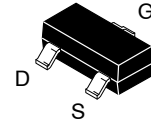


# N-Channel RF Amplifier

## MMBF5484, MMBF5485, MMBF5486

This device is designed primarily for electronic switching applications such as low On Resistance analog switching. Sourced from Process 50.



NOTE: Source & Drain are interchangeable

SOT-23  
CASE 318-08

### ABSOLUTE MAXIMUM RATINGS\* (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Rating	Value	Unit
V <sub>DG</sub>	Drain-Gate Voltage	25	V
V <sub>GS</sub>	Gate-Source Voltage	-25	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.

\*These rating are limiting values above which the serviceability of any semiconductor device may be impaired.

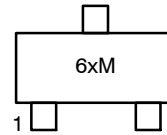
1. These rating are based on a maximum junction temperature of 150°C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### THERMAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Characteristic	Max	Unit
		*MMBF5484-5486	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	225	mW
		1.8	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	-	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	556	°C/W

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

### MARKING DIAGRAM



6x = Device Code (x = B, M, H)  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
MMBF5484	SOT-23	3000 Tape & Reel
MMBF5484	(Pb-Free)	
MMBF5484		

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MMBF5484, MMBF5485, MMBF5486

## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS</b>							
V <sub>(BR)GSS</sub>	Gate-Source Breakdown Voltage	I <sub>G</sub> = -1.0 μA, V <sub>DS</sub> = 0	-25	-	-	V	
I <sub>GSS</sub>	Gate Reverse Current	V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0 V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0, T <sub>A</sub> = 100°C	-	-	-1.0 -0.2	nA μA	
V <sub>GS(off)</sub>	Gate-Source Cutoff Voltage	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 10 nA	5484 5485 5486	-0.3 -0.5 -2.0	-	-3.0 -4.0 -6.0	V V V

## ON CHARACTERISTICS

I <sub>DSS</sub>	Zero-Gate Voltage Drain Current*	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0	5484 5485 5486	1.0 4.0 8.0	- - -	5.0 10 20	mA mA mA
------------------	----------------------------------	---------------------------------------------	----------------------	-------------------	-------------	-----------------	----------------

## SMALL SIGNAL CHARACTERISTICS

g <sub>fs</sub>	Forward Transfer Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz	5484 5485 5486	3000 3500 4000	- - -	6000 7000 8000	μmhos μmhos μmhos		
Re(y <sub>is</sub> )	Input Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz	5484	-	-	100	μmhos		
		V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 kHz	5485 / 5486	-	-	1000	μmhos		
g <sub>os</sub>	Output Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz	5484 5485 5486	- - -	- - -	50 60 75	μmhos μmhos μmhos		
		Re(y <sub>os</sub> )	Output Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz	5484	-	-	75	μmhos
				V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 MHz	5485 / 5486	-	-	100	μmhos
Re(y <sub>fs</sub> )	Forward Transconductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz	5484	2500	-	-	μmhos		
		V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 MHz	5485	3000	-	-	μmhos		
			5486	3500	-	-	μmhos		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz	-	-	-	5.0	pF		
C <sub>rss</sub>	Reverse Transfer Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz	-	-	-	1.0	pF		
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz	-	-	-	2.0	pF		
NF	Noise Figure	V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 100 MHz	5484	-	-	3.0	dB		
		V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 400 MHz	5484	-	4.0	-	dB		
		V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 100 MHz	5485 / 5486	-	-	2.0	dB		
		V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 400 MHz	5485 / 5486	-	-	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.

TYPICAL CHARACTERISTICS

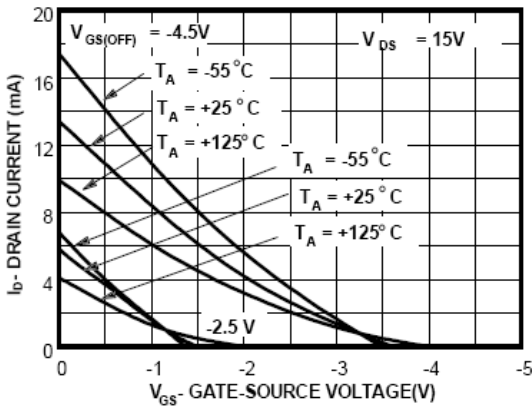


Figure 1. Transfer Characteristics

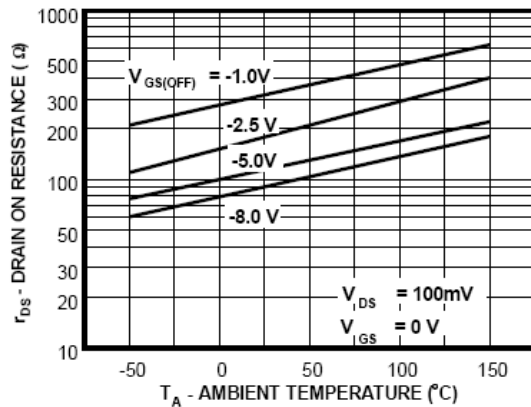


Figure 2. Channel Resistance vs. Temperature

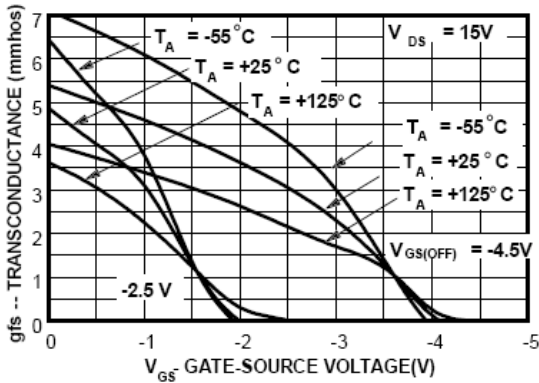


Figure 3. Transconductance Characteristics

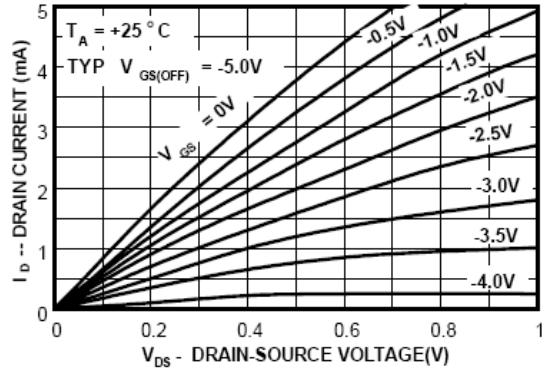


Figure 4. Common Drain-Source Characteristics

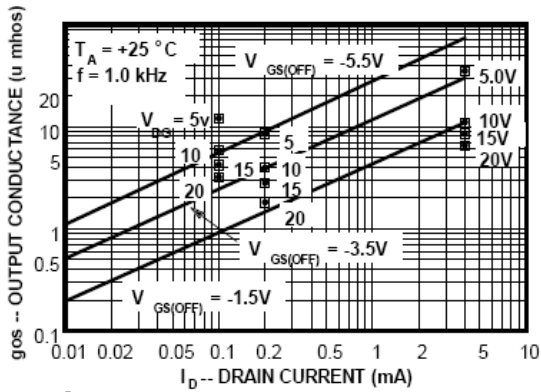


Figure 5. Output Conductance vs. Drain Current

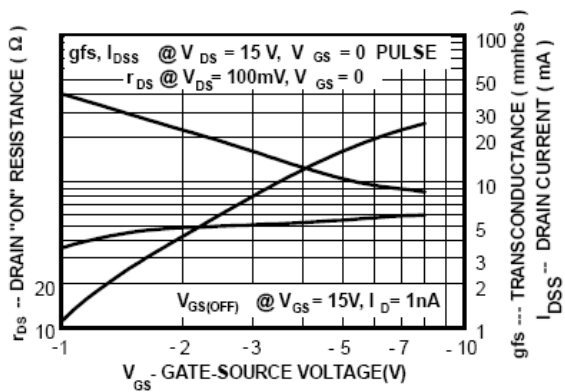


Figure 6. Transconductance Parameter Interactions

# MMBF5484, MMBF5485, MMBF5486

## TYPICAL CHARACTERISTICS (continued)

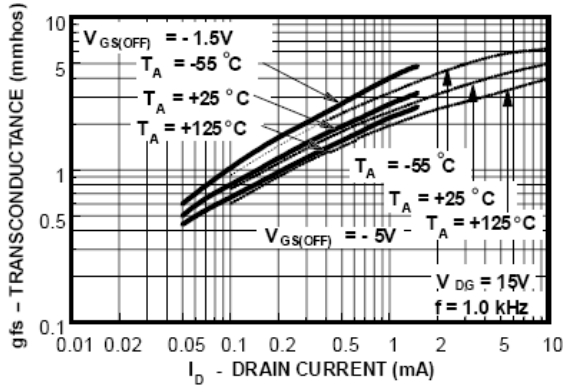


Figure 7. Transconductance vs. Drain Current

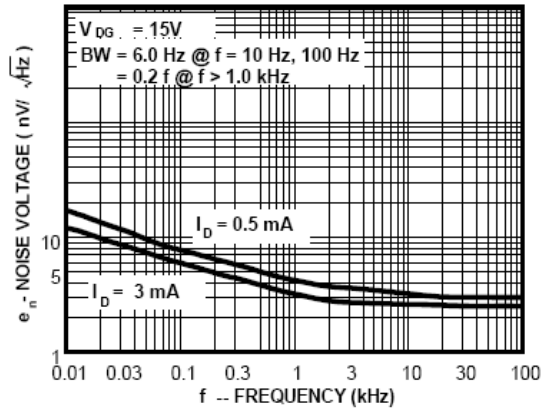


Figure 8. Noise Voltage vs. Frequency

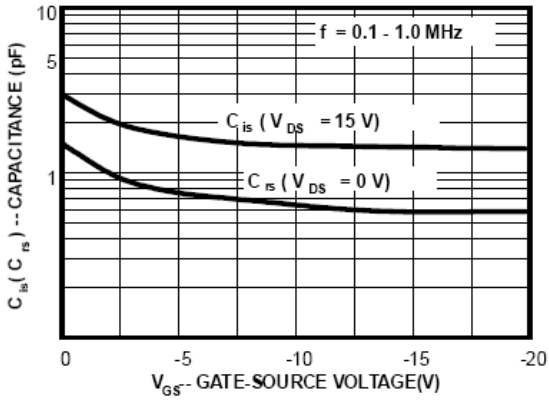


Figure 9. Capacitance vs. Voltage

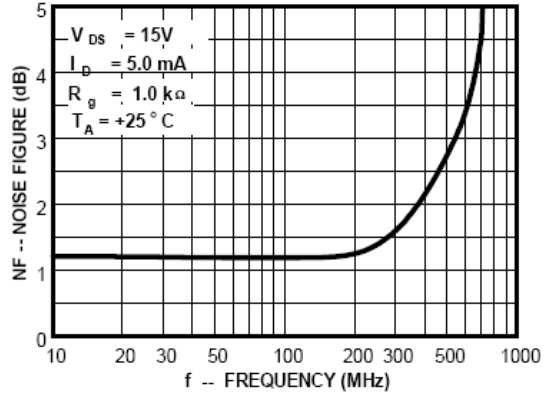


Figure 10. Noise Figure Frequency

COMMON SOURCE CHARACTERISTICS

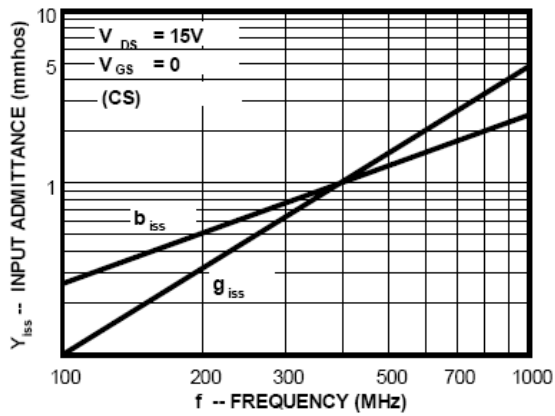


Figure 11. Input Admittance

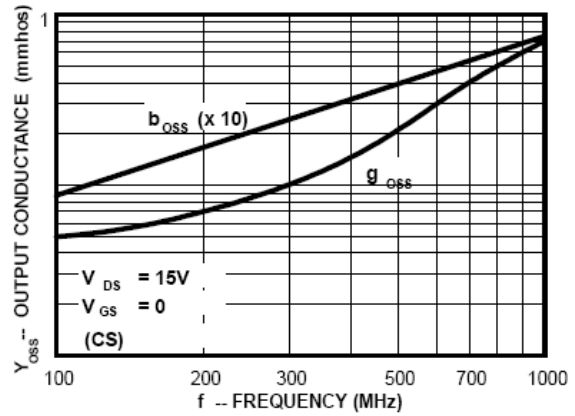


Figure 12. Output Admittance

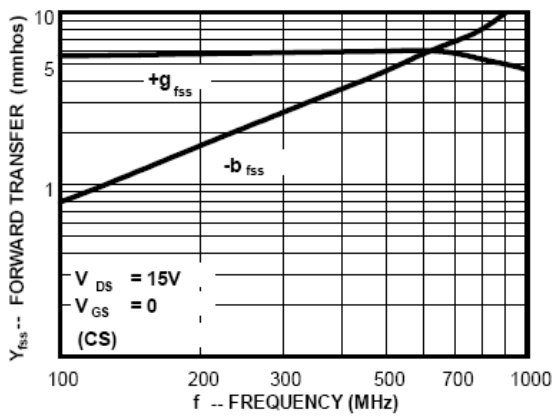


Figure 13. Forward Transadmittance

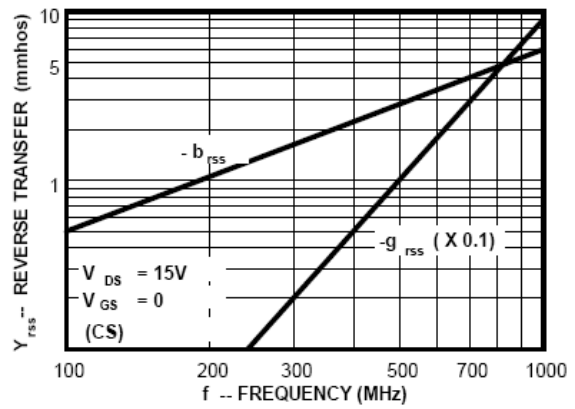


Figure 14. Reverse Transadmittance

COMMON GATE CHARACTERISTICS

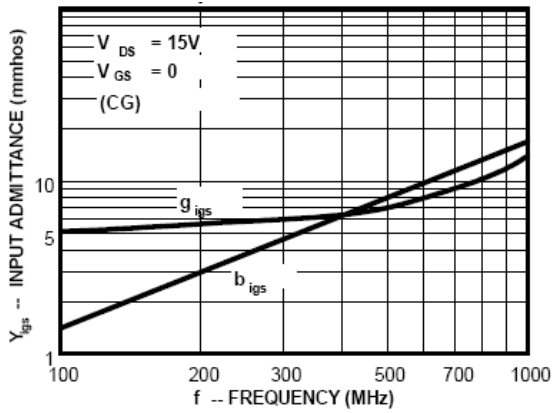


Figure 15. Input Admittance

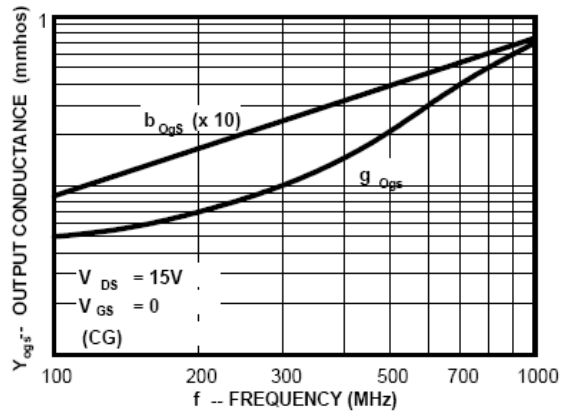


Figure 16. Output Admittance

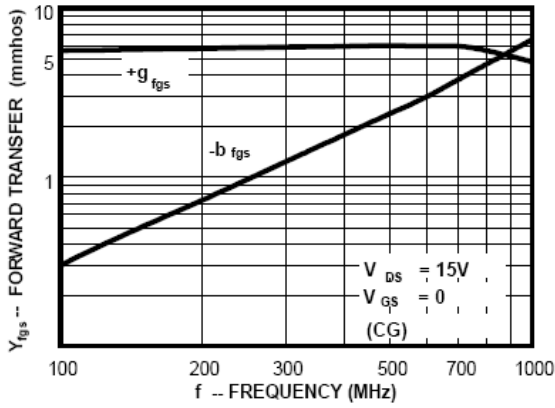


Figure 17. Forward Transadmittance

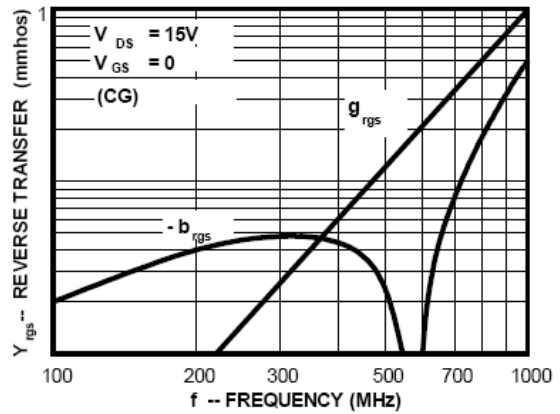


Figure 18. Reverse Transadmittance

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)

