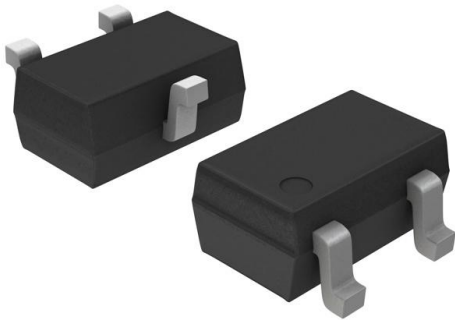


# NSVBC857CWT1G Datasheet

[www.digi-electronics.com](http://www.digi-electronics.com)



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

DiGi Electronics Part Number	NSVBC857CWT1G-DG
Manufacturer	<a href="#">onsemi</a>
Manufacturer Product Number	NSVBC857CWT1G
Description	TRANS PNP 45V 0.1A SC70-3
Detailed Description	Bipolar (BJT) Transistor PNP 45 V 100 mA 100MHz 1 50 mW Surface Mount SC-70-3 (SOT323)



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.

## Purchase and inquiry

Manufacturer Product Number:

NSVBC857CWT1G

Series:

-

Transistor Type:

PNP

Voltage - Collector Emitter Breakdown (Max):

45 V

Current - Collector Cutoff (Max):

15nA (ICBO)

Power - Max:

150 mW

Operating Temperature:

-55°C ~ 150°C (TJ)

Package / Case:

SC-70, SOT-323

Base Product Number:

NSVBC857

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:

100MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SC-70-3 (SOT323)

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

# General Purpose Transistors

## PNP Silicon

### BC856B, BC857B, BC858A

These transistors are designed for general purpose amplifier applications. They are housed in the SC-70/SOT-323 which is designed for low power surface mount applications.

#### Features

- S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

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

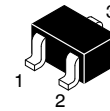
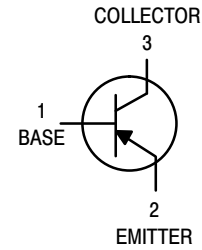
Rating	Symbol	Value	Unit
Collector-Emitter Voltage BC856 BC857 BC858	$V_{CEO}$	-65 -45 -30	V
Collector-Base Voltage BC856 BC857 BC858	$V_{CBO}$	-80 -50 -30	V
Emitter-Base Voltage	$V_{EBO}$	-5.0	V
Collector Current - Continuous	$I_C$	-100	mAdc
Collector Current - Peak (1 ms pulse)	$I_{CM}$	-130	mA

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (Note 1) $T_A = 25^\circ\text{C}$	$P_D$	150	mW
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	883	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

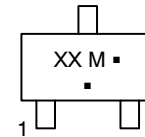
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-5 = 1.0 x 0.75 x 0.062 in.



**SC-70/SOT-323**  
**CASE 419**  
**STYLE 3**

#### MARKING DIAGRAM



XX = Specific Device Code

M = Date Code\*

■ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

#### ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

**BC856B, BC857B, BC858A****ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS</b>						
Collector – Emitter Breakdown Voltage ( $I_C = -10\text{ mA}$ )	BC856 BC857 BC858	$V_{(BR)CEO}$	-65 -45 -30	- - -	V	
Collector – Emitter Breakdown Voltage ( $I_C = -10\ \mu\text{A}$ , $V_{EB} = 0$ )	BC856 BC857 BC858	$V_{(BR)CES}$	-80 -50 -30	- - -	V	
Collector – Base Breakdown Voltage ( $I_C = -10\ \mu\text{A}$ )	BC856 BC857 BC858	$V_{(BR)CBO}$	-80 -50 -30	- - -	V	
Emitter – Base Breakdown Voltage ( $I_E = -1.0\ \mu\text{A}$ )	BC856 BC857 BC858	$V_{(BR)EBO}$	-5.0 -5.0 -5.0	- - -	V	
Collector Cutoff Current ( $V_{CB} = -30\text{ V}$ ) ( $V_{CB} = -30\text{ V}$ , $T_A = 150^\circ\text{C}$ )		$I_{CBO}$	- -	- -	nA $\mu\text{A}$	
<b>ON CHARACTERISTICS</b>						
DC Current Gain ( $I_C = -10\ \mu\text{A}$ , $V_{CE} = -5.0\text{ V}$ )  ( $I_C = -2.0\text{ mA}$ , $V_{CE} = -5.0\text{ V}$ )	BC856A, BC585A BC856B, BC857B, BC858B BC857C  BC856A, BC858A BC856B, BC857B, BC858B BC857C	$h_{FE}$	- - -  125 220 420	90 150 270  180 290 520	- - -  250 475 800	-
Collector – Emitter Saturation Voltage ( $I_C = -10\text{ mA}$ , $I_B = -0.5\text{ mA}$ ) ( $I_C = -100\text{ mA}$ , $I_B = -5.0\text{ mA}$ )		$V_{CE(sat)}$	- -	- -	-0.3 -0.65	V
Base – Emitter Saturation Voltage ( $I_C = -10\text{ mA}$ , $I_B = -0.5\text{ mA}$ ) ( $I_C = -100\text{ mA}$ , $I_B = -5.0\text{ mA}$ )		$V_{BE(sat)}$	- -	-0.7 -0.9	- -	V
Base – Emitter On Voltage ( $I_C = -2.0\text{ mA}$ , $V_{CE} = -5.0\text{ V}$ ) ( $I_C = -10\text{ mA}$ , $V_{CE} = -5.0\text{ V}$ )		$V_{BE(on)}$	-0.6 -	- -	-0.75 -0.82	V
<b>SMALL – SIGNAL CHARACTERISTICS</b>						
Current – Gain – Bandwidth Product ( $I_C = -10\text{ mA}$ , $V_{CE} = -5.0\text{ Vdc}$ , $f = 100\text{ MHz}$ )		$f_T$	100	-	-	MHz
Output Capacitance ( $V_{CB} = -10\text{ V}$ , $f = 1.0\text{ MHz}$ )		$C_{ob}$	-	-	4.5	pF
Noise Figure ( $I_C = -0.2\text{ mA}$ , $V_{CE} = -5.0\text{ Vdc}$ , $R_S = 2.0\text{ k}\Omega$ , $f = 1.0\text{ kHz}$ , $BW = 200\text{ Hz}$ )		NF	-	-	10	dB

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.

# BC856B, BC857B, BC858A

## BC857/BC858

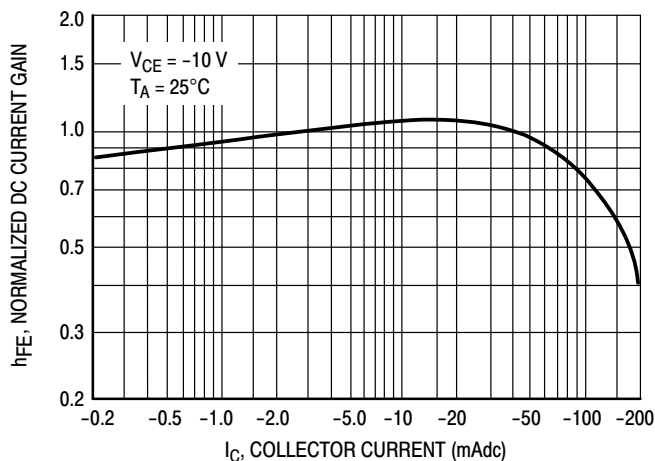


Figure 1. Normalized DC Current Gain

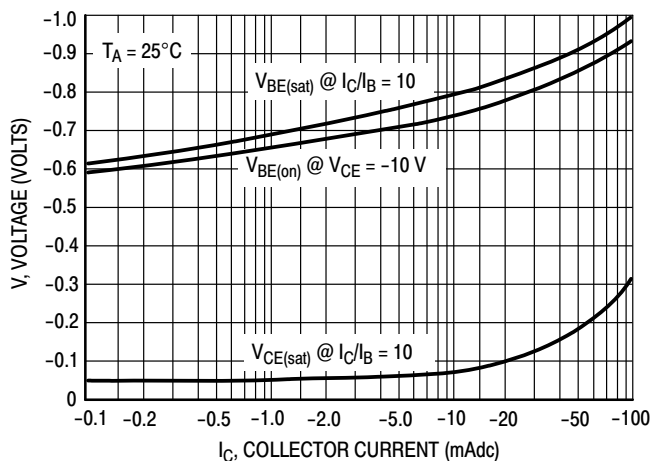


Figure 2. "Saturation" and "On" Voltages

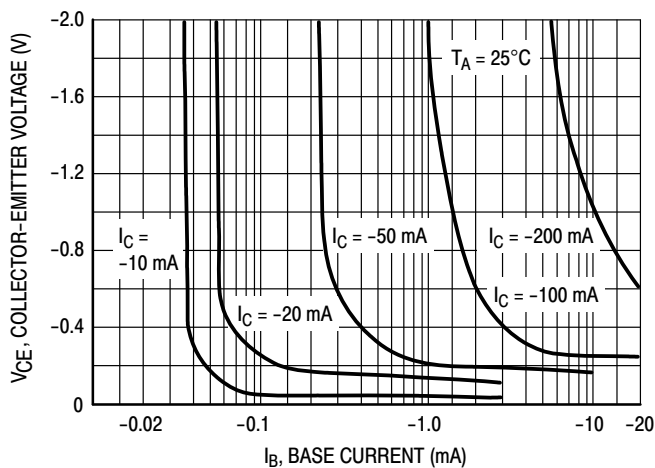


Figure 3. Collector Saturation Region

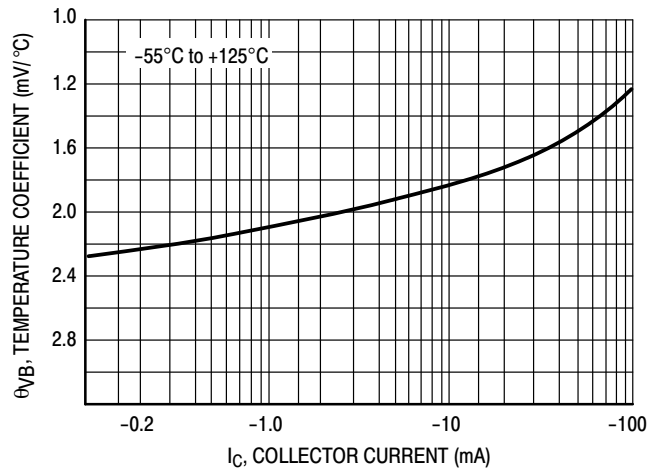


Figure 4. Base-Emitter Temperature Coefficient

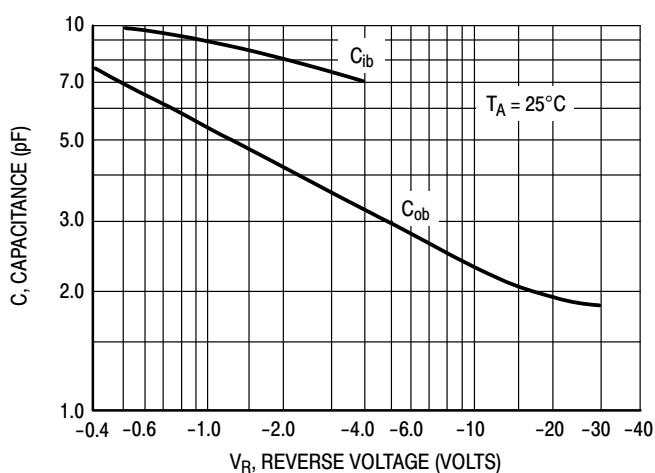


Figure 5. Capacitances

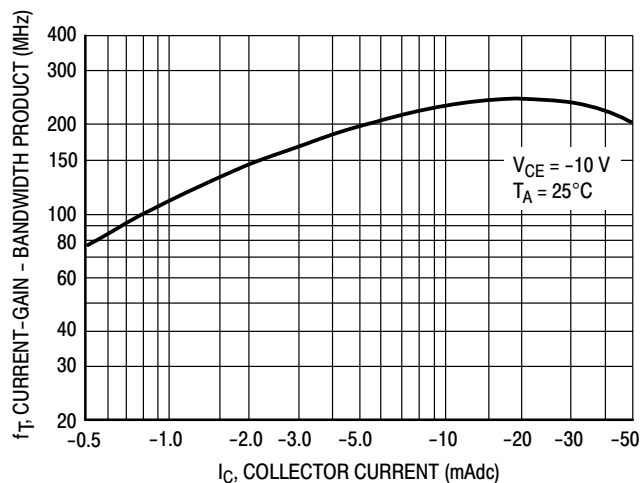
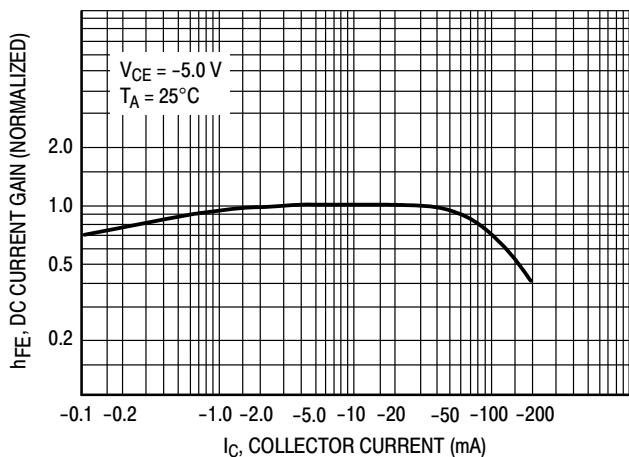


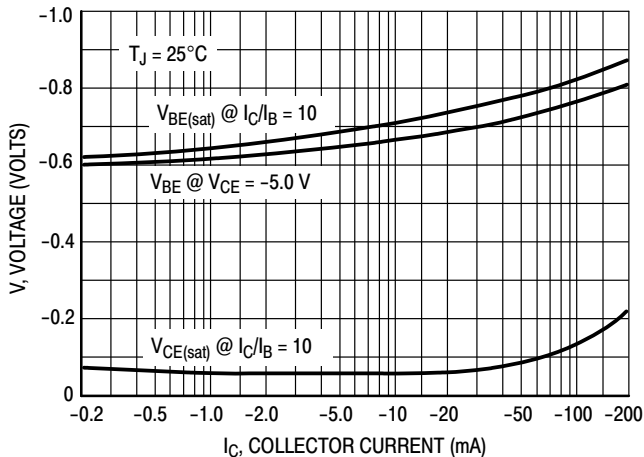
Figure 6. Current-Gain - Bandwidth Product

**BC856B, BC857B, BC858A**

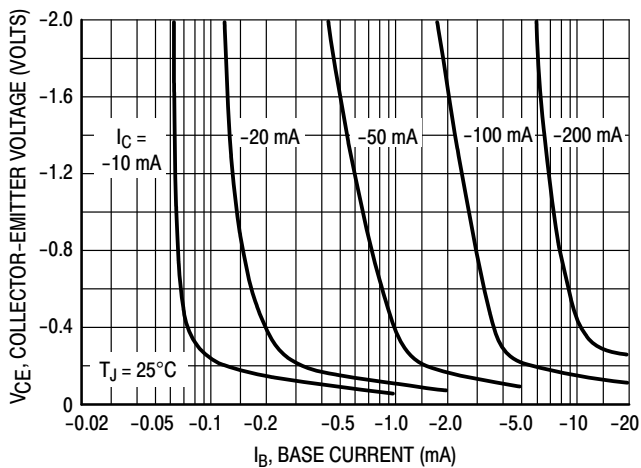
**BC856**



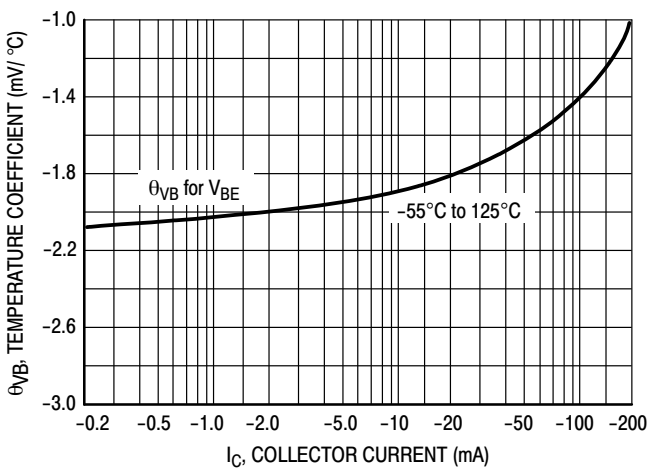
**Figure 7. DC Current Gain**



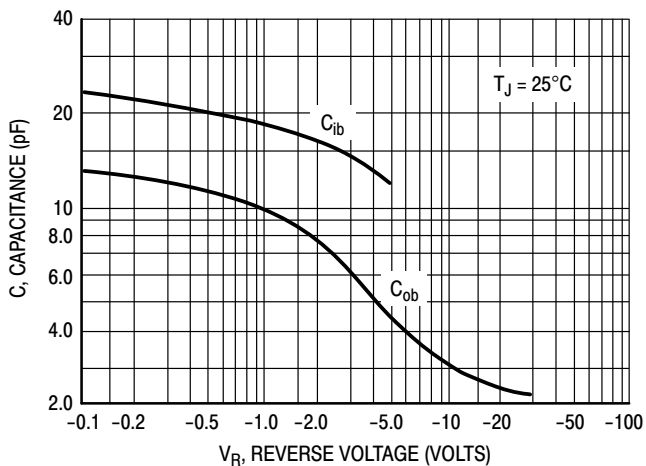
**Figure 8. "On" Voltage**



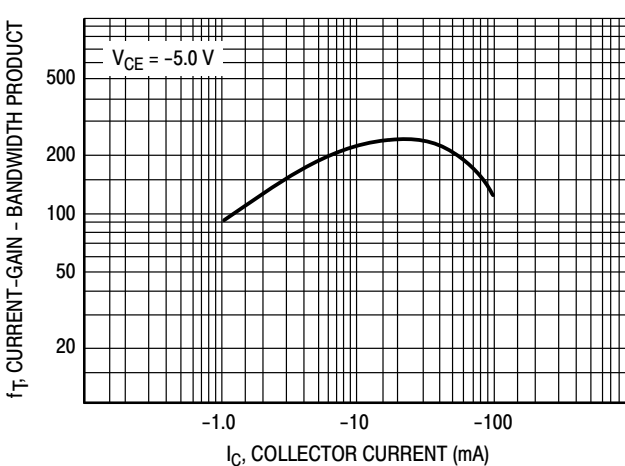
**Figure 9. Collector Saturation Region**



**Figure 10. Base-Emitter Temperature Coefficient**

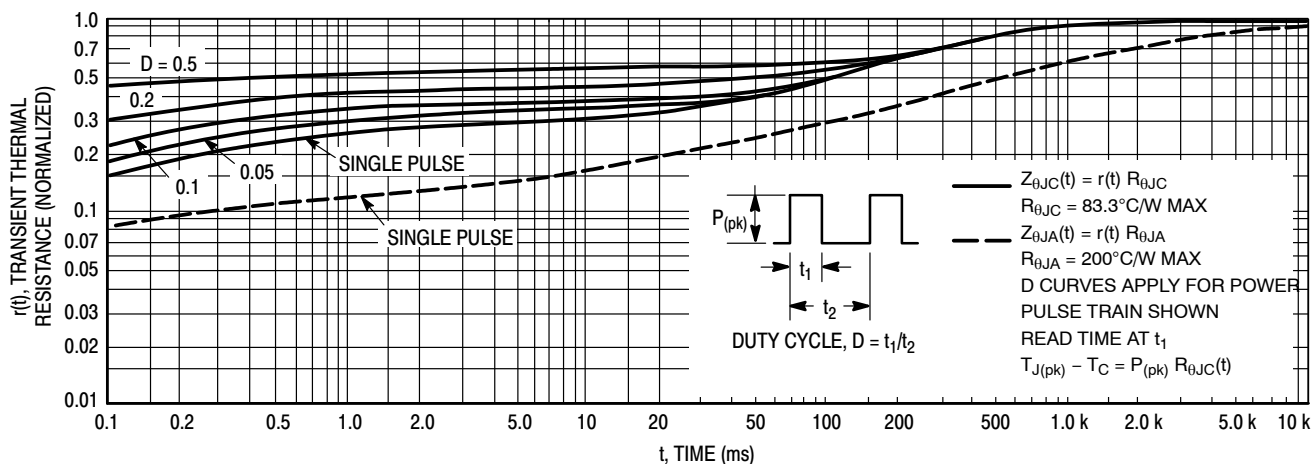


**Figure 11. Capacitance**

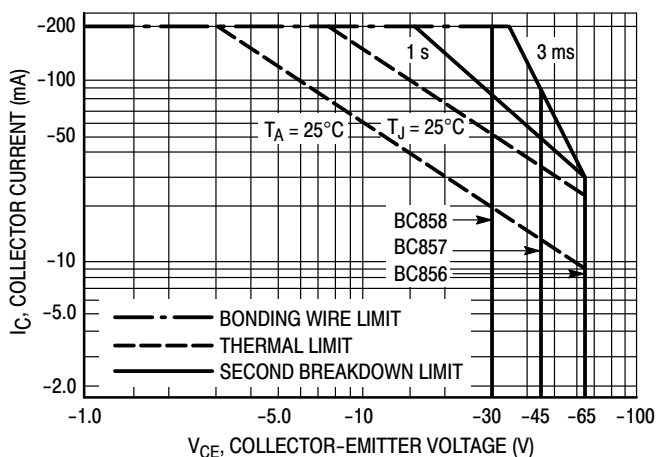


**Figure 12. Current-Gain - Bandwidth Product**

**BC856B, BC857B, BC858A**



**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 that can be handled to values less than the limitations imposed by the secondary breakdown.

**ORDERING INFORMATION**

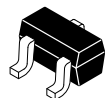
Device	Marking	Package	Shipping†
BC856BWT1G	3B	SC-70/SOT-323 (Pb-Free)	3,000 / Tape & Reel
SBC856BWT1G*			
BC857BWT1G	3F	SC-70/SOT-323 (Pb-Free)	3,000 / Tape & Reel
SBC857BWT1G*			
BC857CWT1G	3G	SC-70/SOT-323 (Pb-Free)	3,000 / Tape & Reel
NSVBC857CWT1G*			
BC858AWT1G	3J	SC-70/SOT-323 (Pb-Free)	3,000 / Tape & Reel
BC858BWT1G	3K	SC-70/SOT-323 (Pb-Free)	3,000 / Tape & Reel

†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.

\*S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.



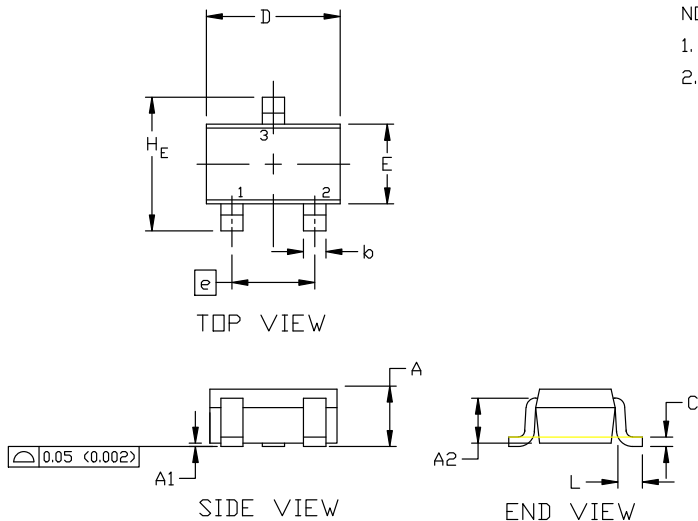
**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**



SCALE 4:1

**SC-70 (SOT-323)  
CASE 419  
ISSUE R**

DATE 11 OCT 2022

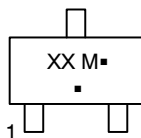


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH

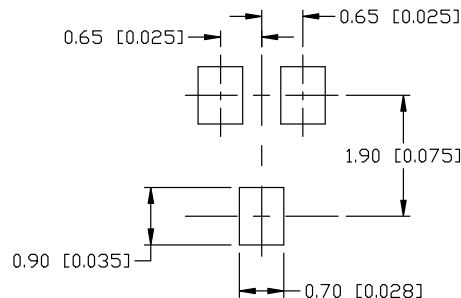
DIM	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.70 REF			0.028 BSC		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.00	2.20	0.071	0.080	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65 BSC			0.026 BSC		
L	0.20	0.38	0.56	0.008	0.015	0.022
H <sub>E</sub>	2.00	2.10	2.40	0.079	0.083	0.095

**GENERIC  
MARKING DIAGRAM**



- XX = Specific Device Code
- M = Date Code
- = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



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

**SOLDERING FOOTPRINT**

- STYLE 1: CANCELLED
- STYLE 2: PIN 1. ANODE, 2. N.C., 3. CATHODE
- STYLE 3: PIN 1. BASE, 2. EMITTER, 3. COLLECTOR
- STYLE 4: PIN 1. CATHODE, 2. CATHODE, 3. ANODE
- STYLE 5: PIN 1. ANODE, 2. ANODE, 3. CATHODE
- STYLE 6: PIN 1. EMITTER, 2. BASE, 3. COLLECTOR
- STYLE 7: PIN 1. BASE, 2. EMITTER, 3. COLLECTOR
- STYLE 8: PIN 1. GATE, 2. SOURCE, 3. DRAIN
- STYLE 9: PIN 1. ANODE, 2. CATHODE, 3. CATHODE-ANODE
- STYLE 10: PIN 1. CATHODE, 2. ANODE, 3. ANODE-CATHODE
- STYLE 11: PIN 1. CATHODE, 2. CATHODE, 3. CATHODE

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<b>DESCRIPTION:</b>	<b>SC-70 (SOT-323)</b>	<b>PAGE 1 OF 1</b>

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onsemi Website: [www.onsemi.com](http://www.onsemi.com)

**ONLINE SUPPORT:** [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)

## OUR CERTIFICATE

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Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

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