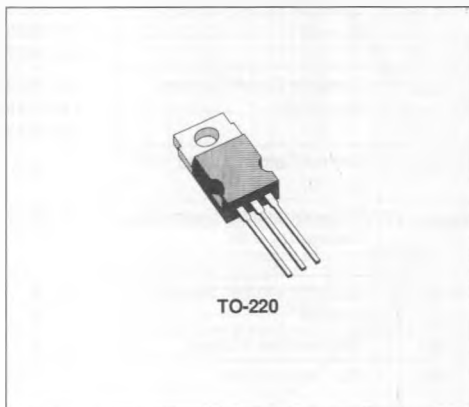


## EPITAXIAL-BASE NPN/PNP

### 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	$^{\circ}C/W$

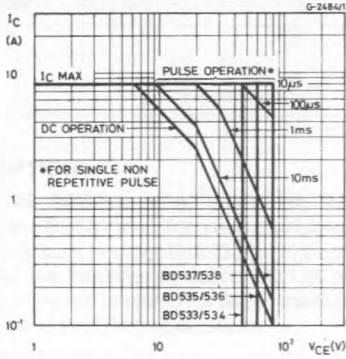
**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25\ ^{\circ}C$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	for <b>BD533/34</b> $V_{CB} = 45\ V$ for <b>BD535/36</b> $V_{CB} = 60\ V$ for <b>BD537/38</b> $V_{CB} = 80\ V$			100 100 100	$\mu A$ $\mu A$ $\mu A$
$I_{CES}$	Collector Cutoff Current ( $V_{BE} = 0$ )	for <b>BD533/34</b> $V_{CE} = 45\ V$ for <b>BD535/36</b> $V_{CE} = 60\ V$ for <b>BD537/38</b> $V_{CE} = 80\ V$			100 100 100	$\mu A$ $\mu A$ $\mu A$
$I_{EBO}$	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 <b>BD533/34</b> for <b>BD535/36</b> for <b>BD537/38</b>	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 <b>BD533/34</b> for <b>BD535/36</b> for <b>BD537/38</b>  $I_C = 500\ mA$ $V_{CE} = 2\ V$ $I_C = 2\ A$ $V_{CE} = 2\ V$ for <b>BD533/34</b> for <b>BD535/36</b> for <b>BD537/38</b>	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	

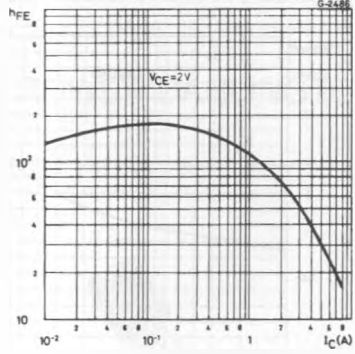
\* Pulsed : pulse duration = 300  $\mu s$ , duty cycle = 1.5 %.

For PNP types voltage and current values are negative.

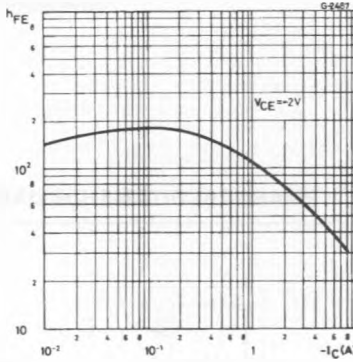
Safe Operating Areas.



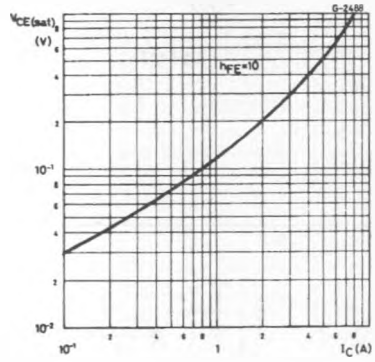
DC Current Gain (NPN types).



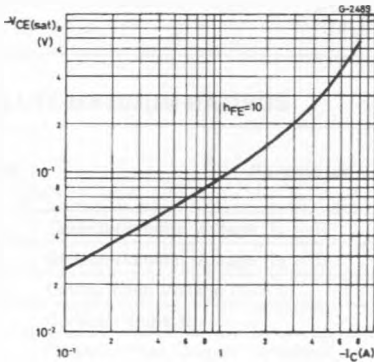
DC Current Gain (PNP types).



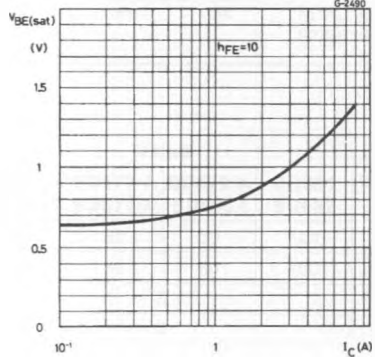
Collector-emitter Saturation Voltage (NPN types).



Collector-emitter Saturation Voltage (PNP types).



Base-emitter Saturation Voltage (NPN types).



Base-emitter Saturation Voltage (PNP types).

