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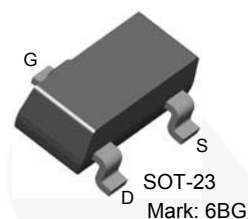
June 2015

# MMBF4416A

## N-Channel RF Amplifier

### Features

- This device is designed for RF amplifiers.
- Sourced from process 50.



### Ordering Information

| Part Number | Top Mark | Package   | Packing Method |
|-------------|----------|-----------|----------------|
| MMBF4416A   | 6BG      | SOT-23 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             |
|----------------|--|------------|------------------|
| $V_{DG}$       | Drain-Gate Voltage                               | 35         | V                |
| $V_{GS}$       | Gate-Source Voltage                              | -35        | V                |
| $I_{GF}$       | Forward Gate Current                             | 10         | 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  $150^\circ\text{C}$ .
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

**Thermal Characteristics<sup>(3)</sup>**

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

| Symbol          | Parameter                               | Max. | Unit                      |
|-----------------|---|------|---------------------------|
| $P_D$           | Total Device Dissipation                | 225  | mW                        |
|                 | Derate Above $25^\circ\text{C}$         | 1.8  | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 556  | $^\circ\text{C}/\text{W}$ |

**Note:**

3. Device mounted on FR-4 PCB 1.6" x 1.6" x 0.06".

**Electrical Characteristics**

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

| Symbol                              | Parameter                                   | Conditions  | Min. | Max. | Unit             |
|-------------------------------------|---|---|------|------|------------------|
| <b>Off Characteristics</b>          |   |   |      |      |                  |
| $V_{(BR)GSS}$                       | Gate-Source Breakdown Voltage               | $V_{DS} = 0, I_G = 1.0 \mu\text{A}$   | -35  |      | V                |
| $I_{GSS}$                           | Gate Reverse Current                        | $V_{GS} = -20 \text{ V}, V_{DS} = 0$  |      | -100 | pA               |
| $V_{GS(off)}$                       | Gate-Source Cut-Off Voltage                 | $V_{DS} = 15 \text{ V}, I_D = 1.0 \text{ nA}$   | -2.5 | -6.0 | V                |
| $V_{GS}$                            | Gate-Source Voltage                         | $V_{DS} = 15 \text{ V}, I_D = 500 \mu\text{A}$  | -1.0 | -5.5 | V                |
| <b>On Characteristics</b>           |   |   |      |      |                  |
| $I_{DSS}$                           | Zero-Gate Voltage Drain Current             | $V_{DS} = 15 \text{ V}, V_{GS} = 0$   | 5    | 15   | mA               |
| $V_{GS(f)}$                         | Gate-Source Forward Voltage                 | $V_{DS} = 0, I_G = 1.0 \text{ mA}$  |      | 1    | V                |
| <b>Small Signal Characteristics</b> |   |   |      |      |                  |
| $g_{fs}$                            | Forward Transfer Conductance <sup>(4)</sup> | $V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$  | 4500 | 7500 | $\mu\text{mhos}$ |
| $g_{os}$                            | Output Conductance <sup>(4)</sup>           | $V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$  |      | 50   | $\mu\text{mhos}$ |
| $C_{iss}$                           | Input Capacitance                           | $V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$  |      | 4.0  | pF               |
| $C_{rss}$                           | Reverse Transfer Capacitance                | $V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$  |      | 0.8  | pF               |
| $C_{oss}$                           | Output Capacitance                          | $V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$  |      | 2.0  | pF               |
| NF                                  | Noise Figure                                | $V_{DS} = 15 \text{ V}, V_{GS} = 0, I_D = 5 \text{ mA}, R_g = 1 \text{ k}\Omega, f = 400 \text{ MHz}$ |      | 4.0  | dB               |

**Note:**

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

Physical Dimensions

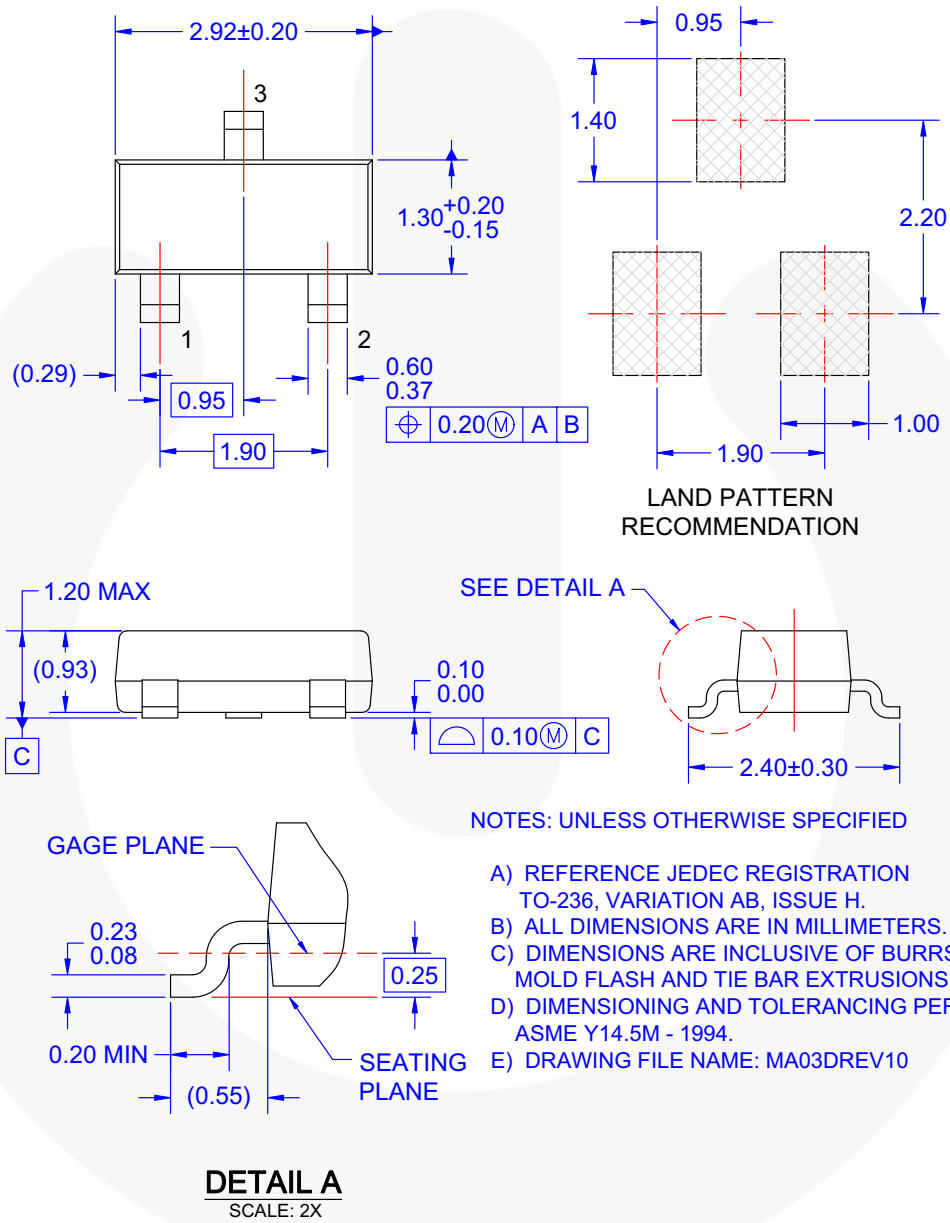







Figure 1. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE



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Rev. 174

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