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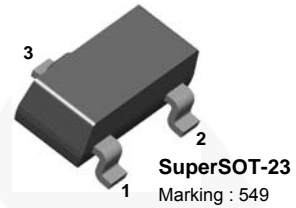


October 2014

# FMMT549 PNP Low-Saturation Transistor

## Features

- This device is designed with high-current gain and low-saturation voltage with collector currents up to 2 A continuous.
- Sourced from process PB.



1. Base 2. Emitter 3. Collector

## Ordering Information

| Part Number | Marking | Package | Packing Method |
|-------------|---------|---------|----------------|
| FMMT549     | 549     | SSOT 3L | Tape and Reel  |

## Absolute Maximum Ratings<sup>(1),(2)</sup>

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol    | Parameter                 | Value              | Unit             |
|-----------|---------------------------|--------------------|------------------|
| $V_{CEO}$ | Collector-Emitter Voltage | -30                | V                |
| $V_{CBO}$ | Collector-Base Voltage    | -35                | V                |
| $V_{EBO}$ | Emitter-Base Voltage      | -5                 | V                |
| $I_C$     | Collector Current         | Continuous         | -1               |
|           |                           | Peak Pulse Current | -2               |
| $T_J$     | Junction Temperature      | 150                | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature Range | -55 to +150        | $^\circ\text{C}$ |

### Notes:

1. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

### Thermal Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol          | Parameter                                    | Max. | Unit                      |
|-----------------|----------------------------------------------|------|---------------------------|
| $P_D$           | Total Device Dissipation, by $R_{\theta JA}$ | 500  | mW                        |
|                 | Derate Above $25^\circ\text{C}$              | 4    | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient      | 250  | $^\circ\text{C}/\text{W}$ |

**Note:**

3. Device is mounted on FR-4 PCB 4.5 inch X 5 inch, mounting pad  $0.02\text{ in}^2$  of 2 oz copper.

### Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol        | Parameter                                           | Conditions                                                       | Min. | Max.  | Unit          |
|---------------|-----------------------------------------------------|------------------------------------------------------------------|------|-------|---------------|
| $BV_{CEO}$    | Collector-Emitter Breakdown Voltage                 | $I_C = -10\text{ mA}, I_B = 0$                                   | -30  |       | V             |
| $BV_{CBO}$    | Collector-Base Breakdown Voltage                    | $I_C = -100\ \mu\text{A}, I_E = 0$                               | -35  |       | V             |
| $BV_{EBO}$    | Emitter-Base Breakdown Voltage                      | $I_E = -100\ \mu\text{A}, I_C = 0$                               | -5.0 |       | V             |
| $I_{CBO}$     | Collector Cut-Off Current                           | $V_{CB} = -30\text{ V}, I_E = 0$                                 |      | -100  | nA            |
|               |                                                     | $V_{CB} = -30\text{ V}, I_E = 0, T_A = 100^\circ\text{C}$        |      | -10   | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter Cut-Off Current                             | $V_{EB} = -4.0\text{ V}, I_C = 0$                                |      | -100  | nA            |
| $h_{FE}$      | DC Current Gain <sup>(4)</sup>                      | $V_{CE} = -2.0\text{ V}, I_C = -50\text{ mA}$                    | 70   |       |               |
|               |                                                     | $V_{CE} = -2.0\text{ V}, I_C = -500\text{ mA}$                   | 100  | 300   |               |
|               |                                                     | $V_{CE} = -2.0\text{ V}, I_C = -1\text{ A}$                      | 80   |       |               |
|               |                                                     | $V_{CE} = -2.0\text{ V}, I_C = -2\text{ A}$                      | 40   |       |               |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage <sup>(4)</sup> | $I_C = -1\text{ A}, I_B = -100\text{ mA}$                        |      | -500  | mV            |
|               |                                                     | $I_C = -2\text{ A}, I_B = -200\text{ mA}$                        |      | -750  |               |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage <sup>(4)</sup>      | $I_C = -1\text{ A}, I_B = -100\text{ mA}$                        |      | -1.25 | V             |
| $V_{BE(on)}$  | Base-Emitter On Voltage <sup>(4)</sup>              | $I_C = -1\text{ A}, V_{CE} = -2.0\text{ V}$                      |      | -1.0  | V             |
| $f_T$         | Current Gain Bandwidth Product                      | $I_C = -100\text{ mA}, V_{CE} = -5\text{ V}, f = 100\text{ MHz}$ | 100  |       | MHz           |
| $C_{obo}$     | Output Capacitance                                  | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$               |      | 25    | pF            |

**Note:**

4. Pulse test: pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2.0\%$

## Typical Performance Characteristics

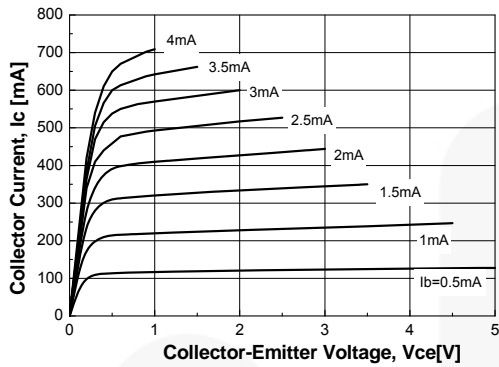


Figure 1. Collector-Emitter Voltage vs. Collector Current

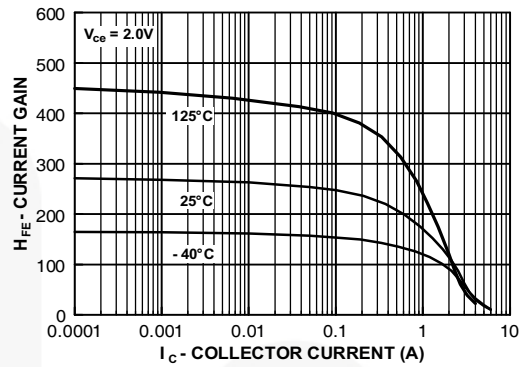


Figure 2. Current Gain vs. Collector Current

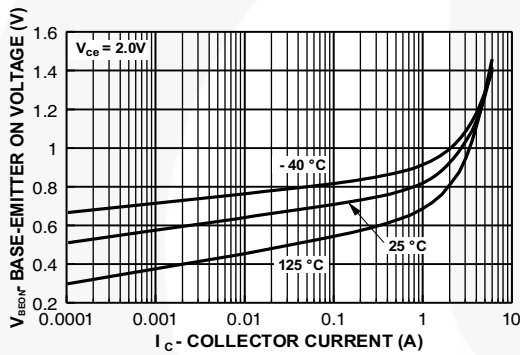


Figure 4. Base-Emitter On Voltage vs. Collector Current

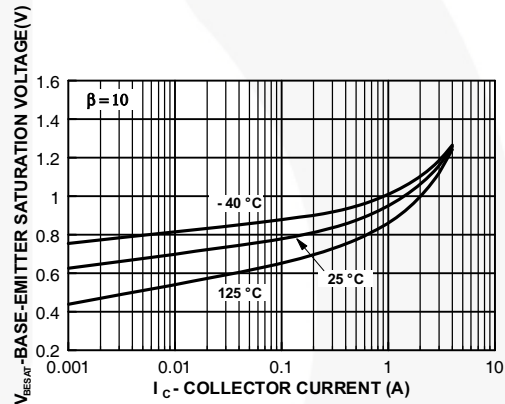


Figure 5. Base-Emitter Saturation Voltage vs. Collector Current

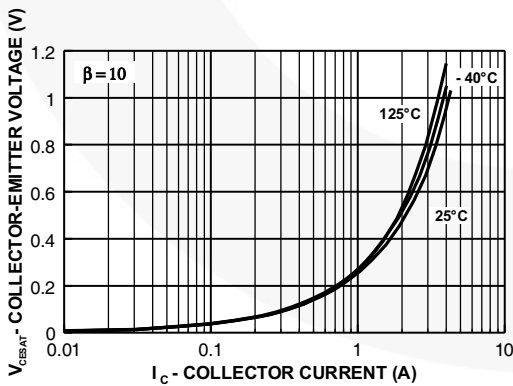


Figure 5. Collector-Emitter Saturation Voltage vs. Collector Current

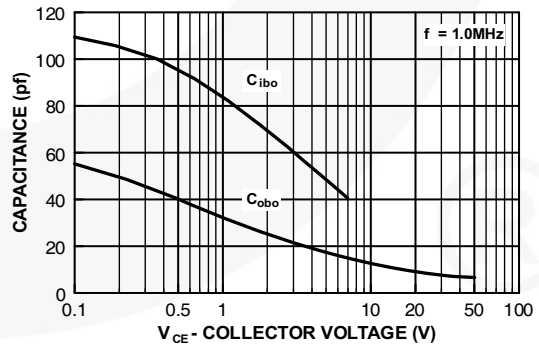
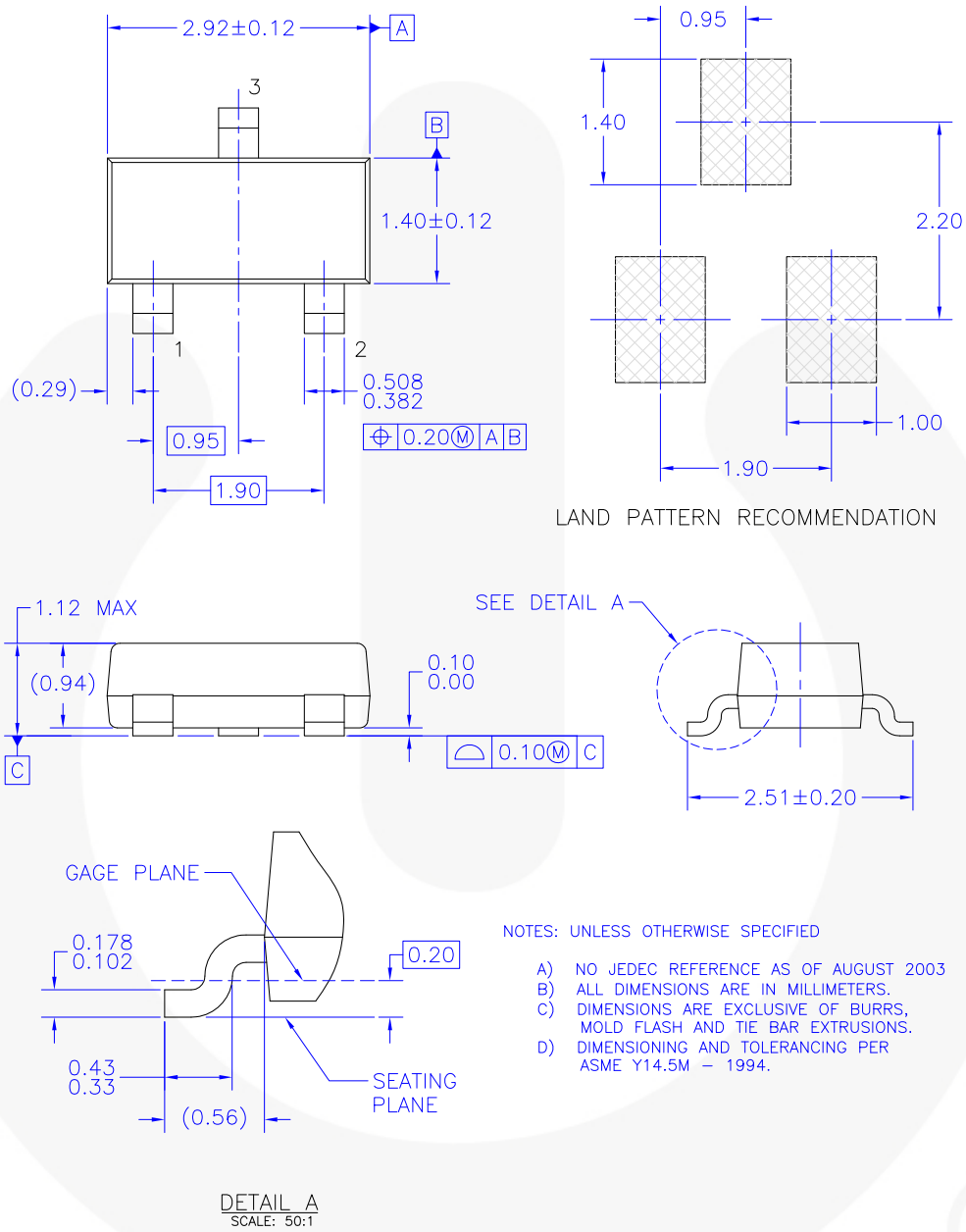


Figure 6. Input / Output Capacitance vs. Reverse Bias Voltage

**Physical Dimensions**



MA03BREVB

**Figure 7. MOLDED PACKAGE, SUPERSOT, 3-LEAD**





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