

# MMDT2907A

## DUAL PNP GENERAL PURPOSE SWITCHING TRANSISTOR

**VOLTAGE** 60 Volts **POWER** 150 mW

SOT-363

Unit: inch ( mm )

### FEATURES

- PNP epitaxial silicon, planar design
- Collector-emitter voltage  $V_{CE} = -60V$
- Collector current  $I_C = -600mA$
- In compliance with EU RoHS 2002/95/EC directives

### MECHANICAL DATA

- Case: SOT-363
- Terminals : Solderable per MIL-STD-750,Method 2026
- Apporx. Weight: 0.0002 ounce, 0.006 gram
- Device Marking : M7A

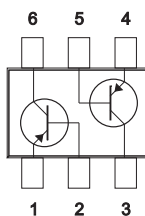
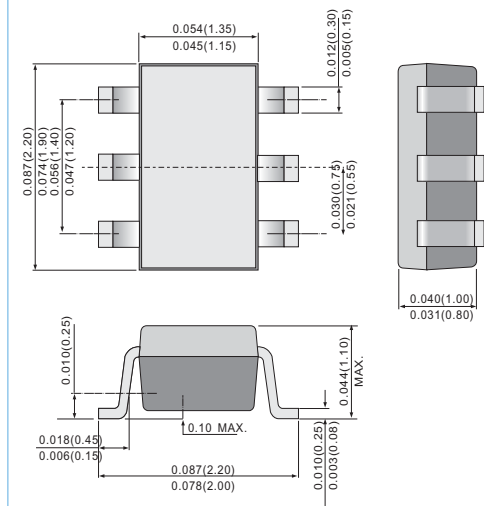


Fig.53



### ABSOLUTE MAXIMUM RATINGS

| Parameter                    | Symbol    | Value | Units |
|------------------------------|-----------|-------|-------|
| Collector-Emitter Voltage    | $V_{CEO}$ | -60   | V     |
| Collector-Base Voltage       | $V_{CBO}$ | -60   | V     |
| Emitter-Base Voltage         | $V_{EBO}$ | -5.0  | V     |
| Collector Current-Continuous | $I_C$     | -600  | mA    |

### THERMAL CHATACTERISTICS

| Parameter                               | Symbol          | Value       | Units           |
|-----------------------------------------|-----------------|-------------|-----------------|
| Max Power Dissipation (Note 1)          | $P_{TOT}$       | 150         | mW              |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 830         | $^{\circ}C / W$ |
| Storage Temperature                     | $T_{STG}$       | -55 to +150 | $^{\circ}C$     |
| Junction Tempereure                     | $T_J$           | -55 to +150 | $^{\circ}C$     |

Note 1 : Transistor mouted on FR-5 board 1.0 x 0.75 x 0.062 in.

# MMDT2907A

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

| Parameter                            | Symbol                | Test Condition                                                                                                                                                                                                                                   | Min.                          | Typ.                  | Max.                    | Units |
|--------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------|-------------------------|-------|
| Collector-Emitter Breakdown Voltage  | V <sub>(BR)</sub> CEO | I <sub>C</sub> =-10mA, I <sub>B</sub> =0                                                                                                                                                                                                         | -60                           | -                     | -                       | V     |
| Collector-Base Breakdown Voltage     | V <sub>(BR)</sub> CBO | I <sub>C</sub> =-10μA, I <sub>E</sub> =0                                                                                                                                                                                                         | -60                           | -                     | -                       | V     |
| Emitter-Base Breakdown Voltage       | V <sub>(BR)</sub> EBO | I <sub>E</sub> =-10μA, I <sub>C</sub> =0                                                                                                                                                                                                         | -5.0                          | -                     | -                       | V     |
| Base Cutoff Current                  | I <sub>BL</sub>       | V <sub>CE</sub> =-30V, V <sub>EB</sub> =-0.5V                                                                                                                                                                                                    | -                             | -                     | -50                     | nA    |
| Collector Cutoff Current             | I <sub>CEX</sub>      | V <sub>CE</sub> =-30V, V <sub>EB</sub> =-0.5V                                                                                                                                                                                                    | -                             | -                     | -50                     | nA    |
|                                      | I <sub>CBO</sub>      | V <sub>CE</sub> =-50V, I <sub>E</sub> =0                                                                                                                                                                                                         | -                             | -                     | -10                     | nA    |
|                                      |                       | V <sub>CE</sub> =-50V, I <sub>E</sub> =0 T <sub>J</sub> =125°C                                                                                                                                                                                   | -                             | -                     | -10                     | μA    |
| DC Current Gain                      | h <sub>FE</sub>       | I <sub>C</sub> =-0.1mA, V <sub>CE</sub> =-10V<br>I <sub>C</sub> =-1.0mA, V <sub>CE</sub> =-10V<br>I <sub>C</sub> =-10mA, V <sub>CE</sub> =-10V<br>I <sub>C</sub> =-150mA, V <sub>CE</sub> =-10V<br>I <sub>C</sub> =-500mA, V <sub>CE</sub> =-10V | 75<br>100<br>100<br>100<br>50 | -<br>-<br>-<br>-<br>- | -<br>-<br>-<br>300<br>- | -     |
| Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub>  | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA<br>I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA                                                                                                                                                   | -<br>-                        | -<br>-                | -0.4<br>-1.6            | V     |
| Base-Emitter Saturation Voltage      | V <sub>BE(SAT)</sub>  | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA<br>I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA                                                                                                                                                   | -<br>-                        | -<br>-                | -1.3<br>-2.6            | V     |
| Collector-Base Capacitance           | C <sub>CBO</sub>      | V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz                                                                                                                                                                                                 | -                             | -                     | 8.0                     | pF    |
| Emitter-Base Capacitance             | C <sub>EBO</sub>      | V <sub>CB</sub> =-2V, I <sub>C</sub> =0, f=1MHz                                                                                                                                                                                                  | -                             | -                     | 30                      | pF    |
| Current Gain-Bandwidth Product       | F <sub>T</sub>        | I <sub>C</sub> =-50mA, V <sub>CE</sub> =-20V,<br>f=100MHz                                                                                                                                                                                        | 200                           | -                     | -                       | MHz   |
| Turn-On Time                         | t <sub>on</sub>       | V <sub>CC</sub> =-30V, V <sub>BE</sub> =-0.5V,<br>I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA                                                                                                                                                  | -                             | -                     | 45                      | ns    |
| Delay Time                           | t <sub>d</sub>        | V <sub>CC</sub> =-30V, V <sub>BE</sub> =-0.5V,<br>I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA                                                                                                                                                  | -                             | -                     | 10                      | ns    |
| Rise Time                            | t <sub>r</sub>        | V <sub>CC</sub> =-30V, V <sub>BE</sub> =-0.5V,<br>I <sub>C</sub> =-150mA, I <sub>B1</sub> =-15mA                                                                                                                                                 | -                             | -                     | 40                      | ns    |
| Turn-Off Time                        | t <sub>off</sub>      | V <sub>CC</sub> =-6V, I <sub>C</sub> =-150mA,<br>I <sub>B1</sub> =I <sub>B2</sub> =-15mA                                                                                                                                                         | -                             | -                     | 100                     | ns    |
| Storage Time                         | t <sub>s</sub>        | V <sub>CC</sub> =-6V, I <sub>C</sub> =-150mA,<br>I <sub>B1</sub> =I <sub>B2</sub> =-15mA                                                                                                                                                         | -                             | -                     | 80                      | ns    |
| Fall Time                            | t <sub>f</sub>        | V <sub>CC</sub> =-6V, I <sub>C</sub> =-150mA,<br>I <sub>B1</sub> =I <sub>B2</sub> =-15mA                                                                                                                                                         | -                             | -                     | 30                      | ns    |

# MMDT2907A

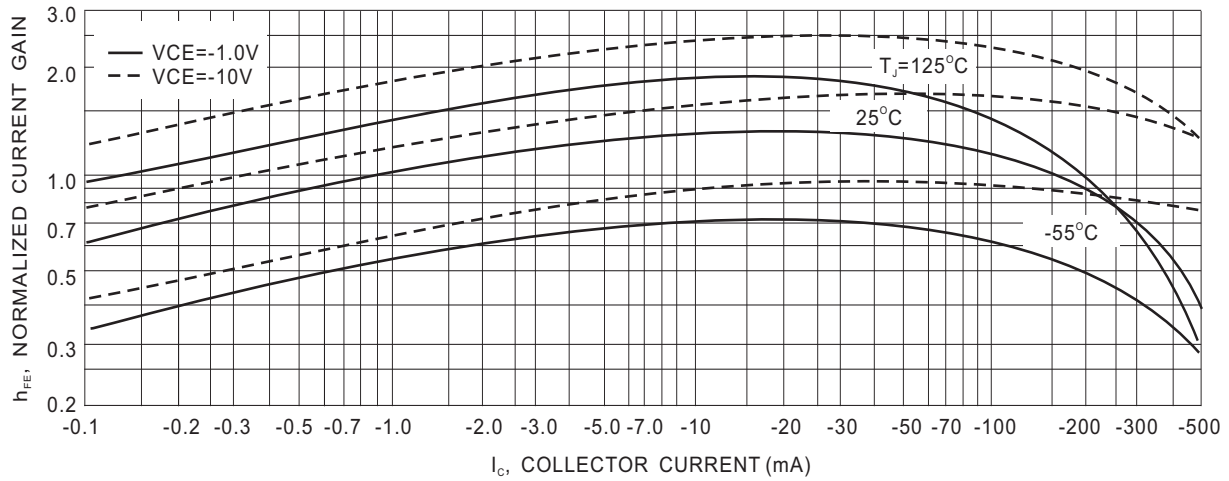


Fig.1-DC Current Gain

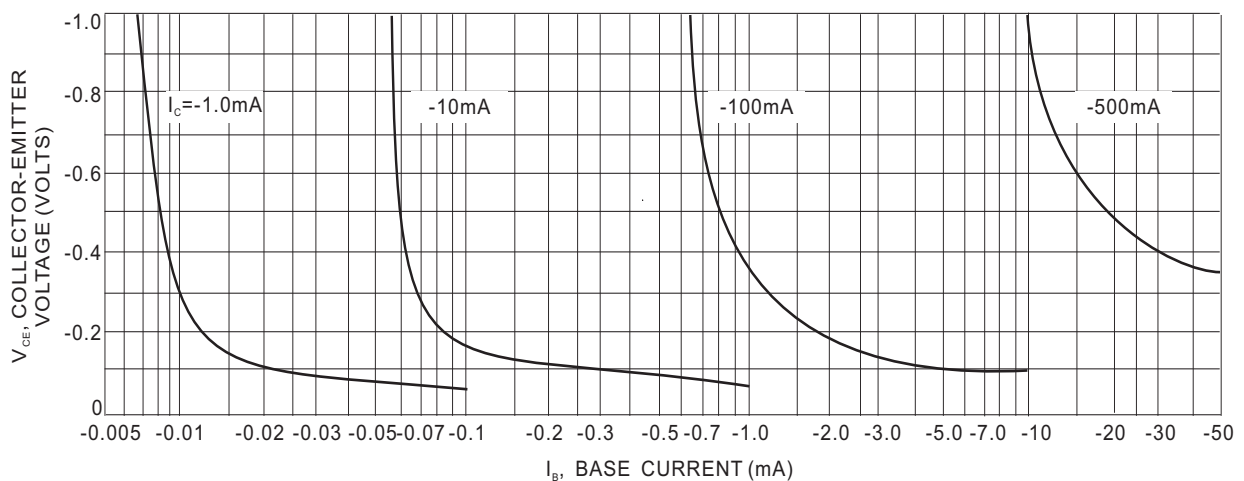


Fig.2-Collector Saturation Region

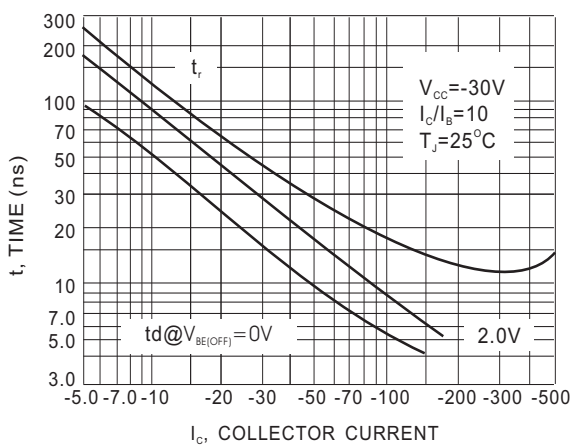


Fig.3-Turn-On Time

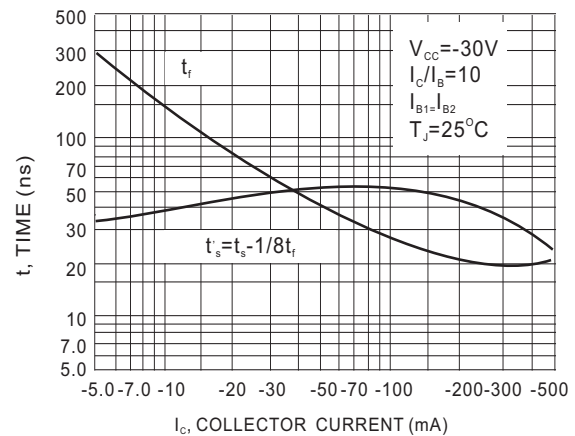


Fig.4-Turn-Off Time

# MMDT2907A

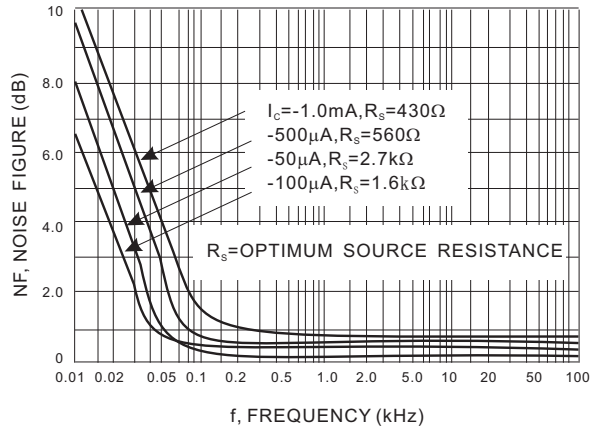


Fig.5-Frequency Effects

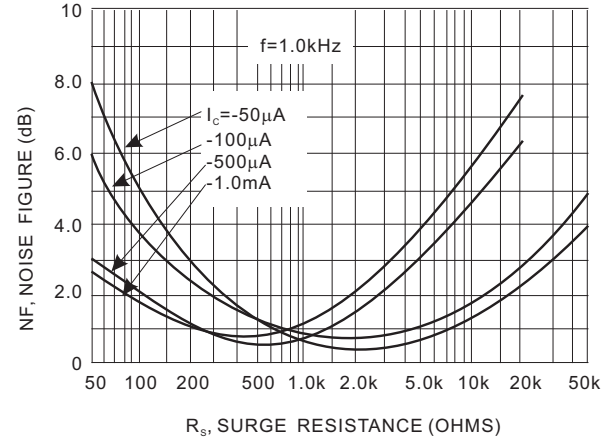


Fig.6-Source Resistance Effects

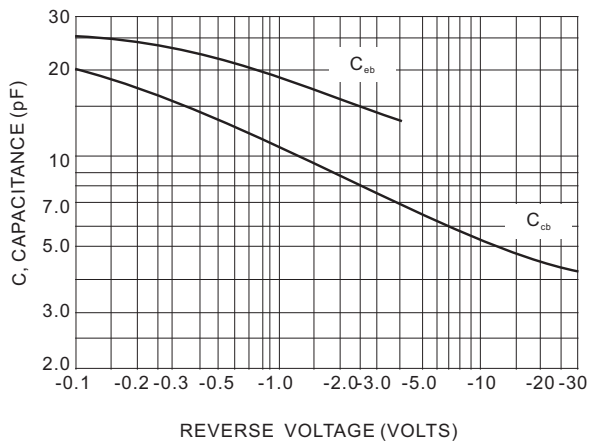


Fig.7-Capacitances

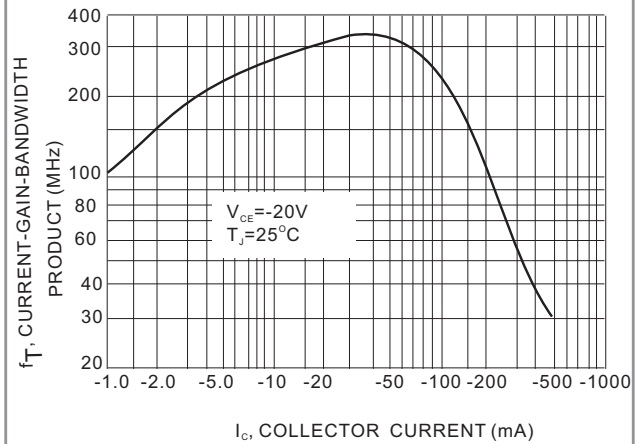


Fig.8-Current-Gain-Bandwidth Product

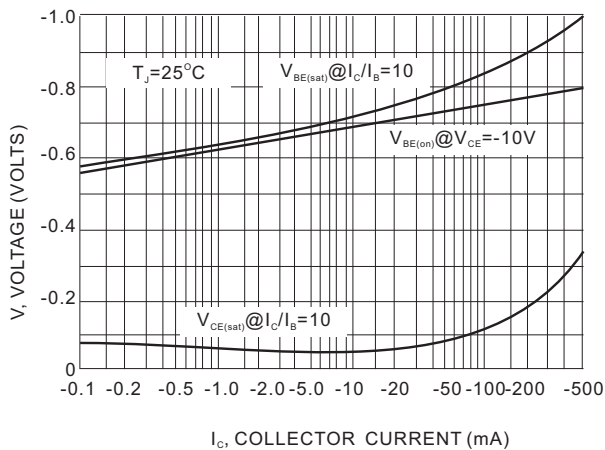


Fig.9-On Voltage

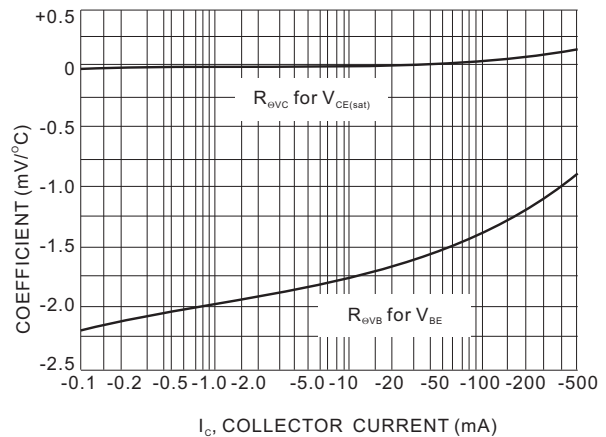


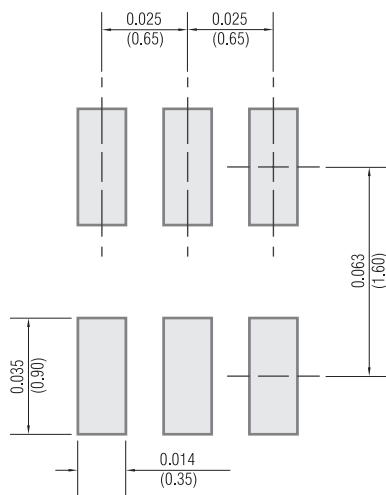
Fig.10-Temperature Coefficients

# MMDT2907A

## MOUNTING PAD LAYOUT

SOT-363

Unit: inch ( mm )



## ORDER INFORMATION

- Packing information
  - T/R - 10K per 13" plastic Reel
  - T/R - 3K per 7" plastic Reel

## LEGAL STATEMENT

### Copyright PanJit International, Inc 2010

The information presented in this document is believed to be accurate and reliable. The specifications and information herein are subject to change without notice. Pan Jit makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. Pan Jit products are not authorized for use in life support devices or systems. Pan Jit does not convey any license under its patent rights or rights of others.