

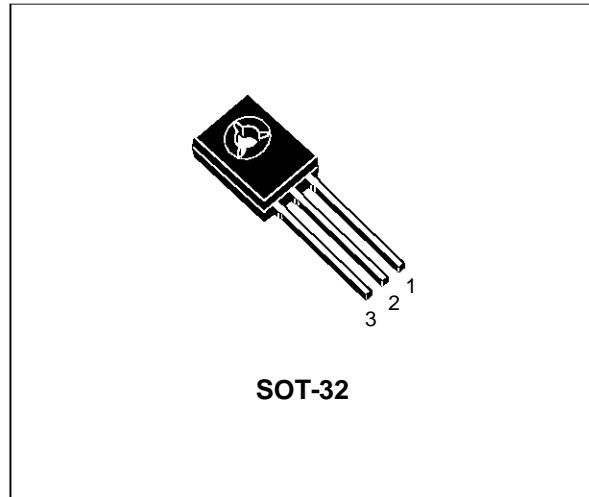
## PNP SILICON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- PNP TRANSISTOR

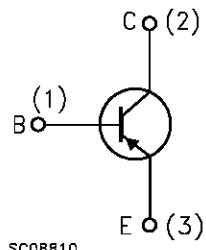
### DESCRIPTION

The BD136, BD138 and BD140 are silicon epitaxial planar PNP transistors in Jedec SOT-32 plastic package, designed for audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

The complementary NPN types are the BD135 BD137 and BD139.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BD136	BD138	BD140	
$V_{CBO}$	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		$^\circ\text{C}$

## BD136/BD138/BD140

### THERMAL DATA

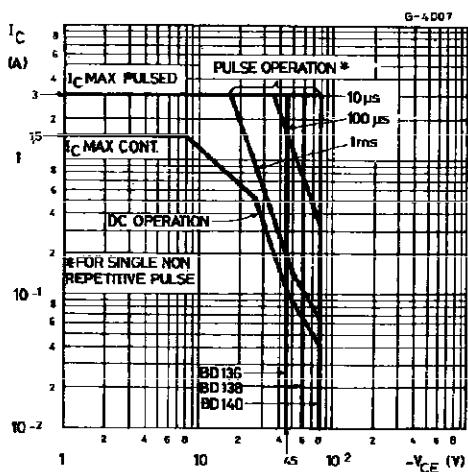
$R_{thj-case}$	Thermal Resistance Junction-case	Max	10	$^{\circ}\text{C/W}$
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### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25 \text{ }^{\circ}\text{C}$ unless otherwise specified)

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	$\mu\text{A}$ $\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = -5 \text{ V}$			-10	$\mu\text{A}$
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage	$I_C = -30 \text{ mA}$ for BD136 for BD138 for BD140	-45 -60 -80			$\text{V}$ $\text{V}$ $\text{V}$
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = -0.5 \text{ A} \quad I_B = -0.05 \text{ A}$			-0.5	$\text{V}$
$V_{BE*}$	Base-Emitter Voltage	$I_C = -0.5 \text{ A} \quad V_{CE} = -2 \text{ V}$			-1	$\text{V}$
$h_{FE*}$	DC Current Gain	$I_C = -5 \text{ mA} \quad V_{CE} = -2 \text{ V}$ $I_C = -0.5 \text{ A} \quad V_{CE} = -2 \text{ V}$ $I_C = -150 \text{ mA} \quad V_{CE} = -2 \text{ V}$	25 25 40		250	
$h_{FE}$	$h_{FE}$ Groups	$I_C = -150 \text{ mA} \quad V_{CE} = -2 \text{ V}$ for BD140 group 10	63		160	

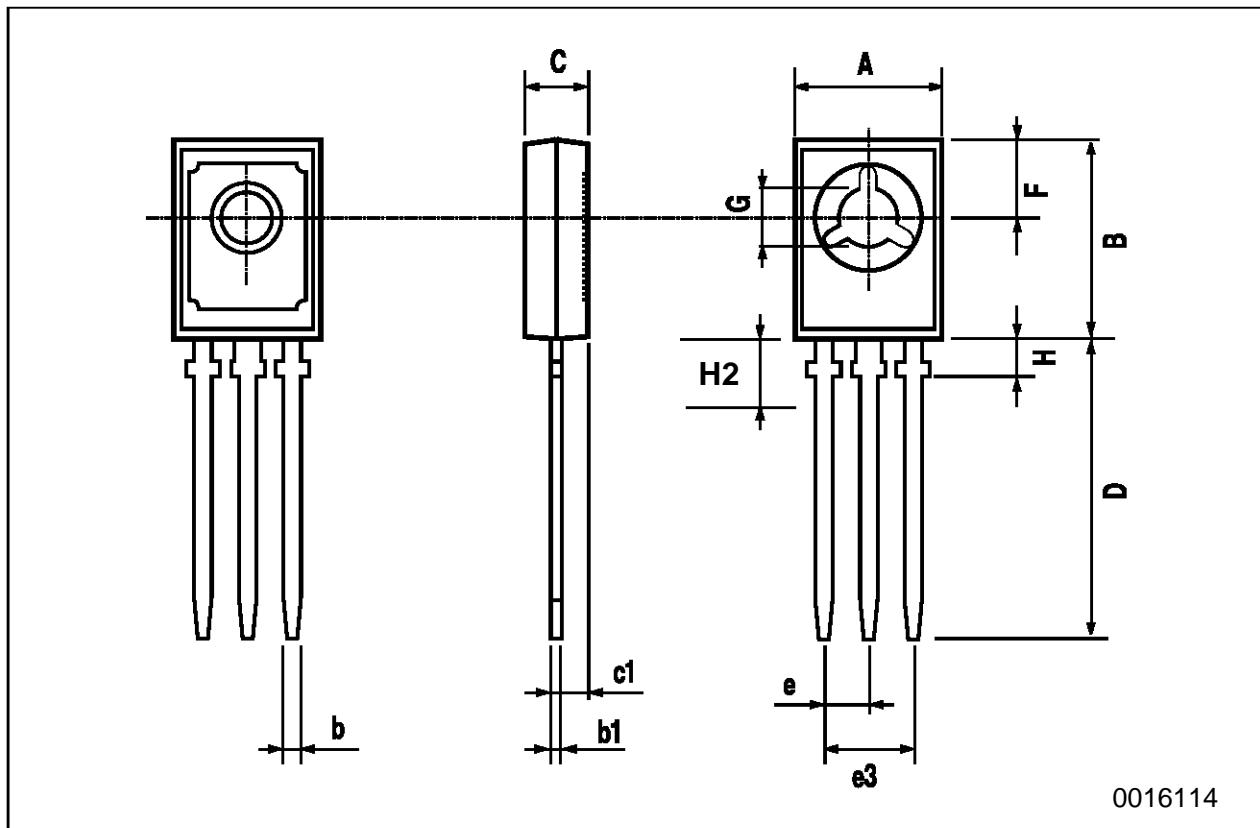
\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5 %

### Safe Operating Areas



## 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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