

# BC327, BC327-16, BC327-25, BC327-40

## Amplifier Transistors

### PNP Silicon

#### Features

- These are Pb-Free Devices\*

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	-45	Vdc
Collector-Emitter Voltage	$V_{CES}$	-50	Vdc
Emitter-Base Voltage	$V_{EBO}$	-5.0	Vdc
Collector Current - Continuous	$I_C$	-800	mAdc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $T_A = 25^\circ\text{C}$	$P_D$	625 5.0	mW mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $T_A = 25^\circ\text{C}$	$P_D$	1.5 12	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

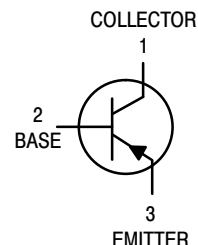
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

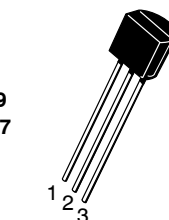


ON Semiconductor®

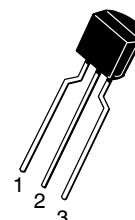
<http://onsemi.com>



TO-92  
CASE 29  
STYLE 17

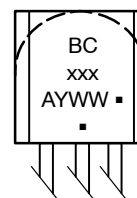


STRAIGHT LEAD  
BULK PACK



BENT LEAD  
TAPE & REEL  
AMMO PACK

#### MARKING DIAGRAM



BCxxx = Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
■ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

See detailed ordering, marking, and shipping information in the package dimensions section on page 4 of this data sheet.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = -10 mA, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	-45	-	-	Vdc
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = -100 μA, I <sub>E</sub> = 0)	V <sub>(BR)CES</sub>	-50	-	-	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = -10 μA, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	-5.0	-	-	Vdc
Collector Cutoff Current (V <sub>CB</sub> = -30 V, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-	-	-100	nAdc
Collector Cutoff Current (V <sub>CE</sub> = -45 V, V <sub>BE</sub> = 0)	I <sub>CES</sub>	-	-	-100	nAdc
Emitter Cutoff Current (V <sub>EB</sub> = -4.0 V, I <sub>C</sub> = 0)	I <sub>EBO</sub>	-	-	-100	nAdc
<b>ON CHARACTERISTICS</b>					
DC Current Gain (I <sub>C</sub> = -100 mA, V <sub>CE</sub> = -1.0 V)	h <sub>FE</sub>	100	-	630	-
		100	-	250	
		160	-	400	
		250	-	630	
		40	-	-	
Base-Emitter On Voltage (I <sub>C</sub> = -300 mA, V <sub>CE</sub> = -1.0 V)	V <sub>BE(on)</sub>	-	-	-1.2	Vdc
Collector-Emitter Saturation Voltage (I <sub>C</sub> = -500 mA, I <sub>B</sub> = -50 mA)	V <sub>CE(sat)</sub>	-	-	-0.7	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>					
Output Capacitance (V <sub>CB</sub> = -10 V, I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>ob</sub>	-	11	-	pF
Current-Gain-Bandwidth Product (I <sub>C</sub> = -10 mA, V <sub>CE</sub> = -5.0 V, f = 100 MHz)	f <sub>T</sub>	-	260	-	MHz

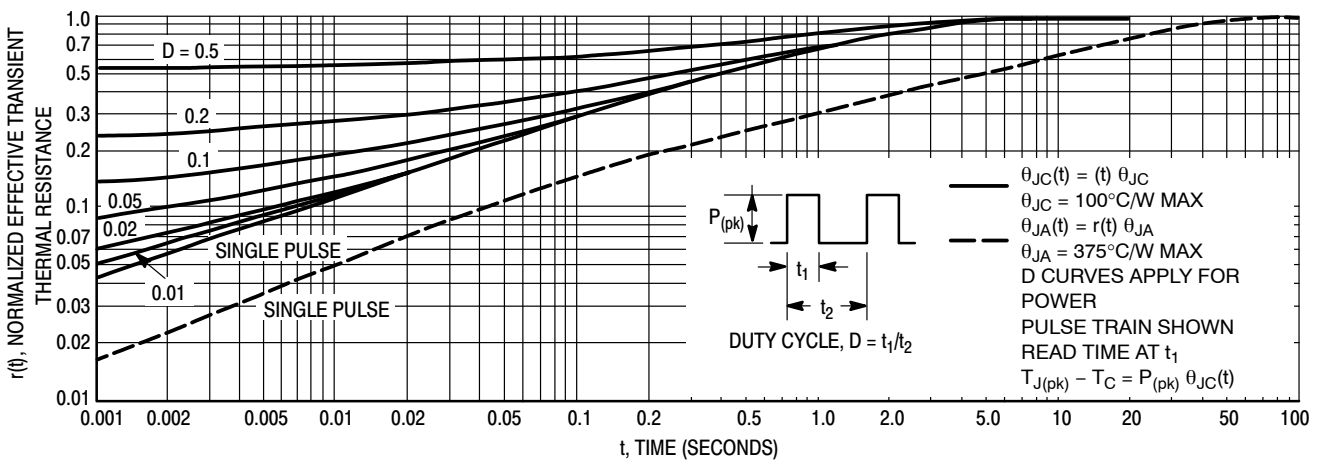


Figure 1. Thermal Response

BC327, BC327-16, BC327-25, BC327-40

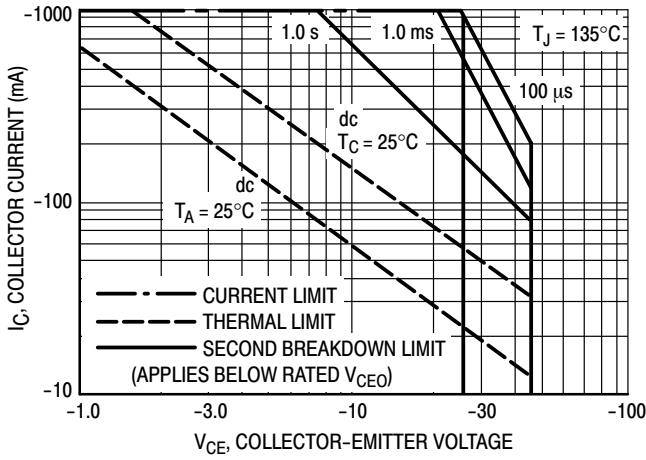


Figure 2. Active Region - Safe Operating Area

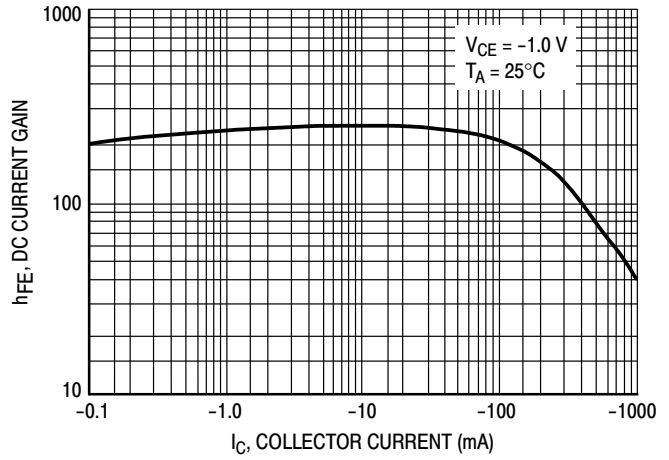


Figure 3. DC Current Gain

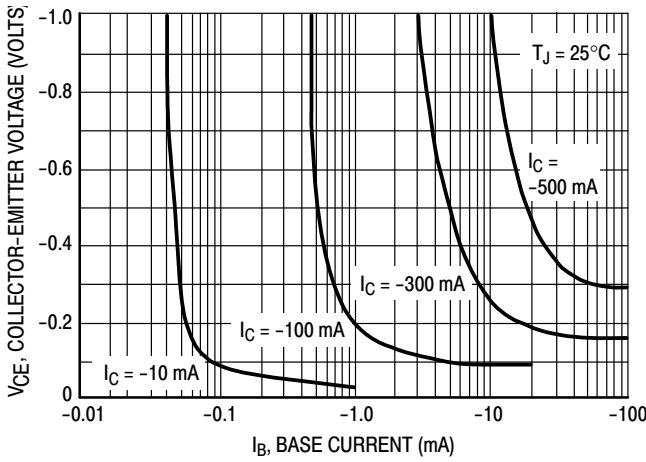


Figure 4. Saturation Region

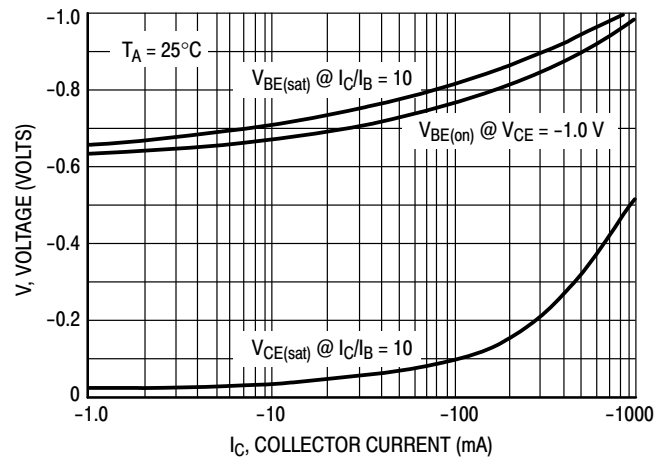


Figure 5. "On" Voltages

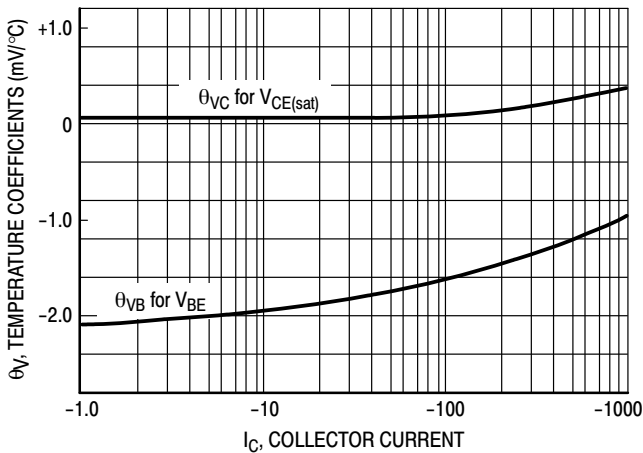


Figure 6. Temperature Coefficients

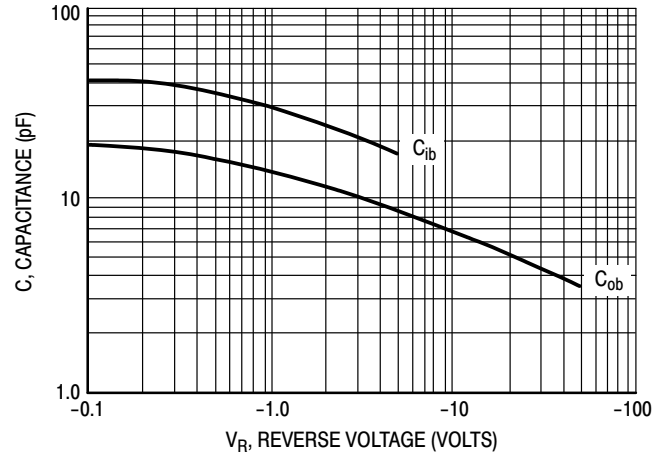


Figure 7. Capacitances

## BC327, BC327-16, BC327-25, BC327-40

### ORDERING INFORMATION

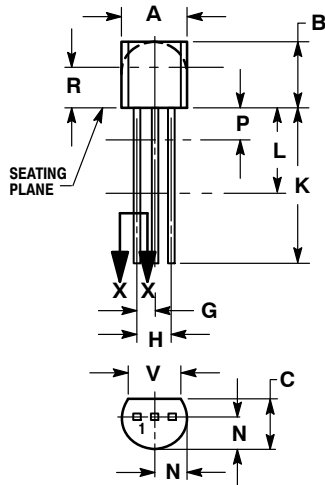
Device Order Number	Specific Device Marking	Package Type	Shipping†
BC327G	7	TO-92 Straight Lead (Pb-Free)	5000 Units / Bulk
BC327RL1G	327	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Reel
BC327-025G	327	TO-92 Straight Lead (Pb-Free)	5000 Units / Bulk
BC327-25RL1G	7-25	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Reel
BC327-25ZL1G	32725	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Ammo Box
BC327-40ZL1G	7-40	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Ammo Box

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

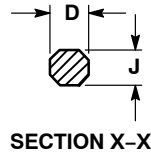
# BC327, BC327-16, BC327-25, BC327-40

## PACKAGE DIMENSIONS

TO-92 (TO-226)  
CASE 29-11  
ISSUE AM



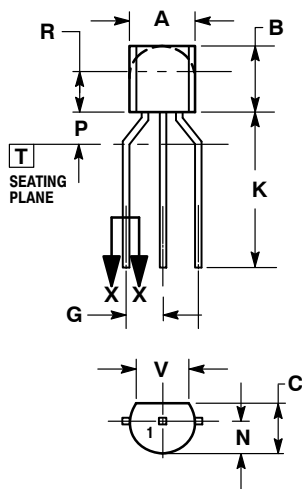
STRAIGHT LEAD  
BULK PACK



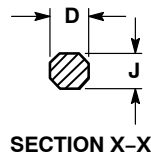
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---



BENT LEAD  
TAPE & REEL  
AMMO PACK



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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## SMALL SIGNAL PNP TRANSISTORS

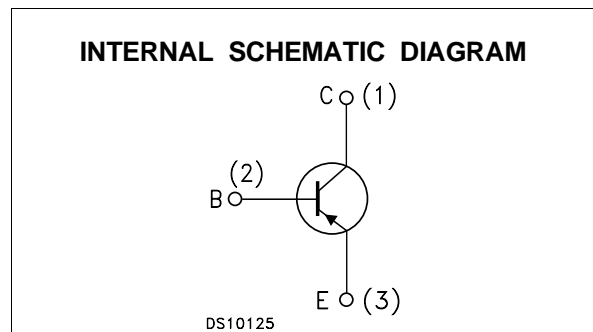
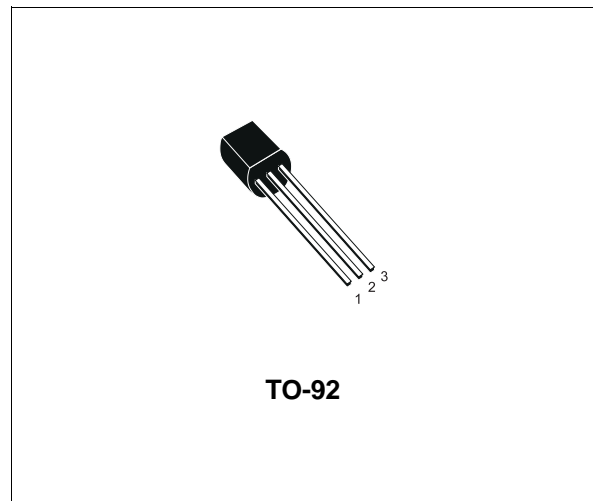
PRELIMINARY DATA

Type	Marking
BC327-25	BC327-25
BC327-40	BC327-40

- SILICON EPITAXIAL PLANAR PNP TRANSISTORS
- TO-92 PACKAGE SUITABLE FOR THROUGH-HOLE PCB ASSEMBLY
- THE NPN COMPLEMENTARY TYPES ARE BC337-25 AND BC337-40 RESPECTIVELY

### APPLICATIONS

- WELL SUITABLE FOR TV AND HOME APPLIANCE EQUIPMENT
- SMALL LOAD SWITCH TRANSISTORS WITH HIGH GAIN AND LOW SATURATION VOLTAGE



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	-50	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	-45	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	-5	V
$I_C$	Collector Current	-0.5	A
$I_{CM}$	Collector Peak Current	-1	A
$P_{tot}$	Total Dissipation at $T_C = 25\text{ }^\circ\text{C}$	625	mW
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

## BC327-25 / BC327-40

### THERMAL DATA

R <sub>thj-amb</sub> •	Thermal Resistance Junction-Ambient	Max	200	°C/W
R <sub>thj-case</sub> •	Thermal Resistance Junction-Case	Max	83.3	°C/W

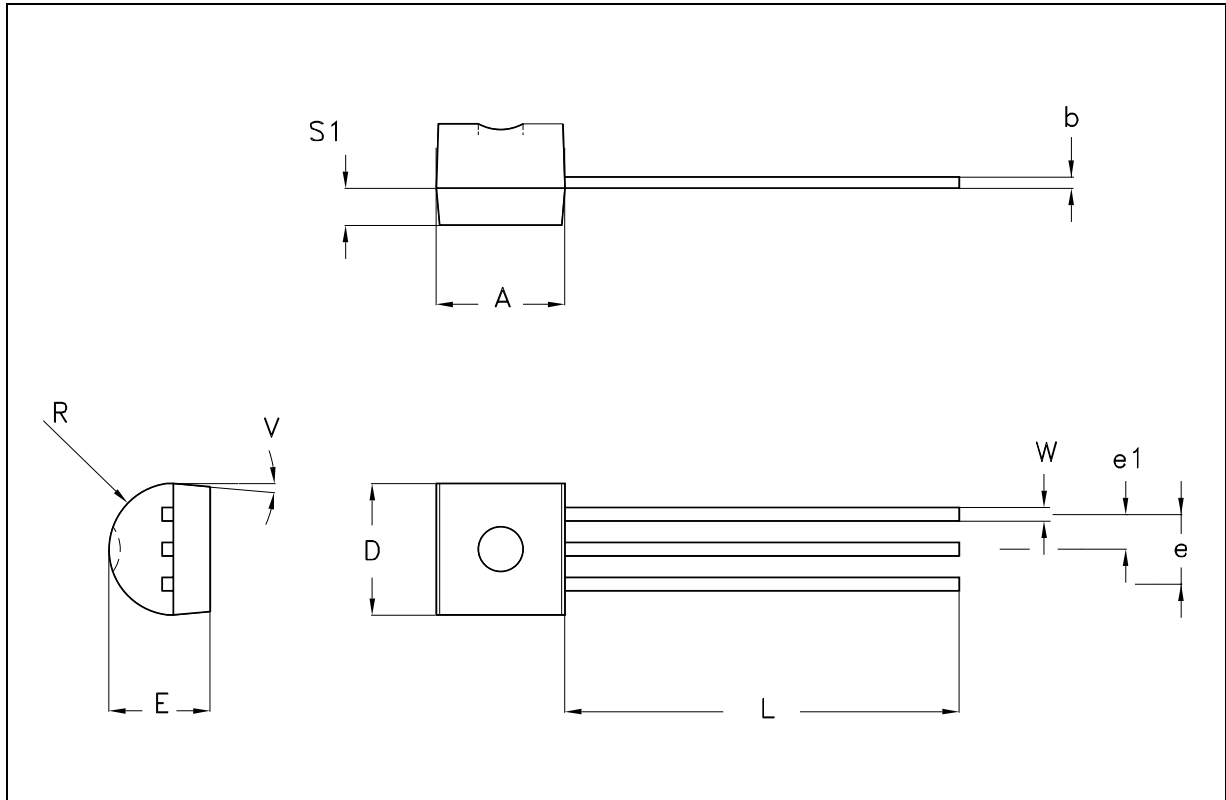
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = -20 V V <sub>CB</sub> = -20 V      T <sub>C</sub> = 150 °C			-100 -5	nA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = -5 V			-100	nA
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage (I <sub>E</sub> = 0)	I <sub>C</sub> = -10 μA	-50			V
V <sub>(BR)CEO*</sub>	Collector-Emitter Breakdown Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = -10 mA	-45			V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = -10 μA	-5			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = -500 mA      I <sub>B</sub> = -50 mA			-0.7	V
V <sub>BE(on)*</sub>	Base-Emitter On Voltage	I <sub>C</sub> = -500 mA      V <sub>CE</sub> = -1 V			-1.2	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = -100 mA      V <sub>CE</sub> = -1 V for <b>BC327-25</b> for <b>BC327-40</b>	160 250		400 600	
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = -10mA    V <sub>CE</sub> = -5 V    f = 100MHz	80			MHz
C <sub>CBO</sub>	Collector-Base Capacitance	I <sub>E</sub> = 0      V <sub>CB</sub> = -10 V    f = 1 MHz		10		pF

\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %

**TO-92 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.32		4.95	0.170		0.195
b	0.36		0.51	0.014		0.020
D	4.45		4.95	0.175		0.194
E	3.30		3.94	0.130		0.155
e	2.41		2.67	0.095		0.105
e1	1.14		1.40	0.045		0.055
L	12.70		15.49	0.500		0.609
R	2.16		2.41	0.085		0.094
S1	1.14		1.52	0.045		0.059
W	0.41		0.56	0.016		0.022
V	4 degree		6 degree	4 degree		6 degree







DC COMPONENTS CO., LTD.

DISCRETE SEMICONDUCTORS

BC327

TECHNICAL SPECIFICATIONS OF PNP EPITAXIAL PLANAR TRANSISTOR

Description

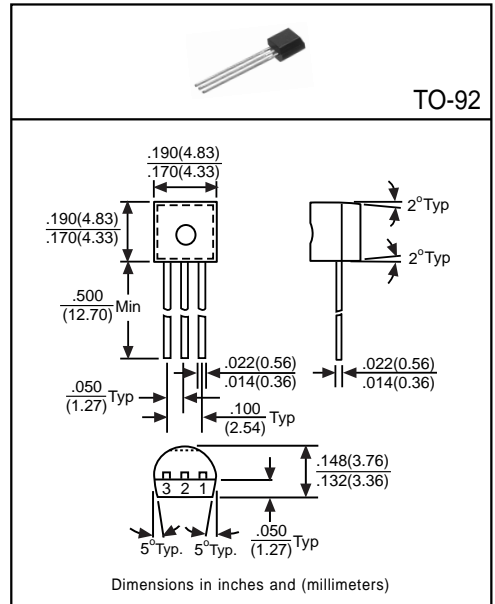
Designed for driver and output stage of audio amplifiers.

Pinning

- 1 = Collector
- 2 = Base
- 3 = Emitter

Absolute Maximum Ratings (TA=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	VCBO	-50	V
Collector-Emitter Voltage	VCEO	-45	V
Emitter-Base Voltage	VEBO	-5	V
Collector Current	IC	-500	mA
Total Power Dissipation	PD	625	mW
Junction Temperature	TJ	+150	°C
Storage Temperature	TSTG	-55 to +150	°C



Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV <sub>CB0</sub>	-50	-	-	V	I <sub>C</sub> =-100μA, I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage	BV <sub>CE0</sub>	-45	-	-	V	I <sub>C</sub> =-10mA, I <sub>B</sub> =0
Emitter-Base Breakdown Voltage	BV <sub>EB0</sub>	-5	-	-	V	I <sub>E</sub> =-100μA, I <sub>C</sub> =0
Collector Cutoff Current	I <sub>CBO</sub>	-	-	-0.1	μA	V <sub>CB</sub> =-30V, I <sub>E</sub> =0
Emitter Cutoff Current	I <sub>EBO</sub>	-	-	-0.1	μA	V <sub>EB</sub> =-5V, I <sub>C</sub> =0
Collector-Emitter Saturation Voltage <sup>(1)</sup>	V <sub>CE(sat)</sub>	-	-	-0.7	V	I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA
Base-Emitter On Voltage <sup>(1)</sup>	V <sub>BE(on)</sub>	-	-	-1.2	V	V <sub>CE</sub> =-1V, I <sub>C</sub> =-300mA
DC Current Gain <sup>(1)</sup>	hFE1	100	-	630	-	I <sub>C</sub> =-100mA, V <sub>CE</sub> =-1V
	hFE2	40	-	-	-	I <sub>C</sub> =-300mA, V <sub>CE</sub> =-1V
Transition Frequency	f <sub>T</sub>	-	100	-	MHz	I <sub>C</sub> =-10mA, V <sub>CE</sub> =-5V, f=100MHz
Output Capacitance	C <sub>ob</sub>	-	4	-	pF	V <sub>CB</sub> =-10V, f=1MHz, I <sub>C</sub> =0

(1) Pulse Test: Pulse Width ≤ 380μs, Duty Cycle ≤ 2%

Classification of hFE1

Rank	16	25	40
Range	100~250	160~400	250~630