



**BD433/5/7**  
**BD434/6/8**

## COMPLEMENTARY SILICON POWER TRANSISTORS

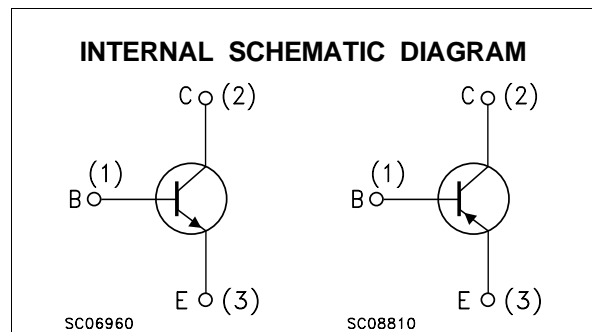
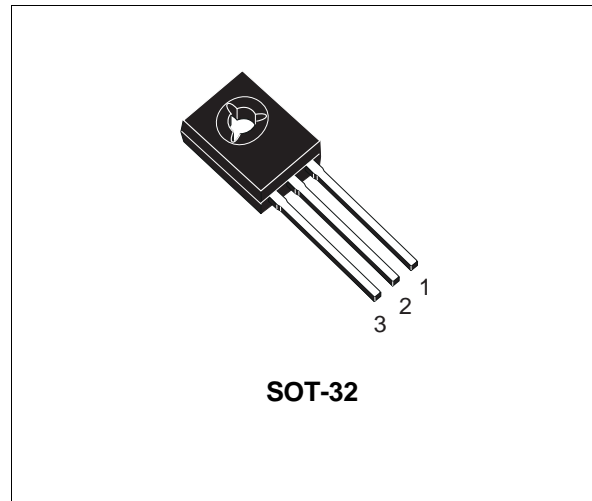
- STMicroelectronics PREFERRED SALESTYPE
- COMPLEMENTARY PNP - NPN DEVICES

### DESCRIPTION

The BD433, BD435, and BD437 are silicon epitaxial-base NPN power transistors in Jedec SOT-32 plastic package, intended for use in medium power linear and switching applications.

The BD433 is especially suitable for use in car-radio output stages.

The complementary PNP types are BD434, BD436, and BD438 respectively.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value				Unit
		NPN	BD433	BD435	BD437	
		PNP	BD434	BD436	BD438	
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )		22	32	45	V
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )		22	32	45	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )		22	32	45	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )		5			V
$I_C$	Collector Current		4			A
$I_{CM}$	Collector Peak Current ( $t \leq 10$ ms)		7			A
$I_B$	Base Current		1			A
$P_{tot}$	Total Dissipation at $T_c \leq 25$ °C		36			W
$T_{stg}$	Storage Temperature		-65 to 150			°C
$T_j$	Max. Operating Junction Temperature		150			°C

For PNP types voltage and current values are negative.

## BD433 BD434 BD435 BD436 BD437 BD438

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	3.5	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	100	°C/W

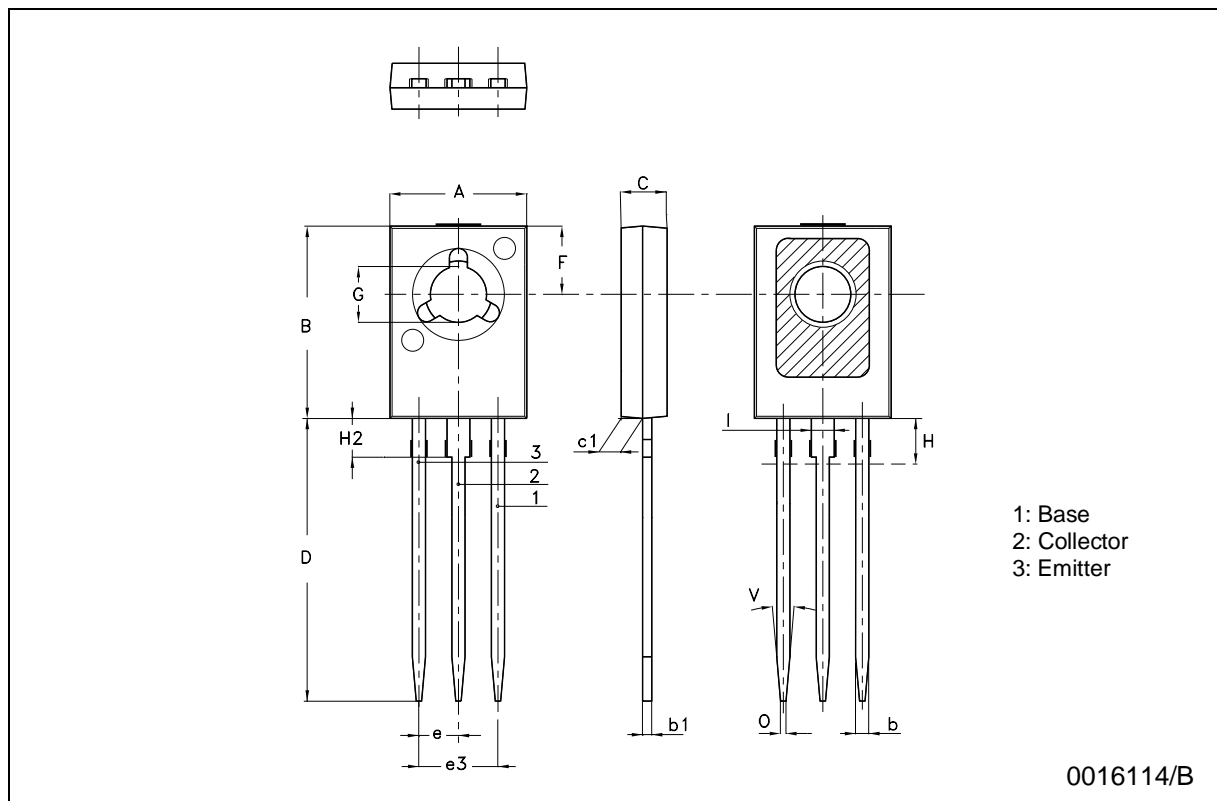
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>BD433/434</b> V <sub>CB</sub> = 22 V for <b>BD435/436</b> V <sub>CB</sub> = 32 V for <b>BD437/438</b> V <sub>CB</sub> = 45 V			100 100 100	μA μA μA
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	for <b>BD433/434</b> V <sub>CE</sub> = 22 V for <b>BD435/436</b> V <sub>CE</sub> = 32 V for <b>BD437/438</b> V <sub>CE</sub> = 45 V			100 100 100	μA μA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA	for <b>BD433/434</b> 22 for <b>BD435/436</b> 32 for <b>BD437/438</b> 45			V V V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 2 A	I <sub>B</sub> = 0.2 A for <b>BD433/434</b> for <b>BD435/436</b> for <b>BD437/438</b>	0.2 0.2 0.2	0.5 0.5 0.6	V V V
V <sub>BE*</sub>	Base-Emitter Voltage	I <sub>C</sub> = 10 mA I <sub>C</sub> = 2 A	V <sub>CE</sub> = 5 V V <sub>CE</sub> = 1 V for <b>BD433/434</b> for <b>BD435/436</b> for <b>BD437/438</b>	0.58	1.1 1.1 1.2	V V V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 10 mA  I <sub>C</sub> = 500 mA I <sub>C</sub> = 2 A	V <sub>CE</sub> = 5 V for <b>BD433/434</b> for <b>BD435/436</b> for <b>BD437/438</b>  V <sub>CE</sub> = 1 V V <sub>CE</sub> = 1 V for <b>BD433/434</b> for <b>BD435/436</b> for <b>BD437/438</b>	40 40 30 85  50 50 40	130 130 130 140	
h <sub>FE1</sub> /h <sub>FE2*</sub>	Matched Pair	I <sub>C</sub> = 500 mA	V <sub>CE</sub> = 1 V		1.4	
f <sub>T</sub>	Transition frequency	I <sub>C</sub> = 250 mA	V <sub>CE</sub> = 1 V	3		MHz

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

**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

© 2003 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>

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[BD437](#) [BD438](#)