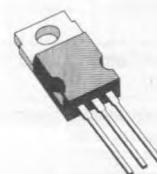


EPITAXIAL-BASE NPN/PNP

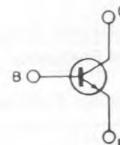
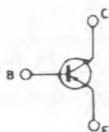
DESCRIPTION

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.



TO-220

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		°C
T_J	Junction Temperature			150		°C

* For PNP types voltage and current values are negative.

THERMAL DATA

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

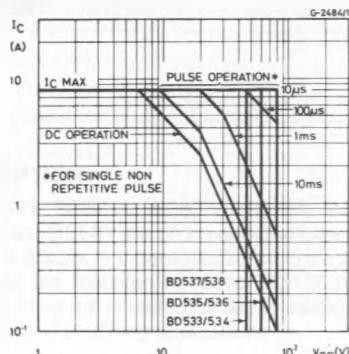
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

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

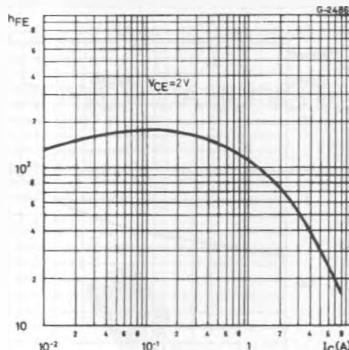
* Pulsed : pulse duration = 300 μs , duty cycle = 1.5 %.

For PNP types voltage and current values are negative.

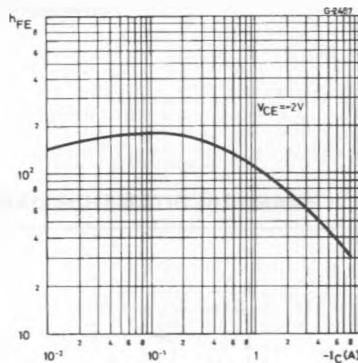
Safe Operating Areas.



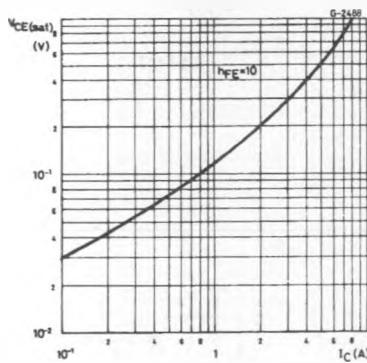
DC Current Gain (NPN types).



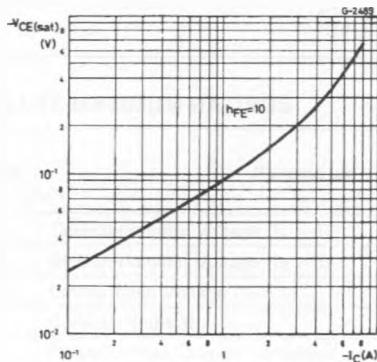
DC Current Gain (PNP types).



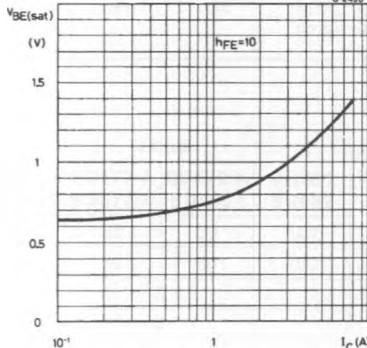
Collector-emitter Saturation Voltage (NPN types).



Collector-emitter Saturation Voltage (PNP types).



Base-emitter Saturation Voltage (NPN types).



Base-emitter Saturation Voltage (PNP types).

