

MSD42T1G

NPN Silicon General Purpose High Voltage Transistors

This NPN Silicon Planar Transistor is designed for general purpose amplifier applications. This device is housed in the SC-59 package which is designed for low power surface mount applications.

Features

- 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 | $V_{(BR)CBO}$ | 300 | Vdc |
| Collector-Emitter Voltage | $V_{(BR)CEO}$ | 300 | Vdc |
| Emitter-Base Voltage | $V_{(BR)EBO}$ | 6.0 | Vdc |
| Collector Current – Continuous | I_C | 150 | mAdc |

THERMAL CHARACTERISTICS

| Rating | Symbol | Max | Unit |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 1) | P_D | 450 | mW |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 274 | $^\circ\text{C/W}$ |
| Junction and Storage Temperature Range | T_J, 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

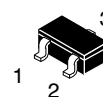
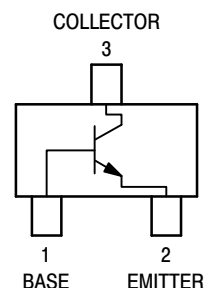
| Characteristic | Symbol | Min | Max | Unit |
|---|------------------------|----------|--------|---------------|
| Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ mAdc}, I_B = 0$) | $V_{(BR)CEO}$ | 300 | - | Vdc |
| Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$) | $V_{(BR)CBO}$ | 300 | - | Vdc |
| Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}, I_C = 0$) | $V_{(BR)EBO}$ | 6.0 | - | Vdc |
| Collector-Base Cutoff Current ($V_{CB} = 200 \text{ Vdc}, I_E = 0$) | I_{CBO} | - | 0.1 | μA |
| Emitter-Base Cutoff Current ($V_{EB} = 6.0 \text{ Vdc}, I_B = 0$) | I_{EBO} | - | 0.1 | μA |
| DC Current Gain (Note 2) ($V_{CE} = 10 \text{ Vdc}, I_C = 1.0 \text{ mAdc}$) ($V_{CE} = 10 \text{ Vdc}, I_C = 30 \text{ mAdc}$) | h_{FE1} h_{FE2} | 25 40 | - - | - |
| Collector-Emitter Saturation Voltage (Note 2) ($I_C = 20 \text{ mAdc}, I_B = 2.0 \text{ mAdc}$) | $V_{CE(sat)}$ | - | 0.5 | Vdc |

1. FR-4 @ 10 mm², 1 oz. Copper traces.
2. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, D.C. $\leq 2\%$.



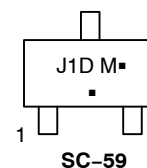
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<http://onsemi.com>



SC-59
CASE 318D
STYLE 1

MARKING DIAGRAM



J1D = Specific Device Code
M = Date Code
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|----------|--------------------|--------------------|
| MSD42T1G | SC-59 (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.

MSD42T1G

TYPICAL CHARACTERISTICS

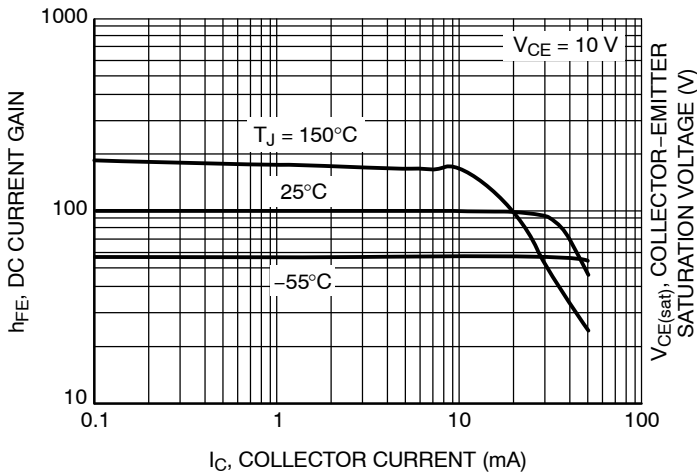


Figure 1. DC Current Gain

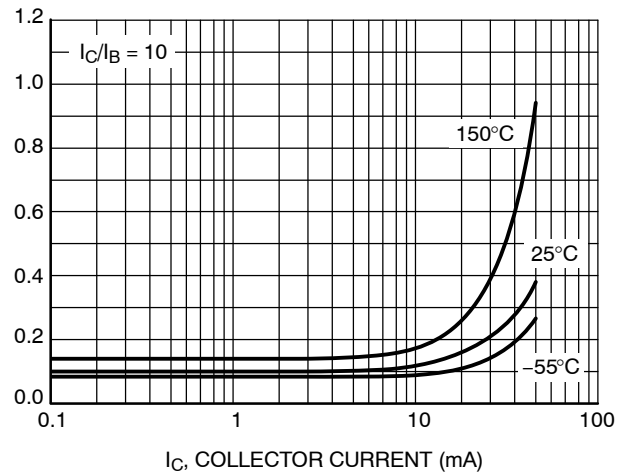


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

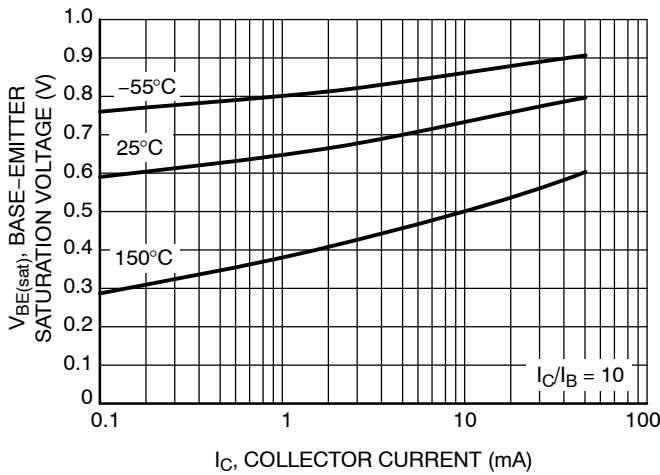


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

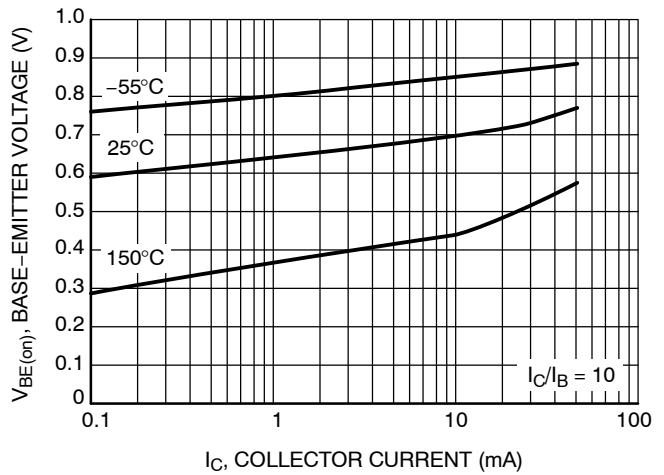


Figure 4. Base-Emitter On Voltage vs. Collector Current

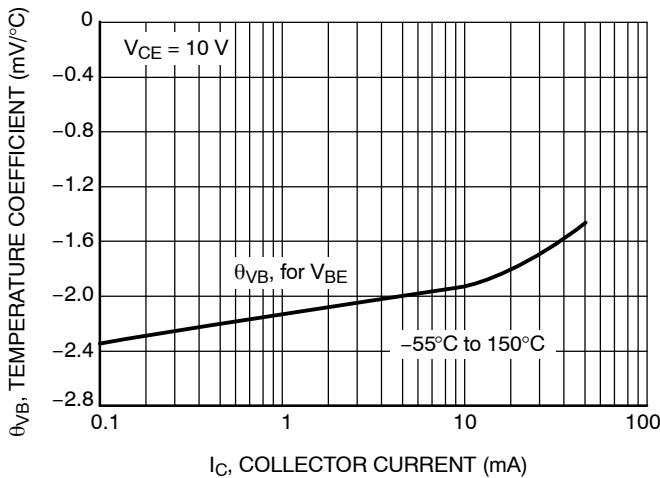


Figure 5. Base-Emitter Temperature Coefficient

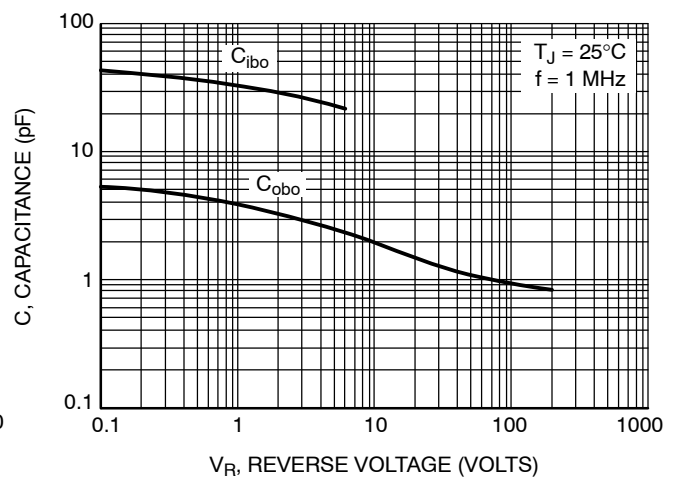


Figure 6. Capacitance

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TYPICAL CHARACTERISTICS

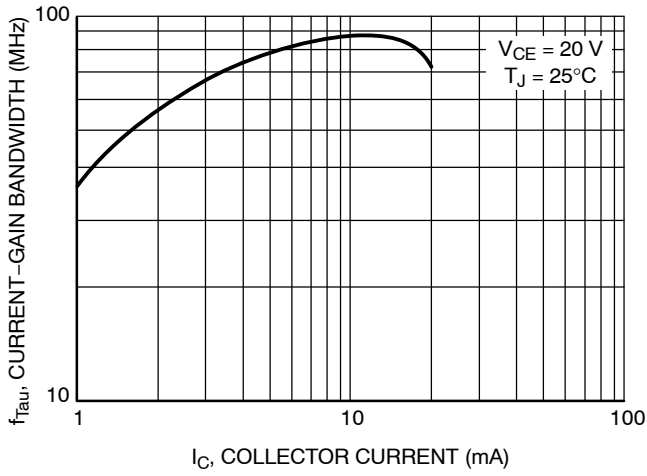


Figure 7. Current-Gain — Bandwidth Product

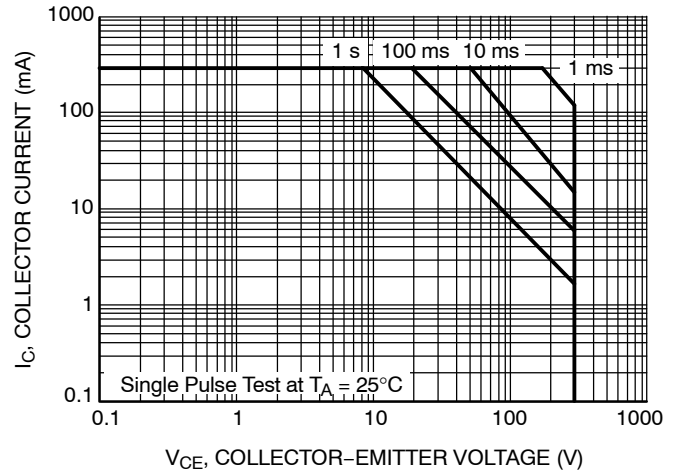


Figure 8. Safe Operating Area

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

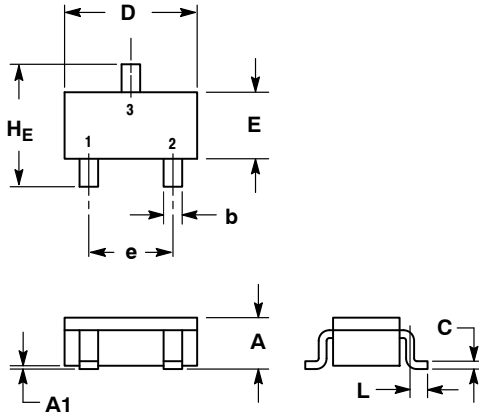
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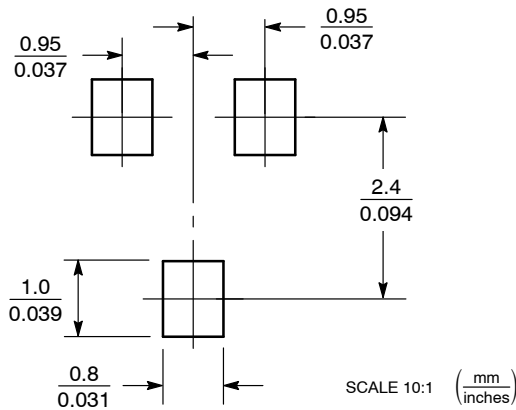
SC-59
CASE 318D-04
ISSUE H

DATE 28 JUN 2012

SCALE 2:1



SOLDERING FOOTPRINT*

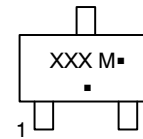


*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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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| DESCRIPTION: | SC-59 | PAGE 1 OF 1 |

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