

# MMBT2907AWT1

Preferred Device

## 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

- Pb-Free Package is Available

#### 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	$^\circ\text{C}$

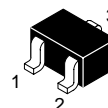
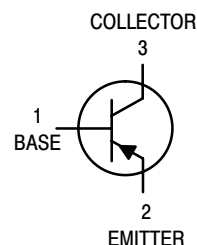
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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



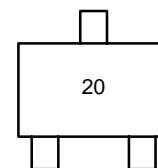
ON Semiconductor®

<http://onsemi.com>



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

#### MARKING DIAGRAM



20 = Specific Device Code

#### ORDERING INFORMATION

Device	Package	Shipping†
MMBT2907AWT1	SC-70	3000 Tape & Reel
MMBT2907AWT1G	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.

Preferred devices are recommended choices for future use and best overall value.

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

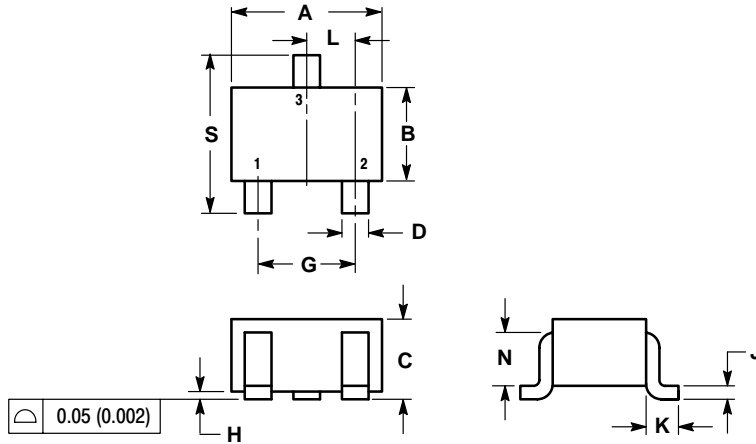
Characteristic	Symbol	Min	Max	Unit	
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Breakdown Voltage (Note 2) (I <sub>C</sub> = –10 mA <sub>dc</sub> , I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	–60	–	V <sub>dc</sub>	
Collector–Base Breakdown Voltage (I <sub>C</sub> = –10 mA <sub>dc</sub> , I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	–60	–	V <sub>dc</sub>	
Emitter–Base Breakdown Voltage (I <sub>E</sub> = –10 μA <sub>dc</sub> , I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	–5.0	–	V <sub>dc</sub>	
Base Cutoff Current (V <sub>CE</sub> = –30 V <sub>dc</sub> , V <sub>EB(off)</sub> = –0.5 V <sub>dc</sub> )	I <sub>BL</sub>	–	–50	nA <sub>dc</sub>	
Collector Cutoff Current (V <sub>CE</sub> = –30 V <sub>dc</sub> , V <sub>EB(off)</sub> = –0.5 V <sub>dc</sub> )	I <sub>CEX</sub>	–	–50	nA <sub>dc</sub>	
<b>ON CHARACTERISTICS<sup>(3)</sup></b>					
DC Current Gain (Note 2) (I <sub>C</sub> = –0.1 mA <sub>dc</sub> , V <sub>CE</sub> = –10 V <sub>dc</sub> ) (I <sub>C</sub> = –1.0 mA <sub>dc</sub> , V <sub>CE</sub> = –10 V <sub>dc</sub> ) (I <sub>C</sub> = –10 mA <sub>dc</sub> , V <sub>CE</sub> = –10 V <sub>dc</sub> ) (I <sub>C</sub> = –150 mA <sub>dc</sub> , V <sub>CE</sub> = –10 V <sub>dc</sub> ) (I <sub>C</sub> = –500 mA <sub>dc</sub> , V <sub>CE</sub> = –10 V <sub>dc</sub> )	H <sub>FE</sub>	75 100 100 100 50	– – – – –	–	
Collector–Emitter Saturation Voltage (Note 2) (I <sub>C</sub> = –150 mA <sub>dc</sub> , I <sub>B</sub> = –15 mA <sub>dc</sub> ) (I <sub>C</sub> = –500 mA <sub>dc</sub> , I <sub>B</sub> = –50 mA <sub>dc</sub> )	V <sub>CE(sat)</sub>	– –	–0.4 –1.6	V <sub>dc</sub>	
Base–Emitter Saturation Voltage (Note 2) (I <sub>C</sub> = –150 mA <sub>dc</sub> , I <sub>B</sub> = –15 mA <sub>dc</sub> ) (I <sub>C</sub> = –500 mA <sub>dc</sub> , I <sub>B</sub> = –50 mA <sub>dc</sub> )	V <sub>BE(sat)</sub>	– –	–1.3 –2.6	V <sub>dc</sub>	
<b>SMALL–SIGNAL CHARACTERISTICS</b>					
Current–Gain – Bandwidth Product (I <sub>C</sub> = –50 mA <sub>dc</sub> , V <sub>CE</sub> = 20 V <sub>dc</sub> , f = 100 MHz)	f <sub>T</sub>	200	–	MHz	
Output Capacitance (V <sub>CB</sub> = –10 V <sub>dc</sub> , I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>obo</sub>	–	8.0	pF	
Input Capacitance (V <sub>EB</sub> = –2.0 V <sub>dc</sub> , I <sub>C</sub> = 0, f = 1.0 MHz)	C <sub>ibo</sub>	–	30	pF	
<b>SWITCHING CHARACTERISTICS</b>					
Turn–On Time	(V <sub>CC</sub> = –30 V <sub>dc</sub> , I <sub>C</sub> = –150 mA <sub>dc</sub> , I <sub>B1</sub> = –15 mA <sub>dc</sub> )	t <sub>on</sub>	–	45	ns
Delay Time		t <sub>d</sub>	–	10	
Rise Time		t <sub>r</sub>	–	40	
Storage Time	(V <sub>CC</sub> = –6.0 V <sub>dc</sub> , I <sub>C</sub> = –150 mA <sub>dc</sub> , I <sub>B1</sub> = I <sub>B2</sub> = 15 mA <sub>dc</sub> )	t <sub>s</sub>	–	80	
Fall Time		t <sub>f</sub>	–	30	
Turn–Off Time		t <sub>off</sub>	–	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 L



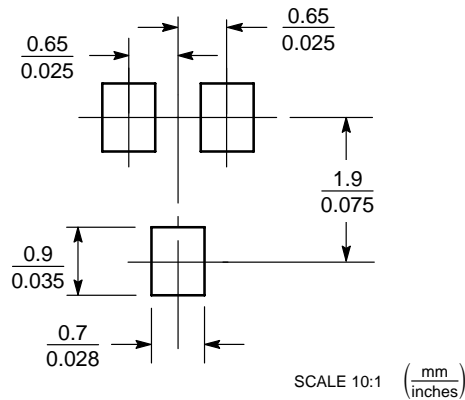
NOTES:

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.032	0.040	0.80	1.00
D	0.012	0.016	0.30	0.40
G	0.047	0.055	1.20	1.40
H	0.000	0.004	0.00	0.10
J	0.004	0.010	0.10	0.25
K	0.017 REF		0.425 REF	
L	0.026 BSC		0.650 BSC	
N	0.028 REF		0.700 REF	
S	0.079	0.095	2.00	2.40


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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