

# MSD42WT1, MSD42T1

Preferred Device

## NPN Silicon General Purpose High Voltage Transistors

This NPN Silicon Planar Transistor is designed for general purpose amplifier applications. This device is housed in the SC-70/SOT-323 and SC-59 packages which are designed for low power surface mount applications.

### Features

- Pb-Free Package is Available

### 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>	6.0	Vdc
Collector Current – Continuous	I <sub>C</sub>	150	mAdc

### 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~+150	°C

### ELECTRICAL CHARACTERISTICS

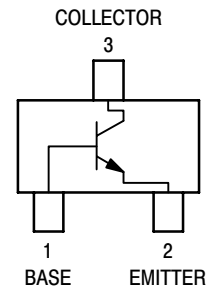
Characteristic	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = 1.0 mAdc, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	300	-	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = 100 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	300	-	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 100 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)EBO</sub>	6.0	-	Vdc
Collector-Base Cutoff Current (V <sub>CB</sub> = 200 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-	0.1	μA
Emitter-Base Cutoff Current (V <sub>EB</sub> = 6.0 Vdc, I <sub>B</sub> = 0)	I <sub>EBO</sub>	-	0.1	μA
DC Current Gain (Note 2) (V <sub>CE</sub> = 10 Vdc, I <sub>C</sub> = 1.0 mAdc) (V <sub>CE</sub> = 10 Vdc, I <sub>C</sub> = 30 mAdc)	h <sub>FE1</sub> h <sub>FE2</sub>	25 40	- -	-
Collector-Emitter Saturation Voltage (Note 2) (I <sub>C</sub> = 20 mAdc, I <sub>B</sub> = 2.0 mAdc)	V <sub>CE(sat)</sub>	-	0.5	Vdc

- Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.
- Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

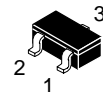


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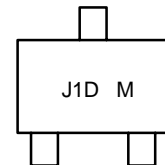
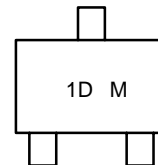


SC-70 (SOT-323)  
CASE 419  
(SCALE 2:1)



SC-59  
CASE 318D  
(SCALE 2:1)

### MARKING DIAGRAMS



1D = Device Marking Code  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
MSD42WT1	SC-70/SOT-323	3000/Tape & Reel
MSD42WT1G	SC-70/SOT-323	3000/Tape & Reel
MSD42T1	SC-59	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.

Preferred devices are recommended choices for future use and best overall value.

# MSD42WT1, MSD42T1

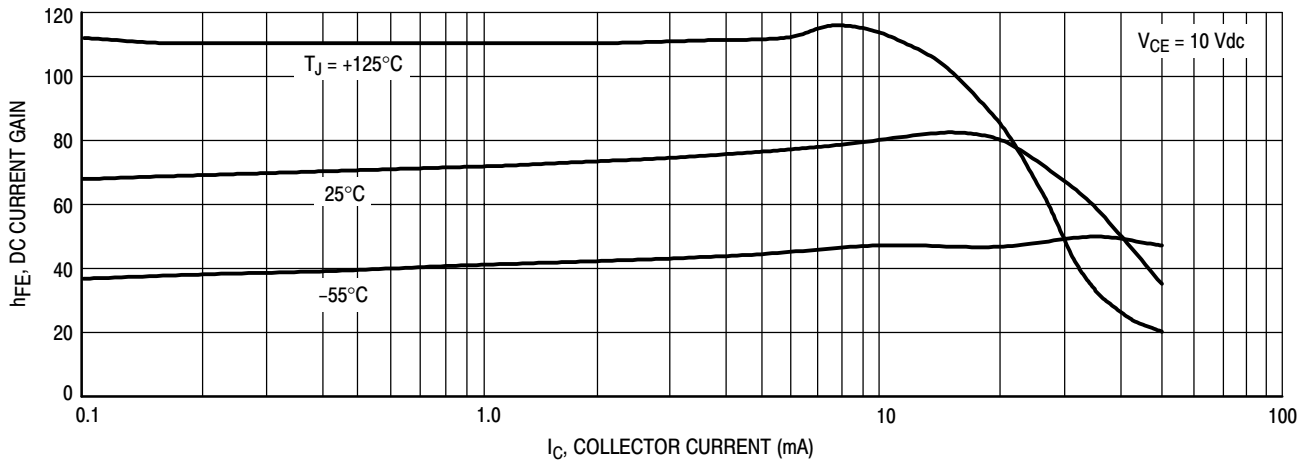


Figure 1. DC Current Gain

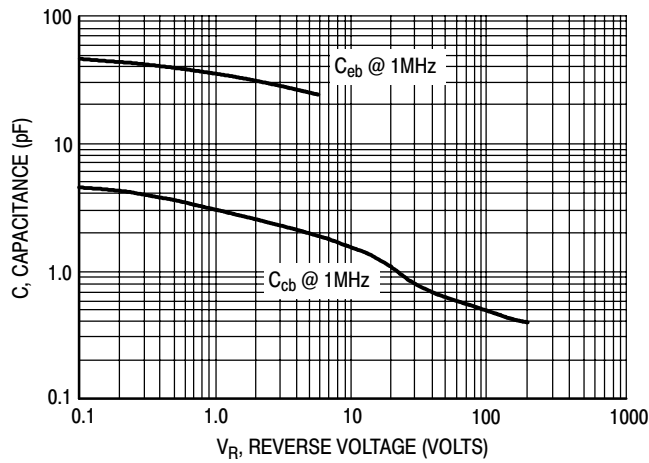


Figure 2. Capacitance

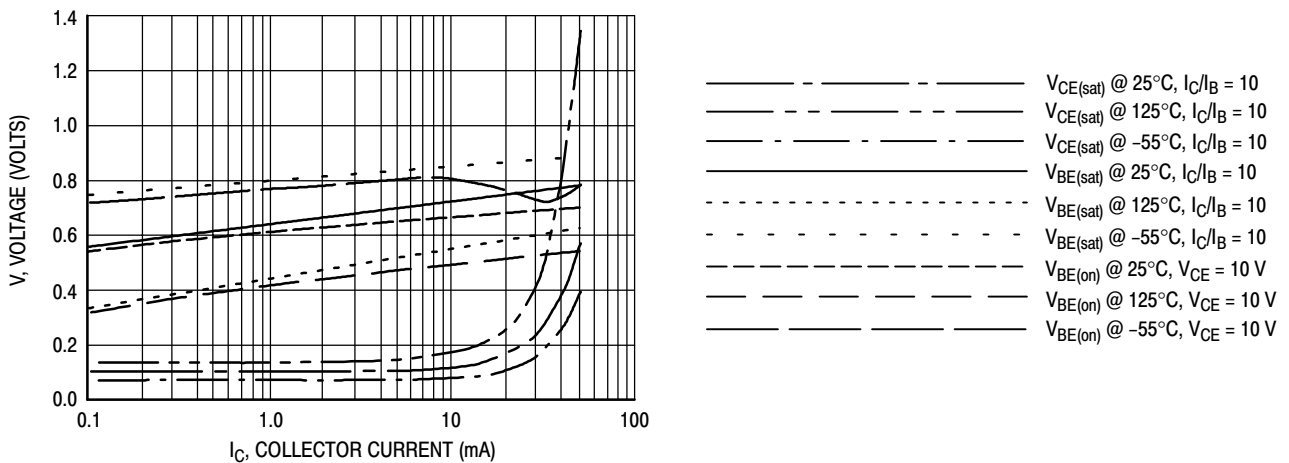
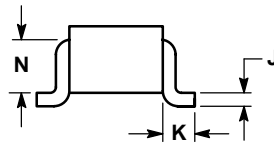
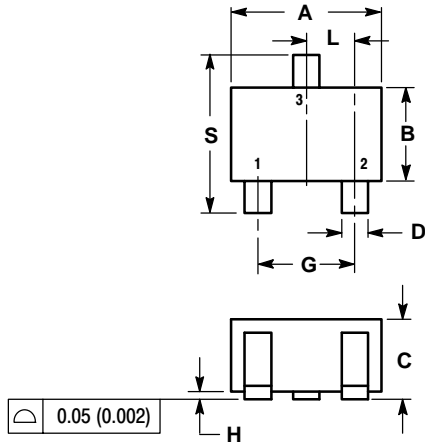


Figure 3. "ON" Voltages

# MSD42WT1, MSD42T1

## PACKAGE DIMENSIONS

SC-70 (SOT-323)  
CASE 419-04  
ISSUE L



NOTES:

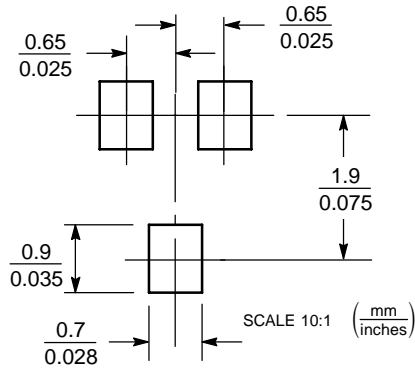
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.032	0.040	0.80	1.00
D	0.012	0.016	0.30	0.40
G	0.047	0.055	1.20	1.40
H	0.000	0.004	0.00	0.10
J	0.004	0.010	0.10	0.25
K	0.017 REF		0.425 REF	
L	0.026 BSC		0.650 BSC	
N	0.028 REF		0.700 REF	
S	0.079	0.095	2.00	2.40

STYLE 3:

- PIN 1. BASE
- EMITTER
- COLLECTOR

### SOLDERING FOOTPRINT\*



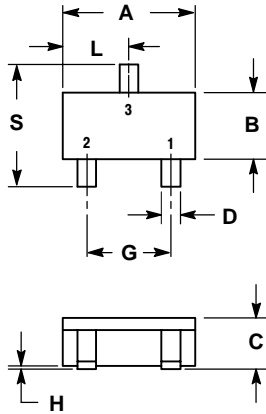
### SC-70/SOT-323

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

# MSD42WT1, MSD42T1

## PACKAGE DIMENSIONS

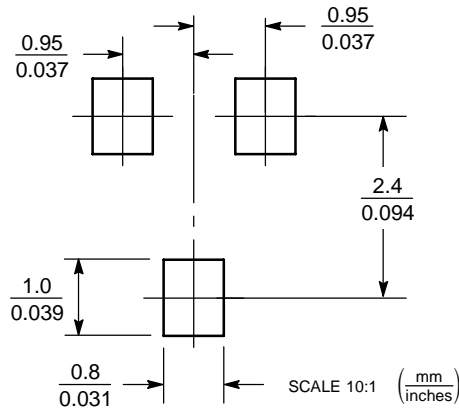
SC-59  
CASE 318D-04  
ISSUE F



- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: MILLIMETER.


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.70	3.10	0.1063	0.1220
B	1.30	1.70	0.0512	0.0669
C	1.00	1.30	0.0394	0.0511
D	0.35	0.50	0.0138	0.0196
G	1.70	2.10	0.0670	0.0826
H	0.013	0.100	0.0005	0.0040
J	0.09	0.18	0.0034	0.0070
K	0.20	0.60	0.0079	0.0236
L	1.25	1.65	0.0493	0.0649
S	2.50	3.00	0.0985	0.1181

### SOLDERING FOOTPRINT\*



SC-59

\*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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