MSD42WT1G, NSVMSD42WT1G

NPN High Voltage Transistors

This NPN Silicon Planar Transistor is designed for general purpose amplifier applications. This device is housed in the SC-70/SOT-323 package which is designed for low power surface mount applications.

Features

- These Devices are Pb−Free, Halogen Free and are RoHS Compliant
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{(BR)CBO}$	300	V
Collector-Emitter Voltage	$V_{(BR)CEO}$	300	V
Emitter-Base Voltage	$V_{(BR)EBO}$	6.0	V
Collector Current − Continuous	I_C	150	mA

THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Power Dissipation (Note 1)	P_D	450	mW
Thermal Resistance, Junction−to−Ambient (Note 1)	$R_{\theta JA}$	274	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−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 mA, I_B = 0)	$V_{(BR)CEO}$	300	−	V
Collector-Base Breakdown Voltage (I_C = 100 μA, I_E = 0)	$V_{(BR)CBO}$	300	−	V
Emitter-Base Breakdown Voltage (I_E = 100 μA, I_E = 0)	$V_{(BR)EBO}$	6.0	−	V
Collector-Base Cutoff Current (V_{CB} = 200 V, I_E = 0)	I_{CBO}	−	0.1	μA
Emitter−Base Cutoff Current (V_{EB} = 6.0 V, I_B = 0)	I_{EBO}	−	0.1	μA
DC Current Gain (Note 2) (V_{CE} = 10 V, I_C = 1.0 mA) (V_{CE} = 10 V, I_C = 30 mA)	h_{FE1} h_{FE2}	25 40	− −	−
Collector-Emitter Saturation Voltage (Note 2) (I_C = 20 mA, I_B = 2.0 mA)	$V_{CE(sat)}$	−	0.5	V

1. FR-4 @ 10 mm², 1 oz. Copper traces.
2. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

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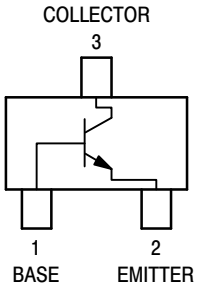
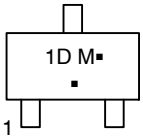


SC−70 (SOT−323)
CASE 419
STYLE 3

MARKING DIAGRAM



SC−70

1D = Specific Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MSD42WT1G	SC−70 (Pb−Free)	3000 / Tape & Reel
NSVMSD42WT1G	SC−70 (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.

TYPICAL CHARACTERISTICS

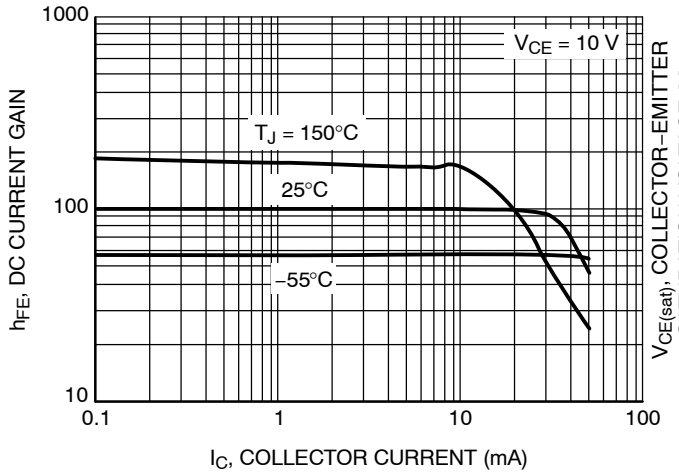


Figure 1. DC Current Gain

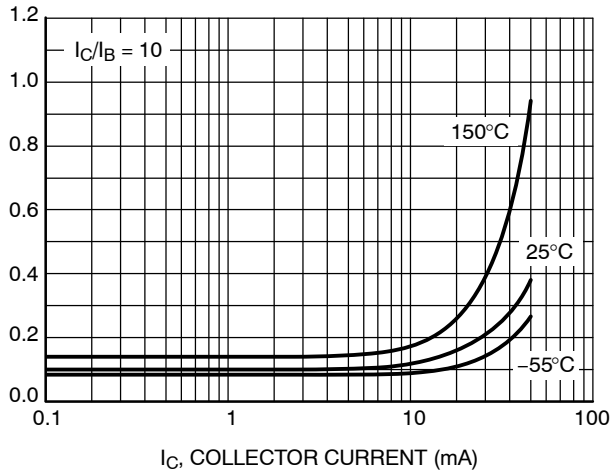


Figure 2. Collector−Emitter Saturation Voltage vs. Collector Current

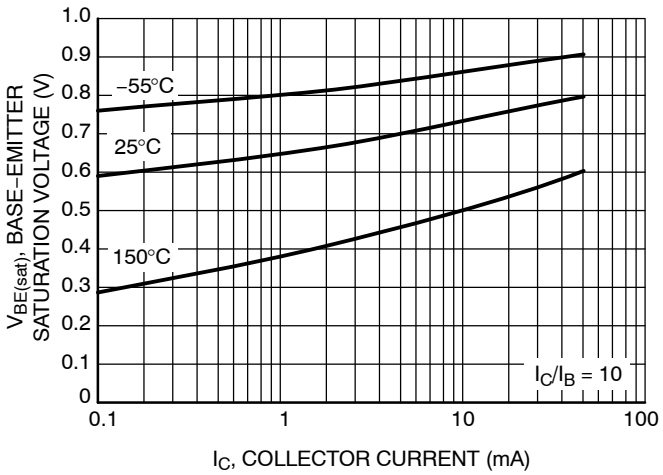


Figure 3. Base−Emitter Saturation Voltage vs. Collector Current

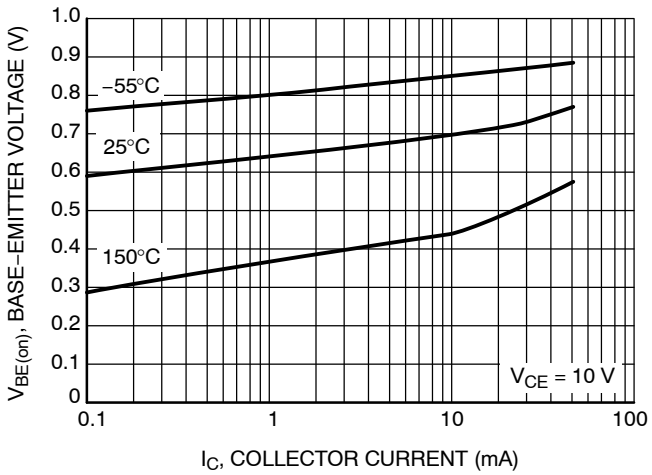


Figure 4. Base−Emitter On Voltage vs. Collector Current

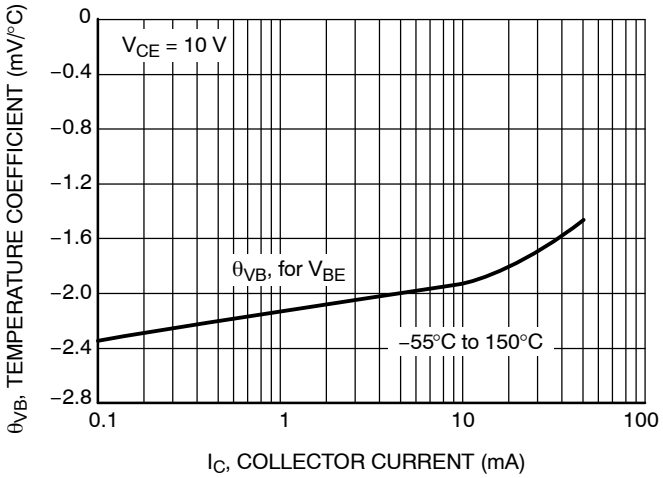


Figure 5. Base−Emitter Temperature Coefficient

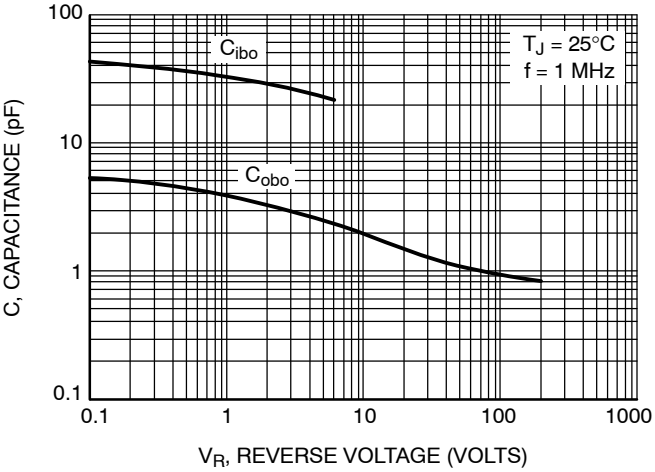


Figure 6. Capacitance

TYPICAL CHARACTERISTICS

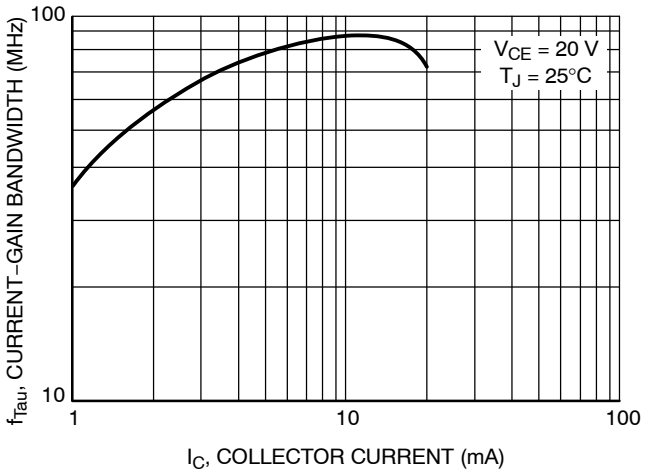


Figure 7. Current−Gain — Bandwidth Product

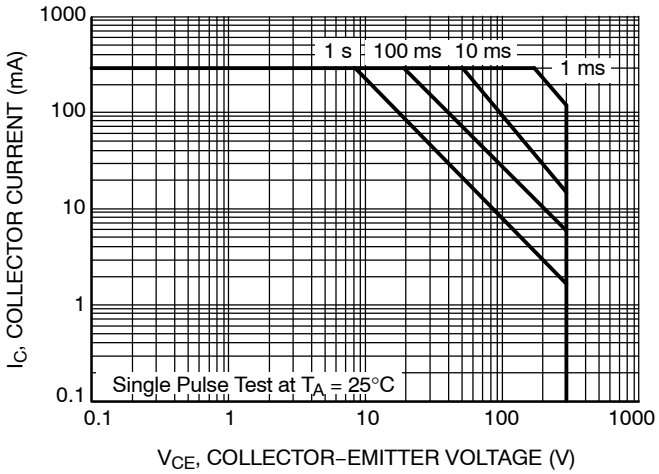


Figure 8. Safe Operating Area

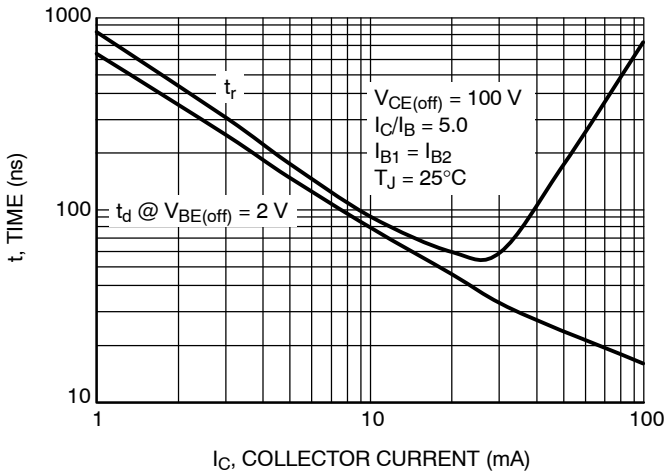


Figure 9. Turn−On Time

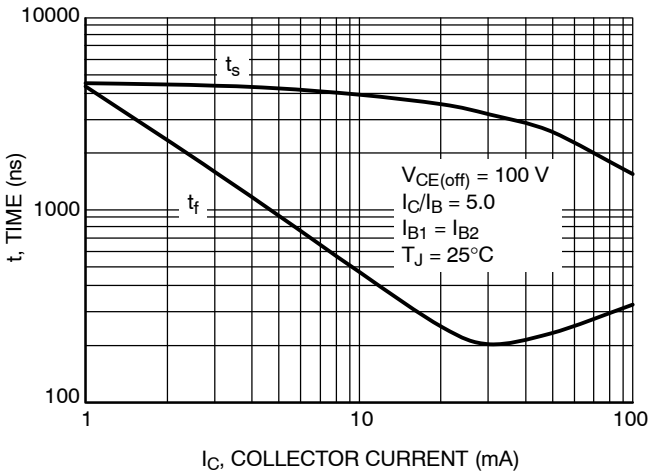
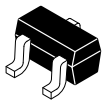


Figure 10. Turn−Off Time

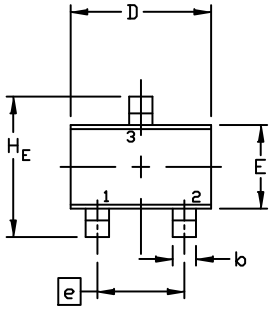
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

SC−70 (SOT−323)
CASE 419
ISSUE P

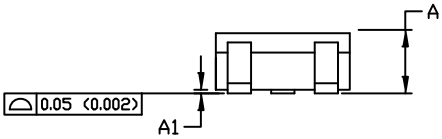
DATE 07 OCT 2021



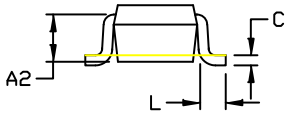
SCALE 4:1



TOP VIEW



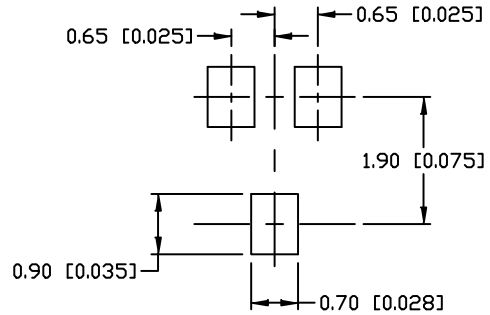
SIDE VIEW



END VIEW

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

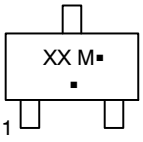
	MILLIMETERS			INCHES		
DIM	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.70 REF			0.028 BSC		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	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_E	2.00	2.10	2.40	0.079	0.083	0.095



* 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

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.

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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