

# MSD601-RT1, MSD601-ST1

Preferred Device

## NPN General Purpose Amplifier Transistors Surface Mount

### Features

- Pb-Free Packages are Available

### MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

| Rating                         | Symbol               | Value | Unit |
|--------------------------------|----------------------|-------|------|
| Collector – Base Voltage       | V <sub>(BR)CBO</sub> | 60    | Vdc  |
| Collector – Emitter Voltage    | V <sub>(BR)CEO</sub> | 50    | Vdc  |
| Emitter – Base Voltage         | V <sub>(BR)EBO</sub> | 7.0   | Vdc  |
| Collector Current – Continuous | I <sub>C</sub>       | 100   | mAdc |
| Collector Current – Peak       | I <sub>C(P)</sub>    | 200   | mAdc |

### THERMAL CHARACTERISTICS

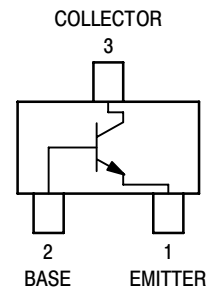
| Characteristic       | Symbol           | Max        | Unit |
|----------------------|------------------|------------|------|
| Power Dissipation    | P <sub>D</sub>   | 200        | mW   |
| Junction Temperature | T <sub>J</sub>   | 150        | °C   |
| Storage Temperature  | T <sub>stg</sub> | -55 ~ +150 | °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.



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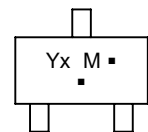
<http://onsemi.com>



### 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<sub>A</sub> = 25°C)

| Characteristic  | Symbol                               | Min              | Max             | Unit             |
|---|--------------------------------------|------------------|-----------------|------------------|
| Collector – Emitter Breakdown Voltage<br>(I <sub>C</sub> = 2.0 mA <sub>dc</sub> , I <sub>B</sub> = 0)   | V <sub>(BR)CEO</sub>                 | 50               | –               | V <sub>dc</sub>  |
| Collector – Base Breakdown Voltage<br>(I <sub>C</sub> = 10 μA <sub>dc</sub> , I <sub>E</sub> = 0)   | V <sub>(BR)CBO</sub>                 | 60               | –               | V <sub>dc</sub>  |
| Emitter – Base Breakdown Voltage<br>(I <sub>E</sub> = 10 μA <sub>dc</sub> , I <sub>C</sub> = 0)   | V <sub>(BR)EBO</sub>                 | 70               | –               | V <sub>dc</sub>  |
| Collector – Base Cutoff Current<br>(V <sub>CB</sub> = 45 V <sub>dc</sub> , I <sub>E</sub> = 0)  | I <sub>CBO</sub>                     | –                | 0.1             | μA <sub>dc</sub> |
| Collector – Emitter Cutoff Current<br>(V <sub>CE</sub> = 10 V <sub>dc</sub> , I <sub>B</sub> = 0)   | I <sub>CEO</sub>                     | –                | 100             | nA <sub>dc</sub> |
| DC Current Gain (Note 1)<br>(V <sub>CE</sub> = 10 V <sub>dc</sub> , I <sub>C</sub> = 2.0 mA <sub>dc</sub> )<br>MSD601–RT1<br>MSD601–ST1<br>(V <sub>CE</sub> = 2.0 V <sub>dc</sub> , I <sub>C</sub> = 100 mA <sub>dc</sub> ) | h <sub>FE1</sub><br>h <sub>FE2</sub> | 210<br>290<br>90 | 340<br>460<br>– | –                |
| Collector – Emitter Saturation Voltage<br>(I <sub>C</sub> = 100 mA <sub>dc</sub> , I <sub>B</sub> = 10 mA <sub>dc</sub> )   | V <sub>CE(sat)</sub>                 | –                | 0.5             | V <sub>dc</sub>  |

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

## ORDERING INFORMATION

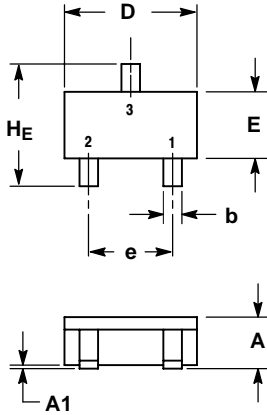
| Device      | Package            | Shipping†         |
|-------------|--------------------|-------------------|
| MSD–601RT1  | SC–59              | 3000 Units / Reel |
| MSD–601RT1G | SC–59<br>(Pb–Free) | 3000 Units / Reel |
| MSD–601ST1  | SC–59              | 3000 Units / Reel |
| MSD–601ST1G | SC–59<br>(Pb–Free) | 3000 Units / 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.

# MSD601-RT1, MSD601-ST1

## PACKAGE DIMENSIONS

SC-59  
CASE 318D-04  
ISSUE G



NOTES:

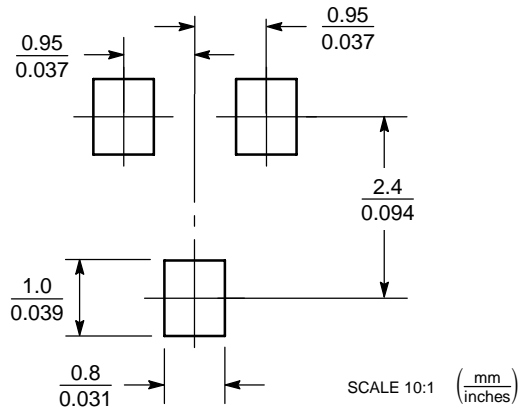
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

| 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 |

STYLE 1:

1. EMITTER
2. BASE
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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