

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 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

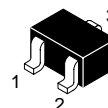
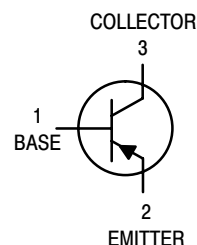
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

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



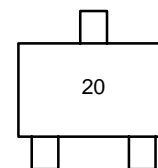
ON Semiconductor®

<http://onsemi.com>



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

MARKING DIAGRAM



20 = Specific Device Code

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.

MMBT2907AWT1

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

| Characteristic | Symbol | Min | Max | Unit |
|--|----------------------|------|-----|------------------|
| OFF CHARACTERISTICS | | | | |
| Collector–Emitter Breakdown Voltage (Note 2) (I _C = –10 mA _{dc} , I _B = 0) | V _{(BR)CEO} | –60 | – | Vdc |
| Collector–Base Breakdown Voltage (I _C = –10 mA _{dc} , I _E = 0) | V _{(BR)CBO} | –60 | – | Vdc |
| Emitter–Base Breakdown Voltage (I _E = –10 μA _{dc} , I _C = 0) | V _{(BR)EBO} | –5.0 | – | Vdc |
| Base Cutoff Current (V _{CE} = –30 Vdc, V _{EB(off)} = –0.5 Vdc) | I _{BL} | – | –50 | nA _{dc} |
| Collector Cutoff Current (V _{CE} = –30 Vdc, V _{EB(off)} = –0.5 Vdc) | I _{CEX} | – | –50 | nA _{dc} |

ON CHARACTERISTICS⁽³⁾

| | | | | |
|---|----------------------|-------------------------------|-----------------------|-----|
| DC Current Gain (Note 2) (I _C = –0.1 mA _{dc} , V _{CE} = –10 Vdc) (I _C = –1.0 mA _{dc} , V _{CE} = –10 Vdc) (I _C = –10 mA _{dc} , V _{CE} = –10 Vdc) (I _C = –150 mA _{dc} , V _{CE} = –10 Vdc) (I _C = –500 mA _{dc} , V _{CE} = –10 Vdc) | 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 | Vdc |
| 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 | Vdc |

SMALL–SIGNAL CHARACTERISTICS

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

SWITCHING CHARACTERISTICS

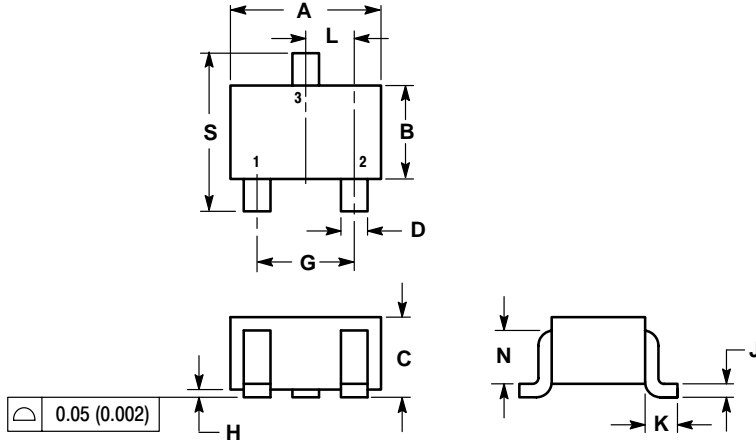
| | | | | | |
|---------------|--|------------------|---|-----|----|
| Turn–On Time | (V _{CC} = –30 Vdc, I _C = –150 mA _{dc} , I _{B1} = –15 mA _{dc}) | t _{on} | – | 45 | ns |
| Delay Time | | t _d | – | 10 | |
| Rise Time | | t _r | – | 40 | |
| Storage Time | (V _{CC} = –6.0 Vdc, I _C = –150 mA _{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%.

MMBT2907AWT1

PACKAGE DIMENSIONS

SC-70/SOT-323
CASE 419-04
ISSUE L



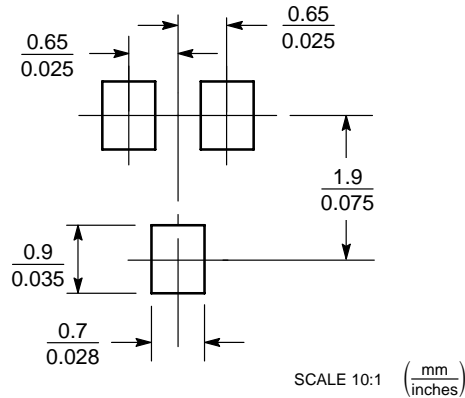
NOTES:

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.

MMBT2907AWT1

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA

Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada

Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada

Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051
Phone: 81-3-5773-3850

ON Semiconductor Website: <http://onsemi.com>

Order Literature: <http://www.onsemi.com/litorder>

For additional information, please contact your
local Sales Representative.