

# MSC3930-BT1

Preferred Device

## NPN RF Amplifier Transistor

- Pb-Free Package is Available



ON Semiconductor®

<http://onsemi.com>

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

| Rating                         | Symbol        | Value | Unit |
|--------------------------------|---------------|-------|------|
| Collector-Base Voltage         | $V_{(BR)CBO}$ | 30    | Vdc  |
| Collector-Emitter Voltage      | $V_{(BR)CEO}$ | 20    | Vdc  |
| Emitter-Base Voltage           | $V_{(BR)EBO}$ | 5.0   | Vdc  |
| Collector Current — Continuous | $I_C$         | 30    | mAdc |

### THERMAL CHARACTERISTICS

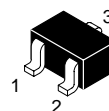
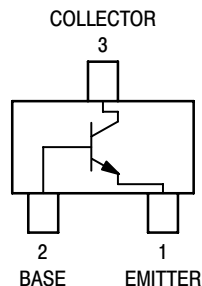
| Characteristic       | Symbol    | Max        | Unit             |
|----------------------|-----------|------------|------------------|
| Power Dissipation    | $P_D$     | 200        | mW               |
| Junction Temperature | $T_J$     | 150        | $^\circ\text{C}$ |
| Storage Temperature  |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

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

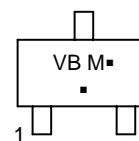
| Characteristic                                                                                                   | Symbol    | Min | Max | Unit            |
|------------------------------------------------------------------------------------------------------------------|-----------|-----|-----|-----------------|
| Collector-Base Cutoff Current<br>( $V_{CB} = 10\text{ Vdc}$ , $I_E = 0$ )                                        | $I_{CBO}$ | —   | 0.1 | $\mu\text{Adc}$ |
| DC Current Gain <sup>(1)</sup><br>( $V_{CB} = 10\text{ Vdc}$ , $I_C = -1.0\text{ mAdc}$ )                        | $h_{FE}$  | 70  | 140 | —               |
| Collector-Gain — Bandwidth<br>Product<br>( $V_{CB} = 10\text{ Vdc}$ , $I_E = -1.0\text{ mAdc}$ )                 | $f_T$     | 150 | —   | MHz             |
| Reverse Transistor Capacitance<br>( $V_{CE} = 10\text{ Vdc}$ , $I_C = 1.0\text{ mAdc}$ , $f = 10.7\text{ MHz}$ ) | $C_{re}$  | —   | 1.5 | pF              |

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



SOT-323/SC-70  
CASE 419  
STYLE 3

### MARKING DIAGRAM



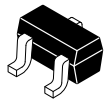
VB = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device       | Package            | Shipping†        |
|--------------|--------------------|------------------|
| MSC3930-BT1  | SC-70              | 3000/Tape & Reel |
| MSC3930-BT1G | SC-70<br>(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.



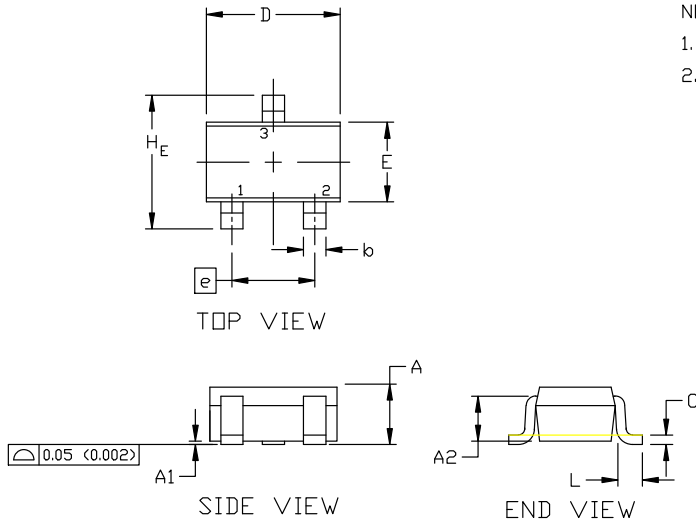
SCALE 4:1

### SC-70 (SOT-323)

#### CASE 419

#### ISSUE R

DATE 11 OCT 2022

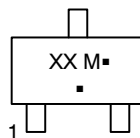


#### NOTES:

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

| 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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| DESCRIPTION:     | SC-70 (SOT-323) | PAGE 1 OF 1                                                                                                                                                                         |

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