

# MSD601-RT1, MSD601-ST1

Preferred Device

## NPN General Purpose Amplifier Transistors Surface Mount

### Features

- Pb-Free Packages are Available

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

Rating	Symbol	Value	Unit
Collector – Base Voltage	$V_{(BR)CBO}$	60	Vdc
Collector – Emitter Voltage	$V_{(BR)CEO}$	50	Vdc
Emitter – Base Voltage	$V_{(BR)EBO}$	7.0	Vdc
Collector Current – Continuous	$I_C$	100	mAdc
Collector Current – Peak	$I_{C(P)}$	200	mAdc

### THERMAL CHARACTERISTICS

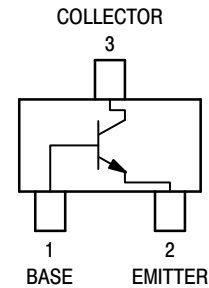
Characteristic	Symbol	Max	Unit
Power Dissipation	$P_D$	200	mW
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



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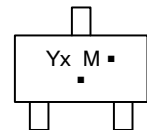
<http://onsemi.com>



### MARKING DIAGRAM



SC-59  
CASE 318D



- x = R for RT1  
S for ST1
- M = Date Code
- = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

# MSD601-RT1, MSD601-ST1

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

Characteristic	Symbol	Min	Max	Unit
Collector – Emitter Breakdown Voltage ( $I_C = 2.0 \text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	50	–	Vdc
Collector – Base Breakdown Voltage ( $I_C = 10 \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	60	–	Vdc
Emitter – Base Breakdown Voltage ( $I_E = 10 \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	7.0	–	Vdc
Collector – Base Cutoff Current ( $V_{CB} = 45 \text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	–	0.1	$\mu\text{Adc}$
Collector – Emitter Cutoff Current ( $V_{CE} = 10 \text{ Vdc}$ , $I_B = 0$ )	$I_{CEO}$	–	100	nAdc
DC Current Gain (Note 1) ( $V_{CE} = 10 \text{ Vdc}$ , $I_C = 2.0 \text{ mAdc}$ ) MSD601-RT1 MSD601-ST1 ( $V_{CE} = 2.0 \text{ Vdc}$ , $I_C = 100 \text{ mAdc}$ )	$h_{FE1}$  $h_{FE2}$	210 290 90	340 460 –	–
Collector – Emitter Saturation Voltage ( $I_C = 100 \text{ mAdc}$ , $I_B = 10 \text{ mAdc}$ )	$V_{CE(sat)}$	–	0.5	Vdc

1. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , D.C.  $\leq 2\%$ .

## ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MSD-601RT1	SC-59	3000 / Tape & Reel
MSD-601RT1G	SC-59 (Pb-Free)	3000 / Tape & Reel
MSD-601ST1	SC-59	3000 / Tape & Reel
MSD-601ST1G	SC-59 (Pb-Free)	3000 / Tape & Reel

<sup>†</sup>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.

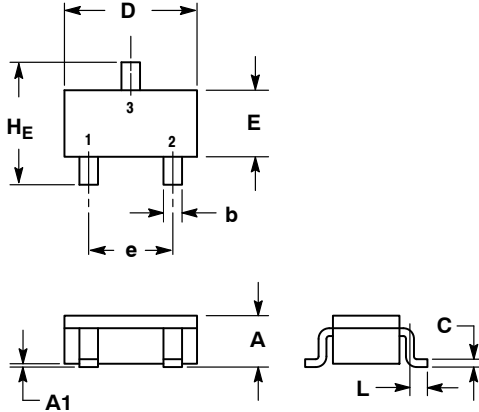
# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



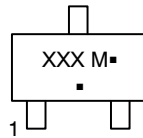
SCALE 2:1

SC-59  
CASE 318D-04  
ISSUE H

DATE 28 JUN 2012



### GENERIC MARKING DIAGRAM\*



- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package\*

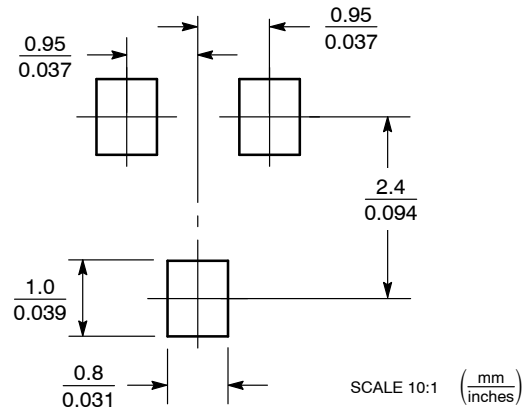
(\*Note: Microdot may be in either location)

\*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.

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

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.00	1.15	1.30	0.039	0.045	0.051
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.35	0.43	0.50	0.014	0.017	0.020
c	0.09	0.14	0.18	0.003	0.005	0.007
D	2.70	2.90	3.10	0.106	0.114	0.122
E	1.30	1.50	1.70	0.051	0.059	0.067
e	1.70	1.90	2.10	0.067	0.075	0.083
L	0.20	0.40	0.60	0.008	0.016	0.024
HE	2.50	2.80	3.00	0.099	0.110	0.118

### RECOMMENDED SOLDERING FOOTPRINT\*



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

- |                                                                 |                                                                |                                                                      |
|-----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------|
| <p>STYLE 1:<br/>PIN 1. BASE<br/>2. EMITTER<br/>3. COLLECTOR</p> | <p>STYLE 2:<br/>PIN 1. ANODE<br/>2. N.C.<br/>3. CATHODE</p>    | <p>STYLE 3:<br/>PIN 1. ANODE<br/>2. ANODE<br/>3. CATHODE</p>         |
| <p>STYLE 4:<br/>PIN 1. CATHODE<br/>2. N.C.<br/>3. ANODE</p>     | <p>STYLE 5:<br/>PIN 1. CATHODE<br/>2. CATHODE<br/>3. ANODE</p> | <p>STYLE 6:<br/>PIN 1. ANODE<br/>2. CATHODE<br/>3. ANODE/CATHODE</p> |

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DESCRIPTION:	SC-59	PAGE 1 OF 1

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