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January 2016

## BC556 / BC557 / BC558 / BC559 / BC560 PNP Epitaxial Silicon Transistor

### Features

- Switching and Amplifier
- High-Voltage: BC556,  $V_{CEO} = -65\text{ V}$
- Low-Noise: BC559, BC560
- Complement to BC546, BC547, BC548, BC549, and BC550



### Ordering Information

Part Number	Marking	Package	Packing Method
BC556ABU	BC556A	TO-92 3L	Bulk
BC556ATA	BC556A	TO-92 3L	Ammo
BC556BTA	BC556B	TO-92 3L	Ammo
BC556BTF	BC556B	TO-92 3L	Tape and Reel
BC556BTFR	BC556B	TO-92 3L	Tape and Reel
BC557ATA	BC557A	TO-92 3L	Ammo
BC557BTA	BC557B	TO-92 3L	Ammo
BC557BTF	BC557B	TO-92 3L	Tape and Reel
BC558BTA	BC558B	TO-92 3L	Ammo
BC559BTA	BC559B	TO-92 3L	Ammo
BC559CTA	BC559C	TO-92 3L	Ammo
BC560CTA	BC560C	TO-92 3L	Ammo

BC556 / BC557 / BC558 / BC559 / BC560 — PNP Epitaxial Silicon Transistor

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

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

## Thermal Characteristics<sup>(1)</sup>

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

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

### Note:

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.

## Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  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	

## $h_{FE}$ Classification

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

## Typical Performance Characteristics

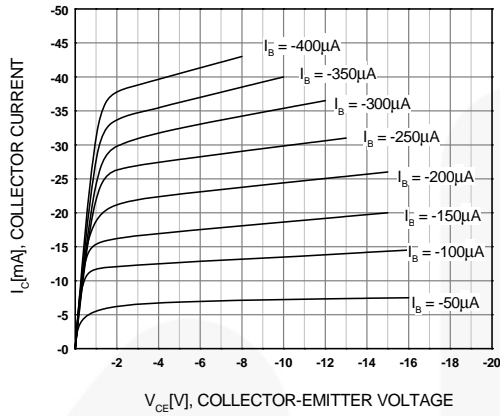


Figure 1. Static Characteristic

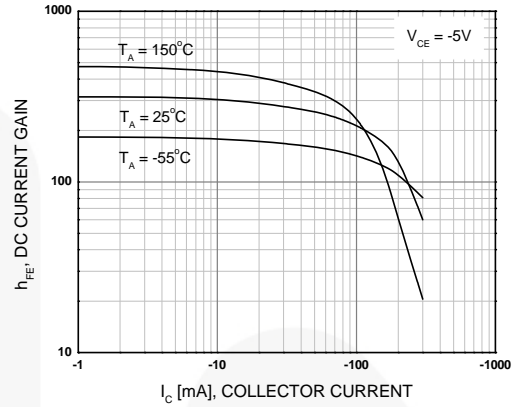


Figure 2. DC Current Gain

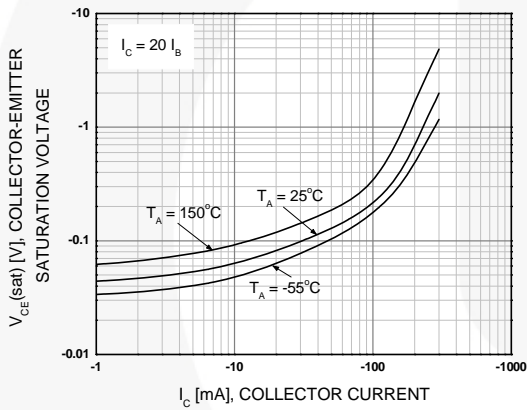


Figure 3. Collector-Emitter Saturation Voltage

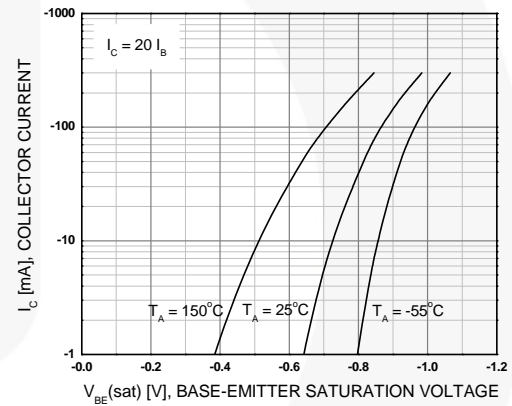


Figure 4. Base-Emitter Saturation Voltage

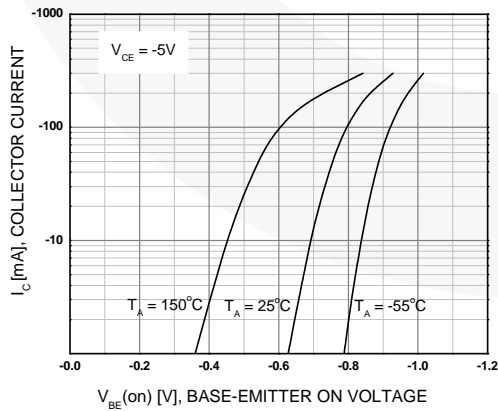


Figure 5. Base-Emitter On Voltage

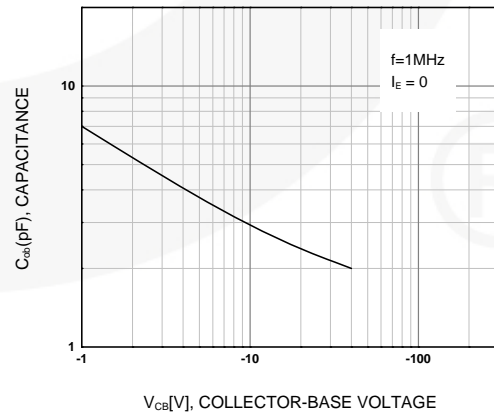


Figure 6. Collector Output Capacitance

## Typical Performance Characteristics (Continued)

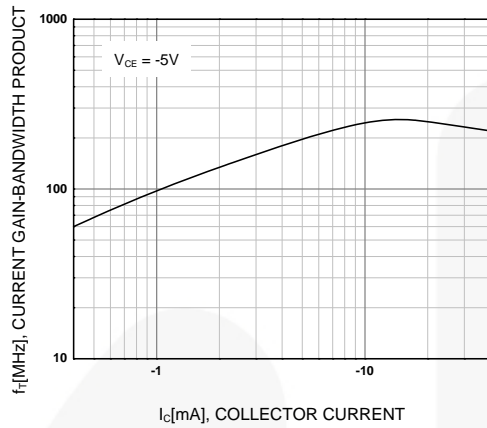


Figure 7. Current Gain Bandwidth Product

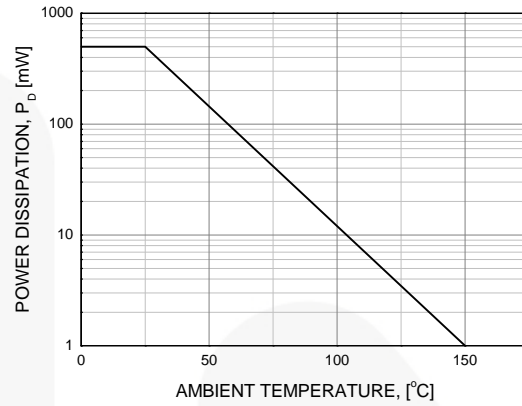


Figure 8. Power Deration

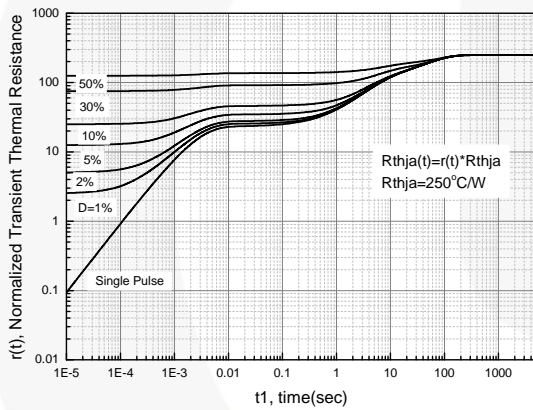
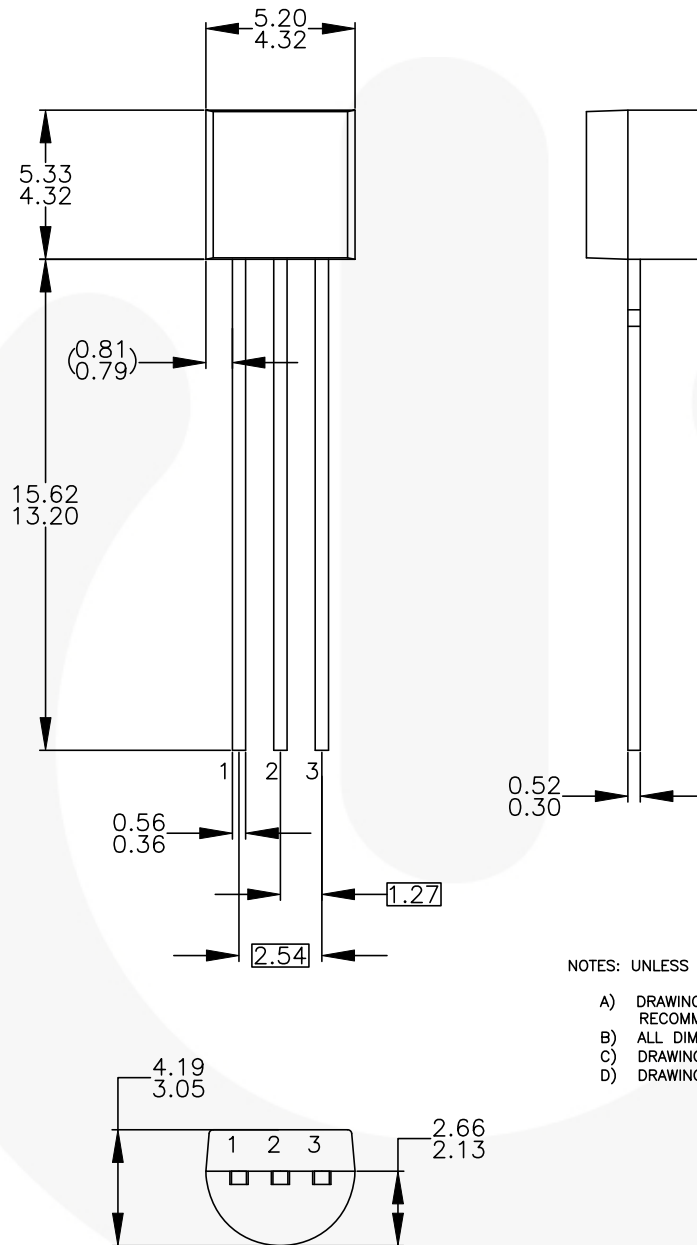


Figure 9. Normalized Transient Thermal Resistance

## Physical Dimensions



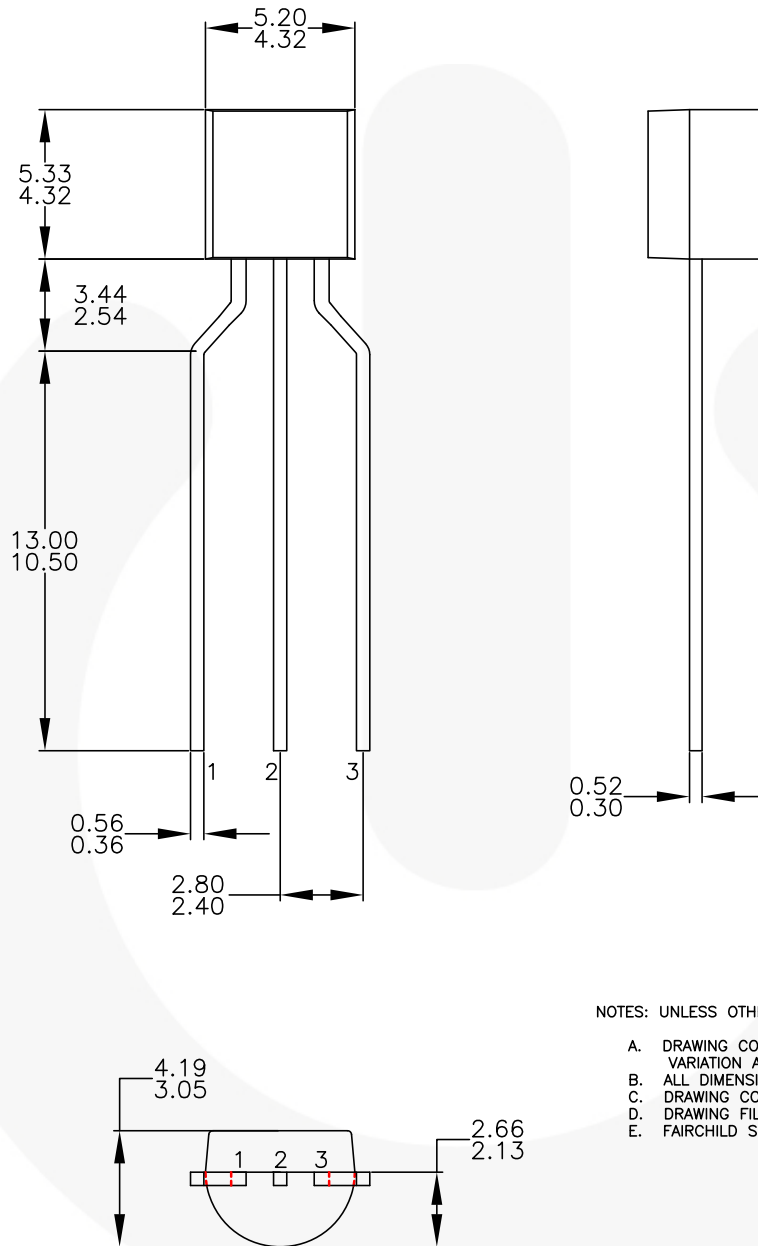
NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-2009.
- D) DRAWING FILENAME: MKT-ZA03DREV4.



Figure 10. 3-LEAD, TO92, JEDEC TO-92 COMPLIANT STRAIGHT LEAD CONFIGURATION, BULK

# Physical Dimensions (Continued)



NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
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- C. DRAWING CONFORMS TO ASME Y14.5M-2009.
- D. DRAWING FILENAME: MKT-ZA03FREV3.
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Figure 11. 3-LEAD, TO92, MOLDED 0.200 IN LINE SPACING LEAD FORM, AMMO, TAPE AND REEL





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