



# BD136 BD138/BD140

## PNP SILICON TRANSISTORS

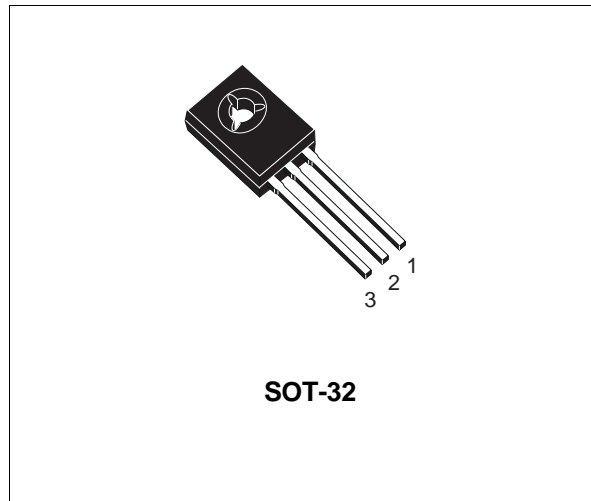
Type	Marking
BD136	BD136
BD136-10	BD136-10
BD136-16	BD136-16
BD138	BD138
BD140	BD140
BD140-10	BD140-10
BD140-16	BD140-16

- STMicroelectronics PREFERRED SALESTYPES
- PNP TRANSISTOR

### DESCRIPTION

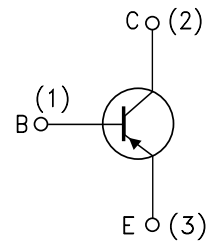
The BD136, BD138 and BD140 are silicon Epitaxial Planar PNP transistors mounted in Jedec SOT-32 plastic package, designed for audio amplifiers and drivers utilizing complementary or quasi-complementary circuits.

The complementary NPN types are the BD135, BD137 and BD139.



SOT-32

### 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

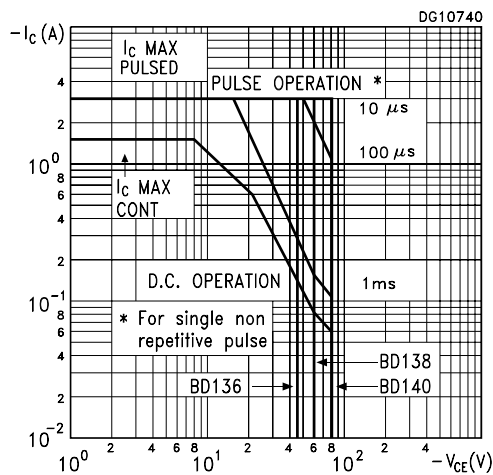
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	10	°C/W
-----------------------	----------------------------------	-----	----	------

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

Symbol	Parameter	Test Conditions	Min.	Typ.	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 <sub>EB</sub> = -5 V			-10	μA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = -30 mA for <b>BD136</b> for <b>BD138</b> for <b>BD140</b>	-45 -60 -80			V V V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = -0.5 A I <sub>B</sub> = -0.05 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 V <sub>CE</sub> = -2 V I <sub>C</sub> = -150 mA V <sub>CE</sub> = -2 V I <sub>C</sub> = -0.5 A V <sub>CE</sub> = -2 V	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>BD136/BD140</b> group-10 for <b>BD136/BD140</b> group-16	63 100		160 250	

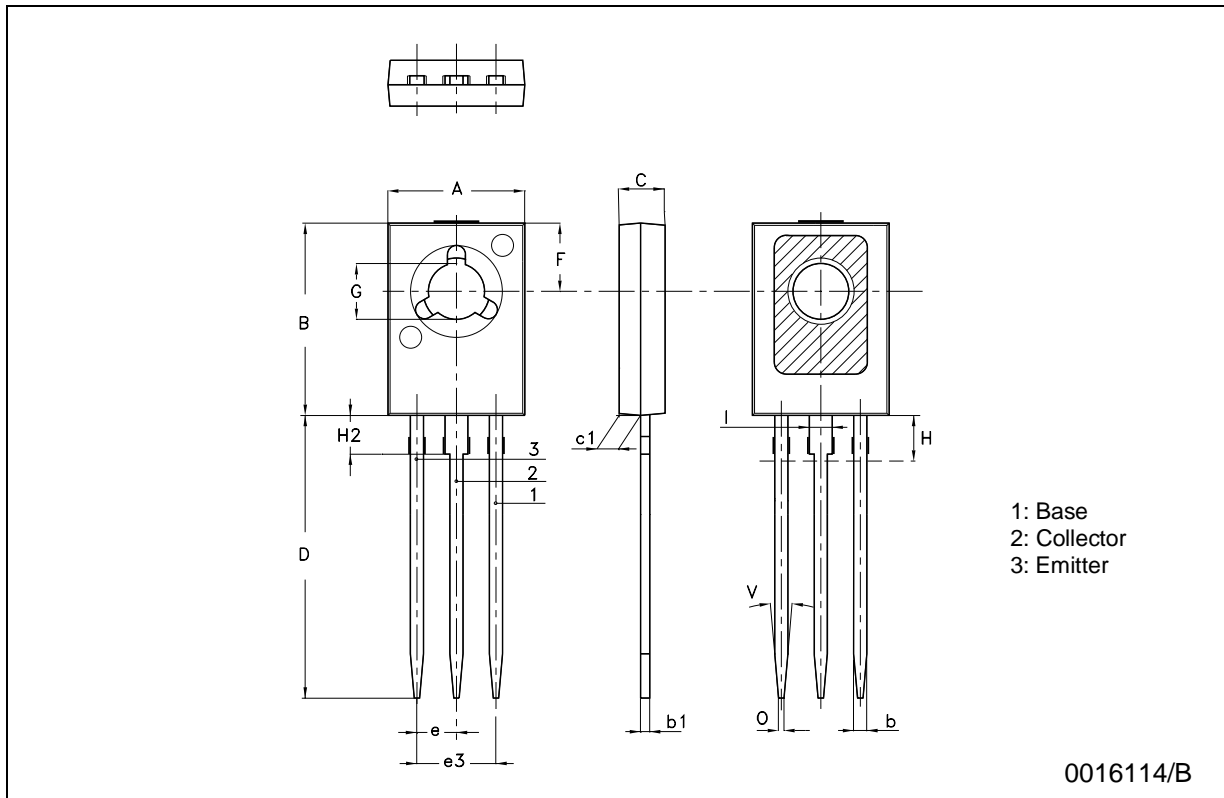
\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

## 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		0.425
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°	



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 2001 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.