

BC557AZL1G Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	BC557AZL1G-DG
Manufacturer	onsemi
Manufacturer Product Number	BC557AZL1G
Description	TRANS PNP 45V 0.1A TO92
Detailed Description	Bipolar (BJT) Transistor PNP 45 V 100 mA 320MHz 6 25 mW Through Hole TO-92 (TO-226)



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

BC557AZL1G

Series:

-

Transistor Type:

PNP

Voltage - Collector Emitter Breakdown (Max):

45 V

Current - Collector Cutoff (Max):

100nA

Power - Max:

625 mW

Operating Temperature:

-55°C ~ 150°C (TJ)

Package / Case:

TO-226-3, TO-92-3 Long Body (Formed Leads)

Base Product Number:

BC557

Manufacturer:

onsemi

Product Status:

Obsolete

Current - Collector (Ic) (Max):

100 mA

Vce Saturation (Max) @ Ib, Ic:

650mV @ 5mA, 100mA

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

120 @ 2mA, 5V

Frequency - Transition:

320MHz

Mounting Type:

Through Hole

Supplier Device Package:

TO-92 (TO-226)

Environmental & Export classification

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

BC556B, BC557A, B, C, BC558B

Amplifier Transistors

PNP Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V_{CEO}	-65 -45 -30	Vdc
Collector - Base Voltage	V_{CBO}	-80 -50 -30	Vdc
Emitter - Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current – Continuous – Peak	I_C I_{CM}	-100 -200	mAdc
Base Current – Peak	I_{BM}	-200	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°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	$^\circ\text{C}/\text{W}$

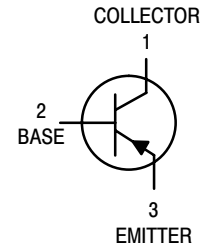
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

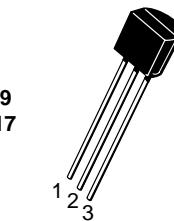


ON Semiconductor®

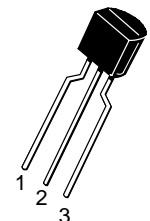
<http://onsemi.com>



TO-92
CASE 29
STYLE 17

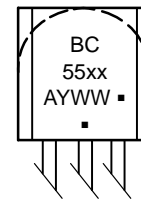


STRAIGHT LEAD
BULK PACK



BENT LEAD
TAPE & REEL
AMMO PACK

MARKING DIAGRAM



xx = 6B, 7A, 7B, 7C, or 8B
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

BC556B, BC557A, B, C, BC558B**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit	
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage ($I_C = -2.0\text{ mAdc}$, $I_B = 0$)	BC556 BC557 BC558	$V_{(BR)CEO}$	-65 -45 -30	- - -	- - -	V
Collector–Base Breakdown Voltage ($I_C = -100\ \mu\text{Adc}$)	BC556 BC557 BC558	$V_{(BR)CBO}$	-80 -50 -30	- - -	- - -	V
Emitter–Base Breakdown Voltage ($I_E = -100\ \mu\text{Adc}$, $I_C = 0$)	BC556 BC557 BC558	$V_{(BR)EBO}$	-5.0 -5.0 -5.0	- - -	- - -	V
Collector–Emitter Leakage Current ($V_{CES} = -40\text{ V}$) ($V_{CES} = -20\text{ V}$) ($V_{CES} = -20\text{ V}$, $T_A = 125^\circ\text{C}$)	BC556 BC557 BC558 BC556 BC557 BC558	I_{CES}	- - - - - -	-2.0 -2.0 -2.0 - - -	-100 -100 -100 -4.0 -4.0 -4.0	nA μA

ON CHARACTERISTICS

DC Current Gain ($I_C = -10\ \mu\text{Adc}$, $V_{CE} = -5.0\text{ V}$) ($I_C = -2.0\text{ mAdc}$, $V_{CE} = -5.0\text{ V}$) ($I_C = -100\text{ mAdc}$, $V_{CE} = -5.0\text{ V}$)	A Series Device B Series Devices C Series Devices BC557 A Series Device B Series Devices C Series Devices A Series Device B Series Devices C Series Devices	h_{FE}	- - - 120 120 180 420 - - -	90 150 270 - 170 290 500 120 180 300	- - - 800 220 460 800 - - -	-
Collector–Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -0.5\text{ mAdc}$) ($I_C = -10\text{ mAdc}$, $I_B = \text{see Note 1}$) ($I_C = -100\text{ mAdc}$, $I_B = -5.0\text{ mAdc}$)		$V_{CE(sat)}$	- - -	-0.075 -0.3 -0.25	-0.3 -0.6 -0.65	V
Base–Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -0.5\text{ mAdc}$) ($I_C = -100\text{ mAdc}$, $I_B = -5.0\text{ mAdc}$)		$V_{BE(sat)}$	- -	-0.7 -1.0	- -	V
Base–Emitter On Voltage ($I_C = -2.0\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) ($I_C = -10\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$)		$V_{BE(on)}$	-0.55 -	-0.62 -0.7	-0.7 -0.82	V

SMALL–SIGNAL CHARACTERISTICS

Current–Gain – Bandwidth Product ($I_C = -10\text{ mA}$, $V_{CE} = -5.0\text{ V}$, $f = 100\text{ MHz}$)	BC556 BC557 BC558	f_T	- - -	280 320 360	- - -	MHz
Output Capacitance ($V_{CB} = -10\text{ V}$, $I_C = 0$, $f = 1.0\text{ MHz}$)		C_{ob}	-	3.0	6.0	pF
Noise Figure ($I_C = -0.2\text{ mAdc}$, $V_{CE} = -5.0\text{ V}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$, $\Delta f = 200\text{ Hz}$)	BC556 BC557 BC558	NF	- - -	2.0 2.0 2.0	10 10 10	dB
Small–Signal Current Gain ($I_C = -2.0\text{ mAdc}$, $V_{CE} = 5.0\text{ V}$, $f = 1.0\text{ kHz}$)	BC557 A Series Device B Series Devices C Series Devices	h_{fe}	125 125 240 450	- - - -	900 260 500 900	-

1. $I_C = -10\text{ mAdc}$ on the constant base current characteristics, which yields the point $I_C = -11\text{ mAdc}$, $V_{CE} = -1.0\text{ V}$.

BC556B, BC557A, B, C, BC558B

BC557/BC558

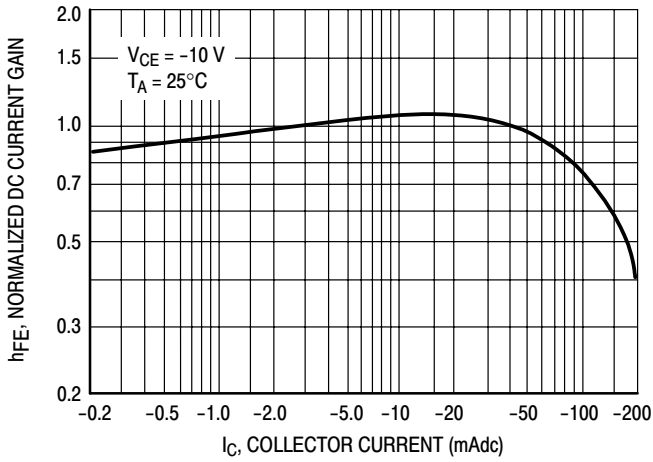


Figure 1. Normalized DC Current Gain

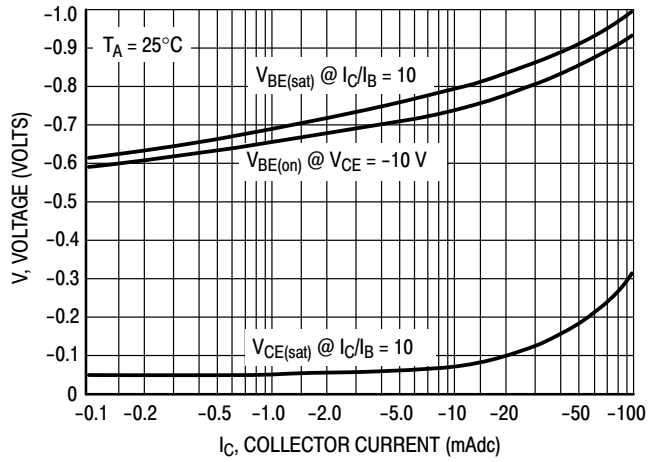


Figure 2. "Saturation" and "On" Voltages

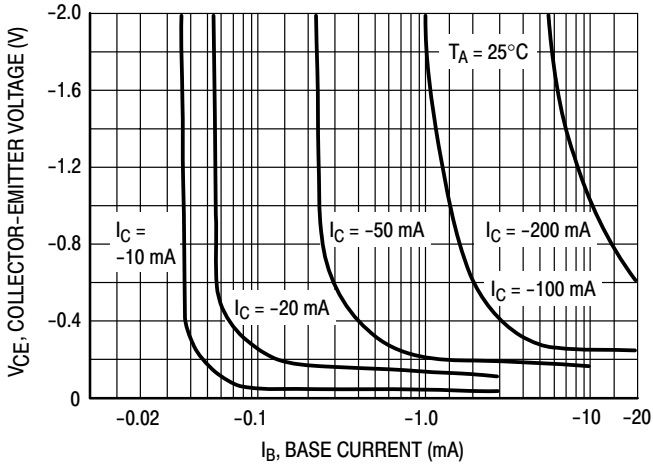


Figure 3. Collector Saturation Region

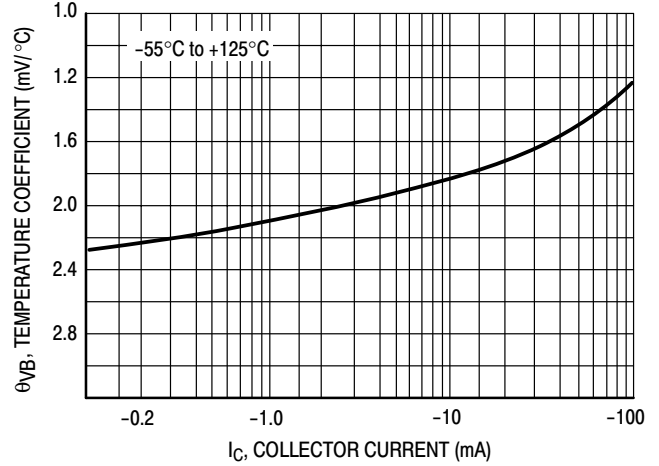


Figure 4. Base-Emitter Temperature Coefficient

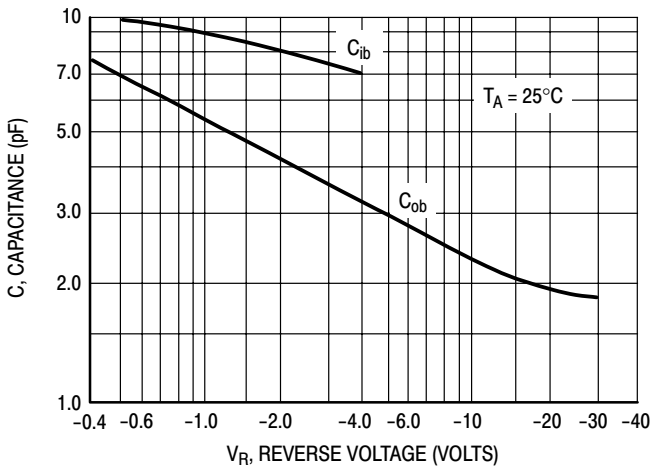


Figure 5. Capacitances

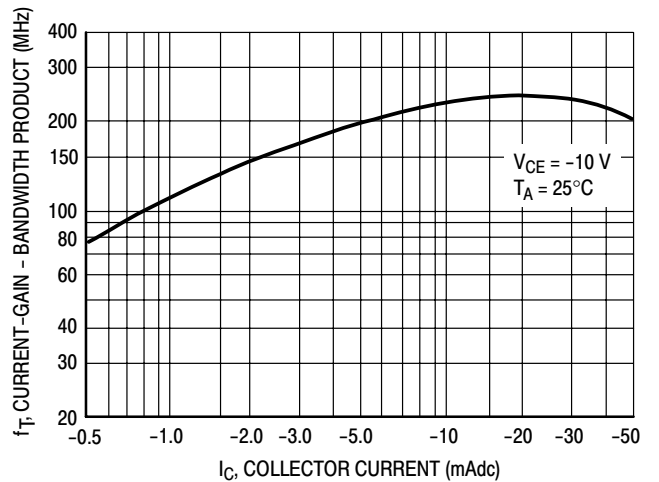


Figure 6. Current-Gain - Bandwidth Product

BC556B, BC557A, B, C, BC558B

BC556

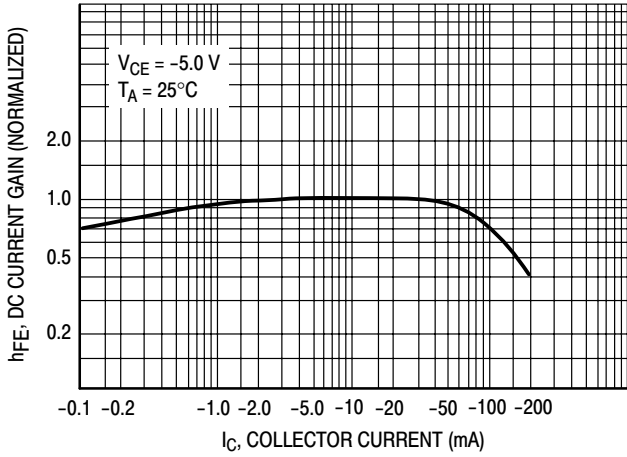


Figure 7. DC Current Gain

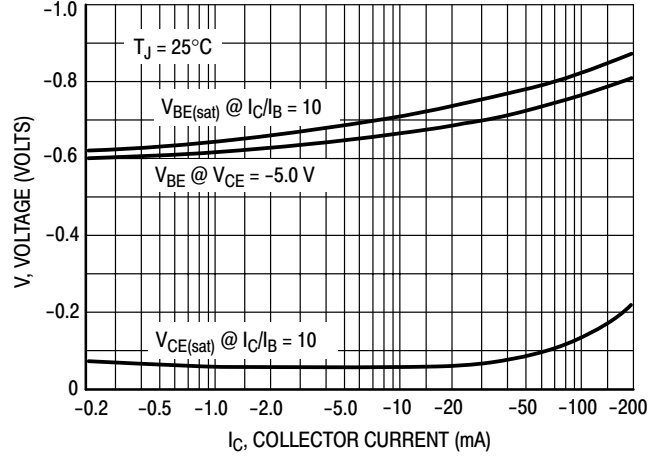


Figure 8. "On" Voltage

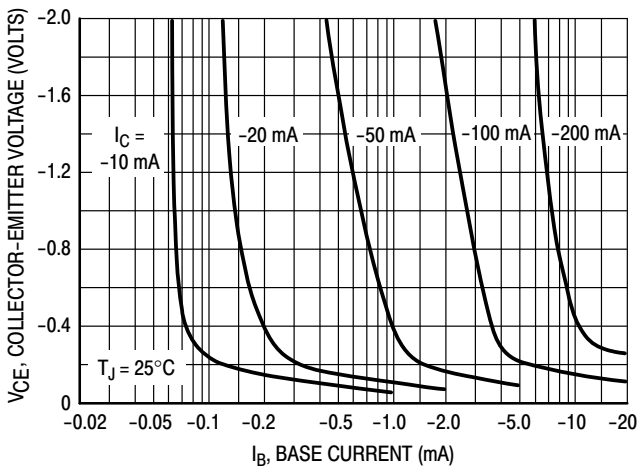


Figure 9. Collector Saturation Region

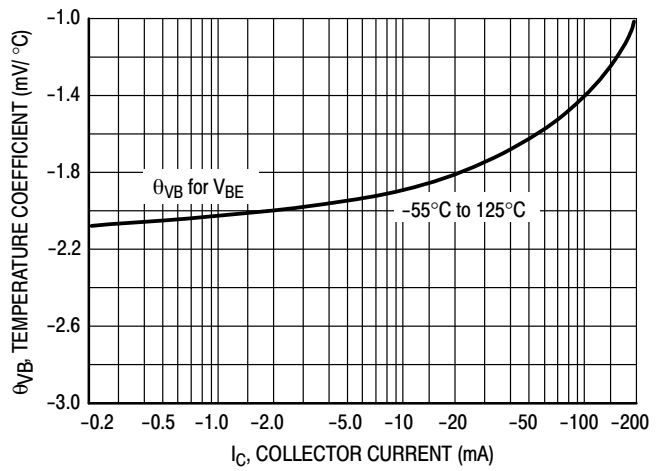


Figure 10. Base-Emitter Temperature Coefficient

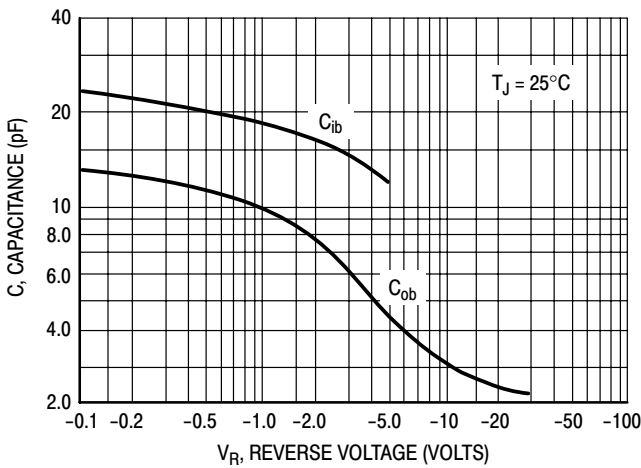


Figure 11. Capacitance

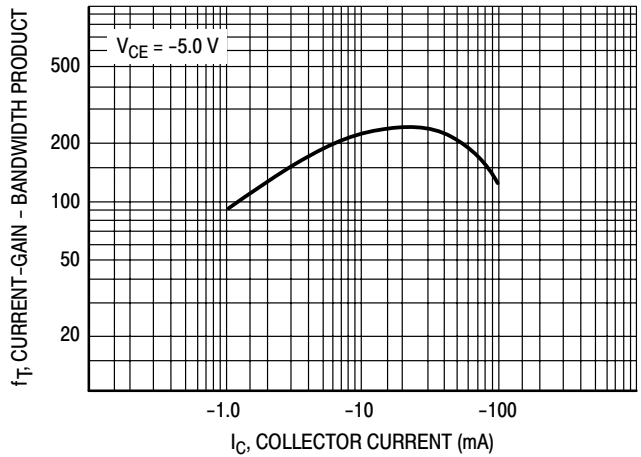


Figure 12. Current-Gain - Bandwidth Product

BC556B, BC557A, B, C, BC558B

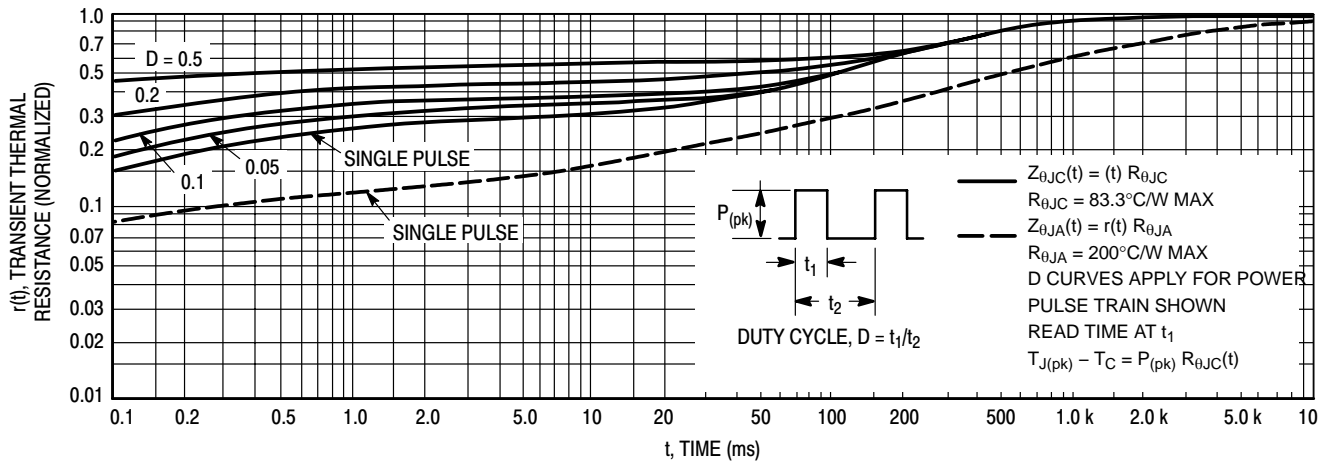


Figure 13. Thermal Response

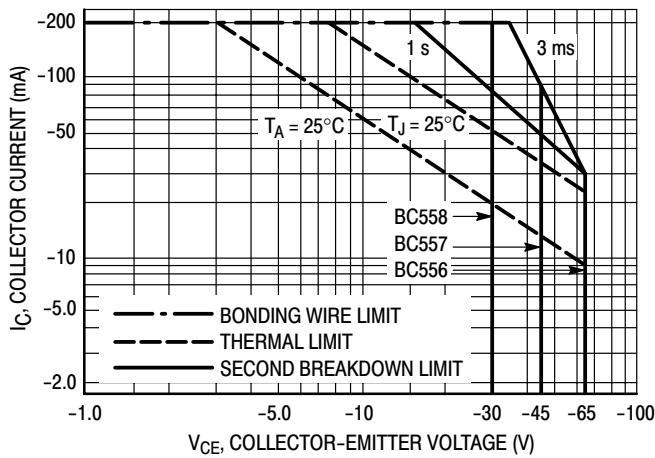


Figure 14. Active Region – Safe Operating Area

The safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

The data of Figure 14 is based upon $T_{J(pk)} = 150^\circ\text{C}$; T_C or T_A is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^\circ\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 13. At high case or ambient temperatures, thermal limitations will reduce the power than can be handled to values less than the limitations imposed by second breakdown.

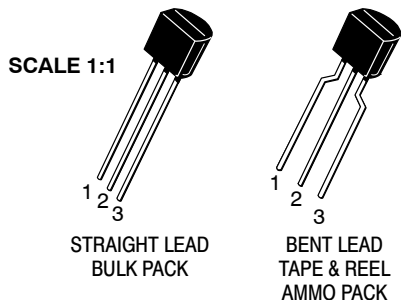
BC556B, BC557A, B, C, BC558B**ORDERING INFORMATION**

Device	Package	Shipping†
BC556BG	TO-92 (Pb-Free)	5000 Units / Bulk
BC556BZL1G	TO-92 (Pb-Free)	2000 / Ammo Box
BC557AZL1G	TO-92 (Pb-Free)	2000 / Ammo Box
BC557BG	TO-92 (Pb-Free)	5000 Units / Bulk
BC557BRL1	TO-92	2000 / Tape & Reel
BC557BRL1G	TO-92 (Pb-Free)	2000 / Tape & Reel
BC557BZL1G	TO-92 (Pb-Free)	2000 / Ammo Box
BC557CG	TO-92 (Pb-Free)	5000 Units / Bulk
BC557CZL1G	TO-92 (Pb-Free)	2000 / Ammo Box
BC558BRLG	TO-92 (Pb-Free)	2000 / Tape & Reel
BC558BRL1G	TO-92 (Pb-Free)	2000 / Tape & Reel
BC558BZL1G	TO-92 (Pb-Free)	2000 / 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.

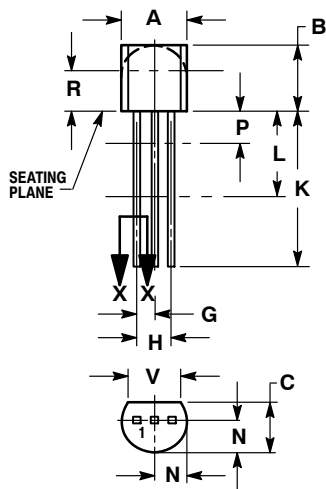


**MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS**

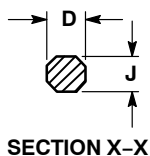


**TO-92 (TO-226)
CASE 29-11
ISSUE AM**

DATE 09 MAR 2007



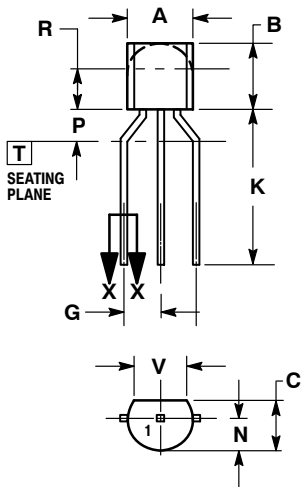
**STRAIGHT LEAD
BULK PACK**



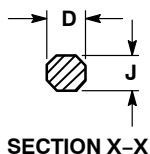
NOTES:

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	---

STYLES ON PAGE 2

DOCUMENT NUMBER:	98ASB42022B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	TO-92 (TO-226)	PAGE 1 OF 2

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

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

DATE 09 MAR 2007

STYLE 1: PIN 1. EMITTER 2. BASE 3. COLLECTOR	STYLE 2: PIN 1. BASE 2. EMITTER 3. COLLECTOR	STYLE 3: PIN 1. ANODE 2. ANODE 3. CATHODE	STYLE 4: PIN 1. CATHODE 2. CATHODE 3. ANODE	STYLE 5: PIN 1. DRAIN 2. SOURCE 3. GATE
STYLE 6: PIN 1. GATE 2. SOURCE & SUBSTRATE 3. DRAIN	STYLE 7: PIN 1. SOURCE 2. DRAIN 3. GATE	STYLE 8: PIN 1. DRAIN 2. GATE 3. SOURCE & SUBSTRATE	STYLE 9: PIN 1. BASE 1 2. EMITTER 3. BASE 2	STYLE 10: PIN 1. CATHODE 2. GATE 3. ANODE
STYLE 11: PIN 1. ANODE 2. CATHODE & ANODE 3. CATHODE	STYLE 12: PIN 1. MAIN TERMINAL 1 2. GATE 3. MAIN TERMINAL 2	STYLE 13: PIN 1. ANODE 1 2. GATE 3. CATHODE 2	STYLE 14: PIN 1. EMITTER 2. COLLECTOR 3. BASE	STYLE 15: PIN 1. ANODE 1 2. CATHODE 3. ANODE 2
STYLE 16: PIN 1. ANODE 2. GATE 3. CATHODE	STYLE 17: PIN 1. COLLECTOR 2. BASE 3. EMITTER	STYLE 18: PIN 1. ANODE 2. CATHODE 3. NOT CONNECTED	STYLE 19: PIN 1. GATE 2. ANODE 3. CATHODE	STYLE 20: PIN 1. NOT CONNECTED 2. CATHODE 3. ANODE
STYLE 21: PIN 1. COLLECTOR 2. EMITTER 3. BASE	STYLE 22: PIN 1. SOURCE 2. GATE 3. DRAIN	STYLE 23: PIN 1. GATE 2. SOURCE 3. DRAIN	STYLE 24: PIN 1. EMITTER 2. COLLECTOR/ANODE 3. CATHODE	STYLE 25: PIN 1. MT 1 2. GATE 3. MT 2
STYLE 26: PIN 1. V _{CC} 2. GROUND 2 3. OUTPUT	STYLE 27: PIN 1. MT 2. SUBSTRATE 3. MT	STYLE 28: PIN 1. CATHODE 2. ANODE 3. GATE	STYLE 29: PIN 1. NOT CONNECTED 2. ANODE 3. CATHODE	STYLE 30: PIN 1. DRAIN 2. GATE 3. SOURCE
STYLE 31: PIN 1. GATE 2. DRAIN 3. SOURCE	STYLE 32: PIN 1. BASE 2. COLLECTOR 3. EMITTER	STYLE 33: PIN 1. RETURN 2. INPUT 3. OUTPUT	STYLE 34: PIN 1. INPUT 2. GROUND 3. LOGIC	STYLE 35: PIN 1. GATE 2. COLLECTOR 3. EMITTER

DOCUMENT NUMBER:	98ASB42022B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	TO-92 (TO-226)	PAGE 2 OF 2

onsemi and **ONSEMI** are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we strictly control the quality of products and services. Welcome your RFQ to

Email: Info@DiGi-Electronics.com



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.