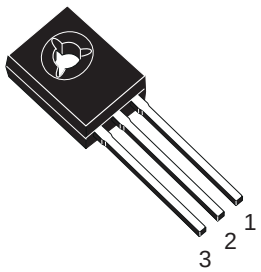
BD433/5/7
BD434/6/8

COMPLEMENTARY SILICON POWER TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPE
- COMPLEMENTARY PNP - NPN DEVICES



SOT-32

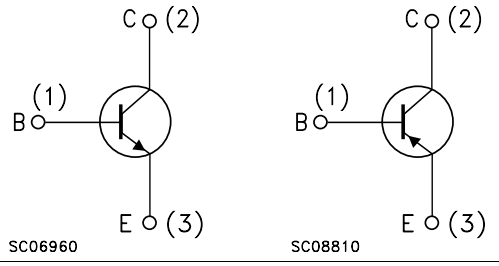
DESCRIPTION

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.

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 $T_c \leq 25\ ^oC$		36			W
T_{stg}	Storage Temperature		-65 to 150			^oC
T_j	Max. Operating Junction Temperature		150			^oC

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	$^oC/W$

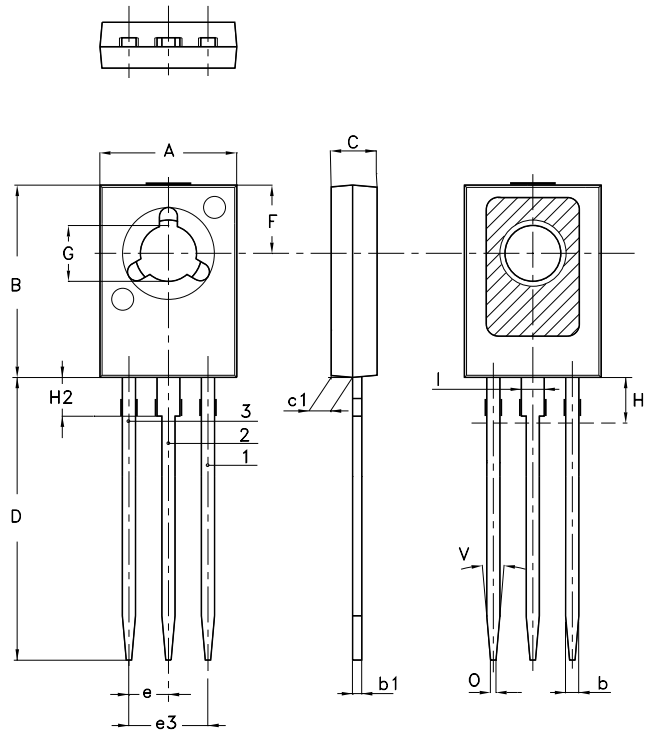
ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	for **BD433/434**	V_{CB} = 22 V			100	µA
		for **BD435/436**	V_{CB} = 32 V			100	µA
		for **BD437/438**	V_{CB} = 45 V			100	µA
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	for **BD433/434**	V_{CE} = 22 V			100	µA
		for **BD435/436**	V_{CE} = 32 V			100	µA
		for **BD437/438**	V_{CE} = 45 V			100	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			V
			for **BD435/436**	32			V
			for **BD437/438**	45			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 2 A	I_B = 0.2 A				
			for **BD433/434**		0.2	0.5	V
			for **BD435/436**		0.2	0.5	V
			for **BD437/438**		0.2	0.6	V
V_{BE}*	Base-Emitter Voltage	I_C = 10 mA	V_{CE} = 5 V		0.58		V
		I_C = 2 A	V_{CE} = 1 V				
			for **BD433/434**			1.1	V
			for **BD435/436**			1.1	V
			for **BD437/438**			1.2	V
h_{FE}*	DC Current Gain	I_C = 10 mA	V_{CE} = 5 V				
			for **BD433/434**	40	130		
			for **BD435/436**	40	130		
			for **BD437/438**	30	130		
		I_C = 500 mA	V_{CE} = 1 V	85	140		
		I_C = 2 A	V_{CE} = 1 V				
			for **BD433/434**	50			
			for **BD435/436**	50			
			for **BD437/438**	40			
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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