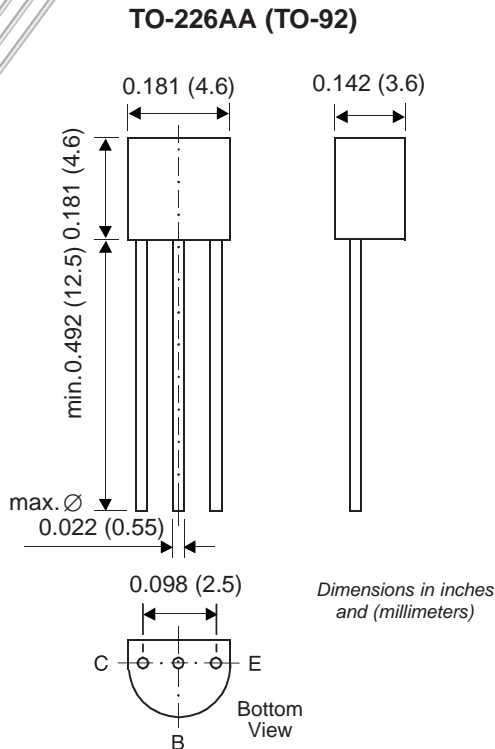
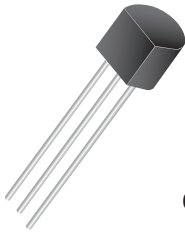


## Small Signal Transistors (NPN)



### Features

- NPN Silicon Epitaxial Planar Transistors
- These transistors are subdivided into three groups A, B, and C according to their current gain. The type BC546 is available in groups A and B, however, the types BC547 and BC548 can be supplied in all three groups. As complementary types the PNP transistors BC556...BC558 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	BC546	$V_{CB0}$	80	V
	BC547		50	
	BC548		30	
Collector-Emitter Voltage	BC546	$V_{CES}$	80	V
	BC547		50	
	BC548		30	
Collector-Emitter Voltage	BC546	$V_{CEO}$	65	V
	BC547		45	
	BC548		30	
Emitter-Base Voltage	BC546, BC547 BC548	$V_{EBO}$	6 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 $T_{amb} = 25^\circ\text{C}$		$P_{tot}$	500 <sup>(1)</sup>	mW
Thermal Resistance Junction to Ambient Air		$R_{\theta JA}$	250 <sup>(1)</sup>	$^\circ\text{C}/\text{W}$
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_s$	-65 to +150	$^\circ\text{C}$

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

# BC546 thru BC548

Vishay Semiconductors  
formerly General Semiconductor



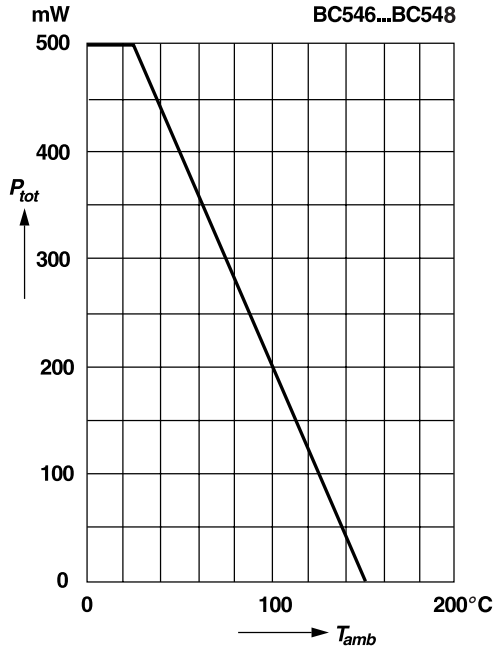
## Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
Small Signal Current Gain	Current gain group A	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA, f = 1 kHz	—	220	—	—	
	B		—	330	—		
	C		—	600	—		
Input Impedance	Current gain group A	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA, f = 1 kHz	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	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA, f = 1 kHz	—	18	30	μS	
	B		—	30	60		
	C		—	60	110		
Reverse Voltage Transfer Ratio	Current gain group A	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA, f = 1 kHz	—	1.5 • 10 <sup>-4</sup>	—	—	
	B		—	2 • 10 <sup>-4</sup>	—		
	C		—	3 • 10 <sup>-4</sup>	—		
DC Current Gain	Current gain group A	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 μA	—	90	—	—	
	B		—	150	—		
	C		—	270	—		
	Current gain group A	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA	110	180	220		
	B		200	290	450		
	C		420	500	800		
Current gain group A	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 100 mA	—	120	—			
B		—	200	—			
C		—	400	—			
Collector Saturation Voltage	V <sub>CEsat</sub>	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA I <sub>C</sub> = 100 mA, I <sub>B</sub> = 5 mA	— —	80 200	200 600	mV	
Base Saturation Voltage	V <sub>BEsat</sub>	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA I <sub>C</sub> = 100 mA, I <sub>B</sub> = 5 mA	— —	700 900	— —	mV	
Base-Emitter Voltage	V <sub>BE</sub>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA	580 —	660 —	700 720	mV	
Collector-Emitter Cutoff Current	BC546 BC547 BC548 BC546 BC547 BC548	I <sub>CES</sub>	V <sub>CE</sub> = 80 V	—	0.2	15	nA
			V <sub>CE</sub> = 50 V	—	0.2	15	nA
			V <sub>CE</sub> = 30 V	—	0.2	15	nA
			V <sub>CE</sub> = 80 V, T <sub>J</sub> = 125°C	—	—	4	μA
			V <sub>CE</sub> = 50 V, T <sub>J</sub> = 125°C	—	—	4	μA
			V <sub>CE</sub> = 30 V, T <sub>J</sub> = 125°C	—	—	4	μA
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA, f = 100 MHz	—	300	—	MHz	
Collector-Base Capacitance	C <sub>CB0</sub>	V <sub>CB</sub> = 10 V, f = 1 MHz	—	3.5	6	pF	
Emitter-Base Capacitance	C <sub>EB0</sub>	V <sub>EB</sub> = 0.5 V, f = 1 MHz	—	9	—	pF	
Noise Figure	BC546, BC547 BC548	F	—	2	10	dB	
			V <sub>CE</sub> = 5 V, I <sub>C</sub> = 200 μA, R <sub>G</sub> = 2 kΩ, f = 1 kHz, Δf = 200 Hz				

## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

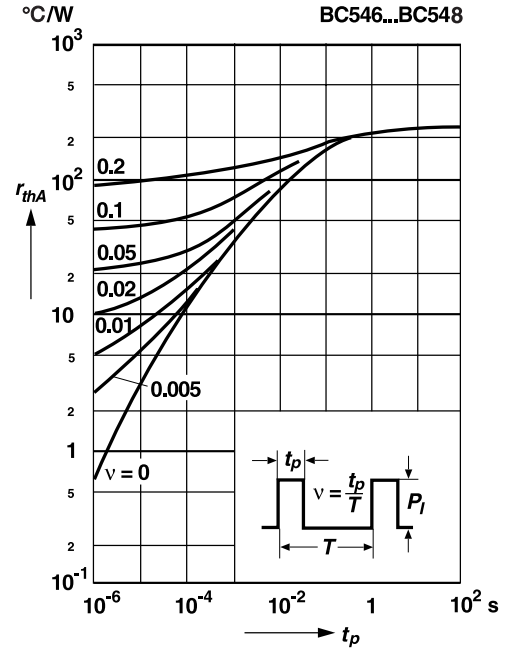
### Admissible power dissipation versus temperature

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

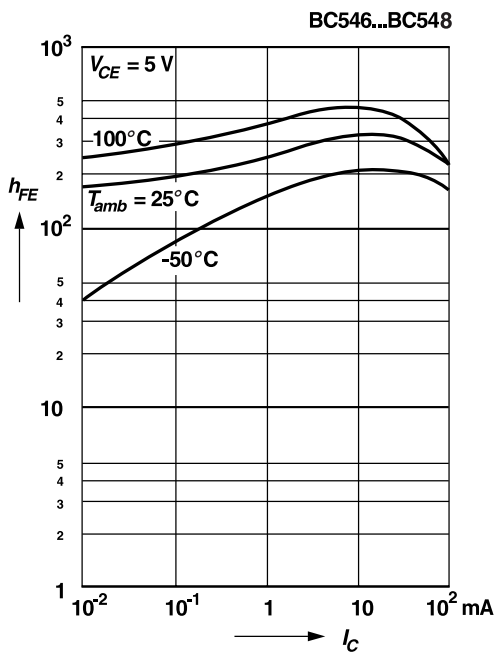


### Pulse thermal resistance versus pulse duration

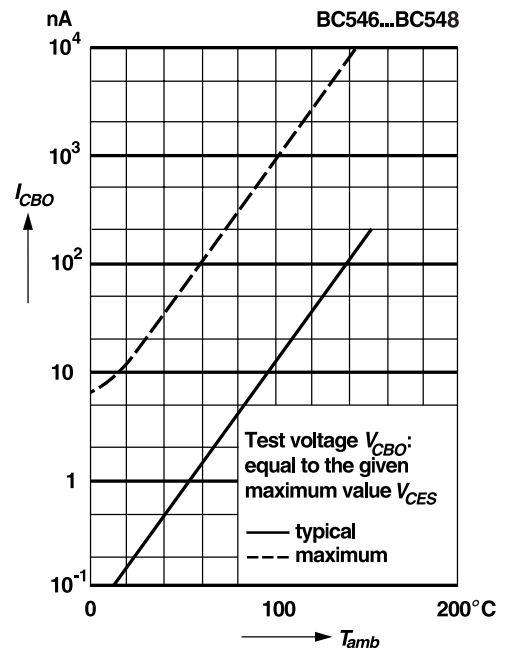
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



### DC current gain versus collector current



### Collector-base cutoff current versus ambient temperature



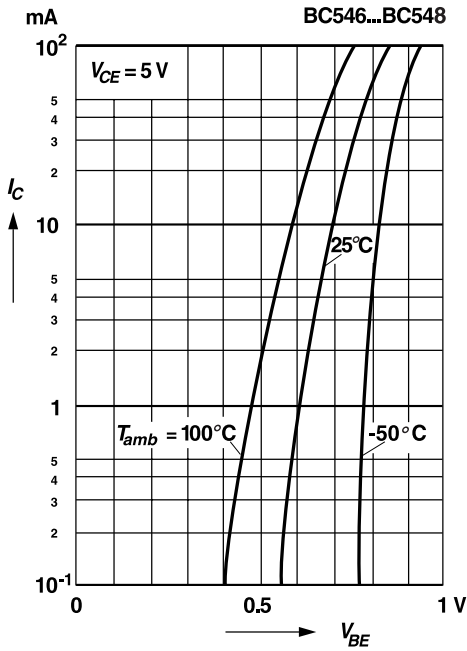
# BC546 thru BC548

Vishay Semiconductors  
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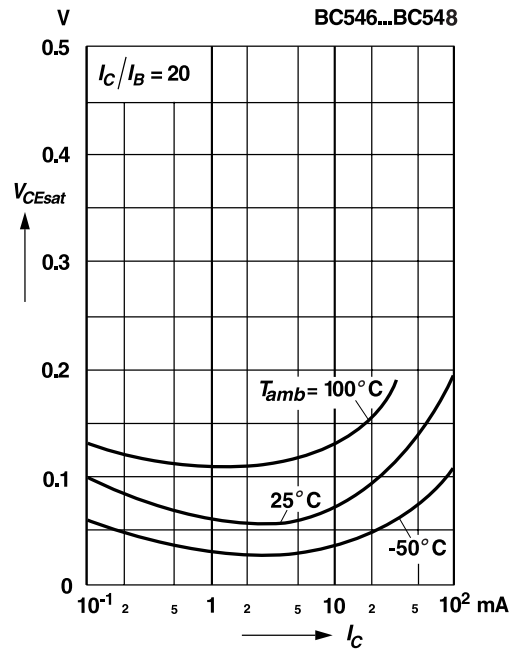


## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

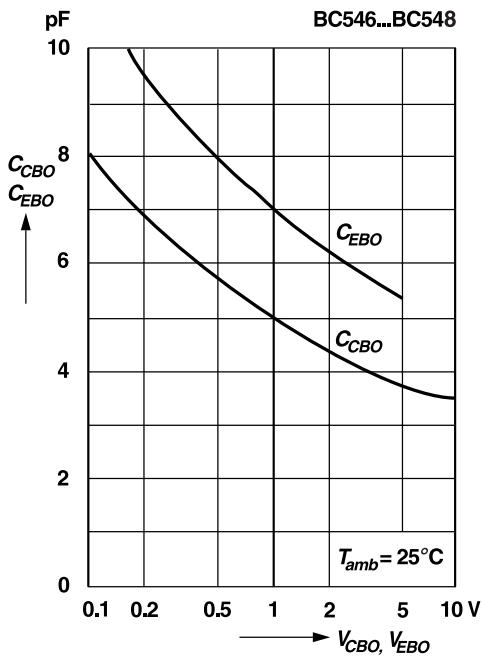
Collector current versus base-emitter voltage



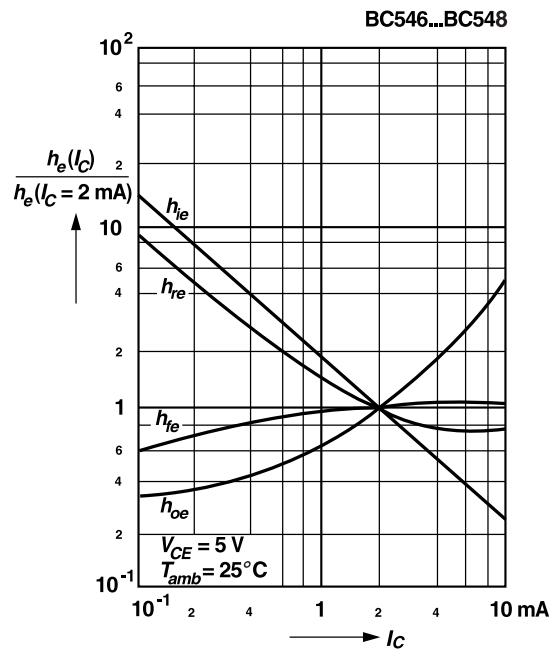
Collector saturation voltage versus collector current



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



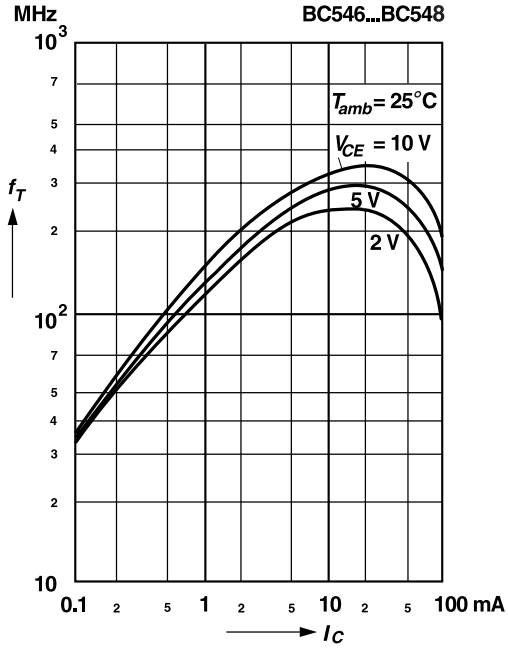
Relative h-parameters versus collector current





Ratings and  
Characteristic Curves (T<sub>A</sub> = 25°C unless otherwise noted)

Gain-bandwidth product  
versus collector current



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Datasheets for electronics components.