

# MSD42SWT1

Preferred Device

## NPN Silicon General Purpose High Voltage Transistor

This NPN 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

- Pb-Free Package is Available

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

Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{(BR)CBO}$	300	Vdc
Collector-Emitter Voltage	$V_{(BR)CEO}$	300	Vdc
Emitter-Base Voltage	$V_{(BR)EBO}$	6.0	Vdc
Collector Current – Continuous	$I_C$	150	mAdc

### THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Power Dissipation (Note 1)	$P_D$	150	mW
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

### ELECTRICAL CHARACTERISTICS

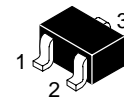
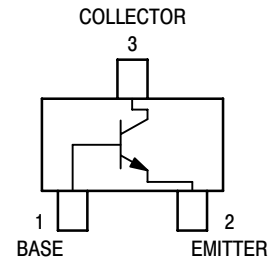
Characteristic	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage ( $I_C = 1.0 \text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	300	–	Vdc
Collector-Base Breakdown Voltage ( $I_C = 100 \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	300	–	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 100 \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	6.0	–	Vdc
Collector-Base Cutoff Current ( $V_{CB} = 300 \text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	–	0.1	$\mu\text{A}$
Emitter-Base Cutoff Current ( $V_{EB} = 6.0 \text{ Vdc}$ , $I_B = 0$ )	$I_{EBO}$	–	0.1	$\mu\text{A}$
DC Current Gain (Note 2) ( $V_{CE} = 10 \text{ Vdc}$ , $I_C = 1.0 \text{ mAdc}$ ) ( $V_{CE} = 10 \text{ Vdc}$ , $I_C = 30 \text{ mAdc}$ )	$h_{FE1}$ $h_{FE2}$	25 40	200 –	–
Collector-Emitter Saturation Voltage (Note 2) ( $I_C = 200 \text{ mAdc}$ , $I_B = 2.0 \text{ mAdc}$ )	$V_{CE(sat)}$	–	0.5	Vdc

- Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.
- Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , D.C.  $\leq 2\%$ .



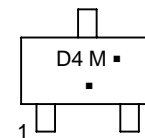
ON Semiconductor®

<http://onsemi.com>



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

### MARKING DIAGRAM



D4 = 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†
MSD42SWT1	SC-70/SOT-323	3000/Tape & Reel
MSD42SWT1G	SC-70/SOT-323 (Pb-Free)	3000/Tape & Reel

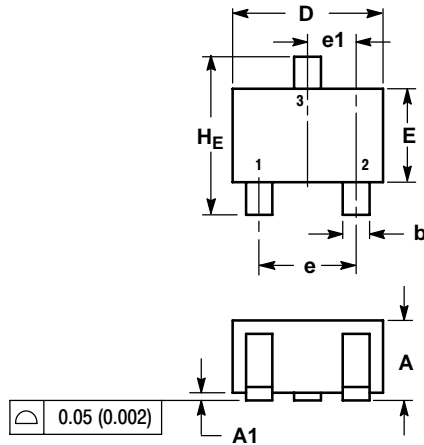
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

# MSD42SWT1

## PACKAGE DIMENSIONS

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



**NOTES:**

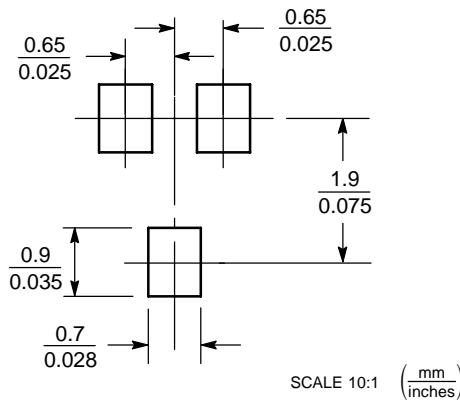
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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	0.7 REF			0.028 REF		
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	0.425 REF			0.017 REF		
HE	2.00	2.10	2.40	0.079	0.083	0.095

**STYLE 3:**

1. BASE
2. EMITTER
3. COLLECTOR

### SOLDERING FOOTPRINT\*



\*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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