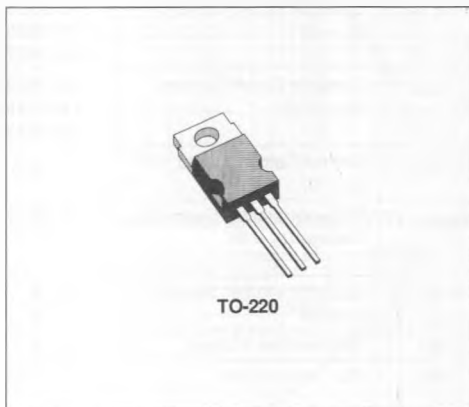


EPITAXIAL-BASE NPN/PNP

DESCRIPTION

The BD533, BD535 and BD537 are silicon epitaxial-base NPN power transistors in Jedec TO-220 plastic package, intended for use in medium power linear and switching applications.

The complementary PNP types are the BD534, BD536 and BD538 respectively.



INTERNAL SCHEMATIC DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	Value			Unit
			BD533 BD534	BD535 BD536	BD537 BD538	
V_{CBO}	Collector-base Voltage ($I_E = 0$)		45	60	80	V
V_{CES}	Collector-emitter Voltage ($V_{BE} = 0$)		45	60	80	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)		45	60	80	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)		5			V
I_C, I_E	Collector and Emitter Current		8			A
I_B	Base Current		1			A
P_{Tot}	Total Power Dissipation at $T_{case} \leq 25^\circ\text{C}$		50			W
T_{stg}	Storage Temperature		- 65 to 150			$^\circ\text{C}$
T_j	Junction Temperature		150			$^\circ\text{C}$

* For PNP types voltage and current values are negative.

THERMAL DATA

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	2.5	$^{\circ}C/W$
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	70	$^{\circ}C/W$

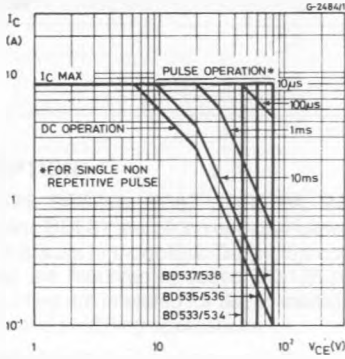
ELECTRICAL CHARACTERISTICS ($T_{case} = 25\ ^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current ($I_E = 0$)	for BD533/34 $V_{CB} = 45\ V$ for BD535/36 $V_{CB} = 60\ V$ for BD537/38 $V_{CB} = 80\ V$			100 100 100	μA μA μA
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	for BD533/34 $V_{CE} = 45\ V$ for BD535/36 $V_{CE} = 60\ V$ for BD537/38 $V_{CE} = 80\ V$			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 BD533/34 for BD535/36 for BD537/38	45 60 80			V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 2\ A$ $I_B = 0.2\ A$ $I_C = 6\ A$ $I_B = 0.6\ A$		0.8	0.8	V V
V_{BE}^*	Base-emitter Voltage	$I_C = 2\ A$ $V_{CE} = 2\ V$			1.5	V
h_{FE}^*	DC Current Gain	$I_C = 10\ mA$ $V_{CE} = 5\ V$ for BD533/34 for BD535/36 for BD537/38 $I_C = 500\ mA$ $V_{CE} = 2\ V$ $I_C = 2\ A$ $V_{CE} = 2\ V$ for BD533/34 for BD535/36 for BD537/38	20 20 15 40 25 25 15			
f_T	Transition Frequency	$I_C = 500\ mA$ $V_{CE} = 1\ V$	3	12		MHz
h_{FE} groups** :	J K	$I_C = 2\ A$ $V_{CE} = 2\ V$ $I_C = 3\ A$ $V_{CE} = 2\ V$ $I_C = 2\ A$ $V_{CE} = 2\ V$ $I_C = 3\ A$ $V_{CE} = 2\ V$	30 15 40 20		75 100	

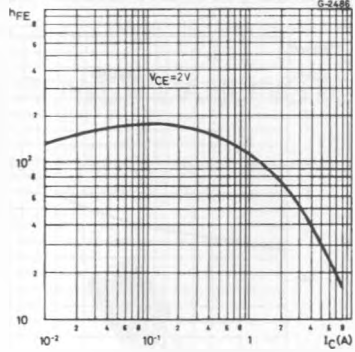
* Pulsed : pulse duration = 300 μs , duty cycle = 1.5 %.

For PNP types voltage and current values are negative.

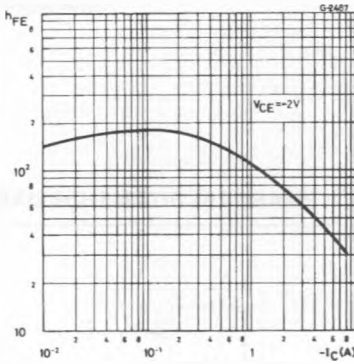
Safe Operating Areas.



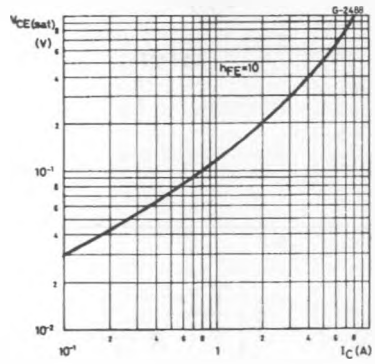
DC Current Gain (NPN types).



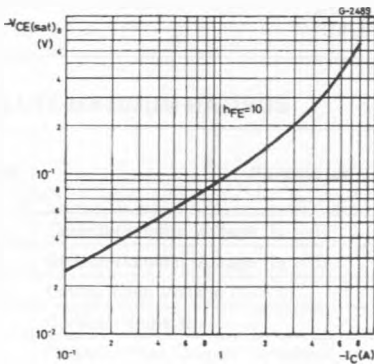
DC Current Gain (PNP types).



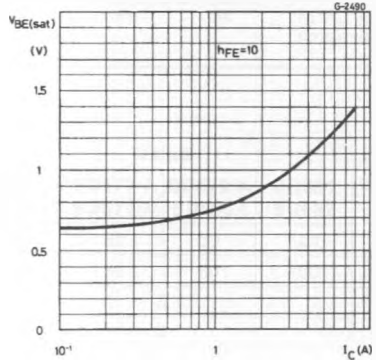
Collector-emitter Saturation Voltage (NPN types).



Collector-emitter Saturation Voltage (PNP types).



Base-emitter Saturation Voltage (NPN types).



Base-emitter Saturation Voltage (PNP types).

