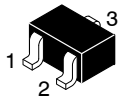
# PNP Silicon General Purpose High Voltage Transistor

# MSB92WT1G, MSB92AWT1G

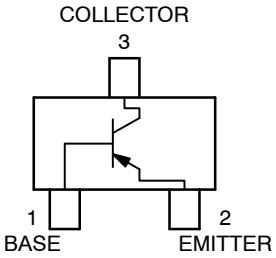



SC−70 (SOT−323)
CASE 419
STYLE 3

This PNP Silicon Planar Transistor is designed for general purpose amplifier applications. This device is housed in the SC-70/SOT-323 package which is designed for low power surface mount applications.

### Features

- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant




### MAXIMUM RATINGS ($T_A$ = 25°C)

| Symbol | Rating | Value | Unit |
|---|---|---|---|
| $V_{(BR)CBO}$ | Collector-Base Voltage | −300 | Vdc |
| $V_{(BR)CEO}$ | Collector-Emitter Voltage | −300 | Vdc |
| $V_{(BR)EBO}$ | Emitter-Base Voltage | −5.0 | Vdc |
| $I_C$ | Collector Current − Continuous | 500 | mAdc |
| ESD | Electrostatic Discharge | MBM > 16,000, MM > 2,000 | V |

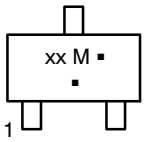
### THERMAL CHARACTERISTICS

| Symbol | Rating | Max | Unit |
|---|---|---|---|
| $P_D$ | Power Dissipation (Note 1) | 150 | mW |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{stg}$ | Storage Temperature Range | −55 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.

1. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.

### MARKING DIAGRAM




xx = Device Code
x= 2D or D2
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)
*Date Code orientation may vary depending upon manufacturing location.

### ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| MSB92WT1G | SC−70/ SOT−323 (Pb−Free) | 3,000/Tape & Reel |
| MSB92AWT1G | 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 Specification Brochure, BRD8011/D.

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## ELECTRICAL CHARACTERISTICS

| Symbol | Characteristic | Min | Max | Unit |
|---|---|---|---|---|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage ($I_C$ = −1.0 mAdc, $I_B$ = 0) | −300 | – | Vdc |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage ($I_C$ = −100 μAdc, $I_E$ = 0) | −300 | – | Vdc |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage ($I_E$ = −100 μAdc, $I_E$ = 0) | −5.0 | – | Vdc |
| $I_{CBO}$ | Collector-Base Cutoff Current ($V_{CB}$ = −200 Vdc, $I_E$ = 0) | – | −0.25 | μA |
| $I_{EBO}$ | Emitter−Base Cutoff Current ($V_{EB}$ = −3.0 Vdc, $I_B$ = 0) | – | −0.1 | μA |
| | DC Current Gain (Note 2) | | | – |
| $h_{FE1}$ | MSB92WT1: ($V_{CE}$ = −10 Vdc, $I_C$ = −1.0 mAdc) | 25 | – | |
| $h_{FE1}$ | MSB92AWT1: ($V_{CE}$ = −10 Vdc, $I_C$ = −1.0 mAdc) | 120 | 200 | |
| $h_{FE2}$ | ($V_{CE}$ = −10 Vdc, $I_C$ = −10 mAdc) | 40 | – | |
| $h_{FE3}$ | ($V_{CE}$ = −10 Vdc, $I_C$ = −30 mAdc) | 25 | – | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage (Note 2) ($I_C$ = −20 mAdc, $I_B$ = −2.0 mAdc) | – | −0.5 | Vdc |
| $V_{BE(sat)}$ | Base−Emitter Saturation Voltage ($I_C$ = −20 mAdc, $I_B$ = −2.0 mAdc) | – | −0.9 | Vdc |

## SMALL SIGNAL CHARACTERISTICS

| | | | | |
|---|---|---|---|---|
| $f_T$ | Current − Gain − Bandwidth Product ($I_C$ = −10 mAdc, $V_{CE}$ = −20 Vdc, f = 20 MHz) | 50 | – | MHz |
| $C_{cb}$ | Collector−Base Capacitance ($V_{CB}$ = −20 Vdc, $I_E$ = 0, f = 1.0 MHz) | – | 6.0 | pF |

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.

2. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.



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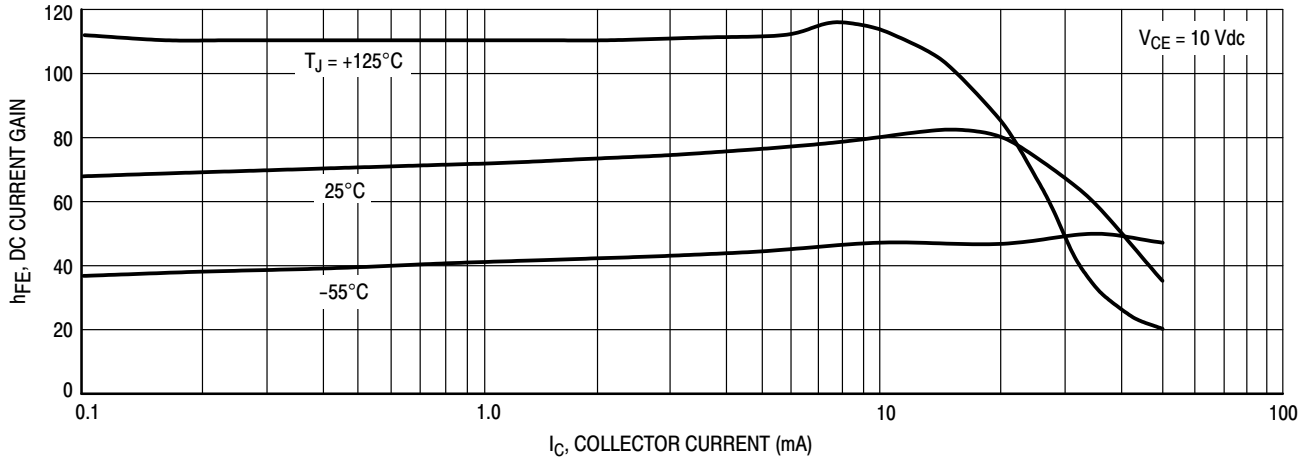



**Figure 1. DC Current Gain**

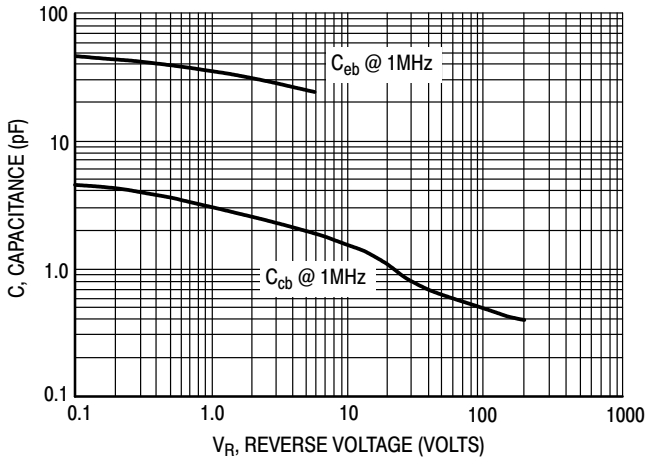



**Figure 2. Capacitance**

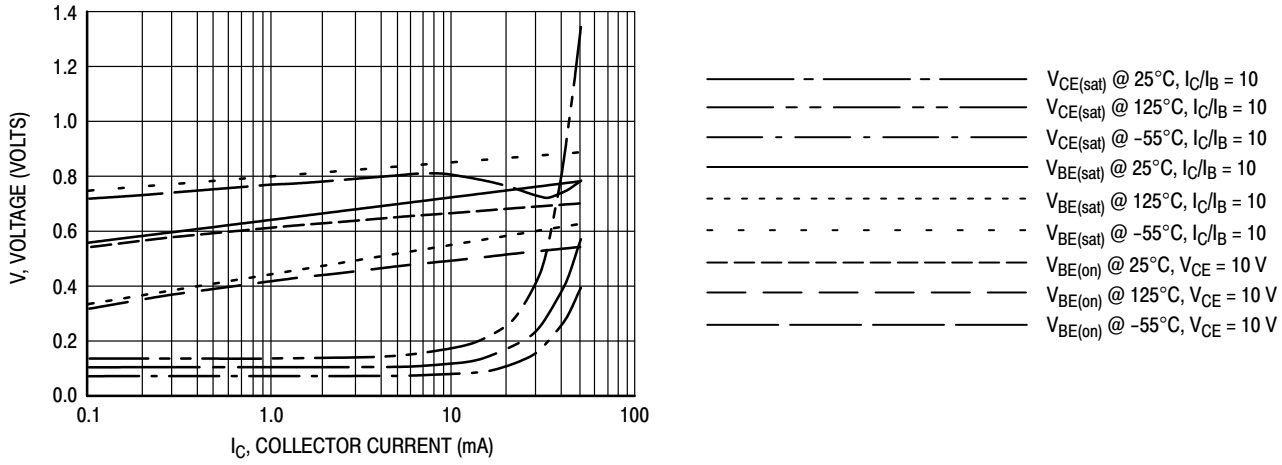
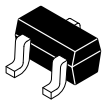



**Figure 3. “ON” Voltages**



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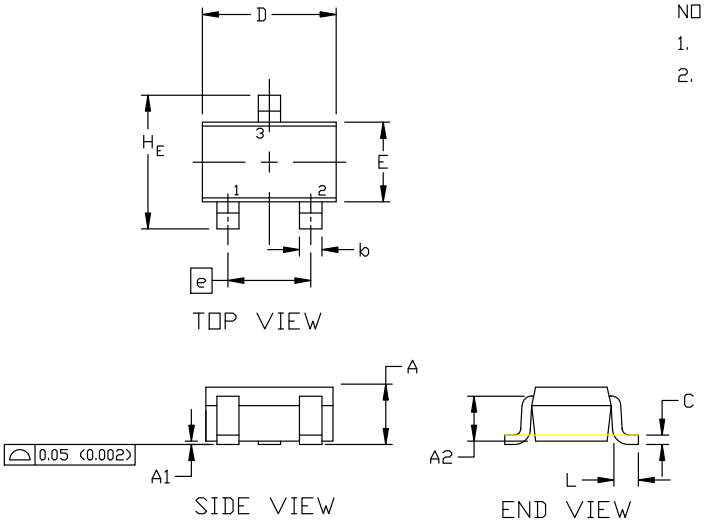
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**SCALE 4:1**

**SC−70 (SOT−323)**
CASE 419
ISSUE R

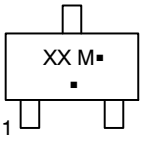
DATE 11 OCT 2022




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

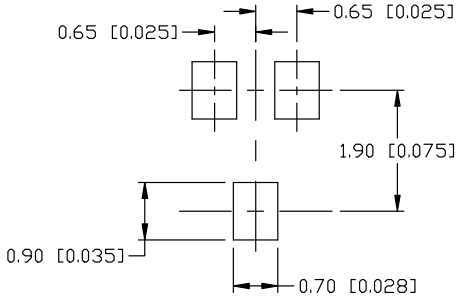
| | MILLIMETERS | | | INCHES | | |
|---|---|---|---|---|---|---|
| DIM | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| A | 0.80 | 0.90 | 1.00 | 0.032 | 0.035 | 0.040 |
| A1 | 0.00 | 0.05 | 0.10 | 0.000 | 0.002 | 0.004 |
| A2 | 0.70 REF | | | 0.028 BSC | | |
| b | 0.30 | 0.35 | 0.40 | 0.012 | 0.014 | 0.016 |
| 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 |
| $H_E$ | 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 ON 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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| **DESCRIPTION:** | **SC−70 (SOT−323)** | **PAGE 1 OF 1** |

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