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

Rating	Symbol	Value	Unit
Collector-Base Voltage	V <sub>(BR)CBO</sub>	300	Vdc
Collector-Emitter Voltage	V <sub>(BR)CEO</sub>	300	Vdc
Emitter-Base Voltage	V <sub>(BR)EBO</sub>	6.0	Vdc
Collector Current – Continuous	Ι <sub>C</sub>	150	mAdc

#### THERMAL CHARACTERISTICS

Rating	Symbol	Мах	Unit
Power Dissipation (Note 1)	PD	450	mW
Thermal Resistance, Junction-to- Ambient	$R_{\theta JA}$	274	°C/W
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°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 <sub>(BR)CEO</sub>	300	-	Vdc
Collector-Base Breakdown Voltage $(I_C = 100 \ \mu Adc, I_E = 0)$	V <sub>(BR)CBO</sub>	300	-	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 100 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)EBO</sub>	6.0	-	Vdc
Collector-Base Cutoff Current (V <sub>CB</sub> = 200 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-	0.1	μA
Emitter–Base Cutoff Current (V <sub>EB</sub> = 6.0 Vdc, I <sub>B</sub> = 0)	I <sub>EBO</sub>	-	0.1	μA
DC Current Gain (Note 2) ( $V_{CE}$ = 10 Vdc, I <sub>C</sub> = 1.0 mAdc) ( $V_{CE}$ = 10 Vdc, I <sub>C</sub> = 30 mAdc)	h <sub>FE1</sub> h <sub>FE2</sub>	25 40	-	-
Collector-Emitter Saturation Voltage (Note 2) ( $I_C$ = 20 mAdc, $I_B$ = 2.0 mAdc)	V <sub>CE(sat)</sub>	-	0.5	Vdc

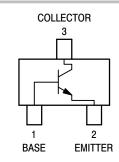
1. FR-4 @ 10 mm<sup>2</sup>, 1 oz. Copper traces.

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



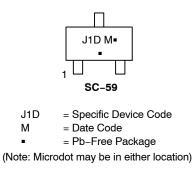
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### MARKING DIAGRAM



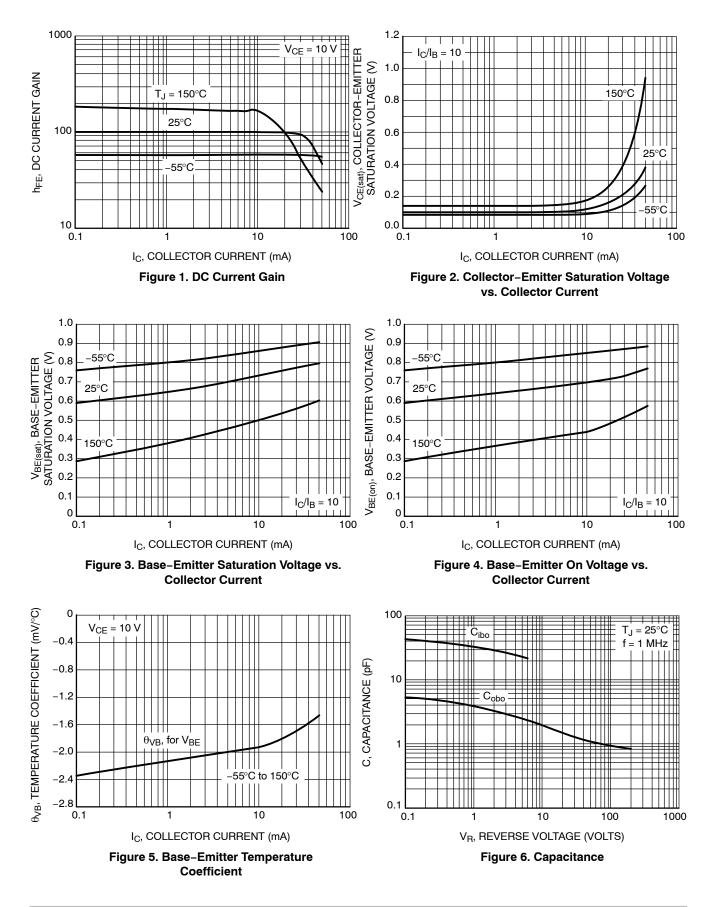
### **ORDERING INFORMATION**

Device	Package	Shipping <sup>†</sup>
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.

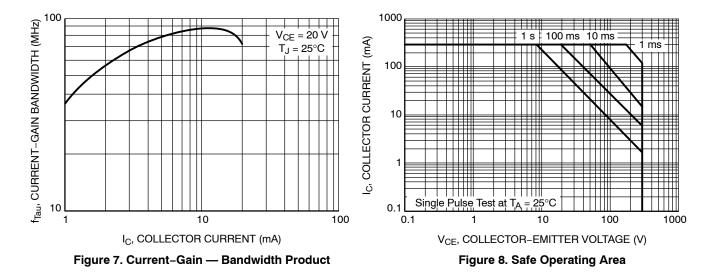
### MSD42T1G

### **TYPICAL CHARACTERISTICS**



# MSD42T1G

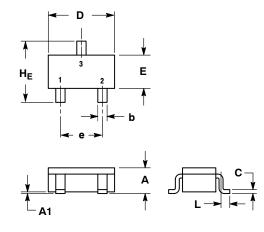
### **TYPICAL CHARACTERISTICS**



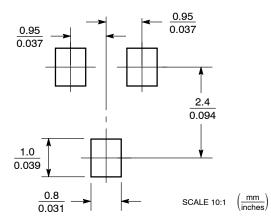




SCALE 2:1



### **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.

SC-59 CASE 318D-04 ISSUE H

DATE 28 JUN 2012

NOTES:

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

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
Α	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
С	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**



= Specific Device Code XXX Μ = 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:	STYLE 2:	STYLE 3:
PIN 1. BASE	PIN 1. ANODE	PIN 1. ANODE
2. EMITTER	2. N.C.	2. ANODE
3. COLLECTOR	3. CATHODE	3. CATHODE
Style 4:	Style 5:	STYLE 6:
Pin 1. Cathode	Pin 1. Cathode	PIN 1. ANODE
2. n.C.	2. Cathode	2. CATHODE
3. Anode	3. Anode	3. ANODE/CATHODE

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