

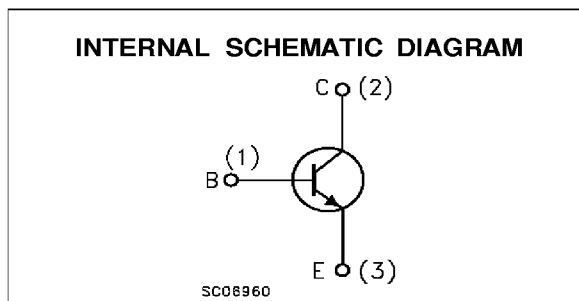
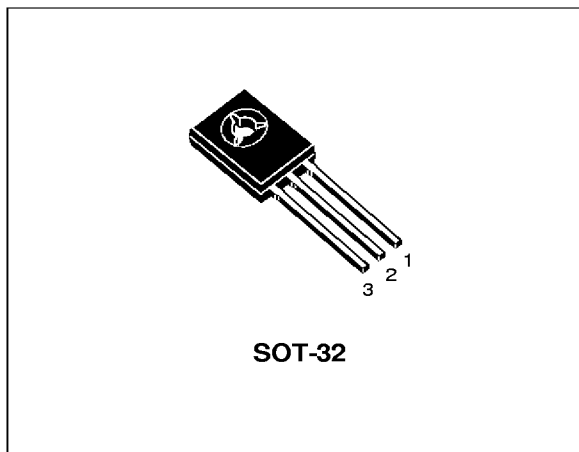
## NPN SILICON TRANSISTORS

■ 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.



**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 $T_c \leq 25\text{ }^\circ\text{C}$	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 / BD137 / BD139

## THERMAL DATA

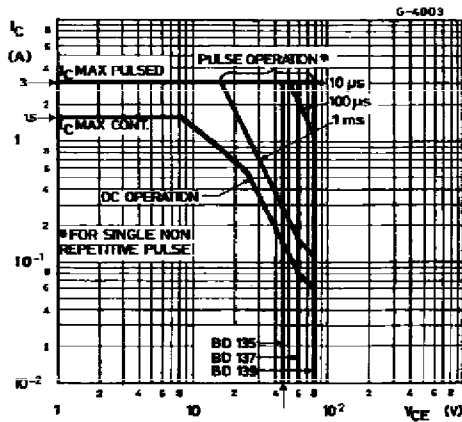
$R_{thj-case}$	Thermal Resistance Junction-case	Max	10	$^{\circ}C/W$
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## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

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

\* Pulsed: Pulse duration = 300  $\mu s$ , 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
H2		2.15			0.084	

