BD433/5/7
BD434/6/8

COMPLEMENTARY SILICON POWER TRANSISTORS

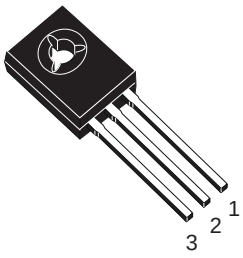
- STMicroelectronics PREFERRED SALESTYPE
- COMPLEMENTARY PNP - NPN DEVICES

DESCRIPTION

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

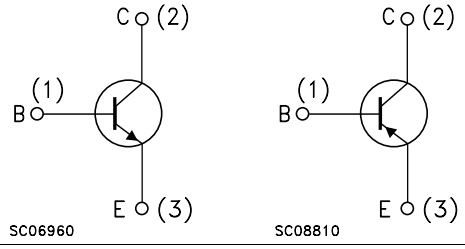
The BD433 is especially suitable for use in car-radio output stages.

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



SOT-32

INTERNAL SCHEMATIC DIAGRAM



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 ≤ 10 ms)		7			A
I_B	Base Current		1			A
P_{tot}	Total Dissipation at T_c ≤ 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.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	3.5	$^oC/W$
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	100	$^oC/W$

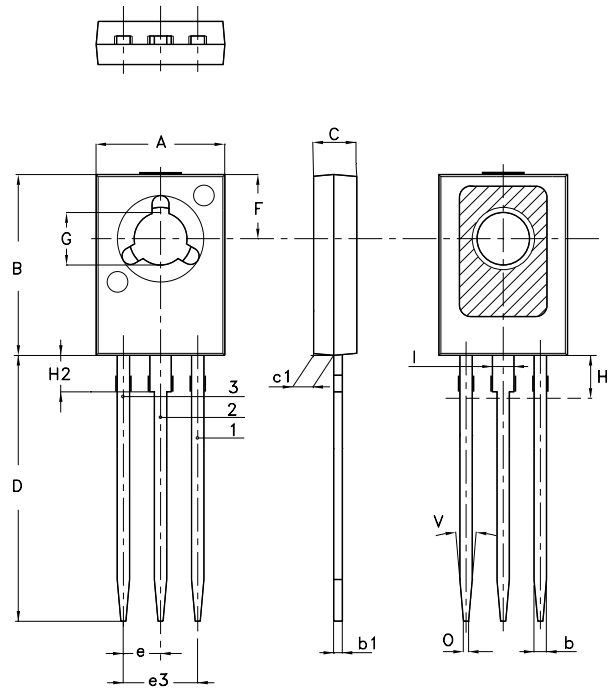
ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

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** for **BD435/436** for **BD437/438**	22 32 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 V_{CE} = 5 V I_C = 2 A V_{CE} = 1 V for **BD433/434** for **BD435/436** for **BD437/438**		0.58	 1.1 1.1 1.2	V V V V
h_{FE}*	DC Current Gain	I_C = 10 mA V_{CE} = 5 V for **BD433/434** for **BD435/436** for **BD437/438** I_C = 500 mA V_{CE} = 1 V I_C = 2 A 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^o			10^o	



1: Base
2: Collector
3: Emitter

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