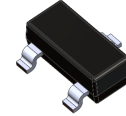


# RF Amplifier, N-Channel

## MMBF4416A



SOT-23  
CASE 318BM

### Features

- This Device is Designed for RF Amplifiers
- Sourced from Process 50
- This is a Pb-Free and Halide Free Device

### ABSOLUTE MAXIMUM RATINGS

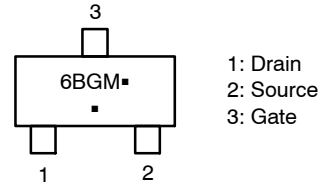
(T<sub>A</sub> = 25°C unless otherwise noted.) (Notes 1, 2)

Symbol	Parameter	Value	Unit
V <sub>DG</sub>	Drain-Gate Voltage	35	V
V <sub>GS</sub>	Gate-Source Voltage	-35	V
I <sub>GF</sub>	Forward Gate Current	10	mA
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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

### MARKING DIAGRAM



6BG = Specific Device Code  
M = Date Code  
■ = Pb-Free Package

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MMBF4416A	SOT-23 (Pb-Free/ Halide Free)	3000 / Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

# MMBF4416A

## THERMAL CHARACTERISTICS

( $T_A = 25^\circ\text{C}$  unless otherwise noted.) (Note 3)

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

3. Device mounted on FR-4 PCB  $1.6'' \times 1.6'' \times 0.06''$ .

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

$V_{(BR)GSS}$	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	$\mu\text{A}$
$V_{GS(off)}$	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

### ON CHARACTERISTICS

$I_{DSS}$	Zero-Gate Voltage Drain Current	$V_{GS} = 15 \text{ V}, V_{GS} = 0$	5	-	15	mA
$V_{GS(f)}$	Gate-Source Forward Voltage	$V_{DS} = 0, I_G = 1.0 \text{ mA}$	-	-	1	V

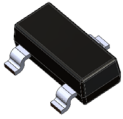
### SMALL SIGNAL CHARACTERISTICS

$g_{fs}$	Forward Transfer Admittance (Note 4)	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$	4500	-	7500	$\mu\text{mhos}$
$g_{os}$	Output Admittance (Note 4)	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$	-	-	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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

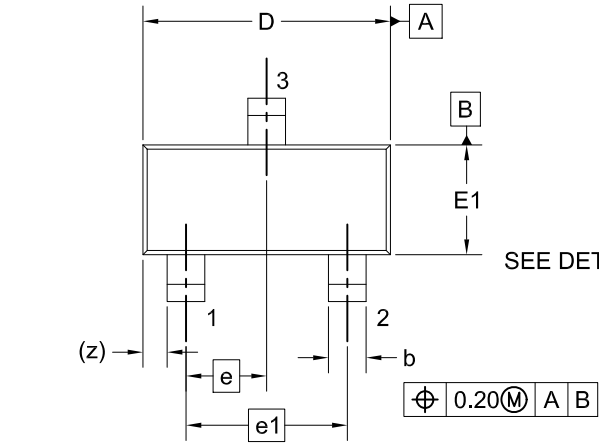


**SOT-23**  
**CASE 318BM**  
**ISSUE A**

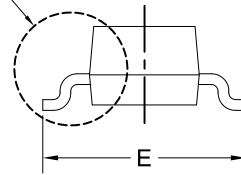
DATE 01 SEP 2021

NOTES: UNLESS OTHERWISE SPECIFIED

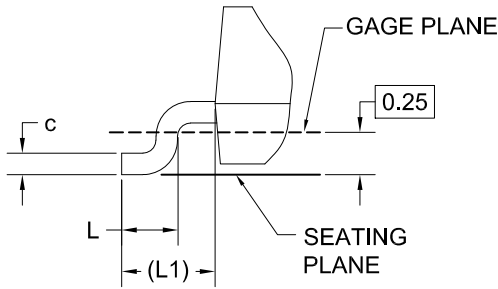
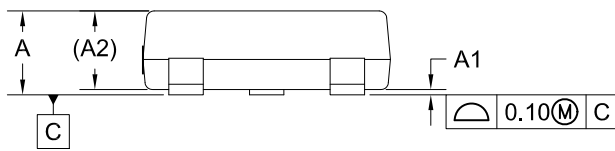
- A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 2009.



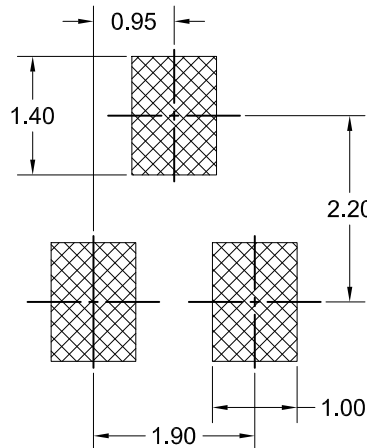
SEE DETAIL A



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	---	---	1.20
A1	0.00	0.05	0.10
A2	0.93 REF		
b	0.37	0.44	0.60
c	0.08	0.15	0.23
D	2.72	2.92	3.12
E	2.10	2.40	2.70
E1	1.15	1.30	1.50
e	0.95 BSC		
e1	1.90 BSC		
L	0.20	---	---
L1	0.55 REF		
z	0.29 REF		

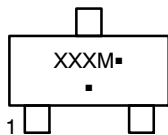


**DETAIL A**  
SCALE: 2X



**LAND PATTERN  
RECOMMENDATION**

### GENERIC MARKING DIAGRAM\*



- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

\*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

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