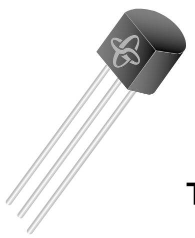
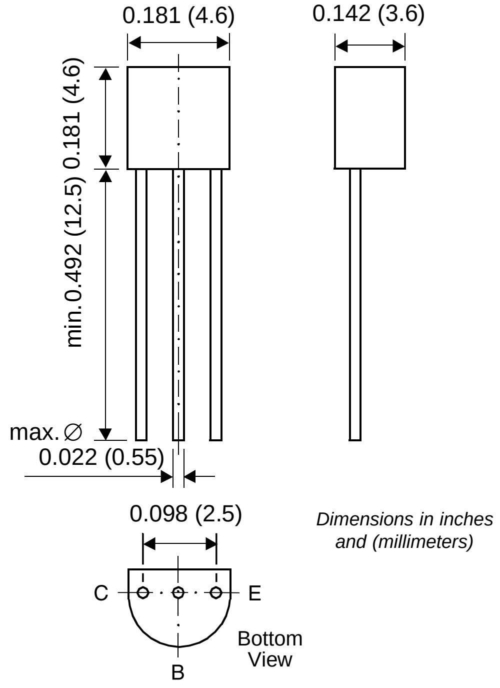
GENERAL SEMICONDUCTOR®

BC556 thru BC559

Small Signal Transistors (PNP)



TO-226AA (TO-92)



Dimensions in inches and (millimeters)

Features

- PNP Silicon Epitaxial Planar Transistors for switching and AF amplifier applications.
- These transistors are subdivided into three groups A, B, and C according to their current gain. The type BC556 is available in groups A and B, however, the types BC557 and BC558 can be supplied in all three groups. The BC559 is a low-noise type available in all three groups. As complementary types, the NPN transistors BC546...BC549 are recommended.
- On special request, these transistors are also manufactured in the pin configuration TO-18.

Mechanical Data

Case: TO-92 Plastic Package
Weight: approx. 0.18g
Packaging Codes/Options:
E6/Bulk – 5K per container, 20K/box
E7/4K per Ammo mag., 20K/box

Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Collector-Base Voltage BC556 BC557 BC558, BC559	$-V_{CBO}$	 80 50 30	V
Collector-Emitter Voltage BC556 BC557 BC558, BC559	$-V_{CES}$	 80 50 30	V
Collector-Emitter Voltage BC556 BC557 BC558, BC559	$-V_{CEO}$	 65 45 30	V
Emitter-Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	100	mA
Peak Collector Current	$-I_{CM}$	200	mA
Peak Base Current	$-I_{BM}$	200	mA
Peak Emitter Current	I_{EM}	200	mA
Power Dissipation at T_{amb} = 25°C	P_{tot}	500(1)	mW
Thermal Resistance Junction to Ambient Air	$R_{\Theta JA}$	250(1)	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	–65 to +150	°C

Note: (1) Valid provided that leads are kept at ambient temperature at a distance of 2mm from case.

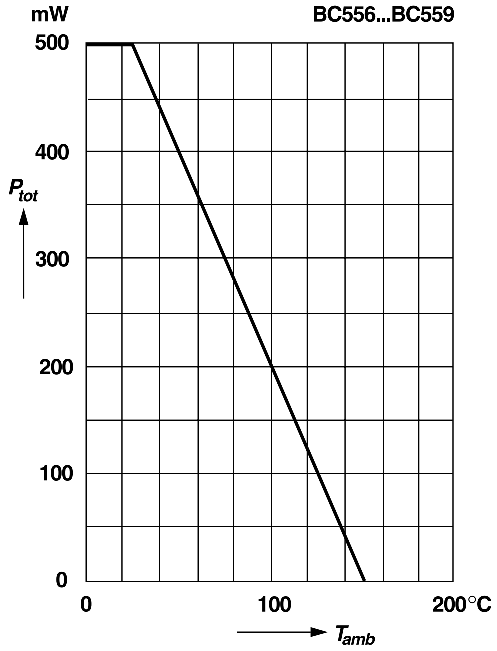
Electrical Characteristics (T_J = 25°C unless otherwise noted)

Parameter		Symbol	Test Condition	Min	Typ	Max	Unit
Small Signal Current Gain	Current gain group A	h_{fe}	$-V_{CE}$ = 5V, $-I_C$ = 2mA, f = 1 kHz	—	220	—	—
	B			—	330	—	
	C			—	600	—	
Input Impedance	Current gain group A	h_{ie}	$-V_{CE}$ = 5V, $-I_C$ = 2mA, f = 1kHz	1.6	2.7	4.5	kΩ
	B			3.2	4.5	8.5	
	C			6	8.7	15	
Output Admittance	Current gain group A	h_{oe}	$-V_{CE}$ = 5V, $-I_C$ = 2mA, f = 1kHz	—	18	30	µS
	B			—	30	60	
	C			—	60	110	
Reverse Voltage Transfer Ratio	Current gain group A	h_{re}	$-V_{CE}$ = 5V, $-I_C$ = 2mA, f = 1kHz	—	$1.5 \cdot 10^{-4}$	—	—
	B			—	$2 \cdot 10^{-4}$	—	
	C			—	$3 \cdot 10^{-4}$	—	
DC Current Gain	Current gain group A	h_{FE}	$-V_{CE}$ = 5V, $-I_C$ = 10µA	—	90	—	—
	B			—	150	—	
	C			—	270	—	
	Current gain group A		$-V_{CE}$ = 5V, $-I_C$ = 2mA	110	180	220	
	B			200	290	450	
	C			420	500	800	
	Current gain group A		$-V_{CE}$ = 5V, $-I_C$ = 100mA	—	120	—	
	B			—	200	—	
	C			—	400	—	
Collector Saturation Voltage		$-V_{CEsat}$	$-I_C$ = 10mA, $-I_B$ = 0.5mA	—	80	300	mV
			$-I_C$ = 100mA, $-I_B$ = 5mA	—	250	650	
Base Saturation Voltage		$-V_{BEsat}$	$-I_C$ = 10mA, $-I_B$ = 0.5mA	—	700	—	mV
			$-I_C$ = 100mA, $-I_B$ = 5mA	—	900	—	
Base-Emitter Voltage		$-V_{BE}$	$-V_{CE}$ = 5V, $-I_C$ = 2mA	600	660	750	mV
			$-V_{CE}$ = 5V, $-I_C$ = 10mA	—	—	800	
Collector-Emitter Cutoff Current	BC556	$-I_{CES}$	$-V_{CE}$ = 80V	—	0.2	15	nA
	BC557		$-V_{CE}$ = 50V	—	0.2	15	nA
	BC558		$-V_{CE}$ = 30V	—	0.2	15	nA
	BC556		$-V_{CE}$ = 80V, T_j = 125°C	—	—	4	µA
	BC557		$-V_{CE}$ = 50V, T_j = 125°C	—	—	4	µA
	BC558, BC559		$-V_{CE}$ = 30V, T_j = 125°C	—	—	4	µA
Gain-Bandwidth Product		f_T	$-V_{CE}$ = 5V, $-I_C$ = 10mA, f = 100MHz	—	150	—	MHz
Collector-Base Capacitance		C_{CBO}	$-V_{CB}$ = 10V, f = 1MHz	—	—	6	pF
Noise Figure	BC556, BC557, BC558	F	$-V_{CE}$ = 5V, $-I_C$ = 200µA, R_G = 2kΩ, f = 1kHz, Δf = 200Hz	—	2	10	dB
	BC559			—	1	4	
	BC559		$-V_{CE}$ = 5V, $-I_C$ = 200µA, R_G = 2 kΩ, f = 30...15000Hz	—	1.2	4	

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

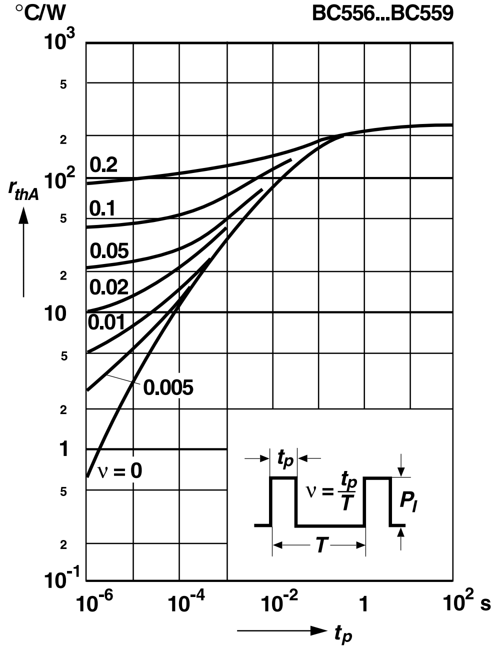
Admissible power dissipation versus temperature

Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case

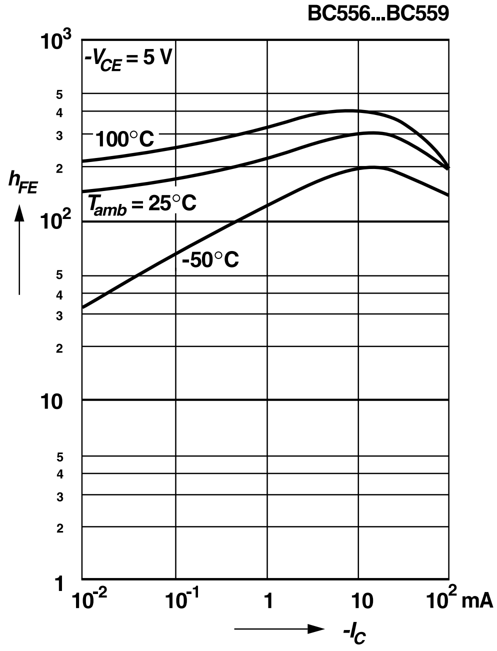


Pulse thermal resistance versus pulse duration

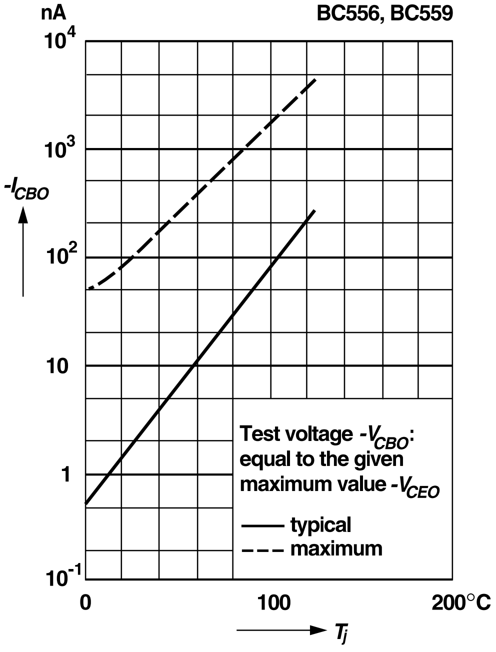
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



DC current gain versus collector current

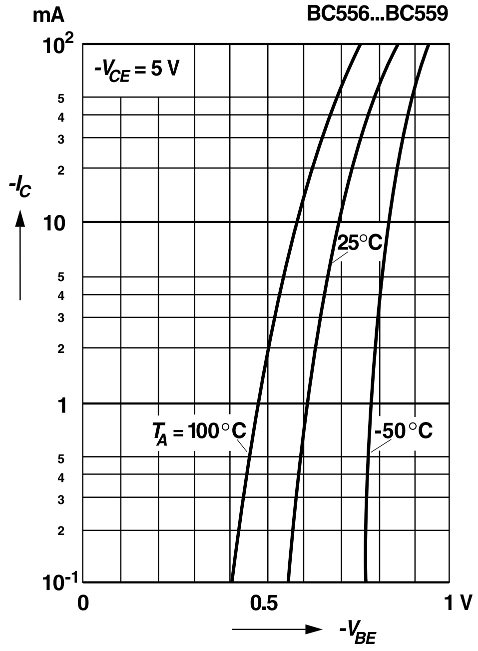


Collector-base cutoff current versus junction temperature

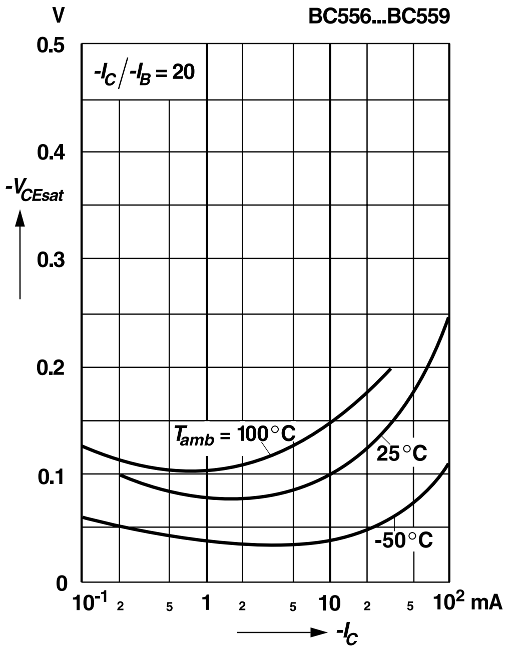


Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

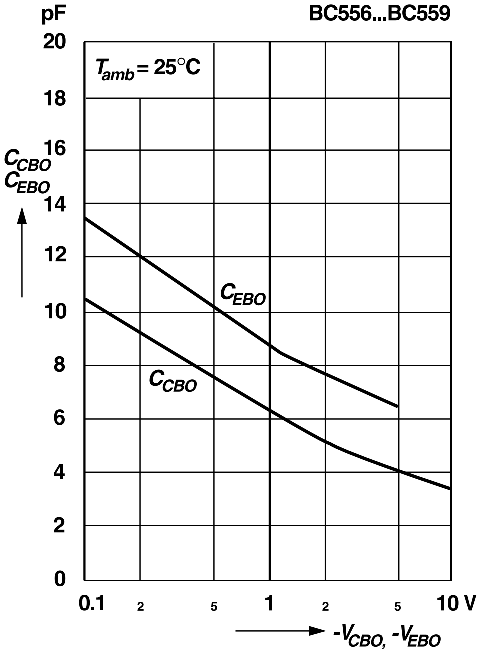
Collector current versus base-emitter voltage



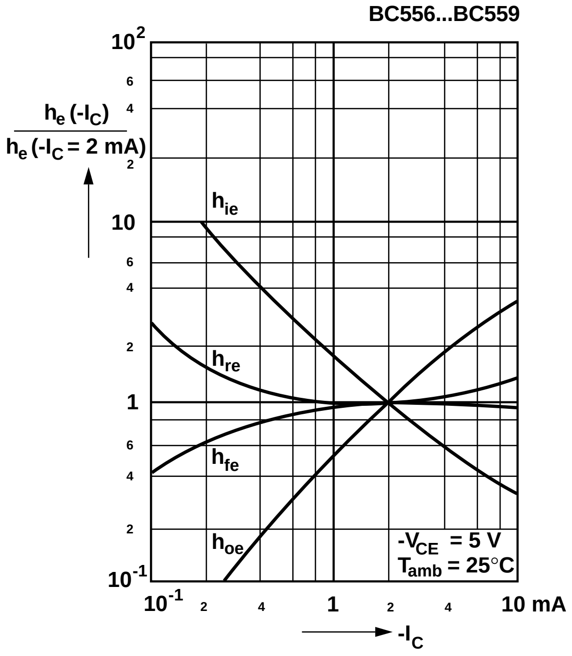
Collector saturation voltage versus collector current



Collector-base capacitance, Emitter-base capacitance versus reverse bias voltage



Relative h-parameters versus collector current

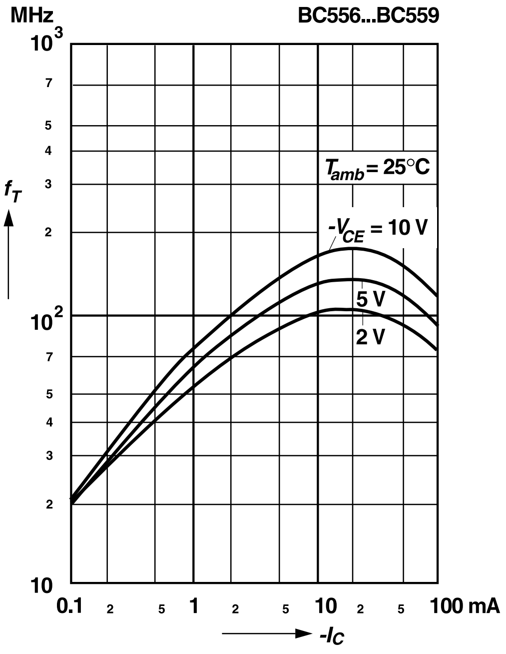


BC556 thru BC559

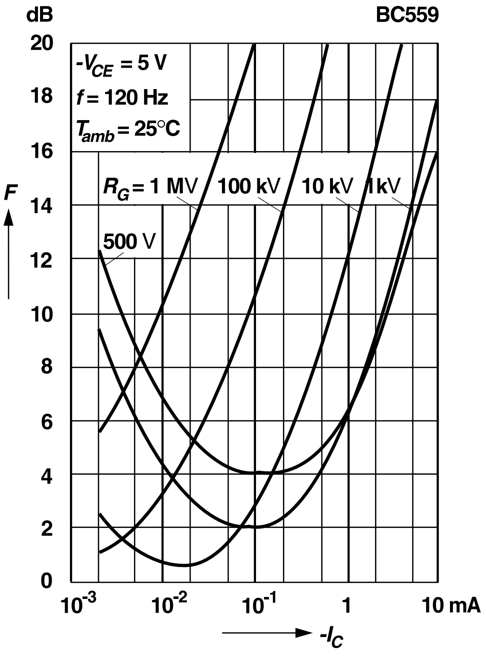
Small Signal Transistors (PNP)

Ratings and Characteristic Curves (T$_A$ = 25°C unless otherwise noted)

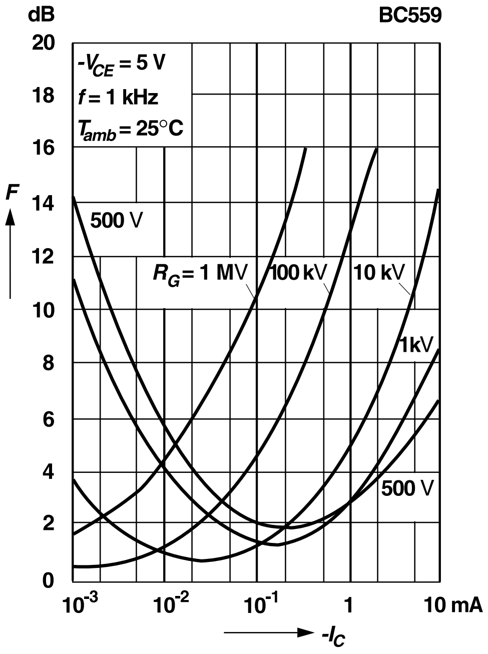
Gain-bandwidth product versus collector current



Noise figure versus collector current



Noise figure versus collector current



Noise figure versus collector-emitter voltage