuits.

The complementary PNP types are BD136 and BD140 respectively.



SOT-32

INTERNAL SCHEMATIC DIAGRAM



SC06960

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 $T_c \leq 25\text{ }^\circ\text{C}$	12.5		W
P_{tot}	Total Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$	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

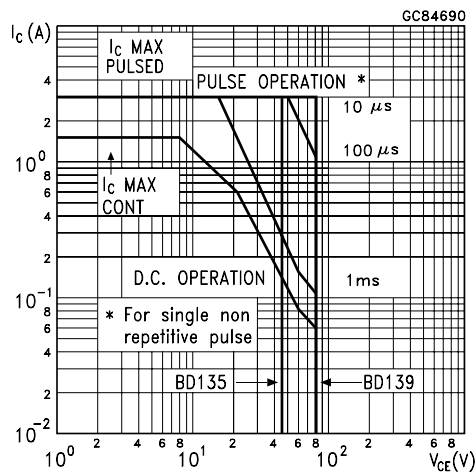
R _{thj-case}	Thermal Resistance Junction-case	Max	10	°C/W
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ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

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 T _C = 125 °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 _B = 0)	I _C = 30 mA for BD135 for BD139	45 80			V V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 0.5 A I _B = 0.05 A			0.5	V
V _{BE*}	Base-Emitter Voltage	I _C = 0.5 A V _{CE} = 2 V			1	V
h _{FE*}	DC Current Gain	I _C = 5 mA V _{CE} = 2 V I _C = 150 mA V _{CE} = 2 V I _C = 0.5 A V _{CE} = 2 V	25 40 25		250	
h _{FE}	h _{FE} Groups	I _C = 150 mA V _{CE} = 2 V for BD135/BD139 group-10 for BD135/BD139 group-16	63 100		160 250	

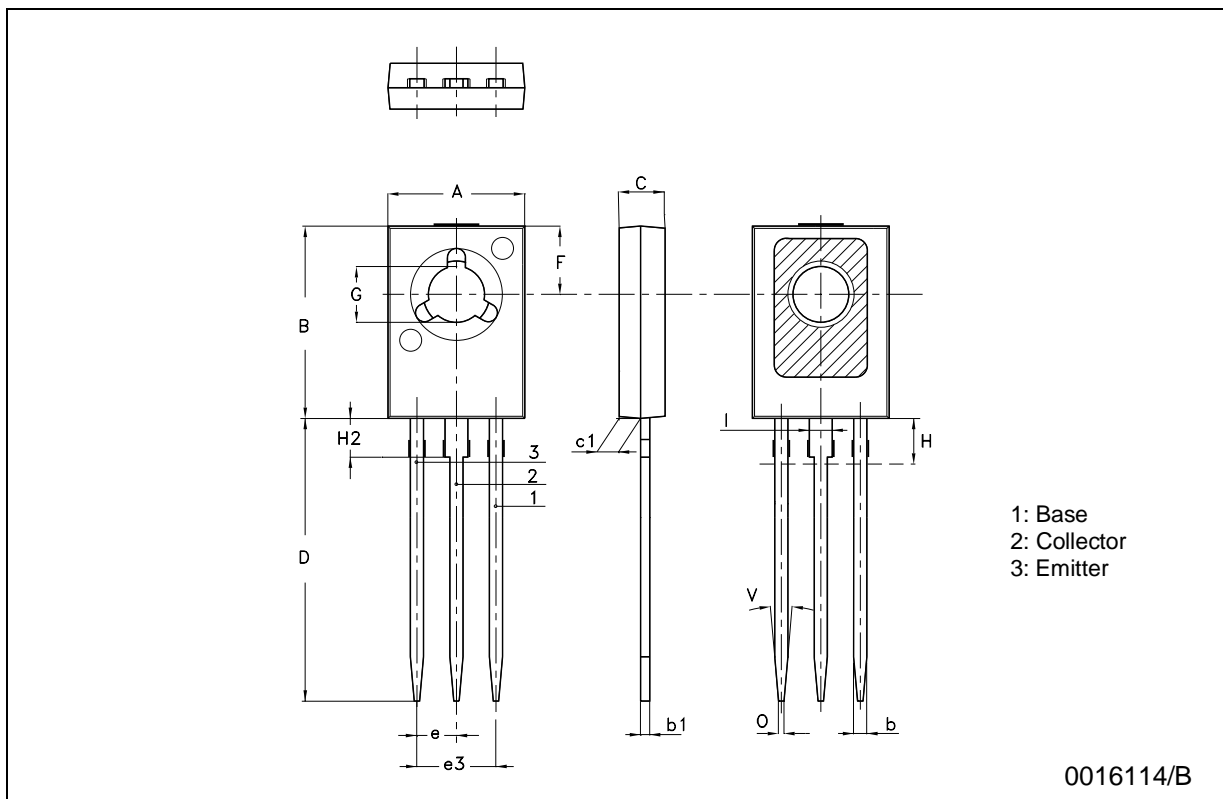
* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

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		0.425
b	0.7		0.9	0.028		0.035
b1	0.40		0.65	0.015		0.025
C	2.4		2.7	0.094		0.106
c1	1.0		1.3	0.039		0.051
D	15.4		16.0	0.606		0.630
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100
H2		2.15			0.084	
I		1.27			0.05	
O		0.3			0.011	
V		10°			10°	



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