

# MSB92ASWT1G, MSB92AS1WT1G

## PNP Silicon General Purpose High Voltage Transistor

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<sub>A</sub> = 25°C)

Rating	Symbol	Value	Unit
Collector-Base Voltage	V <sub>(BR)CBO</sub>	-300	Vdc
Collector-Emitter Voltage	V <sub>(BR)CEO</sub>	-300	Vdc
Emitter-Base Voltage	V <sub>(BR)EBO</sub>	-5.0	Vdc
Collector Current – Continuous	I <sub>C</sub>	500	mAdc
ESD Rating: Human Body Model Machine Model	ESD	Class 1C Class C	-

### THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Power Dissipation (Note 1)	P <sub>D</sub>	150	mW
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

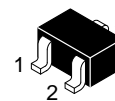
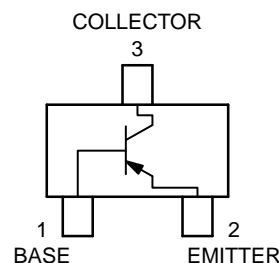
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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



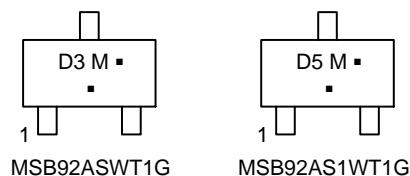
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SC-70 (SOT-323)  
CASE 419  
STYLE 3

### MARKING DIAGRAM



- Dx = 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

Device	Package	Shipping†
MSB92ASWT1G	SC-70 (Pb-Free)	3000/Tape & Reel
MSB92AS1WT1G	SC-70 (Pb-Free)	3000/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.

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## ELECTRICAL CHARACTERISTICS

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

## SMALL SIGNAL CHARACTERISTICS

Current-Gain – Bandwidth Product ( $I_C = -10$ mAdc, $V_{CE} = -20$ Vdc, $f = 20$ MHz)	$f_T$	50	-	MHz
Collector-Base Capacitance ( $V_{CB} = -20$ Vdc, $I_E = 0$ , $f = 1.0$ MHz)	$C_{cb}$	-	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  $\leq 300$   $\mu$ s, D.C.  $\leq 2\%$ .

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## TYPICAL CHARACTERISTICS

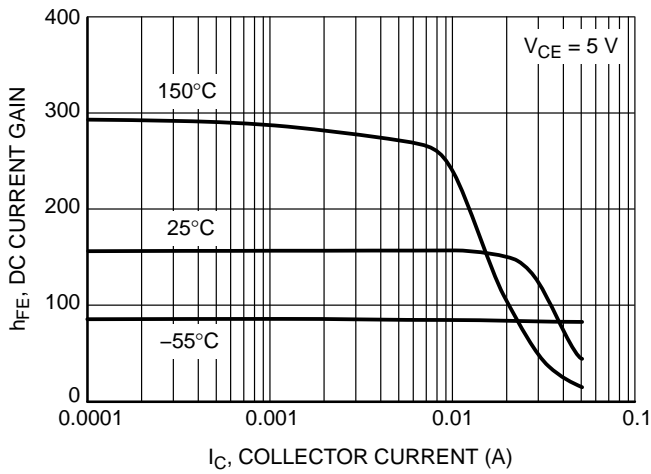


Figure 1. DC Current Gain

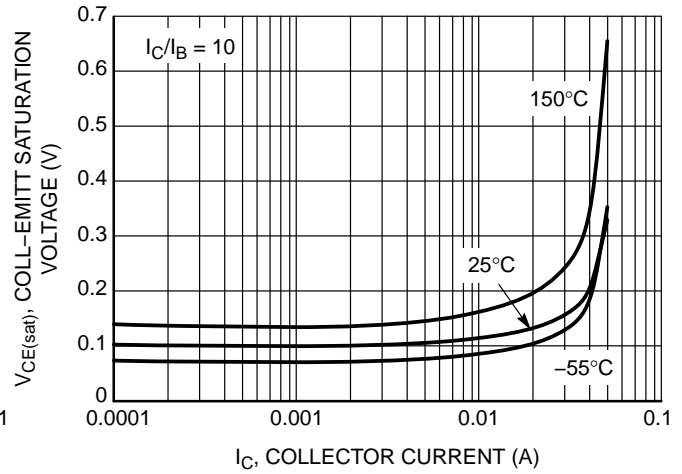


Figure 2.  $V_{CE(sat)}$  Curve

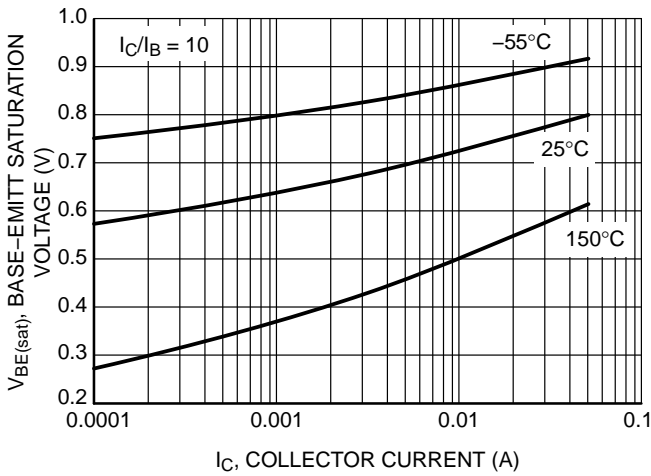


Figure 3.  $V_{BE(sat)}$  Curve

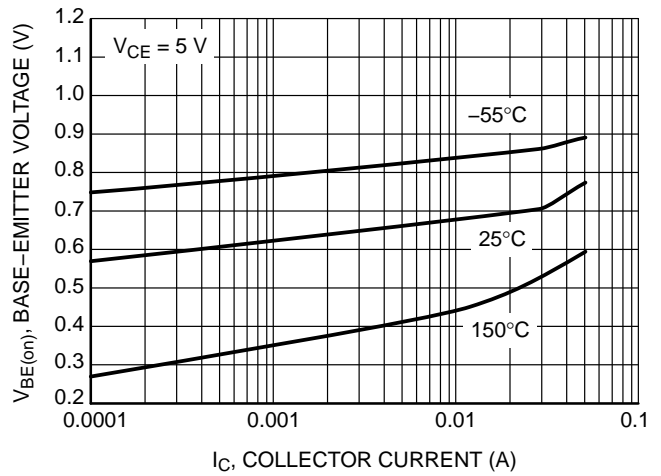


Figure 4.  $V_{BE(on)}$  Curve

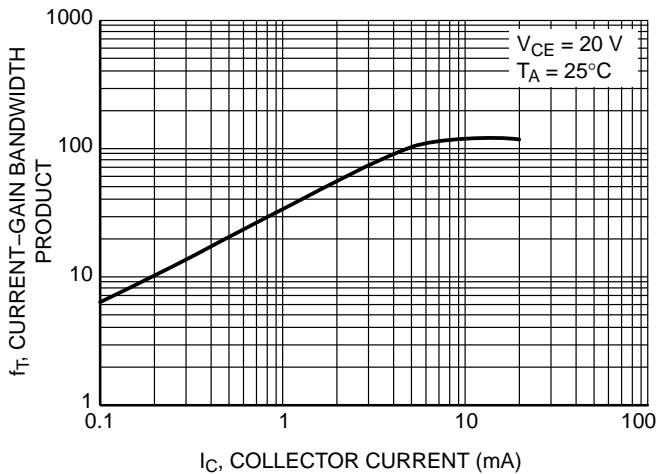


Figure 5. Current-Gain Bandwidth Product

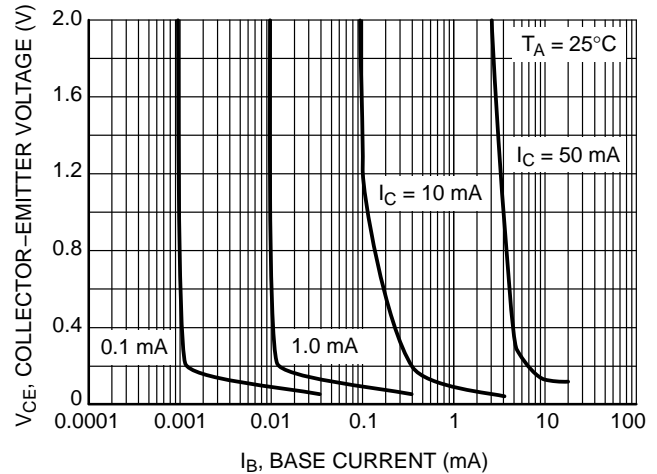


Figure 6. Drain-to-Source Leakage Current vs. Voltage

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## TYPICAL CHARACTERISTICS

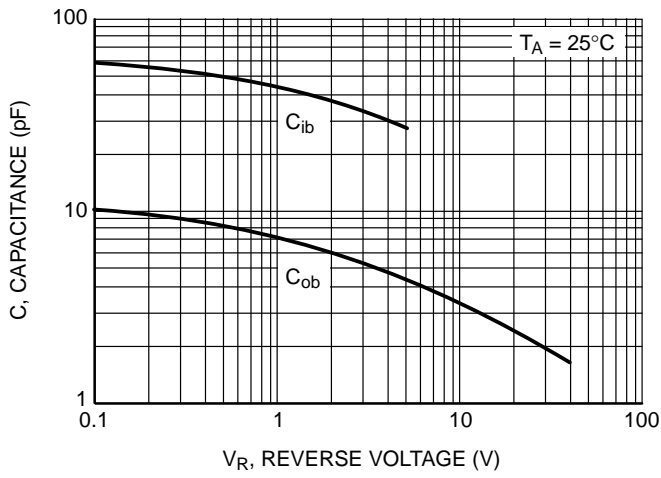


Figure 7. Capacitance

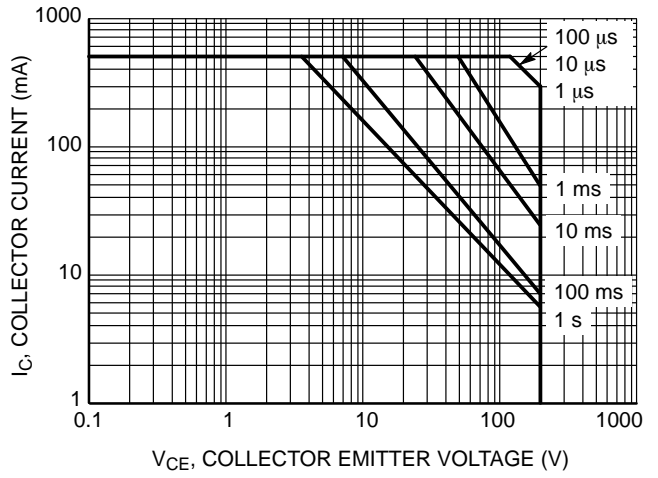


Figure 8. Safe Operating Area

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



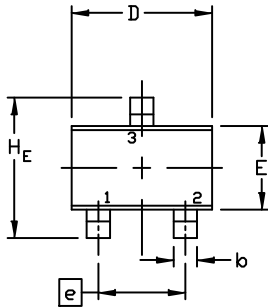
SCALE 4:1

SC-70 (SOT-323)  
CASE 419  
ISSUE P

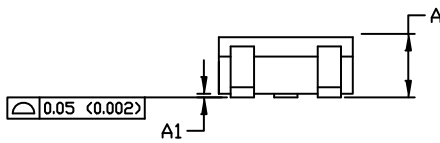
DATE 07 OCT 2021

NOTES:

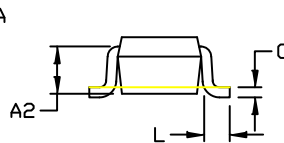
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH



TOP VIEW



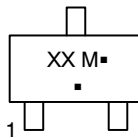
SIDE VIEW



END VIEW

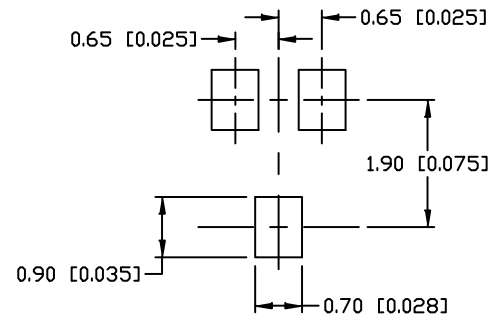
DIM	MILLIMETERS			INCHES		
	MIN.	NDM.	MAX.	MIN.	NDM.	MAX.
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.70 REF			0.028 BSC		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	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:<br>CANCELLED                                 | STYLE 2:<br>PIN 1. ANODE<br>2. N.C.<br>3. CATHODE     | STYLE 3:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 4:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. ANODE       | STYLE 5:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE          |   |
| STYLE 6:<br>PIN 1. EMITTER<br>2. BASE<br>3. COLLECTOR | STYLE 7:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 8:<br>PIN 1. GATE<br>2. SOURCE<br>3. DRAIN      | STYLE 9:<br>PIN 1. ANODE<br>2. CATHODE<br>3. CATHODE-ANODE | STYLE 10:<br>PIN 1. CATHODE<br>2. ANODE<br>3. ANODE-CATHODE | STYLE 11:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. CATHODE |

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