

# BC559CTA Datasheet

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DiGi Electronics Part Number	BC559CTA-DG
Manufacturer	<a href="#">onsemi</a>
Manufacturer Product Number	BC559CTA
Description	TRANS PNP 30V 0.1A TO92-3
Detailed Description	Bipolar (BJT) Transistor PNP 30 V 100 mA 150MHz 500 mW Through Hole TO-92-3



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## Purchase and inquiry

Manufacturer Product Number:

BC559CTA

Series:

-

Transistor Type:

PNP

Voltage - Collector Emitter Breakdown (Max):

30 V

Current - Collector Cutoff (Max):

15nA (ICBO)

Power - Max:

500 mW

Operating Temperature:

150°C (TJ)

Package / Case:

TO-226-3, TO-92-3 (TO-226AA) Formed Leads

Base Product Number:

BC559

Manufacturer:

onsemi

Product Status:

Active

Current - Collector (Ic) (Max):

100 mA

Vce Saturation (Max) @ Ib, Ic:

650mV @ 5mA, 100mA

DC Current Gain (hFE) (Min) @ Ic, Vce:

420 @ 2mA, 5V

Frequency - Transition:

150MHz

Mounting Type:

Through Hole

Supplier Device Package:

TO-92-3

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

Moisture Sensitivity Level (MSL):

Not Applicable

ECCN:

EAR99

# PNP Epitaxial Silicon Transistor

## BC556, BC557, BC558, BC559, BC560

### Features

- Switching and Amplifier
- High-Voltage: BC556,  $V_{CEO} = -65$  V
- Low-Noise: BC559, BC560
- Complement to BC546, BC547, BC548, BC549, and BC550
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector - Base Voltage	$V_{CBO}$	-80	V
BC556			
BC557 / BC560			
BC558 / BC559	-50		
Collector - Emitter Voltage	$V_{CEO}$	-65	V
BC556			
BC557 / BC560			
BC558 / BC559	-45		
Emitter - Base Voltage	$V_{EBO}$	-5	V
Collector Current (DC)	$I_C$	-100	mA
Peak Collector Current (Pulse)	$I_{CP}$	-200	mA
Peak Base Current (Pulse)	$I_{BP}$	-200	mA
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65 to +150	$^\circ\text{C}$

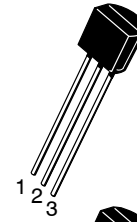
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS (Note 1)

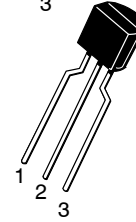
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Max.	Unit
Total Device Dissipation Derate above $25^\circ\text{C}$	$P_D$	500 4.0	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	250	$^\circ\text{C}/\text{W}$

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.



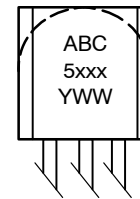
**TO-92-3  
CASE 135AN**  
Straight Lead  
Bulk Packing



**TO-92-3  
CASE 135AR**  
Bent Lead  
Tape & Reel  
Fan-Fold

1. Collector  
2. Base  
3. Emitter

### MARKING DIAGRAM



- A = Assembly Location  
BC5xxx = Specific Device Code  
xxx = 56A, 56B, 57A, 57B,  
58B, 59B, 59C, 60C  
Y = Year  
WW = Work Week

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 2.

**BC556, BC557, BC558, BC559, BC560****ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit		
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = -30\text{ V}, I_E = 0$			-15	nA		
$h_{FE}$	DC Current Gain	$V_{CE} = -5\text{ V}, I_C = -2\text{ mA}$	110		800			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$		-90	-300	mV		
		$I_C = -100\text{ mA}, I_B = -5\text{ mA}$		-250	-650			
$V_{BE(sat)}$	Collector-Base Saturation Voltage	$I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$		-700		mV		
		$I_C = -100\text{ mA}, I_B = -5\text{ mA}$		-900				
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = -5\text{ V}, I_C = -2\text{ mA}$	-600	-660	-750	mV		
		$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$			-800			
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}, f = 10\text{ MHz}$		150		MHz		
$C_{ob}$	Output Capacitance	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$			6	pF		
NF	Noise Figure	BC556 / BC557 / BC558	$V_{CE} = -5\text{ V}, I_C = -200\text{ }\mu\text{A}, f = 1\text{ kHz}, R_G = 2\text{ k}\Omega$		2	10	dB	
		BC559 / BC560			1	4		
		BC559		$V_{CE} = -5\text{ V}, I_C = -200\text{ }\mu\text{A}, R_G = 2\text{ k}\Omega, f = 30\text{ to }15000\text{ MHz}$		1.2		4.0
		BC560				1.2		2.0

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

 **$h_{FE}$  CLASSIFICATION**

Classification	A	B	C
$h_{FE2}$	110 ~ 220	200 ~ 450	420 ~ 800

**ORDERING INFORMATION**

Part Number	Marking	Package	Shipping <sup>†</sup>
BC559CTA	BC559C	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold

**DISCONTINUED** (Note 2)

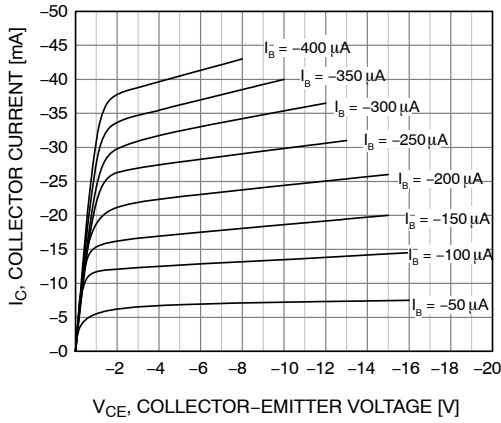
BC556ABU	BC556A	TO-92-3, case 135AN (Pb-Free)	10,000 Units/ Bulk Box
BC556ATA	BC556A	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold
BC556BTA	BC556B	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold
BC556BTF	BC556B	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Tape & Reel
BC556BTFR	BC556B	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Tape & Reel
BC557ATA	BC557A	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold
BC557BTA	BC557B	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold
BC557BTF	BC557B	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Tape & Reel
BC558BTA	BC558B	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold
BC559BTA	BC559B	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold
BC560CTA	BC560C	TO-92-3, case 135AR (Pb-Free)	2,000 Units/ Fan-Fold

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

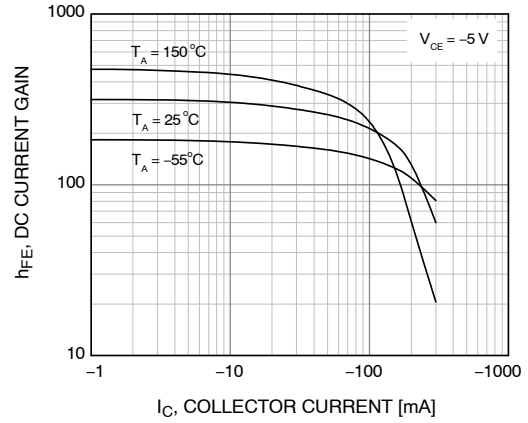
2. **DISCONTINUED:** These devices are not recommended for new design. Please contact your onsemi representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).

**BC556, BC557, BC558, BC559, BC560**

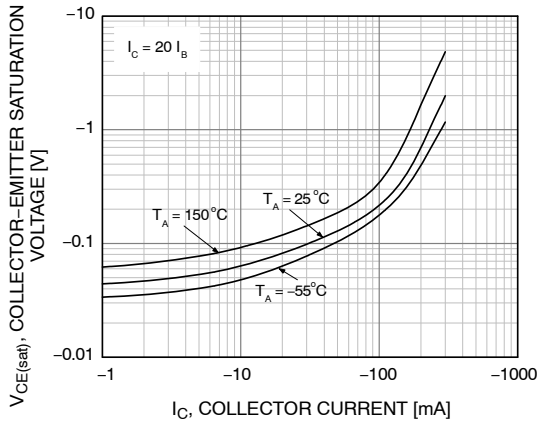
**TYPICAL PERFORMANCE CHARACTERISTICS**



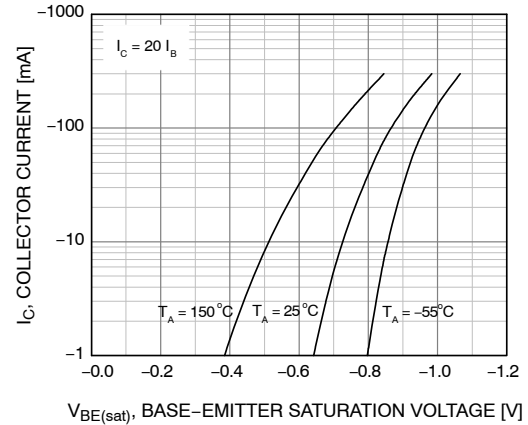
**Figure 1. Static Characteristic**



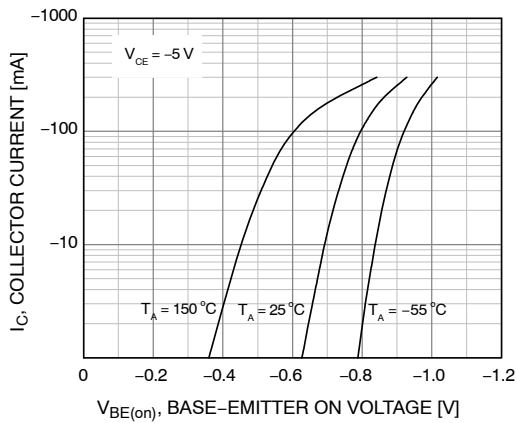
**Figure 2. DC Current Gain**



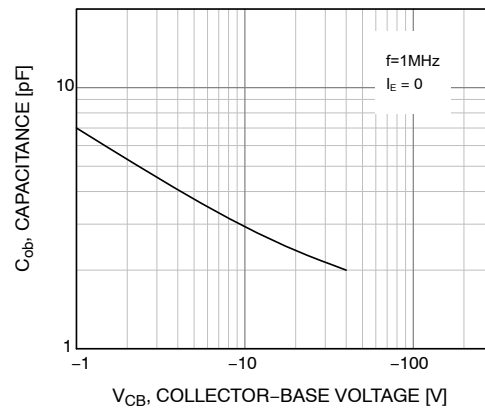
**Figure 3. Collector-Emitter Saturation Voltage**



**Figure 4. Base-Emitter Saturation Voltage**



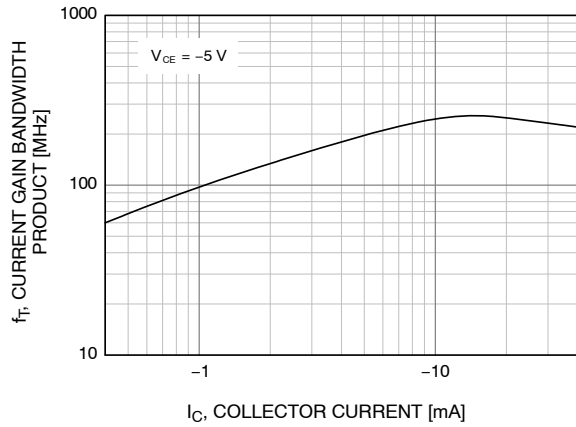
**Figure 5. Base-Emitter On Voltage**



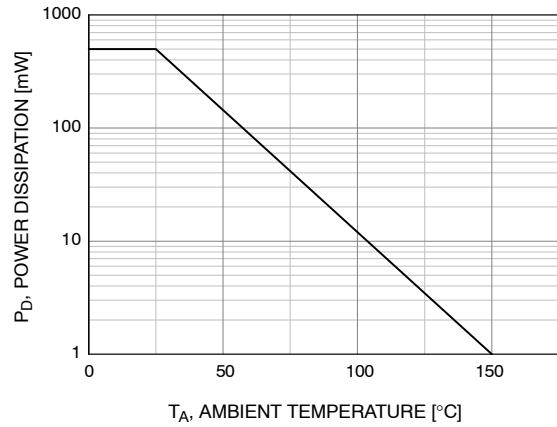
**Figure 6. Collector Output Capacitance**

**BC556, BC557, BC558, BC559, BC560**

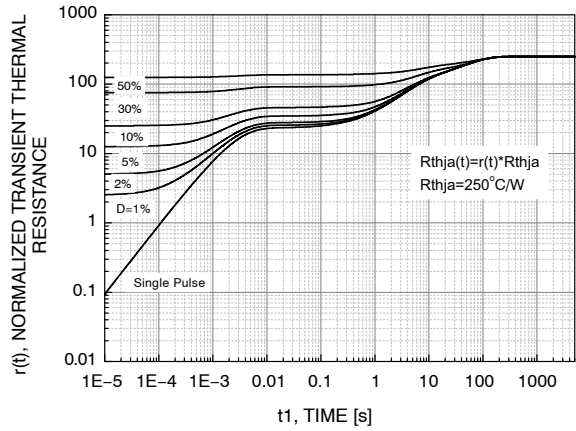
**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**



**Figure 7. Current Gain Bandwidth Product**



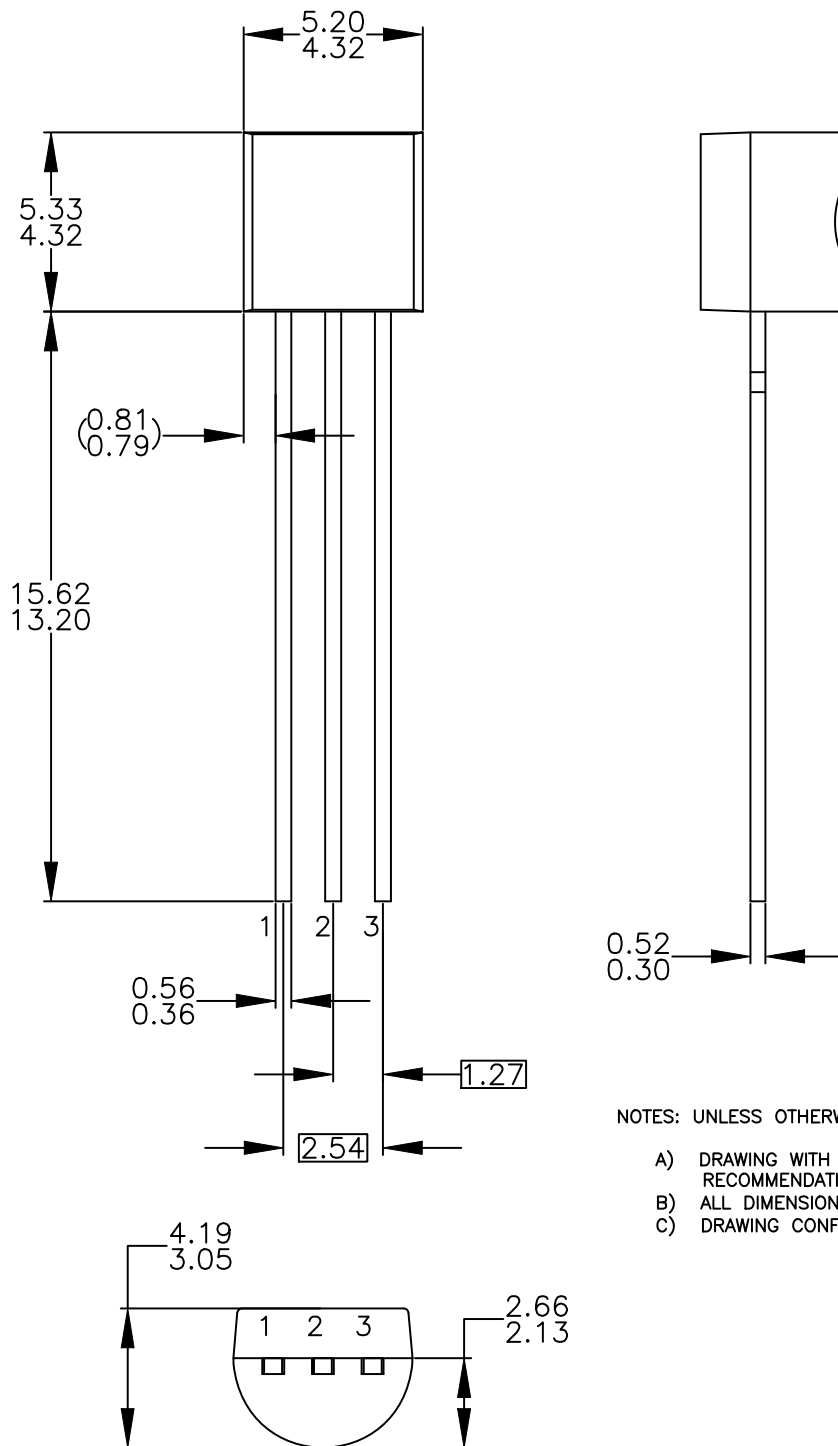
**Figure 8. Power Deration**



**Figure 9. Normalized Transient Thermal Resistance**

**TO-92 3 4.825x4.76**  
CASE 135AN  
ISSUE O

DATE 31 JUL 2016



NOTES: UNLESS OTHERWISE SPECIFIED

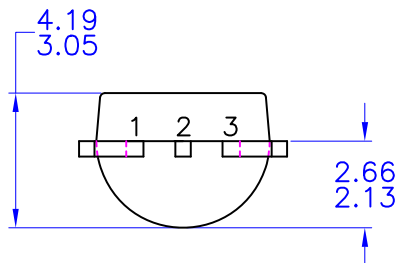
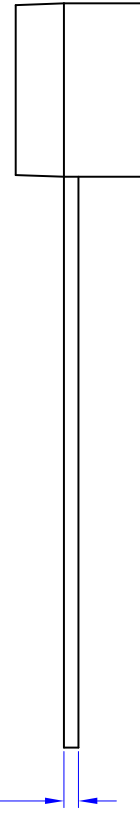
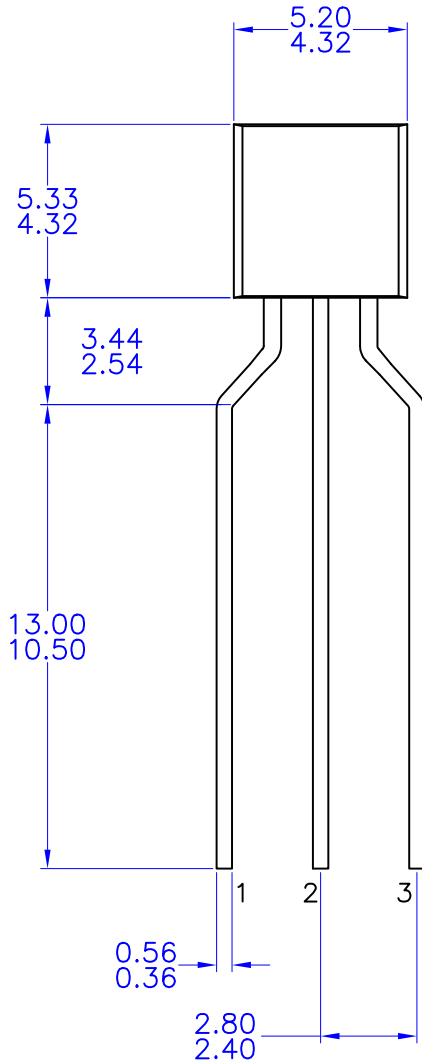
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**TO-92 3 4.83x4.76 LEADFORMED**  
CASE 135AR  
ISSUE O

DATE 30 SEP 2016



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