

P-Channel Switch

MMBFJ270

Description

This device is designed for low level analog switching sample and hold circuits and chopper stabilized amplifiers.
Sourced from process 88.

Features

- These are Pb-Free Devices

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 1)

Symbol	Parameter	Value	Unit
V_{DG}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	30	V
I_{GF}	Forward Gate Current	50	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$

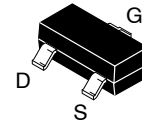
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- These ratings are limiting values above which the serviceability of any semiconductor device may be impaired. These are steady-state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

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

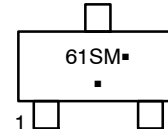
Symbol	Parameter	Max	Unit
P_D	Total Device Dissipation	225	mW
	Derate Above 25°C	1.8	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 2)	556	$^\circ\text{C}/\text{W}$

- Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



SOT-23 (TO-236)
CASE 318-08

MARKING DIAGRAMS



61S = Specific Device Code
M = Date Code
▪ = Pb-Free Package
(Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MMBFJ270	SOT-23 (TO-236) (Pb-Free)	3000 / Tape & Reel

†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](#).

MMBFJ270

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Max	Unit
--------	-----------	----------------	-----	-----	------

OFF CHARACTERISTICS (Note 3)

V _{(BR)GSS}	Gate–Source Breakdown Voltage	I _G = 1.0 μA, V _{DS} = 0	30		V
I _{GSS}	Gate Reverse Current	V _{GS} = 20 V, V _{DS} = 0		200	pA
V _{GS(off)}	Gate–Source Cut–Off Voltage	V _{DS} = –15 V, I _D = –1.0 nA	0.5	2.0	V

ON CHARACTERISTICS (Note 3)

I _{DSS}	Zero–Gate Voltage Drain Current	V _{DS} = –15 V, V _{GS} = 0	–2.0	–15	mA
g _{fs}	Forward Transconductance	V _{GS} = 0 V, V _{DS} = 15 V, f = 1.0 kHz	6000	15000	μmhos
g _{oss}	Common–Source Output Conductance	V _{GS} = 0 V, V _{DS} = 15 V, f = 1.0 kHz		200	μmhos

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.

3. Short duration test pulse used to minimize self–heating effect.

TYPICAL CHARACTERISTICS

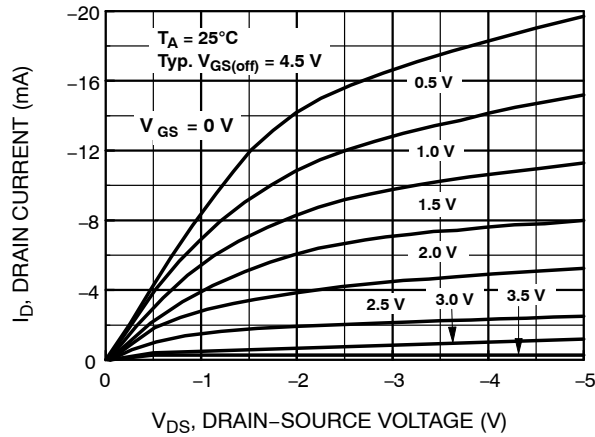


Figure 1. Common Drain-Source

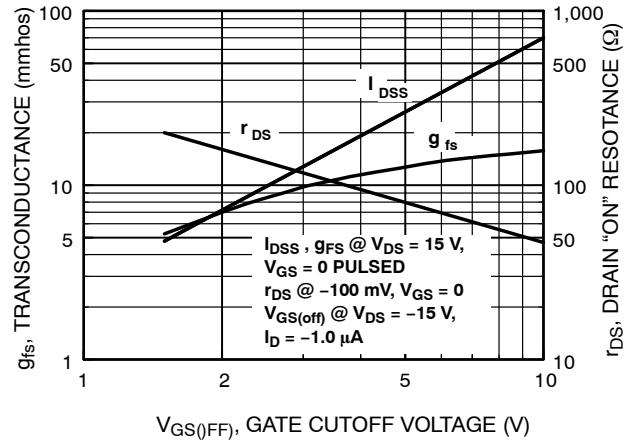


Figure 2. Parameter Interactions

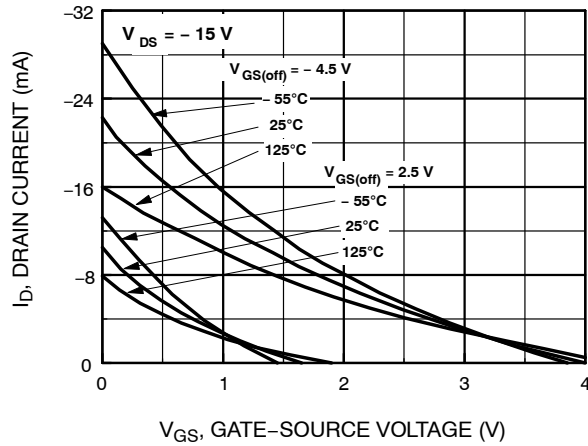


Figure 3. Transfer Characteristics

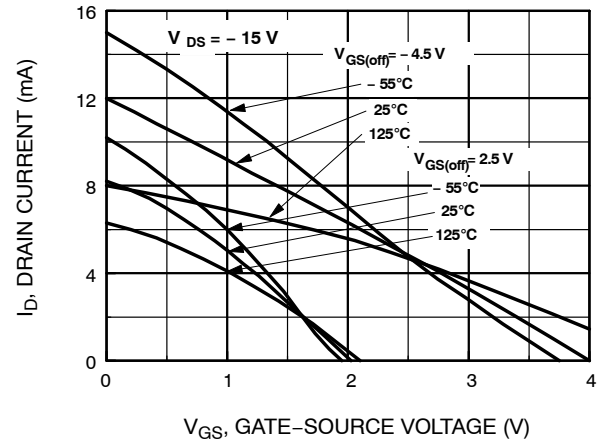


Figure 4. Transfer Characteristics

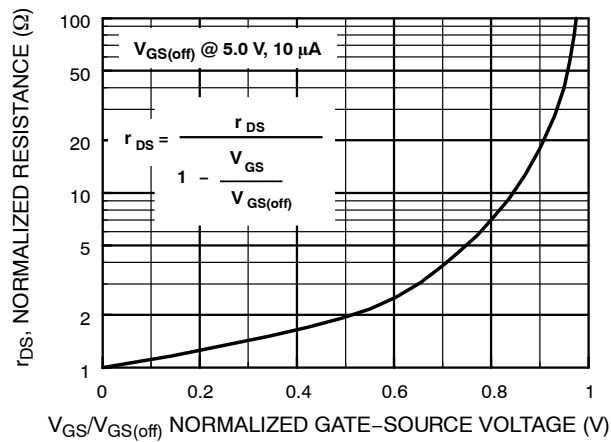


Figure 5. Normalized Drain Resistance vs. Bias Voltage

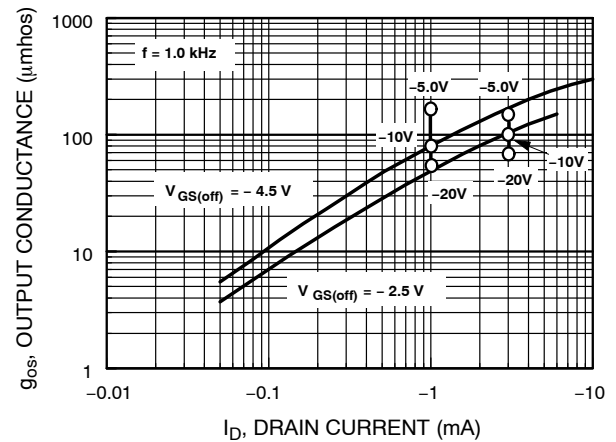


Figure 6. Output Conductance vs. Drain Current

TYPICAL CHARACTERISTICS (Continued)

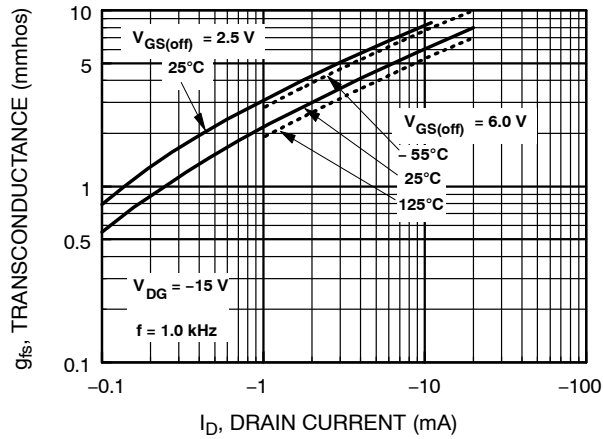


Figure 7. Transconductance vs. Drain Current

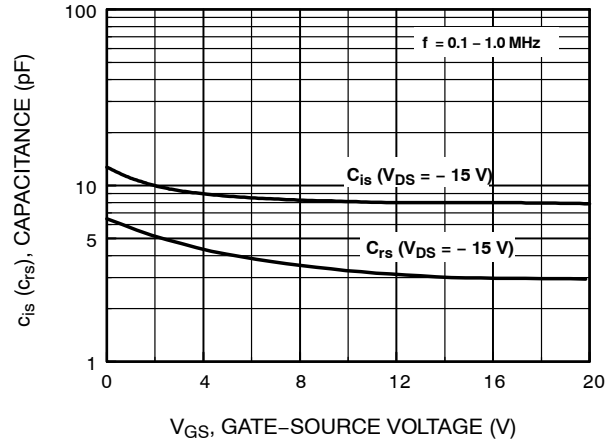


Figure 8. Capacitance vs. Voltage

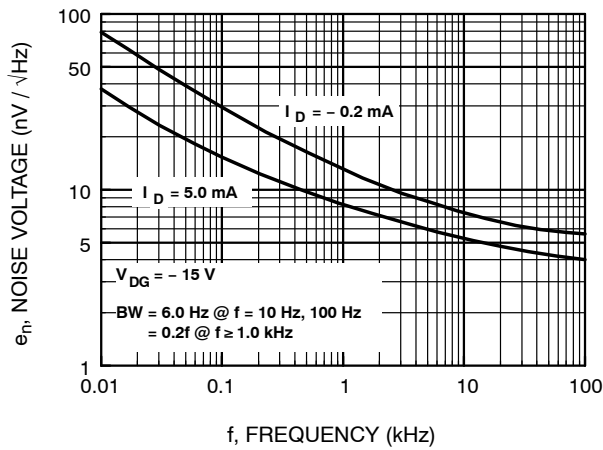


Figure 9. Noise Voltage vs. Frequency

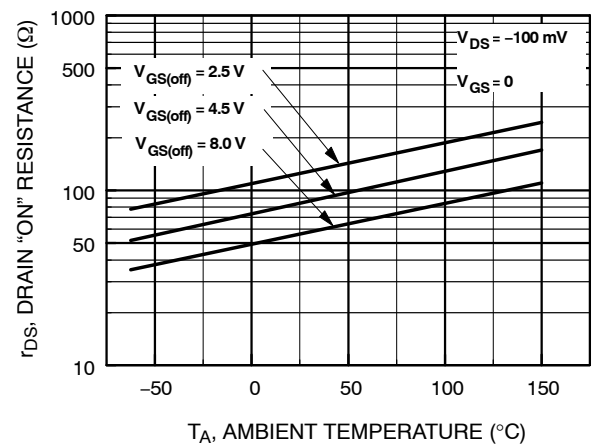


Figure 10. Channel Resistance vs. Temperature

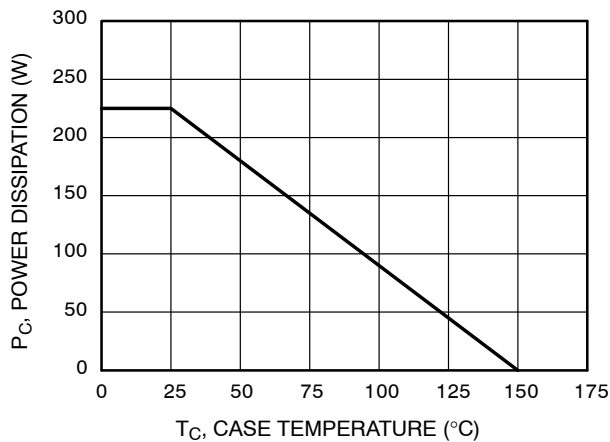


Figure 11. Power Derating

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. **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
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales