

# Silicon NPN Transistor

## **BD535**

Medium Power Linear and Switching

60V / 8A

# DATASHEET

OEM –SGS Ates

Source: SGS Ates Databook 1977

## EPITAXIAL-BASE NPN

**BD 533**  
**BD 535**  
**BD 537**

### MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

The BD 533, BD 535 and BD 537 are silicon epitaxial-base NPN power transistors in Jedec TO-220 plastic package, intended for use in medium power linear and switching applications.

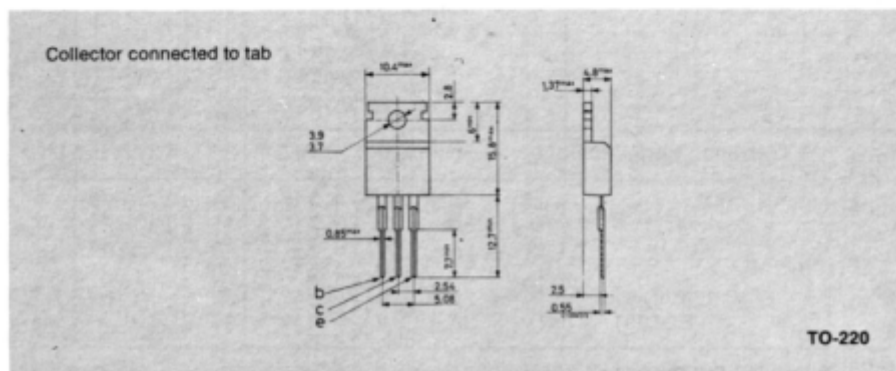
The complementary PNP types are the BD 534, BD 536 and BD 538 respectively.

### ABSOLUTE MAXIMUM RATINGS

		BD 533	BD 535	BD 537
$V_{CBO}$	Collector-base voltage ( $I_E = 0$ )	45V	60V	80V
$V_{CES}$	Collector-emitter voltage ( $V_{BE} = 0$ )	45V	60V	80V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ )	45V	60V	80V
$V_{EBO}$	Emitter-base voltage ( $I_C = 0$ )		5V	
$I_C, I_E$	Collector and emitter current		8A	
$I_B$	Base current		1A	
$P_{tot}$	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	

### MECHANICAL DATA

Dimensions in mm



**BD 533**  
**BD 535**  
**BD 537**

### THERMAL DATA

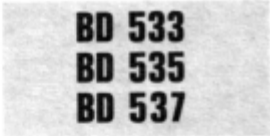
$R_{th\ j-case}$	Thermal resistance junction-case	max	2.5	°C/W
$R_{th\ j-amb}$	Thermal resistance junction-ambient	max	70	°C/W

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

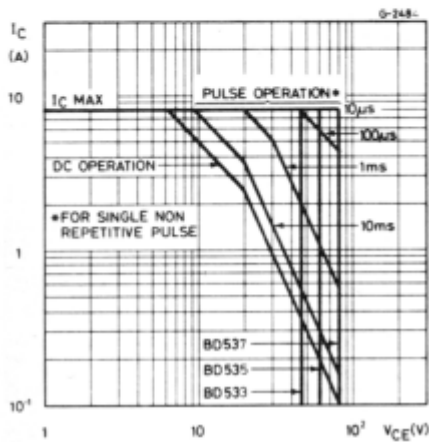
Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector cutoff current ( $I_E = 0$ )	for <b>BD533</b> for <b>BD535</b> for <b>BD537</b>	$V_{CB} = 45V$ $V_{CB} = 60V$ $V_{CB} = 80V$	100 100 100	$\mu A$ $\mu A$ $\mu A$
$I_{CES}$	Collector cutoff current ( $V_{BE} = 0$ )	for <b>BD533</b> for <b>BD535</b> for <b>BD537</b>	$V_{CE} = 45V$ $V_{CE} = 60V$ $V_{CE} = 80V$	100 100 100	$\mu A$ $\mu A$ $\mu A$
$I_{EBO}$	Emitter cutoff current ( $I_C = 0$ )	$V_{EB} = 5V$		1	mA
$V_{CEO(sus)}$ *	Collector-emitter sustaining voltage ( $I_B = 0$ )	$I_C = 100mA$ for <b>BD533</b> for <b>BD535</b> for <b>BD537</b>		45 60 80	V V V
$V_{CE(sat)}$ *	Collector-emitter saturation voltage	$I_C = 2A$ $I_C = 6A$	$I_B = 0.2A$ $I_B = 0.6A$	0.8 0.8	V V
$V_{BE}$ *	Base-emitter voltage	$I_C = 2A$	$V_{CE} = 2V$	1.5	V
$h_{FE}$ *	DC current gain	$I_C = 10mA$ $I_C = 500mA$ $I_C = 2A$	$V_{CE} = 5V$ for <b>BD533</b> for <b>BD535</b> for <b>BD537</b> $V_{CE} = 2V$ $V_{CE} = 2V$ for <b>BD533</b> for <b>BD535</b> for <b>BD537</b>	20 20 15 40 25 25 15	— — — — — — —
$f_T$	Transition frequency	$I_C = 500mA$	$V_{CE} = 1V$	3 12	MHz
$h_{FE}$ groups**:	J K L (only for BD533)	$I_C = 2A$ $I_C = 3A$ $I_C = 2A$ $I_C = 3A$ $I_C = 2A$ $I_C = 3A$	$V_{CE} = 2V$ $V_{CE} = 2V$ $V_{CE} = 2V$ $V_{CE} = 2V$ $V_{CE} = 2V$ $V_{CE} = 2V$	30 15 40 20 60 30	75 — 100 — 150 —

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

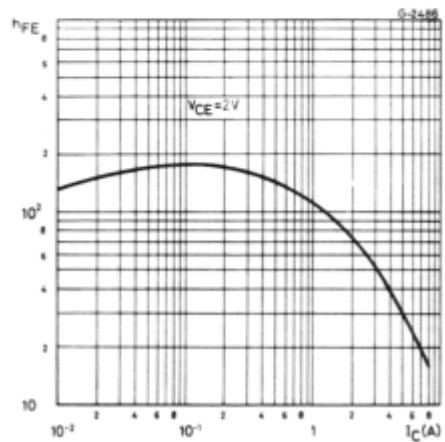
\*\* Only on request



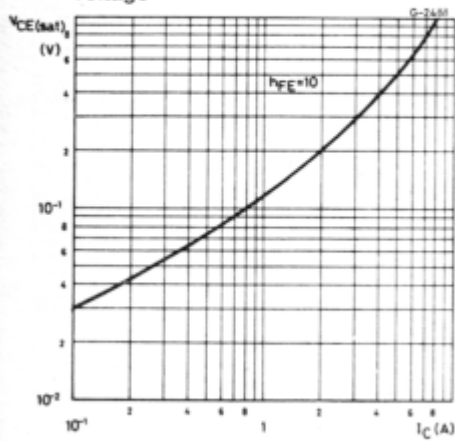
Safe operating areas



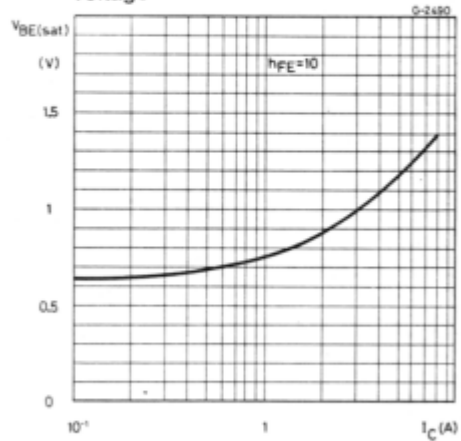
DC current gain



Collector-emitter saturation voltage

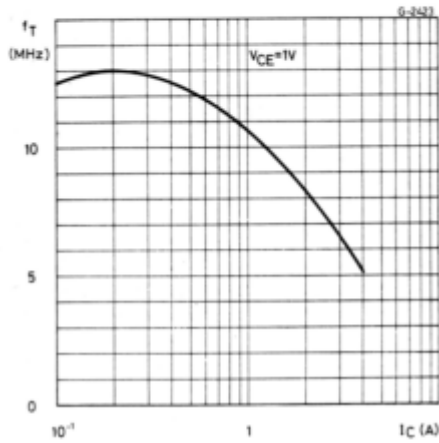


Base-emitter saturation voltage

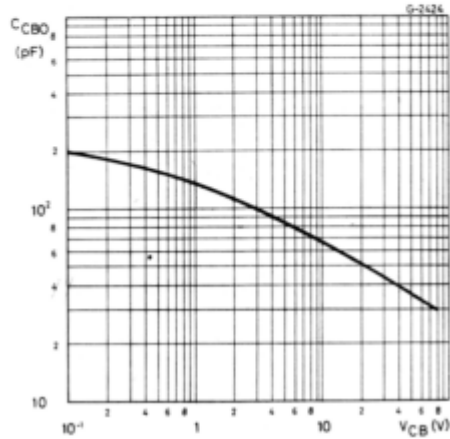


**BD 533**  
**BD 535**  
**BD 537**

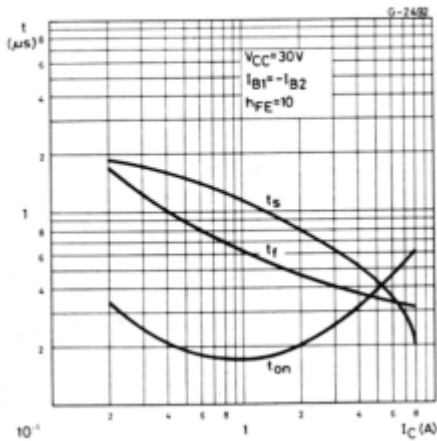
Transition frequency



Collector-base capacitance



Saturated switching characteristics



Power rating chart

