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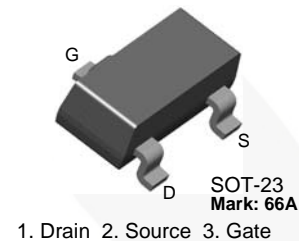


January 2015

MMBF5103 N-Channel Switch

Features

- This device is designed for low level analog switching, sample and hold circuits and chopper stabilized amplifiers.
- Sourced from Process 51
- See J111 for Characteristics



Ordering Information

| Part Number | Top Mark | Package | Packing Method |
|-------------|----------|-----------|----------------|
| MMBF5103 | 66A | SOT-23 3L | Tape and Reel |

Absolute Maximum Ratings^{(1), (2)}

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_{DG} | Drain-Gate Voltage | 40 | V |
| V_{GS} | Gate-Source Voltage | -40 | V |
| I_{GF} | Forward Gate Current | 50 | mA |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to 150 | $^\circ\text{C}$ |

Notes:

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

Thermal Characteristics⁽³⁾

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

| Symbol | Parameter | Max. | Unit |
|-----------------|---|------|---------------------------|
| P_D | Total Device Dissipation | 350 | mW |
| | Derate Above 25°C | 2.8 | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 357 | $^\circ\text{C}/\text{W}$ |

Note:

3. Device mounted on FR-4 PCB 36mm x 18mm x 1.5mm; mounting pad for the collector lead minimum 6cm².

Electrical Characteristics

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

| Symbol | Parameter | Conditions | Min. | Max. | Unit |
|-------------------------------------|--|---|------|------|------|
| Off Characteristics | | | | | |
| $V_{(BR)GSS}$ | Gate-Source Breakdown Voltage | $I_G = 1.0 \mu\text{A}, V_{DS} = 0$ | -40 | | V |
| I_{GSS} | Gate Reverse Current | $V_{GS} = -15 \text{ V}, V_{DS} = 0$ | | -200 | pA |
| | | $V_{GS} = -15 \text{ V}, V_{DS} = 0, T_A = 125^\circ\text{C}$ | | -500 | nA |
| $V_{GS(off)}$ | Gate-Source Cut-Off Voltage | $V_{DS} = 20 \text{ V}, I_D = 1.0 \text{ nA}$ | -1.2 | -2.7 | V |
| $V_{GS(f)}$ | Gate-Source Forward Voltage | $I_G = 1.0 \text{ mA}, V_{DS} = 0$ | | 1.0 | V |
| On Characteristics | | | | | |
| I_{DSS} | Zero-Gate Voltage Drain Current ⁽⁴⁾ | $V_{DS} = 15 \text{ V}, V_{GS} = 0$ | 10 | 40 | mA |
| Small Signal Characteristics | | | | | |
| C_{iss} | Input Capacitance | $V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$ | | 16 | pF |
| C_{rss} | Reverse Transfer Capacitance | $V_{GS} = -15 \text{ V}, f = 1.0 \text{ MHz}$ | | 6.0 | pF |

Note:

4. Pulse test: pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

Physical Dimensions

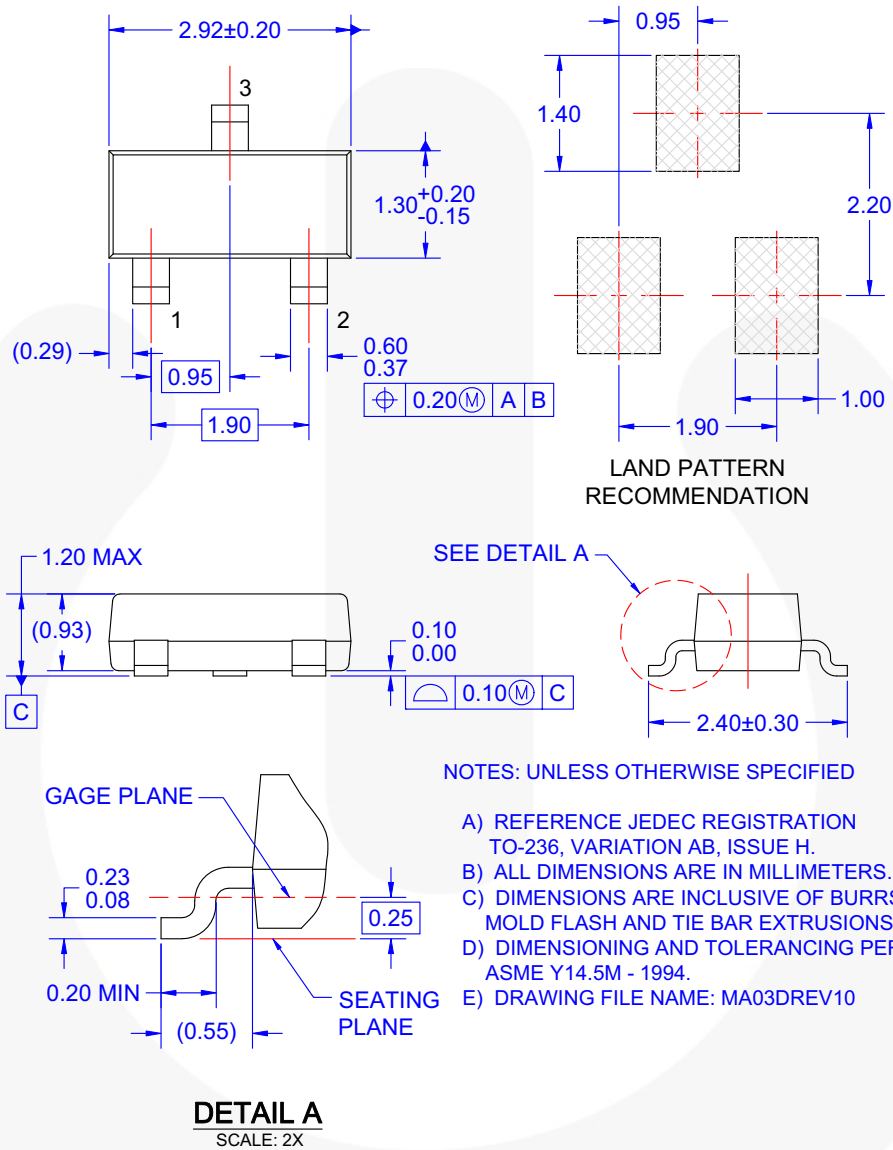







Figure 1. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE



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