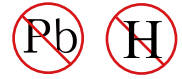




Dual PNP TRANSISTOR

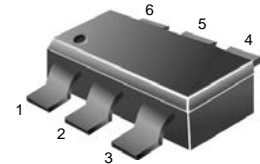


FEATURE

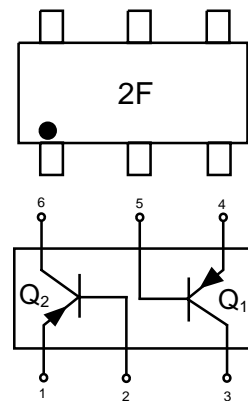
Complementary NPN Type available MMBT2222ADW

MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

| Symbol           | Parameter                     | Value   | Units |
|------------------|-------------------------------|---------|-------|
| V <sub>CB0</sub> | Collector-Base Voltage        | -60     | V     |
| V <sub>CEO</sub> | Collector-Emitter Voltage     | -60     | V     |
| V <sub>EBO</sub> | Emitter-Base Voltage          | -5      | V     |
| I <sub>C</sub>   | Collector Current -Continuous | -600    | mA    |
| P <sub>C</sub>   | Collector Power Dissipation   | 200     | mW    |
| T <sub>J</sub>   | Junction Temperature          | 150     | °C    |
| T <sub>stg</sub> | Storage Temperature           | -55-150 | °C    |



SOT-363/SC-88  
CASE 419B STYLE 1



MARKING: 2F

ELECTRICAL CHARACTERISTICS (T<sub>amb</sub>=25°C unless otherwise specified)

| Parameter                            | Symbol                | Test conditions   | MIN | MAX  | UNIT |
|--------------------------------------|-----------------------|---|-----|------|------|
| Collector-base breakdown voltage     | V <sub>(BR)CBO</sub>  | I <sub>C</sub> = -10μA, I <sub>E</sub> =0                             | -60 |      | V    |
| Collector-emitter breakdown voltage  | V <sub>(BR)CEO</sub>  | I <sub>C</sub> = -10mA, I <sub>B</sub> =0                             | -60 |      | V    |
| Emitter-base breakdown voltage       | V <sub>(BR)EBO</sub>  | I <sub>E</sub> =-10μA, I <sub>C</sub> =0                              | -5  |      | V    |
| Collector cut-off current            | I <sub>CBO</sub>      | V <sub>CB</sub> =-50V, I <sub>E</sub> =0                              |     | -10  | nA   |
| Collector cut-off current            | I <sub>CEX</sub>      | V <sub>CE</sub> =-30V, V <sub>EB(Off)</sub> =-0.5V                    |     | -50  | nA   |
| Emitter cut-off current              | I <sub>EBO</sub>      | V <sub>EB</sub> =-5V, I <sub>C</sub> =0                               |     | -10  | nA   |
| DC current gain                      | h <sub>FE(1)</sub>    | V <sub>CE</sub> =-10V, I <sub>C</sub> = -0.1mA                        | 75  |      |      |
|                                      | h <sub>FE(2)</sub>    | V <sub>CE</sub> =-10V, I <sub>C</sub> = -1mA                          | 100 |      |      |
|                                      | h <sub>FE(3)</sub>    | V <sub>CE</sub> =-10V, I <sub>C</sub> =-10mA                          | 100 |      |      |
|                                      | h <sub>FE(4)</sub>    | V <sub>CE</sub> =-10V, I <sub>C</sub> = -150mA                        | 100 | 300  |      |
|                                      | h <sub>FE(5)</sub>    | V <sub>CE</sub> =-10V, I <sub>C</sub> =-500mA                         | 50  |      |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)1</sub> | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA                         |     | -0.4 | V    |
|                                      | V <sub>CE(sat)2</sub> | I <sub>C</sub> =-500mA, I <sub>B</sub> =- 50mA                        |     | -1.6 | V    |
| Base-emitter saturation voltage      | V <sub>BE(sat)1</sub> | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA                         |     | -1.3 | V    |
|                                      | V <sub>BE(sat)2</sub> | I <sub>C</sub> =-500mA, I <sub>B</sub> =- 50mA                        |     | -2.6 | V    |
| Transition frequency                 | f <sub>T</sub>        | V <sub>CE</sub> =-20V, I <sub>C</sub> = -50mA, f=100MHz               | 200 |      | MHz  |
| Output Capacitance                   | C <sub>ob</sub>       | V <sub>CB</sub> =-10V, I <sub>E</sub> = 0, f=1MHz                     |     | 8    | pF   |
| Input Capacitance                    | C <sub>ib</sub>       | V <sub>EB</sub> =-2V, I <sub>C</sub> = 0, f=1MHz                      |     | 30   | pF   |
| Delay time                           | t <sub>d</sub>        | V <sub>CC</sub> =-30V, I <sub>C</sub> =-150mA, I <sub>B1</sub> =-15mA |     | 10   | nS   |
| Rise time                            | t <sub>r</sub>        |   | 40  | nS   |      |
| Storage time                         | t <sub>S</sub>        | V <sub>CC</sub> =-6V, I <sub>C</sub> =-150mA,                         |     | 225  | nS   |
| Fall time                            | t <sub>f</sub>        | I <sub>B1</sub> = I <sub>B2</sub> = -15mA                             |     | 60   | nS   |

# DEVICE CHARACTERISTICS

## MMBT2907ADW

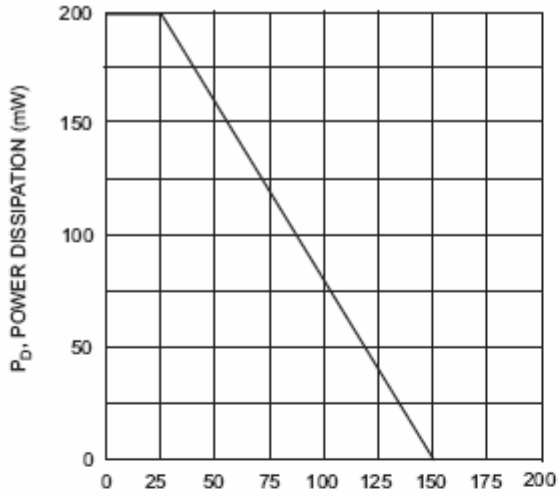


Fig. 1, Max Power Dissipation vs Ambient Temperature

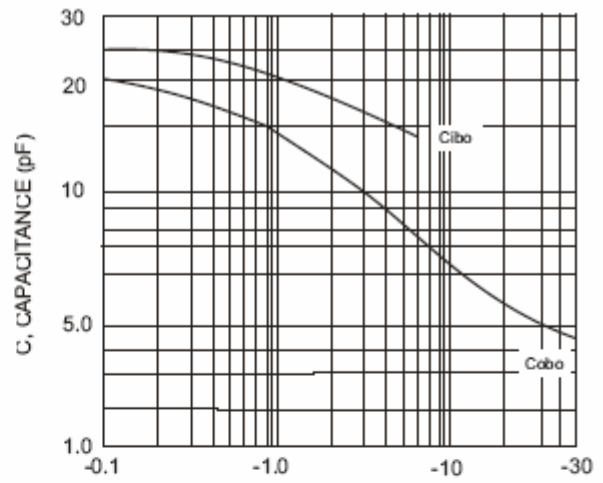


Fig. 2 Typical Capacitance

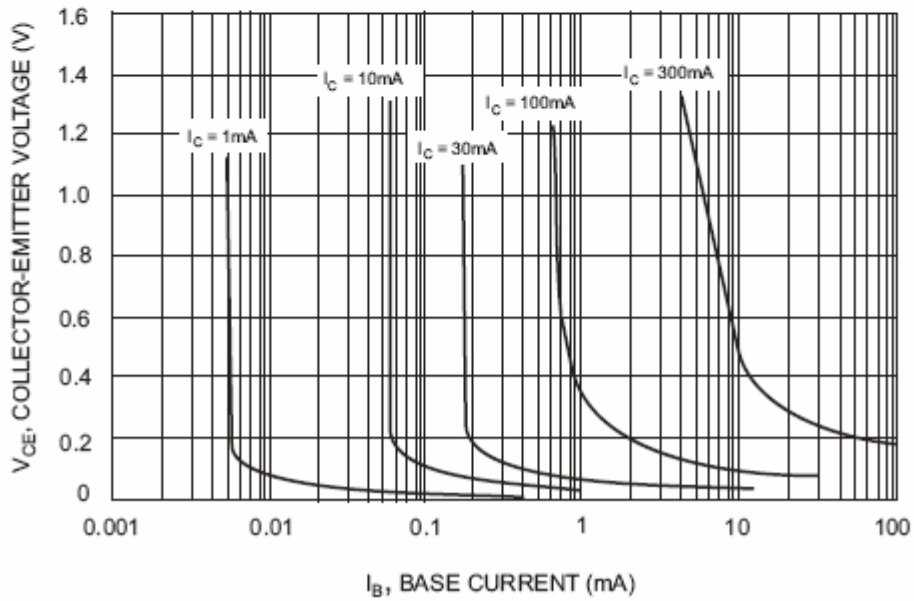


Fig. 3 Typical Collector Saturation Region

# DEVICE CHARACTERISTICS

## MMBT2907ADW

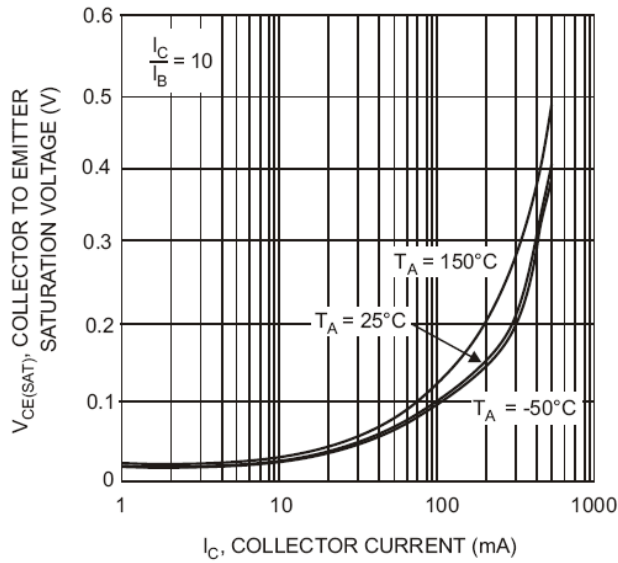


Fig. 4, Collector Emitter Saturation Voltage vs. Collector Current

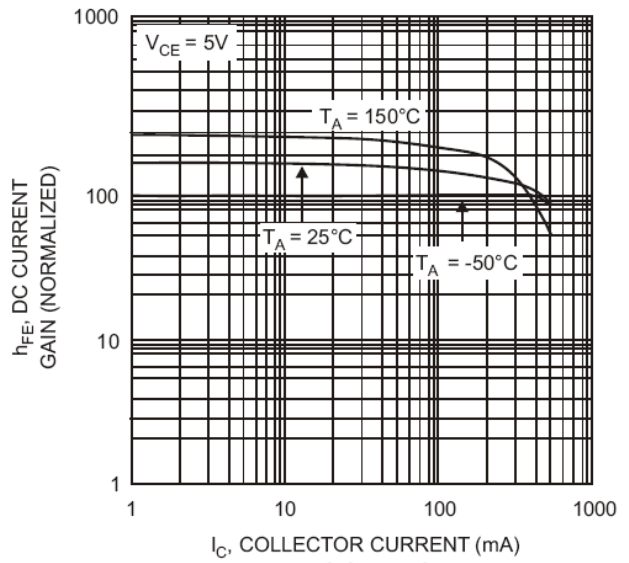


Fig. 5, DC Current Gain vs. Collector Current

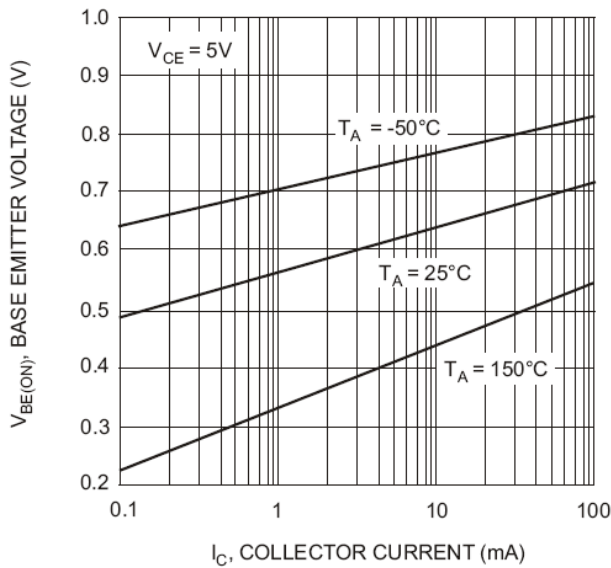


Fig. 6, Base Emitter Voltage vs. Collector Current

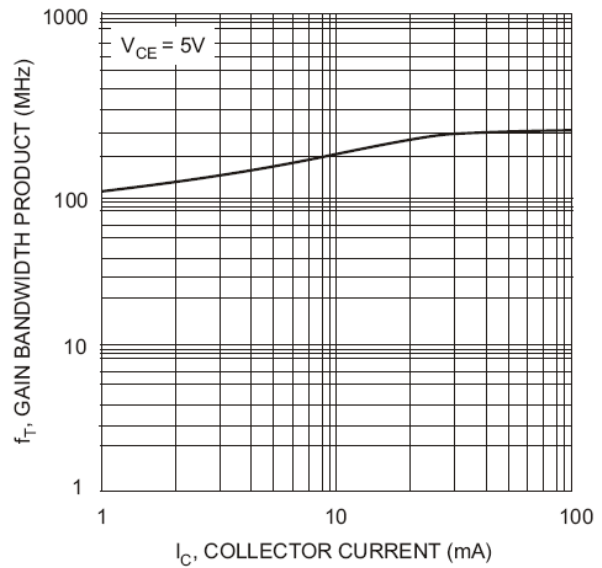


Fig. 7, Gain Bandwidth Product vs. Collector Current

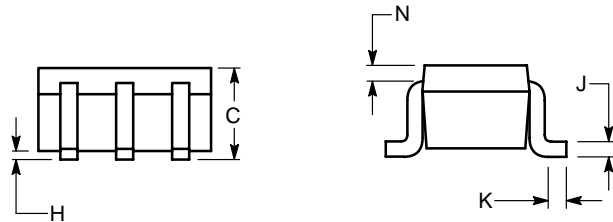
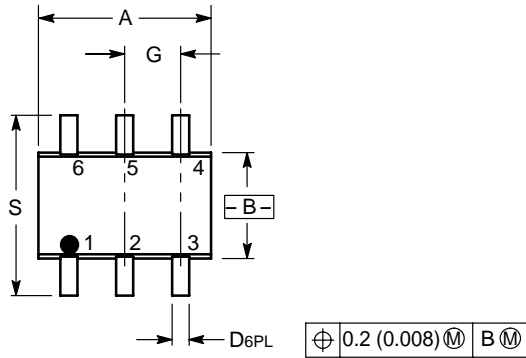
# PACKAGE OUTLINE & DIMENSIONS

## MMBT2907ADW

SC-88/SOT-363

### 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   | 0.031     | 0.043 | 0.80        | 1.10 |
| D   | 0.004     | 0.012 | 0.10        | 0.30 |
| G   | 0.026 BSC |       | 0.65 BSC    |      |
| H   | ---       | 0.004 | ---         | 0.10 |
| J   | 0.004     | 0.010 | 0.10        | 0.25 |
| K   | 0.004     | 0.012 | 0.10        | 0.30 |
| N   | 0.008 REF |       | 0.20 REF    |      |
| S   | 0.079     | 0.087 | 2.00        | 2.20 |

- PIN 1. EMITTER 1  
 2. BASE 1  
 3. COLLECTOR 2  
 4. EMITTER 2  
 5. BASE 2  
 6. COLLECTOR 1

