

# NPN SILICON TRANSISTORS

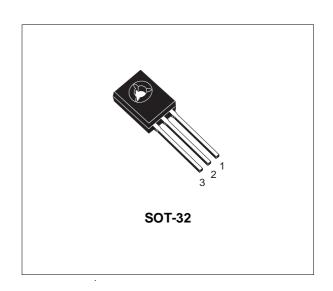
Type	Marking	
BD135	BD135	
BD135-10	BD135-10	
BD135-16	BD135-16	
BD139	BD139	
BD139-10	BD139-10	
BD139-16	BD139-16	

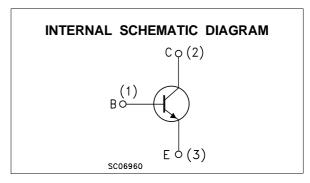
 STMicroelectronics PREFERRED SALESTYPES

#### **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.





#### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Va	Unit	
		BD135	BD139	
V <sub>CBO</sub>	Collector-Base Voltage (I <sub>E</sub> = 0)	45	80	V
V <sub>CEO</sub>	Collector-Emitter Voltage (I <sub>B</sub> = 0)	45	45 80	
V <sub>EBO</sub>	Emitter-Base Voltage (I <sub>C</sub> = 0)	:	5	
Ic	Collector Current	1.5		Α
I <sub>CM</sub>	Collector Peak Current	3		Α
lΒ	Base Current	0.5		Α
P <sub>tot</sub>	Total Dissipation at T <sub>c</sub> ≤ 25 °C	12	12.5	
$P_{tot}$	Total Dissipation at T <sub>amb</sub> ≤ 25 °C	1.	1.25	
T <sub>stg</sub>	Storage Temperature	-65 t	-65 to 150	
Tj	Max. Operating Junction Temperature	150		°C

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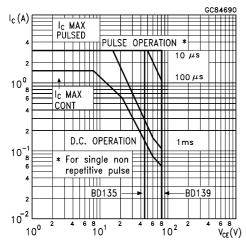
#### THERMAL DATA

### **ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 30 V V <sub>CB</sub> = 30 V T <sub>C</sub> = 125 °C			0.1 10	μA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	$V_{EB} = 5 V$			10	μΑ
V <sub>CEO(sus)</sub> *	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 30 mA for <b>BD135</b> for <b>BD139</b>	45 80			V V
$V_{CE(sat)^*}$	Collector-Emitter Saturation Voltage	$I_C = 0.5 \text{ A}$ $I_B = 0.05 \text{ A}$			0.5	V
V <sub>BE</sub> *	Base-Emitter Voltage	I <sub>C</sub> = 0.5 A V <sub>CE</sub> = 2 V			1	V
h <sub>FE</sub> *	DC Current Gain	I <sub>C</sub> = 5 mA	25 40 25		250	
h <sub>FE</sub>	h <sub>FE</sub> Groups	I <sub>C</sub> = 150 mA V <sub>CE</sub> = 2 V for <b>BD135/BD139</b> group-10 for <b>BD135/BD139</b> group-16	63 100		160 250	

<sup>\*</sup> Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

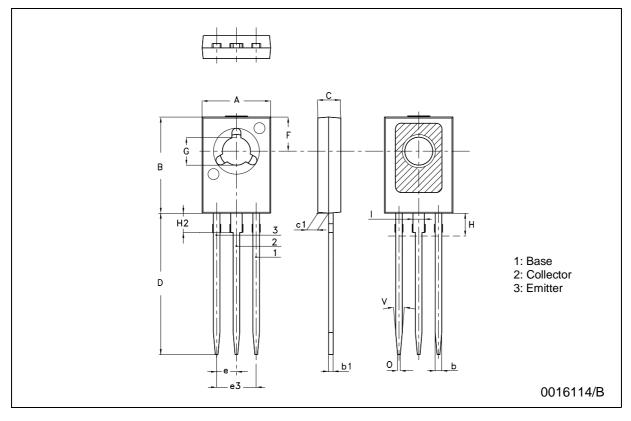
### Safe Operating Area



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# SOT-32 (TO-126) MECHANICAL DATA

DIM.	mm		inch			
DINI.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
А	7.4		7.8	0.291		0.307
В	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
С	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
е		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
G	3		3.2	0.118		0.126
Н			2.54			0.100
H2		2.15			0.084	
1		1.27			0.05	
0		0.3			0.011	
V		10°			10°	



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