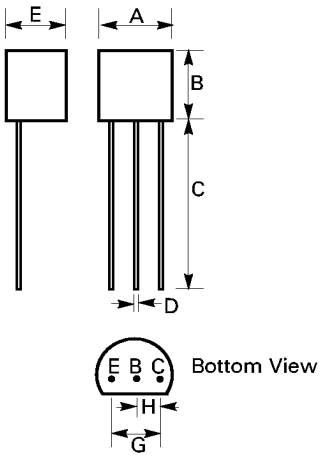
BC546 - BC548

NPN EPITAXIAL PLANAR TRANSISTOR

Features

- Ideal for Switching and AF Amplifier Applications
- Divided into Current Gain Subgroups
- Complementary PNP Types Available (BC556 - BC558)



TO-92		
Dim	**Min**	**Max**
A	4.45	4.70
B	4.46	4.70
C	12.7	—
D	0.41	0.63
E	3.43	3.68
G	2.42	2.67
H	1.14	1.40
All Dimensions in mm		

Mechanical Data

- Case: T0-92, Plastic
- Leads: Solderable per MIL-STD-202, Method 208
- Pin Connections: See Diagram
- Weight: 0.18 grams (approx.)

Maximum Ratings @ $T_A = 25°C$ unless otherwise specified

Characteristic		Symbol	Value	Unit
Collector-Base Voltage	BC546 BC547 BC548	V_{CBO}	80 50 30	V
Collector-Emitter Voltage	BC546 BC547 BC548	V_{CEO}	65 45 30	V
Emitter-Base Voltage	BC546, BC547 BC548	V_{EBO}	6.0 5.0	V
Collector Current		I_C	100	mA
Peak Collector Current		I_{CM}	200	mA
Peak Emitter Current		I_{EM}	200	mA
Power Dissipation (Note 1)		P_d	500	mW
Operating and Storage Temperature Range		T_j, T_{STG}	-65 to +150	°C

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
h-Parameters							
Small Signal Current Gain	Current Gain Group A	h_{fe}	—	220	—	—	
	B	h_{fe}	—	330	—	—	
	C	h_{fe}	—	600	—	—	
Input Impedance	Group A	h_{je}	1.6	2.7	4.5	kΩ	
	B	h_{je}	3.2	4.5	8.5	kΩ	V_{CE} = 5.0V, I_C = 2.0mA, f = 1.0kHz,
	C	h_{je}	6.0	8.7	15	kΩ	Note 2
Output Admittance	Group A	h_{oe}	—	18	30	µS	
	B	h_{oe}	—	30	60	µS	
	C	h_{oe}	—	60	110	µS	
Reverse Voltage Transfer Ratio	Group A	h_{re}	—	$1.5x10^{-4}$	—	—	
	B	h_{re}	—	$2x10^{-4}$	—	—	
	C	h_{re}	—	$3x10^{-4}$	—	—	
DC Current Gain							Note 2
	Current Gain Group A		—	90	—		V_{CE} = 5.0V, I_C = 10µA
	B		—	150	—		
	C		—	270	—		
	Group A	h_{fe}	110	180	220	—	V_{CE} = 5.0V, I_C = 2.0mA
	B		200	290	450		
	C		420	500	800		
	Group A		—	120	—		V_{CE} = 5.0V, I_C = 100mA
	B		—	200	—		
	C		—	400	—		
Thermal Resistance, Junction to Ambient Air		$R_{\theta JA}$	—	—	250	K/W	Note 1
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	80 200	200 600	mV	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5.0mA
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	—	700 900	—	mV	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5.0mA
Base-Emitter Voltage		V_{BE}	580 —	660 —	700 720	mV	V_{CE} = 5.0V, I_C = 2.0mA V_{CE} = 5.0V, I_C = 10mA
Collector Cutoff Current	BC556	I_{CES}		0.2	15	nA	V_{CE} = 80V
	BC557	I_{CES}		0.2	15	nA	V_{CE} = 50V
	BC558	I_{CES}		0.2	15	nA	V_{CE} = 30V
	BC556	I_{CES}		—	4.0	µA	V_{CE} = 80V, T_j = 125°C
	BC557	I_{CES}	—	—	4.0	µA	V_{CE} = 50V, T_j = 125°C
	BC558	I_{CES}		—	4.0	µA	V_{CE} = 30V, T_j = 125°C
		I_{CBO}		—	15	nA	V_{CB} = 30V
		I_{CBO}		—	5.0	µA	V_{CB} = 30V, T_j = 150°C
Gain Bandwidth Product		f_T	—	300	—	MHz	V_{CE} = 5.0V, I_C = 10mA, f = 100MHz
Collector-Base Capacitance		C_{CBO}	—	3.5	6.0	pF	V_{CB} = 10V, f = 1.0MHz
Emitter-Base Capacitance		C_{EBO}	—	9	—	pF	V_{EB} = 0.5V, f = 1MHz
Noise Figure		NF	—	2.0	10	dB	V_{CE} = 5.0V, I_C = 200µA, R_G = 2.0kΩ, f = 1.0kHz, Δf = 200Hz

Note: 1. Leads maintained at ambient temperature at a distance of 2mm from case.
2. Current gain subgroup "C" is not available for BC546.

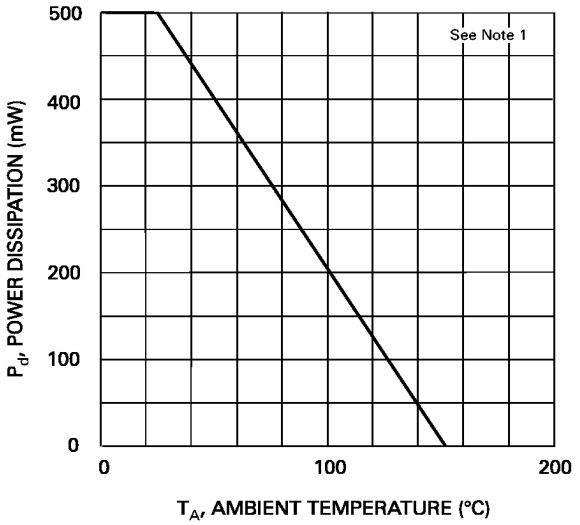


Fig. 1, Power Derating Curve

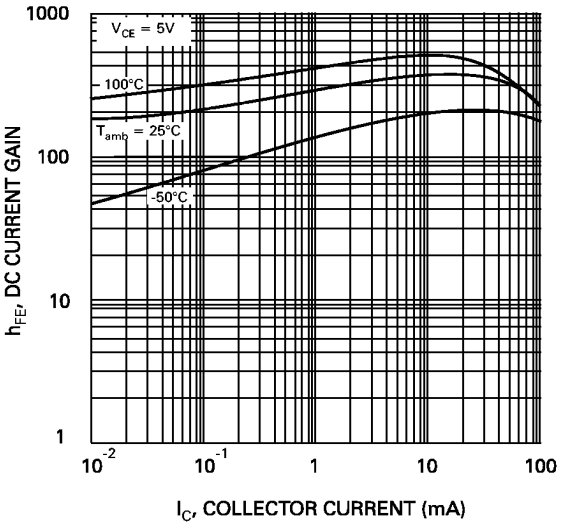


Fig. 2, DC Current Gain vs Collector Current

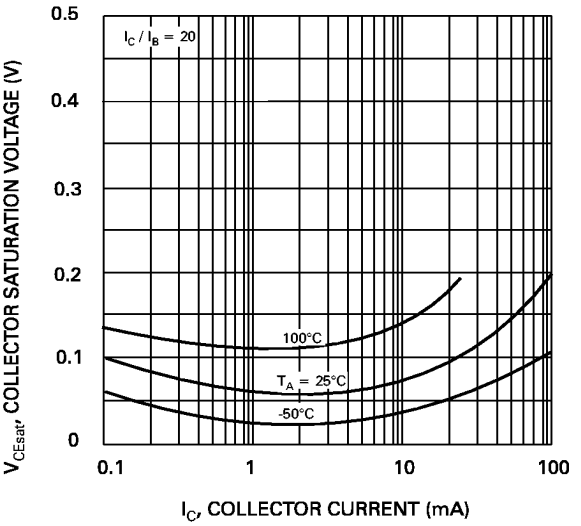


Fig. 3, Collector Sat. Voltage vs Collector Current

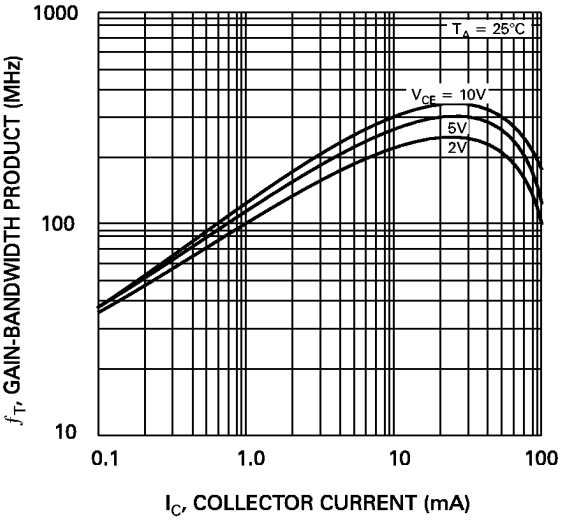


Fig. 4, Gain-Bandwidth Product vs Collector Current