

# 2SC4081RT1

## General Purpose Amplifier Transistor

### NPN Surface Mount

#### Features

- Moisture Sensitivity Level: 1
- Pb-Free Package is 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 to +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.

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

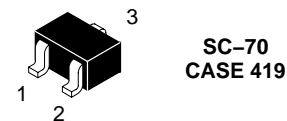
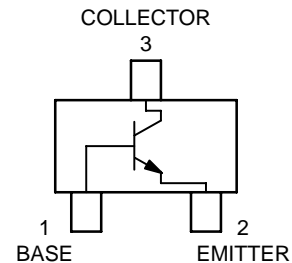
| Characteristic  | Symbol        | Min         | Max               | Unit                                       |
|---|---------------|-------------|-------------------|--|
| Collector-Emitter Breakdown Voltage<br>( $I_C = 2.0\text{ mA}$ , $I_B = 0$ )  | $V_{(BR)CEO}$ | 50          | –                 | Vdc  |
| Collector-Base Breakdown Voltage<br>( $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$ )   | $V_{(BR)CBO}$ | 60          | –                 | Vdc  |
| Emitter-Base Breakdown Voltage<br>( $I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$ )   | $V_{(BR)EBO}$ | 7.0         | –                 | Vdc  |
| Collector-Base Cutoff Current<br>( $V_{CB} = 60\text{ Vdc}$ , $I_E = 0$ )   | $I_{CBO}$     | –           | 0.1               | $\mu\text{Adc}$                            |
| Collector-Emitter Cutoff Current<br>( $V_{CE} = 10\text{ Vdc}$ , $I_B = 0$ )<br>( $V_{CE} = 30\text{ Vdc}$ , $I_B = 0$ )<br>( $V_{CE} = 30\text{ Vdc}$ , $I_B = 0$ , $T_A = 80^\circ\text{C}$ ) | $I_{CEO}$     | –<br>–<br>– | 0.1<br>2.0<br>1.0 | $\mu\text{Adc}$<br>$\mu\text{Adc}$<br>mAdc |
| DC Current Gain (Note 1)<br>( $V_{CE} = 6.0\text{ Vdc}$ , $I_C = 2.0\text{ mA}$ )   | $h_{FE}$      | 180         | 390               | –  |
| Collector-Emitter Saturation Voltage<br>( $I_C = 100\text{ mA}$ , $I_B = 10\text{ mA}$ )  | $V_{CE(sat)}$ | –           | 0.5               | Vdc  |

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

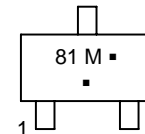


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#### MARKING DIAGRAM



81 = 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†        |
|-------------|--------------------|------------------|
| 2SC4081RT1  | SC-70              | 3000/Tape & Reel |
| 2SC4081RT1G | SC-70<br>(Pb-Free) | 3000/Tape & Reel |

\*The "T1" suffix refers to a 7 inch 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.



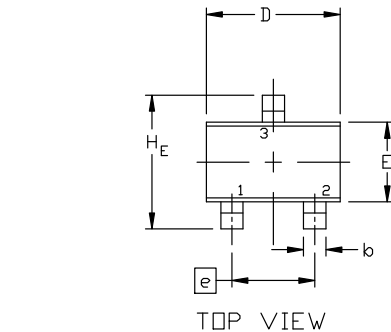
SCALE 4:1

**SC-70 (SOT-323)**  
**CASE 419**  
**ISSUE R**

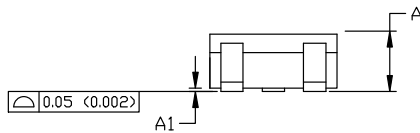
DATE 11 OCT 2022

## NOTES:

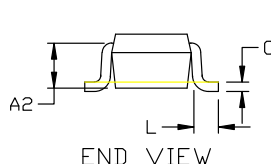
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH



TOP VIEW

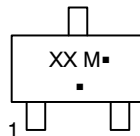


SIDE VIEW



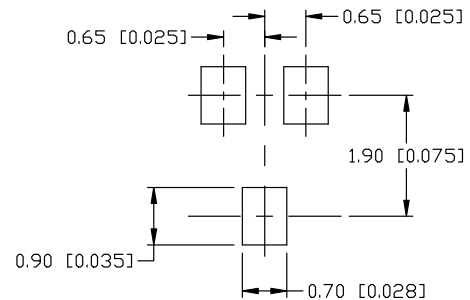
END VIEW

| 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             | 0.70 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        | 2.00 | 2.20 | 0.071     | 0.080 | 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 ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**SOLDERING FOOTPRINT**

STYLE 1:  
CANCELLED

STYLE 2:  
PIN 1. ANODE  
2. N.C.  
3. CATHODE

STYLE 3:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 4:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

STYLE 5:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 6:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

STYLE 7:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 8:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN

STYLE 9:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE-ANODE

STYLE 10:  
PIN 1. CATHODE  
2. ANODE  
3. ANODE-CATHODE

STYLE 11:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE

|                         |                        |  |
|-------------------------|------------------------|--|
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| <b>DESCRIPTION:</b>     | <b>SC-70 (SOT-323)</b> | <b>PAGE 1 OF 1</b>   |

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