

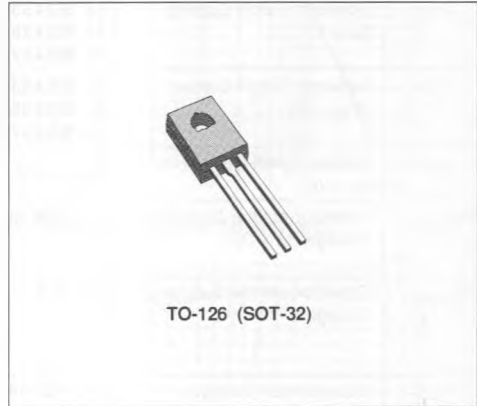
MEDIUM POWER LINEAR AND SWITCHING APPLICATION

DESCRIPTION

The BD433, BD435 and BD437 are silicon epitaxial-base NPN power transistors in Jedec TO-126 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 the BD434, BD436 and BD438 respectively.



INTERNAL SCHEMATIC DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	Value			Unit
			BD433 BD434	BD435 BD436	BD437 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 Power Dissipation at $T_{case} \leq 25$ °C		36			W
T_{stg}	Storage Temperature		- 65 to 150			°C
T_J	Junction Temperature		150			°C

* For PNP types voltage and current values are negative.

THERMAL DATA

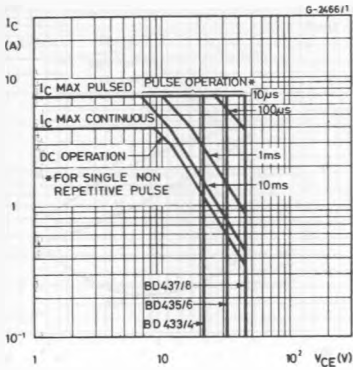
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	3.5	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W

ELECTRICAL CHARACTERISTICS ($T_{case} = 25\ ^\circ C$ unless otherwise specified)

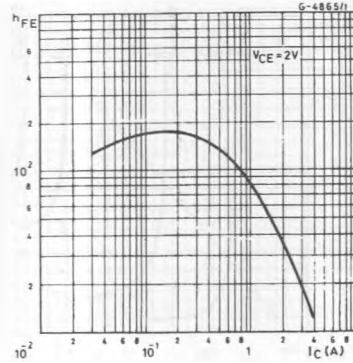
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current ($I_E = 0$)	for BD433/34 for BD435/36 for BD437/38	$V_{CB} = 22\ V$ $V_{CB} = 32\ V$ $V_{CB} = 45\ V$			100 100 100	μA μA μA
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	for BD433/34 for BD435/36 for BD437/38	$V_{CE} = 22\ V$ $V_{CE} = 32\ V$ $V_{CE} = 45\ V$			100 100 100	μA μA μA
I_{EBO}	Emitter Cutoff 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 BD433/34 for BD435/36 for BD437/38	22 32 45			V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 2\ A$	$I_B = 0.2\ A$ for BD433/34 for BD435/36 for BD437/38		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 BD433/34 for BD435/36 for BD437/38		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 BD433/34 for BD435/36 for BD437/38 $V_{CE} = 1\ V$ $V_{CE} = 1\ V$ for BD433/34 for BD435/36 for BD437/38	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%.
For PNP types voltage and current values are negative.

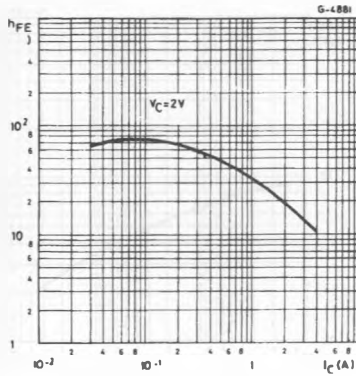
Safe Operating Areas.



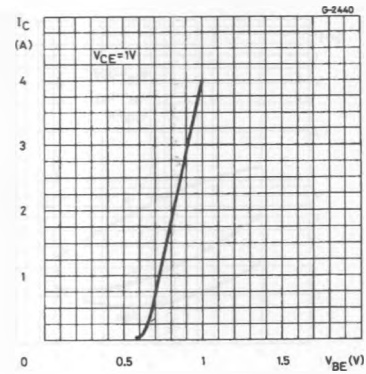
DC Current Gain (NPN types).



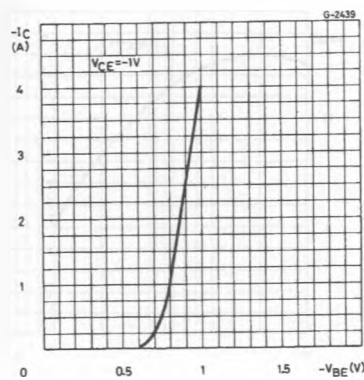
DC Current gain (PNP types).



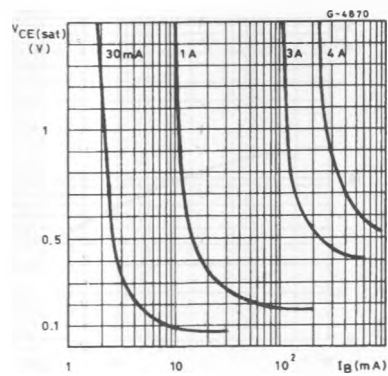
DC Transconductance (NPN types).



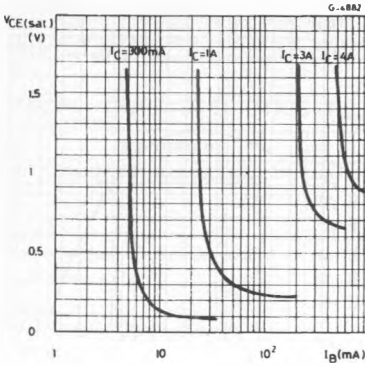
DC Transconductance (PNP types).



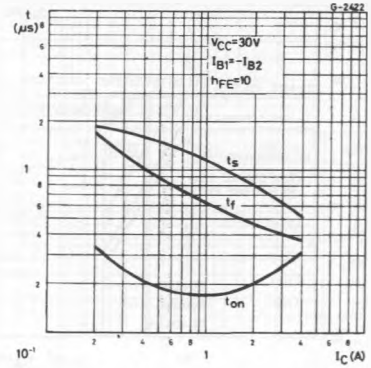
Collector-emitter Saturation Voltage (NPN types).



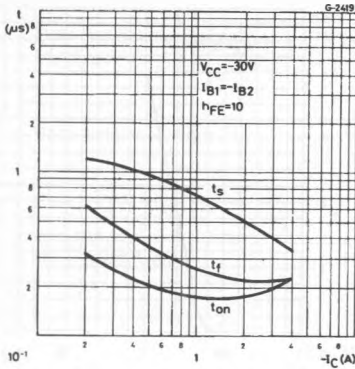
Collector-emitter Saturation Voltage (PNP types).



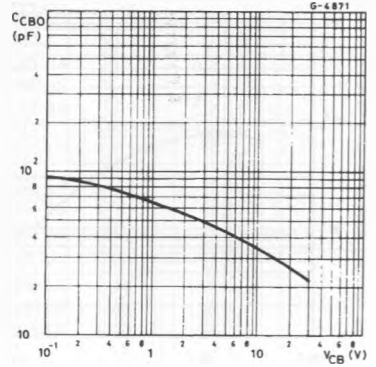
Saturated Switching Characteristics (NPN types).



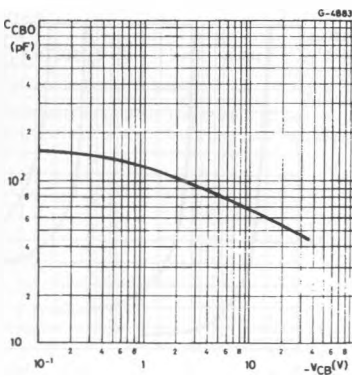
Saturated Switching Characteristics (PNP types).



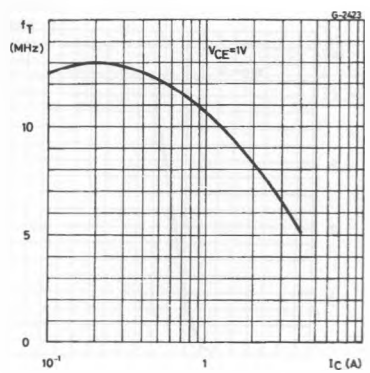
Collector-base Capacitance (NPN types).



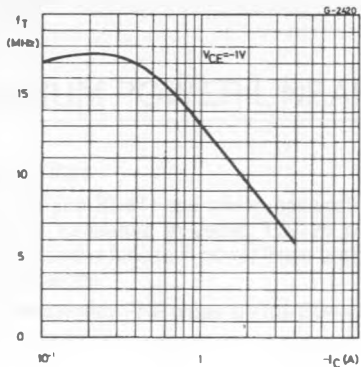
Collector-base Capacitance (PNP types).



Transition Frequency (NPN types).



Transition Frequency (PNP types).



Power Rating Chart.

