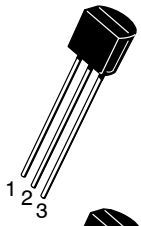
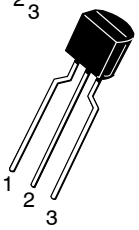
PNP Epitaxial Silicon Transistor

BC556, BC557, BC558, BC559, BC560



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

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°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector - Base Voltage BC556 BC557 / BC560 BC558 / BC559	V_{CBO}	 −80 −50 −30	V
Collector - Emitter Voltage BC556 BC557 / BC560 BC558 / BC559	V_{CEO}	 −65 −45 −30	V
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	°C
Storage Temperature Range	T_{STG}	−65 to +150	°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.

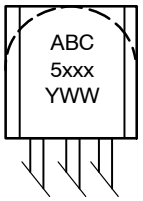
THERMAL CHARACTERISTICS (Note 1)

(T_A = 25°C unless otherwise noted)

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

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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

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

†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.

TYPICAL PERFORMANCE CHARACTERISTICS

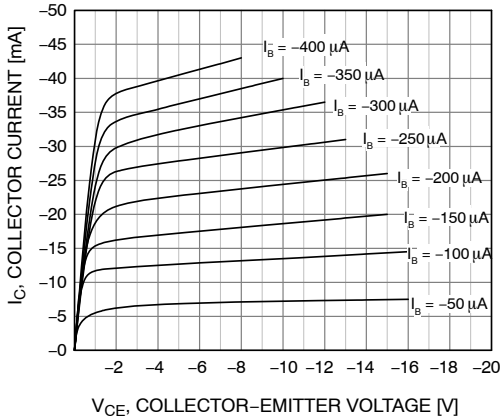


Figure 1. Static Characteristic

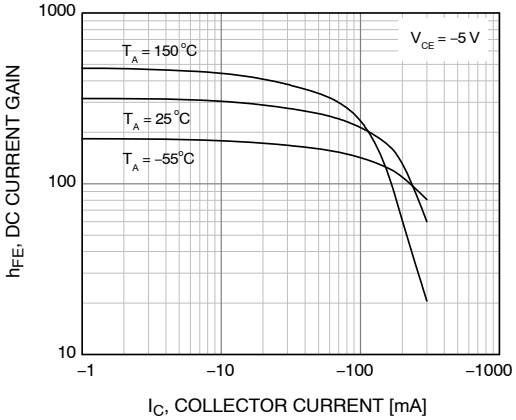


Figure 2. DC Current Gain

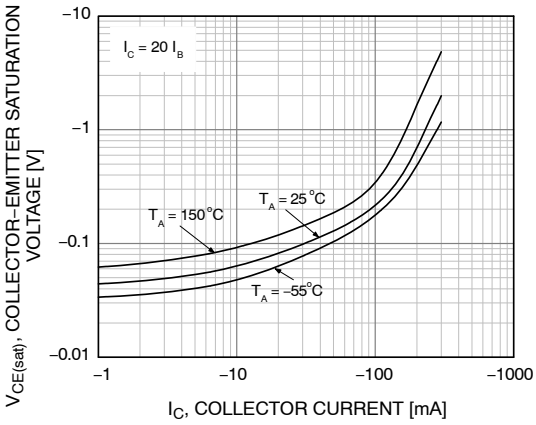


Figure 3. Collector−Emitter Saturation Voltage

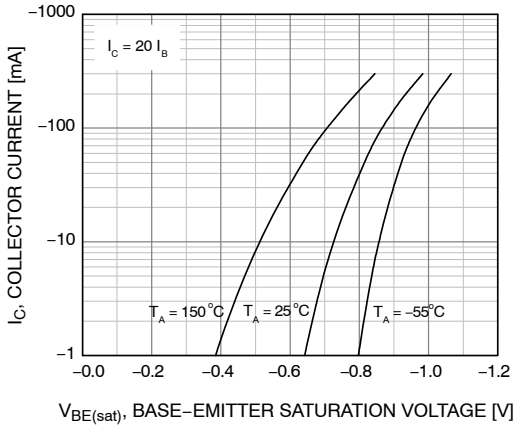


Figure 4. Base−Emitter Saturation Voltage

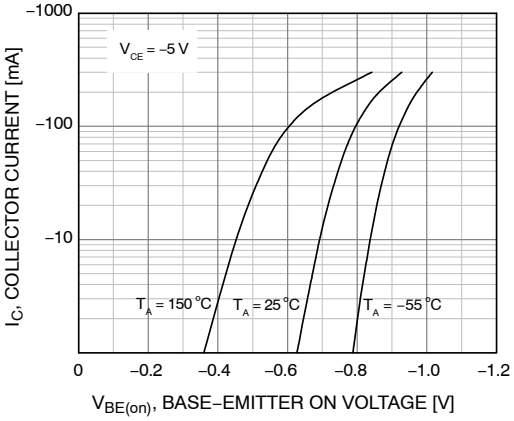


Figure 5. Base−Emitter On Voltage

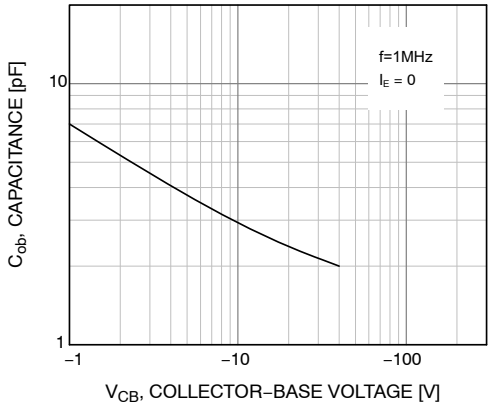


Figure 6. Collector Output Capacitance

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

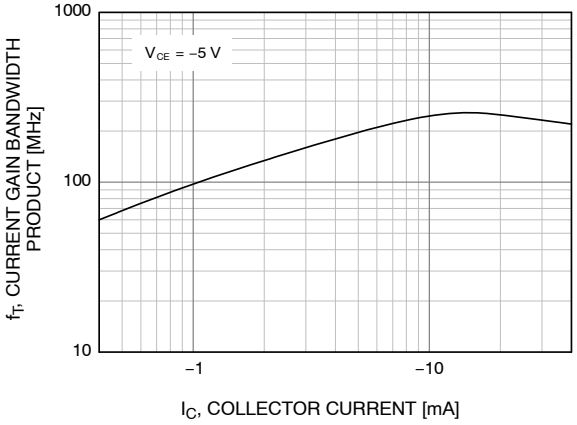


Figure 7. Current Gain Bandwidth Product

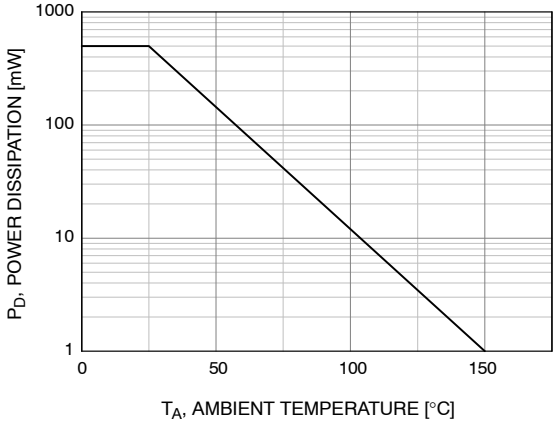


Figure 8. Power Deration

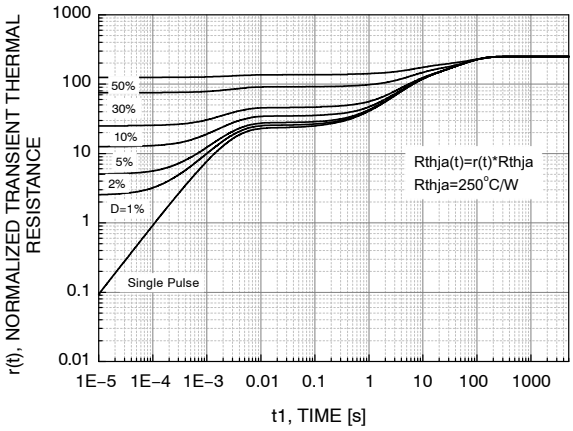
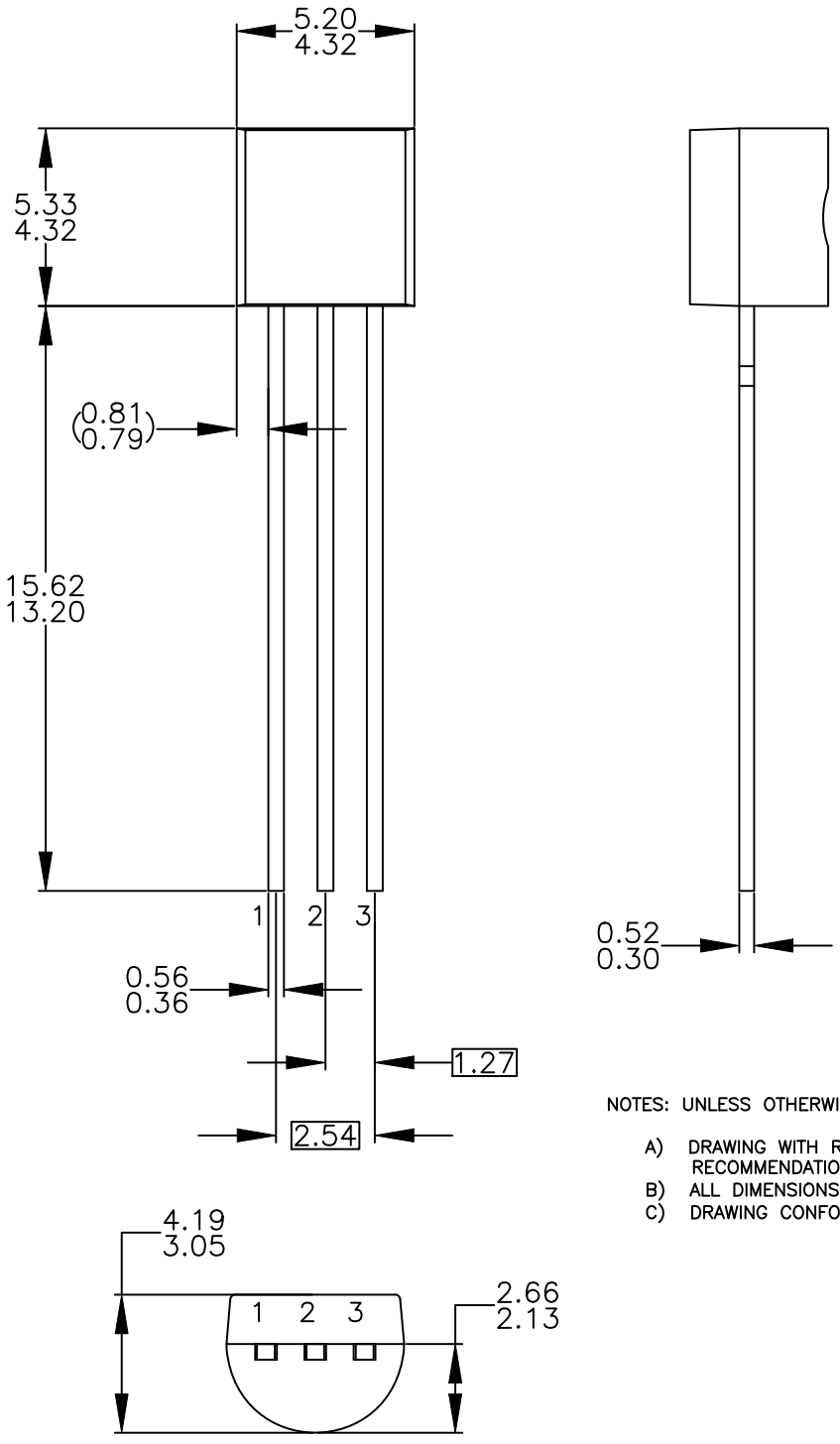


Figure 9. Normalized Transient Thermal Resistance

TO−92 3 4.825x4.76
CASE 135AN
ISSUE O

DATE 31 JUL 2016



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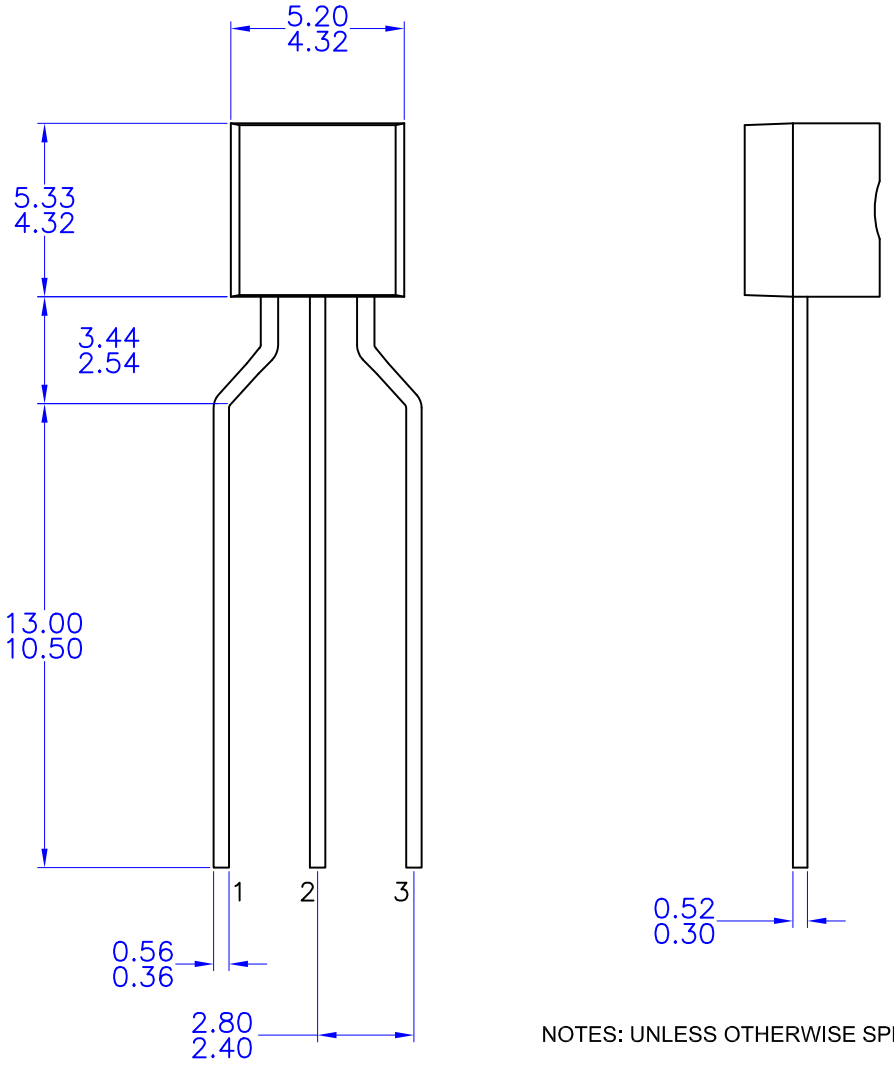
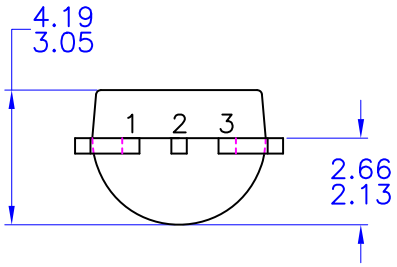
TO−92 3 4.83x4.76 LEADFORMED
CASE 135AR
ISSUE O

DATE 30 SEP 2016





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