

# MSC2712GT1G, MSC2712YT1G

## General Purpose Amplifier Transistor

### NPN Surface Mount

#### Features

- Moisture Sensitivity Level: 1
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### 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 those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



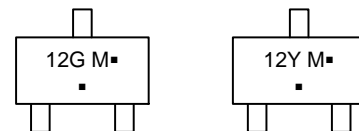
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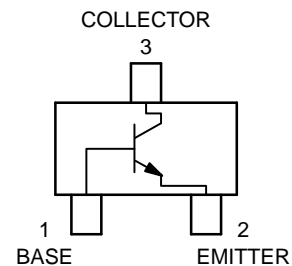


SC-59  
CASE 318D  
STYLE 1

#### MARKING DIAGRAMS



12M, 12Y = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)



#### ORDERING INFORMATION

| Device      | Package            | Shipping†          |
|-------------|--------------------|--------------------|
| MSC2712GT1G | SC-59<br>(Pb-Free) | 3000 / Tape & Reel |
| MSC2712YT1G | SC-59<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.

# MSC2712GT1G, MSC2712YT1G

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

| Characteristic  | Symbol               | Min         | Max               | Unit                 |
|---|----------------------|-------------|-------------------|----------------------|
| Collector–Emitter Breakdown Voltage<br>(I <sub>C</sub> = 2.0 mA, I <sub>B</sub> = 0)  | V <sub>(BR)CEO</sub> | 50          | –                 | Vdc                  |
| Collector–Base Breakdown Voltage<br>(I <sub>C</sub> = 10 μA, I <sub>E</sub> = 0)  | V <sub>(BR)CBO</sub> | 60          | –                 | Vdc                  |
| Emitter–Base Breakdown Voltage<br>(I <sub>E</sub> = 10 μA, I <sub>C</sub> = 0)  | V <sub>(BR)EBO</sub> | 7.0         | –                 | Vdc                  |
| Collector–Base Cutoff Current<br>(V <sub>CB</sub> = 45 Vdc, I <sub>E</sub> = 0)   | I <sub>CBO</sub>     | –           | 0.1               | μAdc                 |
| Collector–Emitter Cutoff Current<br>(V <sub>CE</sub> = 10 Vdc, I <sub>B</sub> = 0)<br>(V <sub>CE</sub> = 30 Vdc, I <sub>B</sub> = 0)<br>(V <sub>CE</sub> = 30 Vdc, I <sub>B</sub> = 0, T <sub>A</sub> = 80°C) | I <sub>CEO</sub>     | –<br>–<br>– | 0.1<br>2.0<br>1.0 | μAdc<br>μAdc<br>mAdc |
| DC Current Gain (Note 1)<br>(V <sub>CE</sub> = 6.0 Vdc, I <sub>C</sub> = 2.0 mA)  | h <sub>FE</sub>      |             |                   | –                    |
|   |                      | 200<br>120  | 400<br>240        |                      |
| Collector–Emitter Saturation Voltage<br>(I <sub>C</sub> = 100 mA, I <sub>B</sub> = 10 mA)   | V <sub>CE(sat)</sub> | –           | 0.5               | Vdc                  |
| Current – Gain – Bandwidth Product<br>(I <sub>C</sub> = 1 mA, V <sub>CE</sub> = 10.0 V, f = 10 MHz)   | f <sub>T</sub>       | 50          | –                 | MHz                  |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

TYPICAL ELECTRICAL CHARACTERISTICS

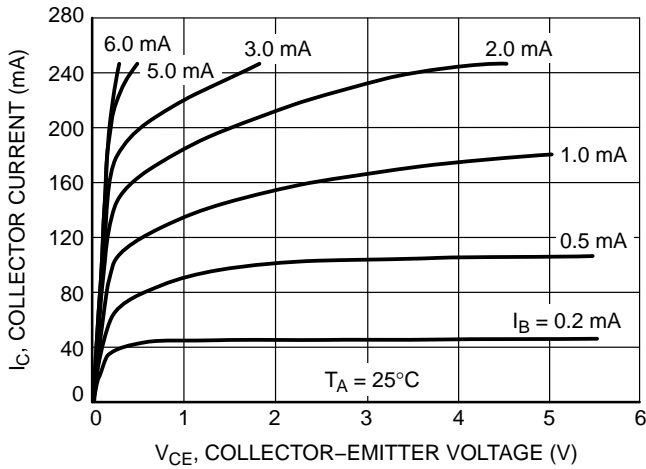


Figure 1. Collector Saturation Voltage

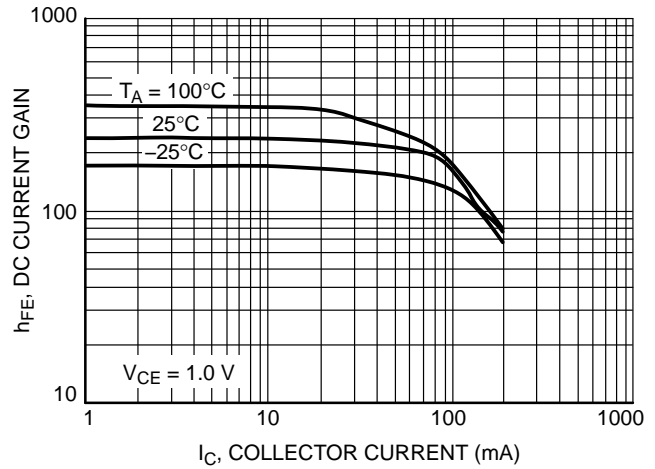


Figure 2. DC Current Gain

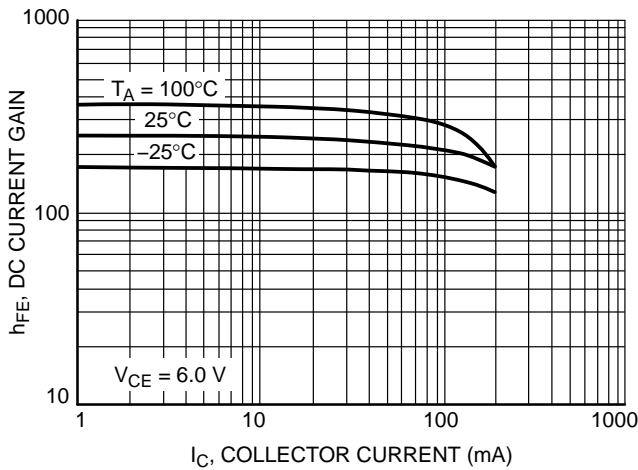


Figure 3. DC Current Gain

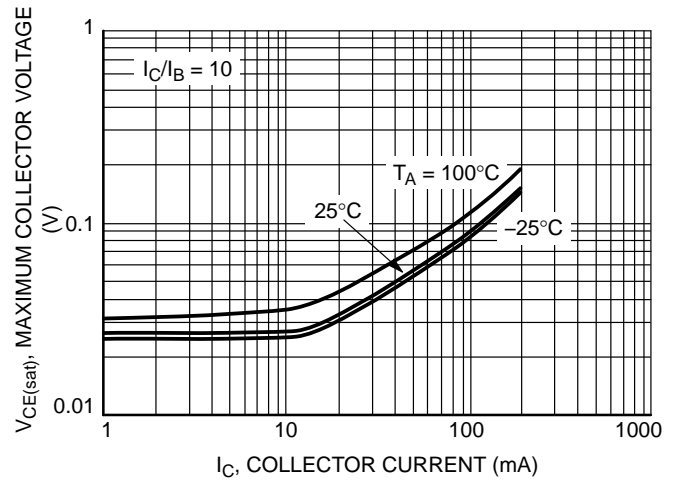


Figure 4.  $V_{CE(sat)}$  versus  $I_C$

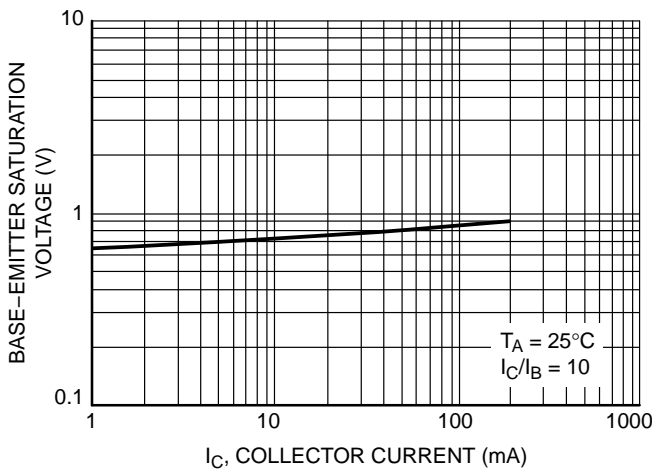


Figure 5.  $V_{BE(sat)}$  versus  $I_C$

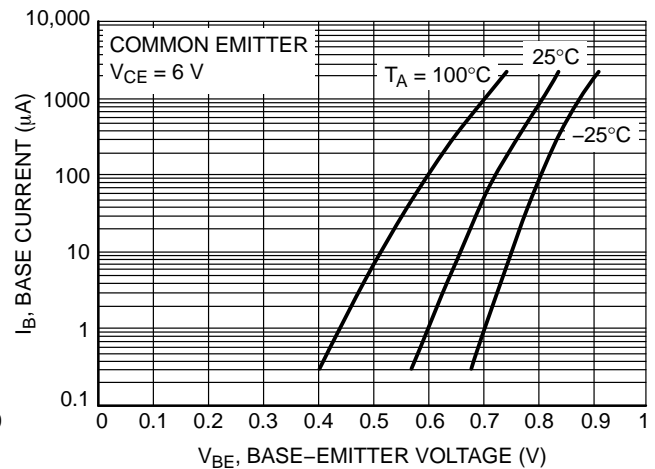


Figure 6. Base-Emitter Voltage

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## TYPICAL ELECTRICAL CHARACTERISTICS

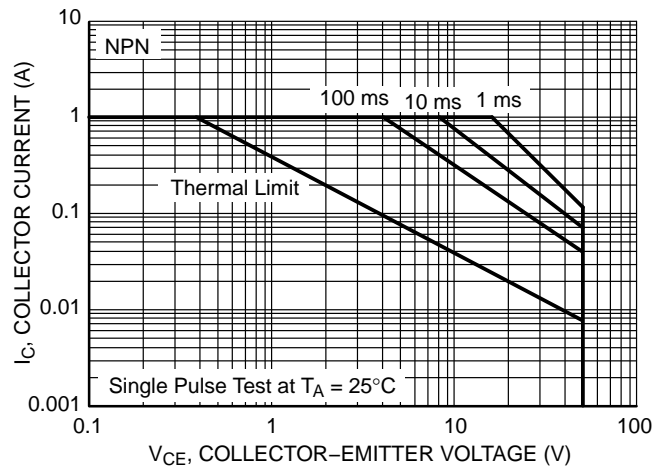


Figure 7. NPN Safe Operating Area

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

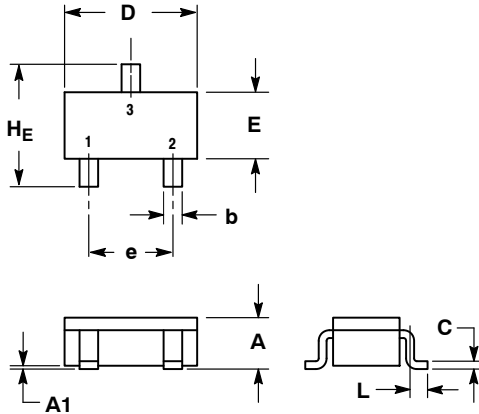
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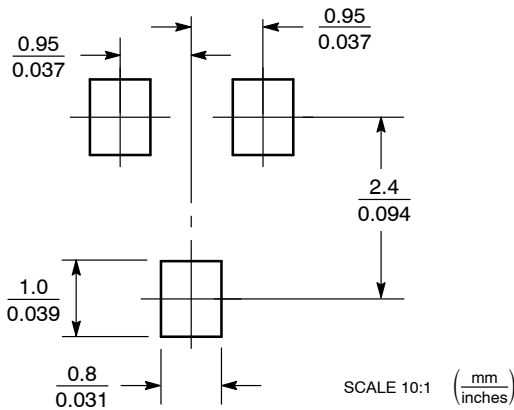
SC-59  
CASE 318D-04  
ISSUE H

DATE 28 JUN 2012

SCALE 2:1



### SOLDERING FOOTPRINT\*

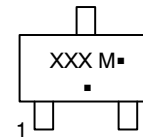


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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 |

### 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.

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

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

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

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

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

STYLE 6: PIN 1. ANODE  
2. CATHODE  
3. ANODE/CATHODE

|                  |             |  |
|------------------|-------------|--|
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