BC546 - BC548

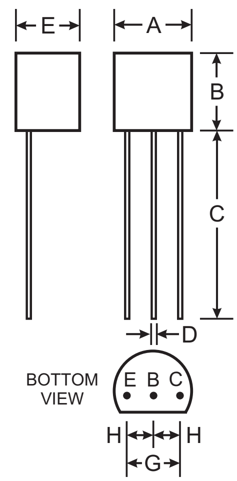
NPN EPITAXIAL PLANAR TRANSISTOR

Features

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

Mechanical Data

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



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		

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
Thermal Resistance, Junction to Ambient Air (Note 1)		$R_{\theta JA}$	250	K/W
Operating and Storage Temperature Range		T_j, T_{STG}	-65 to +150	°C

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

Electrical Characteristics
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	—	—	V_{CE} = 5.0V, I_C = 2.0mA, f = 1.0kHz, Note 2
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	
C	h_{je}	6.0	8.7	15	kΩ	
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}	—	1.5×10^{-4}	—	—	
B	h_{re}	—	2×10^{-4}	—	—	
C	h_{re}	—	3×10^{-4}	—	—	
DC Current Gain						Note 2
Current Gain Group A	h_{fe}	—	90	—	—	V_{CE} = 5.0V, I_C = 10µA
B		—	150	—		
C		—	270	—		
Group A		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	—		
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	80	200	mV	I_C = 10mA, I_B = 0.5mA
			200	600		I_C = 100mA, I_B = 5.0mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	700	—	mV	I_C = 10mA, I_B = 0.5mA
			900			I_C = 100mA, I_B = 5.0mA
Base-Emitter Voltage	V_{BE}	580	660	700	mV	V_{CE} = 5.0V, I_C = 2.0mA
		—	—	720		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

Notes:
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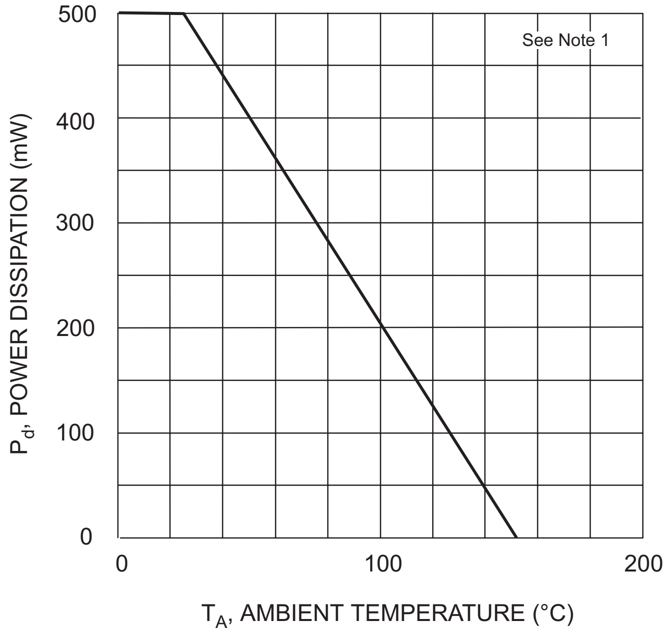

Fig. 1, Power Derating Curve

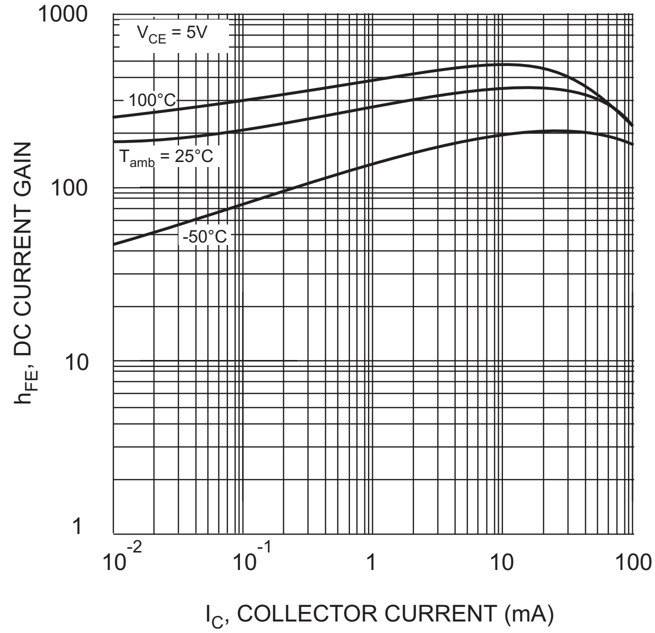

Fig. 2, DC Current Gain vs Collector Current

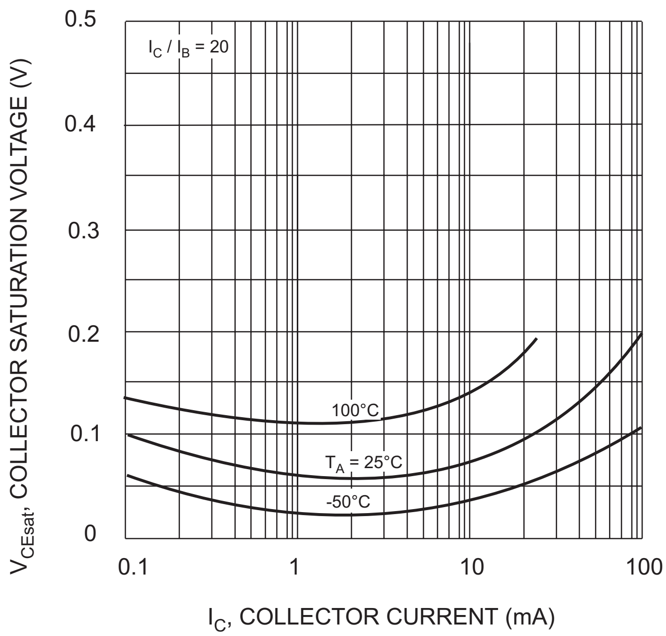

Fig. 3, Collector Sat. Voltage vs Collector Current

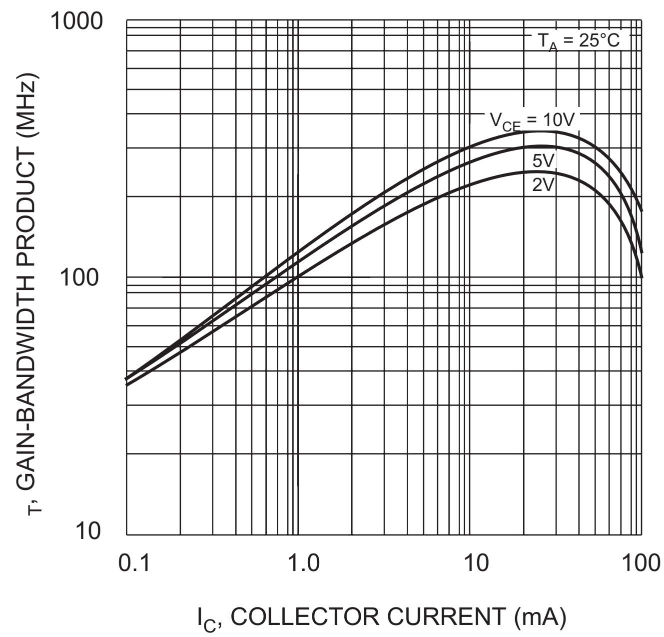

Fig. 4, Gain-Bandwidth Product vs Collector Current