

COMPLEMENTARY SILICON POWER TRANSISTORS

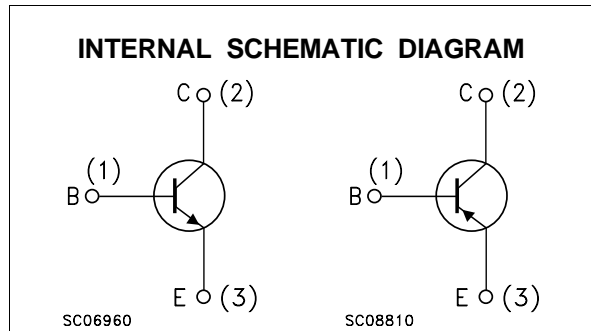
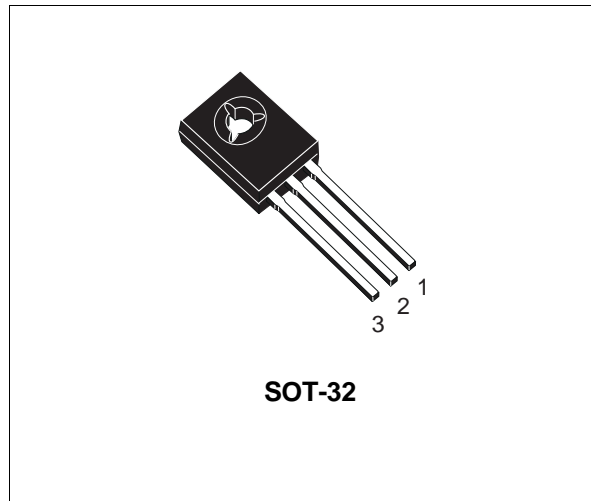
- STMicroelectronics PREFERRED SALESTYPE
- COMPLEMENTARY PNP - NPN DEVICES

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 _{thj-case}	Thermal Resistance Junction-case	Max	3.5	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	Max	100	°C/W

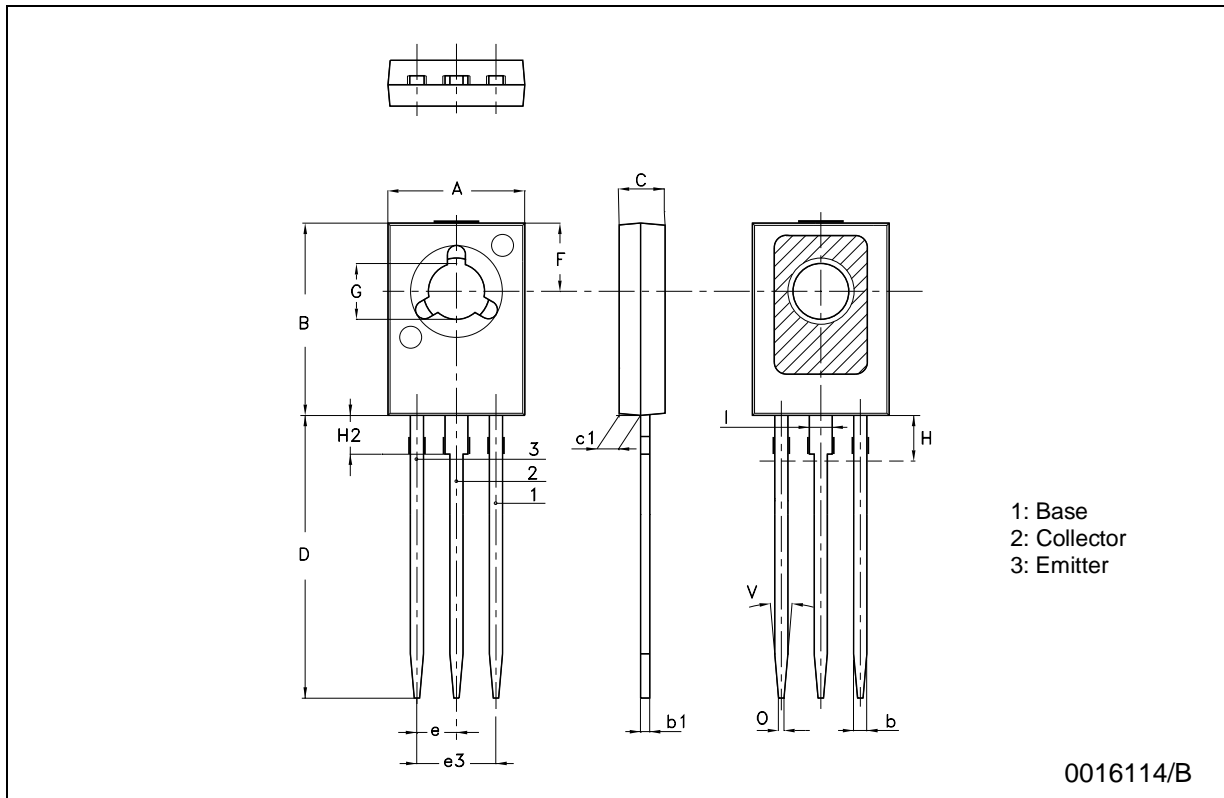
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

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



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