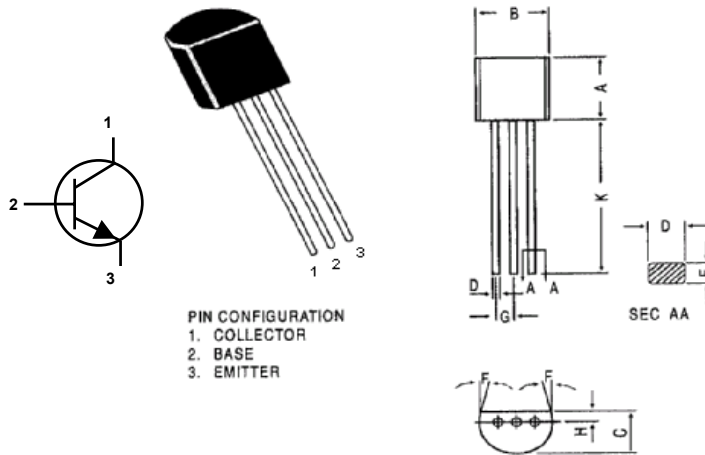


## NPN Silicon Planar Epitaxial Transistors



All dimensions in mm.

DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.14	1.53
K	12.70	—

PIN CONFIGURATION  
 1. COLLECTOR  
 2. BASE  
 3. EMITTER

TO-92 SMD Package

### Absolute Maximum Ratings (Ta = 25 °C unless specified otherwise)

DESCRIPTION	SYMBOL	BC546	BC547	BC548	UNITS
Collector Base Voltage	$V_{CB0}$	80	50	30	V
Collector Emmitter Voltage ( $V_{BE} = 0V$ )	$V_{CES}$	80	50	30	V
Collector Emitter Voltage	$V_{CEO}$	65	45	30	V
Emitter Base Voltage	$V_{EBO}$	6	6	5	V
Collector Current (DC)	$I_C$		100		mA
Collector Current - Peak	$I_{CM}$		200		mA
Emitter Current - Peak	$I_{EM}$		200		mA
Base Current - Peak	$I_{BM}$		200		mA
Total power dissipation up to $T_{amb} = 25\text{ °C}$	$P_{tot}$		500		mW
Storage Temperature	$T_{stg}$		-55 to +150		°C
Junction Temperature	$T_j$		150		°C

### Thermal Resistance

From junction to ambient	$R_{th(j-a)}$		250		°C/W
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**Electrical Characteristics** (Ta=25 °C unless otherwise specified)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS	
Collector Emitter Voltage BC546/BC546A/BC546B/BC546C BC547/BC547A/BC547B/BC547C BC548/BC548A/BC548B/BC548C	V <sub>CEO</sub>	I <sub>C</sub> = 1mA, I <sub>B</sub> = 0	65 45 30			V	
Collector Base Voltage BC546/BC546A/BC546B/BC546C BC547/BC547A/BC547B/BC547C BC548/BC548A/BC548B/BC548C	V <sub>CBO</sub>	I <sub>C</sub> = 100uA, I <sub>E</sub> = 0	80 50 30			V	
Emitter Base Voltage BC546/BC546A/BC546B/BC546C BC547/BC547A/BC547B/BC547C BC548/BC548A/BC548B/BC548C	V <sub>EBO</sub>	I <sub>E</sub> = 10uA, I <sub>C</sub> = 0	6 6 5			V	
Collector Cut off Current	I <sub>CBO</sub>	V <sub>CB</sub> = 30V, I <sub>E</sub> = 0 V <sub>CB</sub> = 30V, I <sub>E</sub> = 0, T <sub>j</sub> = 150°C			15 5	nA uA	
Collector Cut off Current BC546/BC546A/BC546B/BC546C BC547/BC547A/BC547B/BC547C BC548/BC548A/BC548B/BC548C BC546/BC546A/BC546B/BC546C BC547/BC547A/BC547B/BC547C BC548/BC548A/BC548B/BC548C	I <sub>CES</sub>	V <sub>CE</sub> = 80V V <sub>CE</sub> = 50V V <sub>CE</sub> = 30V V <sub>CE</sub> = 80V, T <sub>j</sub> = 125°C V <sub>CE</sub> = 50V, T <sub>j</sub> = 125°C V <sub>CE</sub> = 30V, T <sub>j</sub> = 125°C		0.2 0.2 0.2	15 15 15	nA nA nA uA uA uA	
Base Emitter On Voltage	V <sub>BE(on)</sub>	I <sub>C</sub> = 2mA, V <sub>CE</sub> = 5V I <sub>C</sub> = 10mA, V <sub>CE</sub> = 5V	0.55	0.66	0.7 0.77	V	
Collector Emitter Saturation Voltage	V <sub>CE(Sat)</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0.5mA I <sub>C</sub> = 10mA, I <sub>B</sub> = 5mA I <sub>C</sub> = 100mA, I <sub>B</sub> = see note (1)		0.09 0.2 0.3	0.25 0.60 0.60	V	
Base Emitter Saturation Voltage	V <sub>BE(Sat)</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0.5mA I <sub>C</sub> = 100mA, I <sub>B</sub> = 5mA		0.7 0.9		V	
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 10uA BC546A/BC547A/BC548A BC546B/BC547B/BC548B BC546C/BC547C/BC548C V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA BC546 BC547/BC548 BC546A/BC547A/BC548A BC546B/BC547B/BC548B BC546C/BC547C/BC548C V <sub>CE</sub> = 5V, I <sub>C</sub> = 100mA BC546A/BC547A/BC548A BC546B/BC547B/BC548B BC546C/BC547C/BC548C		90 150 270		450 800 220 450 800	

 Note (1): I<sub>B</sub> is value for which I<sub>C</sub> = 11mA @ V<sub>CE</sub> = 10V.

**Electrical Characteristics** (Ta=25 °C unless otherwise specified)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
<i>DYNAMIC CHARACTERISTICS</i>						
Transition Frequency	$f_T$	$I_C = 10\text{mA}, V_{CE} = 5\text{V}, f = 100\text{MHz}$		300		MHz
Collector output Capacitance	$C_{cbo}$	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		1.7	4.5	pF
Emitter input Capacitance	$C_{ib}$	$V_{EB} = 0.5\text{V}, f = 1\text{MHz}$		9		pF
Noise Figure	NF	$V_{CE} = 5\text{V}, I_C = 0.2\text{mA}$ $R_S = 2\text{k ohm}, f = 1\text{kHz}, B = 200\text{Hz}$		2	10	dB
Small Signal Current Gain	$h_{fe}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, f = 1\text{kHz}$ <b>BC546A/BC547A/BC548A</b> <b>BC546B/BC547B/BC548B</b> <b>BC546C/BC547C/BC548C</b>		220 330 600		
Input Impedance	$h_{ie}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, f = 1\text{kHz}$ <b>BC546A/BC547A/BC548A</b> <b>BC546B/BC547B/BC548B</b> <b>BC546C/BC547C/BC548C</b>	1.6 3.2 6	2.7 4.5 8.7	4.5 8.5 15	k ohm
Voltage Feedback	$h_{re}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, f = 1\text{kHz}$ <b>BC546A/BC547A/BC548A</b> <b>BC546B/BC547B/BC548B</b> <b>BC546C/BC547C/BC548C</b>		1.5 2 3		x10
<i>DYNAMIC CHARACTERISTICS</i>						
Output Admittance	$h_{oe}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, f = 1\text{kHz}$ <b>BC546A/BC547A/BC548A</b> <b>BC546B/BC547B/BC548B</b> <b>BC546C/BC547C/BC548C</b>		18 30 60	30 60 110	u MHO

Note (1):  $I_B$  is value for which  $I_C = 11\text{mA}$  @  $V_{CE} = 10\text{V}$ .