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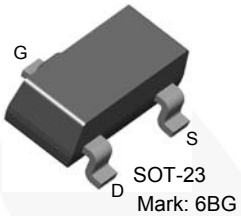
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

June 2015

MMBF4416A
N-Channel RF Amplifier

Features

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



SOT-23
Mark: 6BG

Ordering Information

Part Number	Top Mark	Package	Packing Method
MMBF4416A	6BG	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°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	°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°C unless otherwise noted.

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

Note:

3. Device mounted on FR-4 PCB 1.6” × 1.6” × 0.06”.

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

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

Note:

4. Pulse test: pulse width ≤ 300 ms, duty cycle ≤ 2%

Physical Dimensions

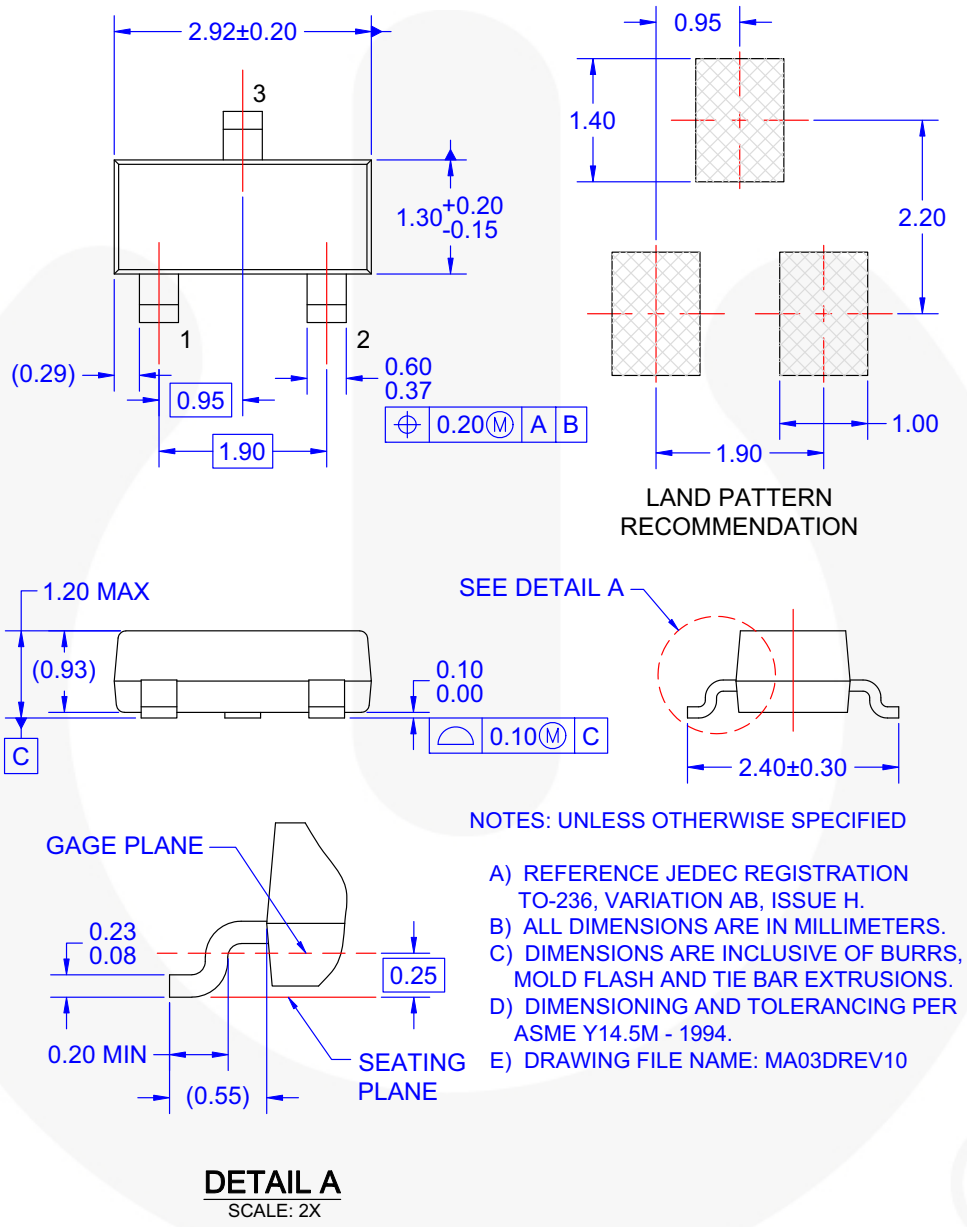


Figure 1. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE

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Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
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Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

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