

MMBT2907AWT1G, NSVMMBT2907AWT1G

General Purpose Transistor

PNP Silicon

These transistors are designed for general purpose amplifier applications. They are 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/BFR 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

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	-60	Vdc
Collector – Base Voltage	V_{CBO}	-60	Vdc
Emitter – Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current – Continuous	I_C	-600	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1) $T_A = 25^\circ\text{C}$	P_D	150	mW
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	833	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

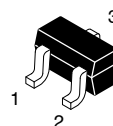
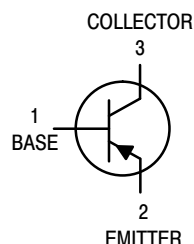
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 1.0 x 0.75 x 0.062 in.



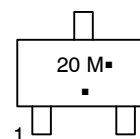
ON Semiconductor®

<http://onsemi.com>



SC-70/SOT-323
CASE 419-04
STYLE 3

MARKING DIAGRAM



20 = Specific Device Code
M = Date Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
MMBT2907AWT1G	SC-70 (Pb-Free)	3000 Tape & Reel
NSVMMBT2907AWT1G	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.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage (Note 2) (I _C = –10 mA _{dc} , I _B = 0)	V _{(BR)CEO}	–60	–	V _{dc}
Collector–Base Breakdown Voltage (I _C = –10 mA _{dc} , I _E = 0)	V _{(BR)CBO}	–60	–	V _{dc}
Emitter–Base Breakdown Voltage (I _E = –10 μA _{dc} , I _C = 0)	V _{(BR)EBO}	–5.0	–	V _{dc}
Base Cutoff Current (V _{CE} = –30 V _{dc} , V _{EB(off)} = –0.5 V _{dc})	I _{BL}	–	–50	nA _{dc}
Collector Cutoff Current (V _{CE} = –30 V _{dc} , V _{EB(off)} = –0.5 V _{dc})	I _{CEx}	–	–50	nA _{dc}

ON CHARACTERISTICS⁽³⁾

DC Current Gain (Note 2) (I _C = –0.1 mA _{dc} , V _{CE} = –10 V _{dc}) (I _C = –1.0 mA _{dc} , V _{CE} = –10 V _{dc}) (I _C = –10 mA _{dc} , V _{CE} = –10 V _{dc}) (I _C = –150 mA _{dc} , V _{CE} = –10 V _{dc}) (I _C = –500 mA _{dc} , V _{CE} = –10 V _{dc})	H _{FE}	75 100 100 100 50	– – – – –	–
Collector–Emitter Saturation Voltage (Note 2) (I _C = –150 mA _{dc} , I _B = –15 mA _{dc}) (I _C = –500 mA _{dc} , I _B = –50 mA _{dc})	V _{CE(sat)}	– –	–0.4 –1.6	V _{dc}
Base–Emitter Saturation Voltage (Note 2) (I _C = –150 mA _{dc} , I _B = –15 mA _{dc}) (I _C = –500 mA _{dc} , I _B = –50 mA _{dc})	V _{BE(sat)}	– –	–1.3 –2.6	V _{dc}

SMALL–SIGNAL CHARACTERISTICS

Current–Gain – Bandwidth Product (I _C = –50 mA _{dc} , V _{CE} = 20 V _{dc} , f = 100 MHz)	f _T	200	–	MHz
Output Capacitance (V _{CB} = –10 V _{dc} , I _E = 0, f = 1.0 MHz)	C _{obo}	–	8.0	pF
Input Capacitance (V _{EB} = –2.0 V _{dc} , I _C = 0, f = 1.0 MHz)	C _{ibo}	–	30	pF

SWITCHING CHARACTERISTICS

Turn–On Time	(V _{CC} = –30 V _{dc} , I _C = –150 mA _{dc} , I _{B1} = –15 mA _{dc})	t _{on}	–	45	ns
Delay Time		t _d	–	10	
Rise Time		t _r	–	40	
Storage Time	(V _{CC} = –6.0 V _{dc} , I _C = –150 mA _{dc} , I _{B1} = I _{B2} = 15 mA _{dc})	t _s	–	80	
Fall Time		t _f	–	30	
Turn–Off Time		t _{off}	–	100	

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

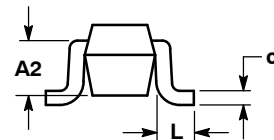
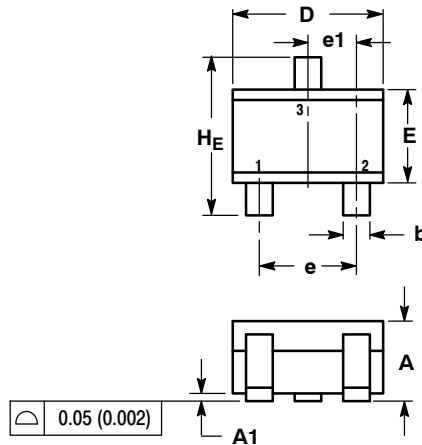
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PACKAGE DIMENSIONS

SC-70 (SOT-323)

CASE 419-04

ISSUE N



NOTES:

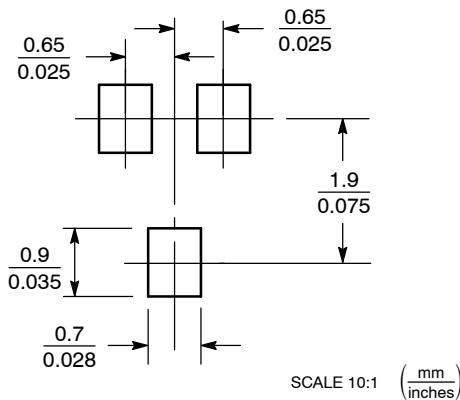
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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 REF		
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
HE	2.00	2.10	2.40	0.079	0.083	0.095

STYLE 3:

- PIN 1. BASE
2. EMITTER
3. COLLECTOR

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.

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