

# 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-Gate 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	$^\circ\text{C}$

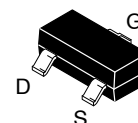
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- 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)

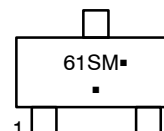
Symbol	Parameter	Max	Unit
$P_D$	Total Device Dissipation	225	mW
	Derate Above $25^\circ\text{C}$	1.8	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 2)	556	$^\circ\text{C}/\text{W}$

- 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<sub>C</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Max	Unit
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### OFF CHARACTERISTICS (Note 3)

V <sub>(BR)GSS</sub>	Gate–Source Breakdown Voltage	I <sub>G</sub> = 1.0 μA, V <sub>DS</sub> = 0	30		V
I <sub>GSS</sub>	Gate Reverse Current	V <sub>GS</sub> = 20 V, V <sub>DS</sub> = 0		200	pA
V <sub>GS(off)</sub>	Gate–Source Cut–Off Voltage	V <sub>DS</sub> = –15 V, I <sub>D</sub> = –1.0 nA	0.5	2.0	V

### ON CHARACTERISTICS (Note 3)

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

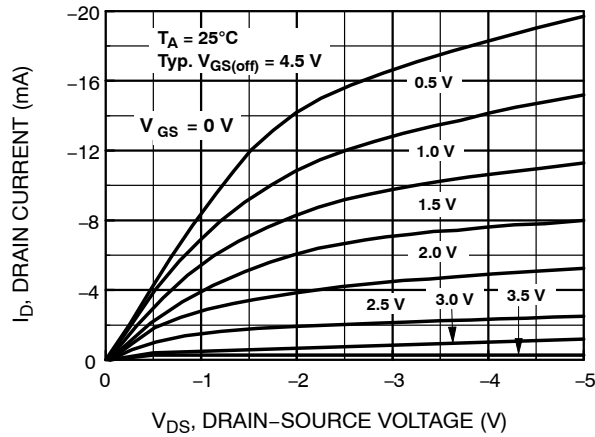


Figure 1. Common Drain-Source

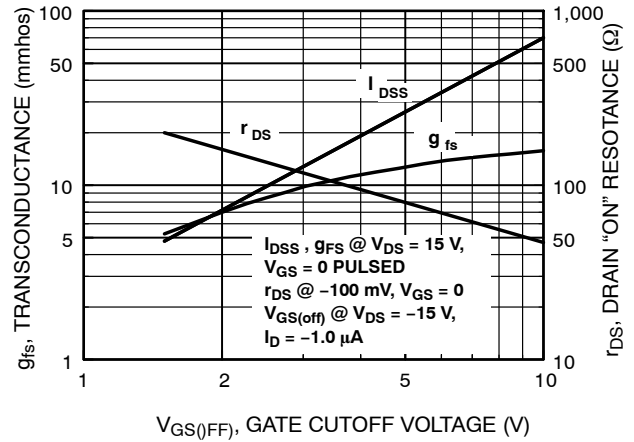


Figure 2. Parameter Interactions

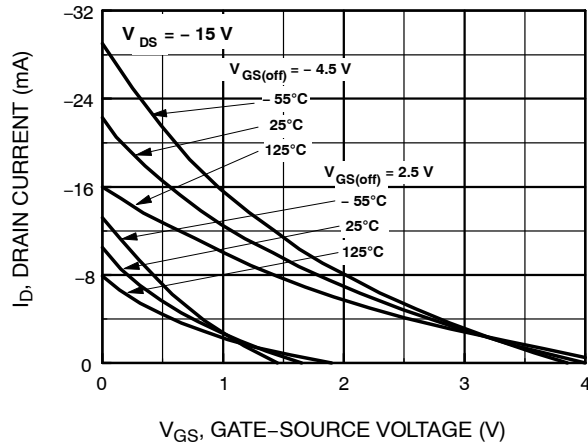


Figure 3. Transfer Characteristics

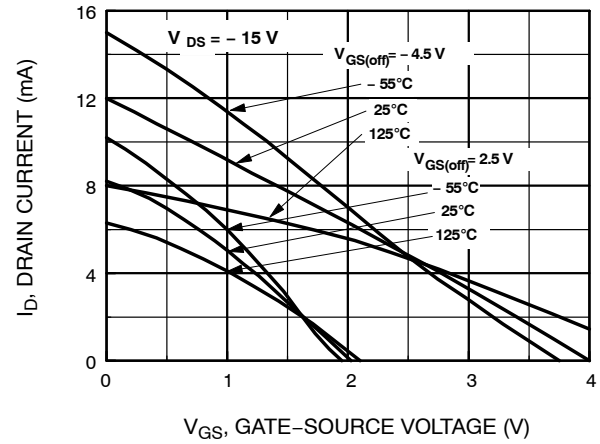


Figure 4. Transfer Characteristics

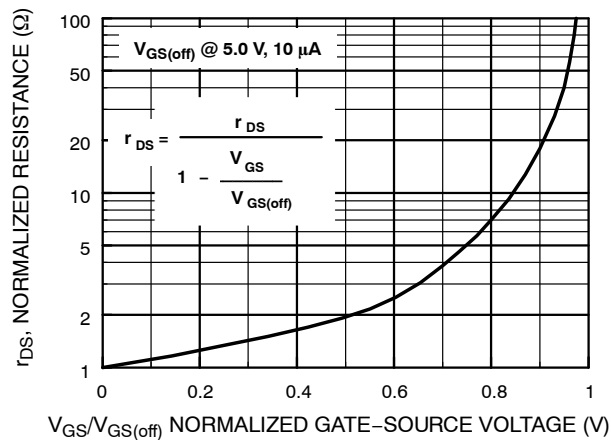


Figure 5. Normalized Drain Resistance vs. Bias Voltage

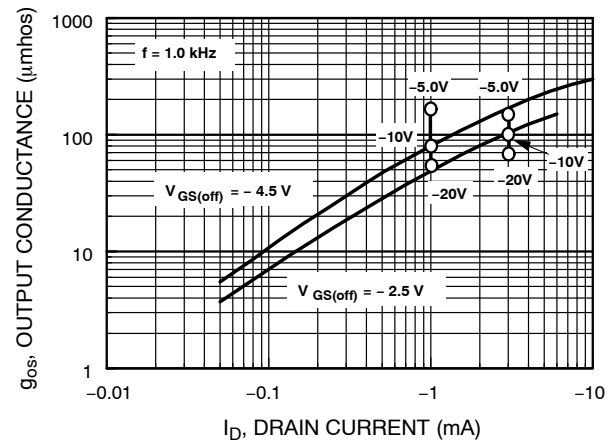


Figure 6. Output Conductance vs. Drain Current

## TYPICAL CHARACTERISTICS (Continued)

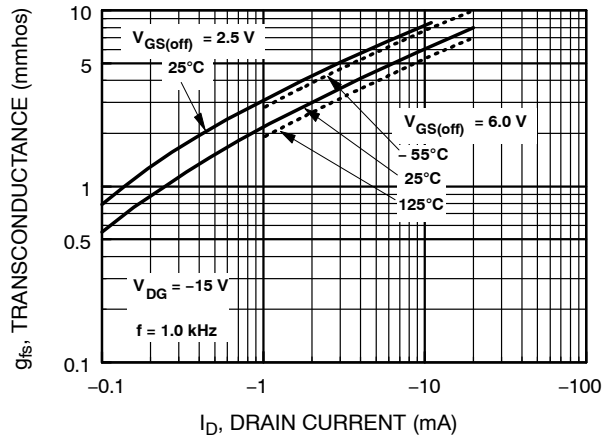


Figure 7. Transconductance vs. Drain Current

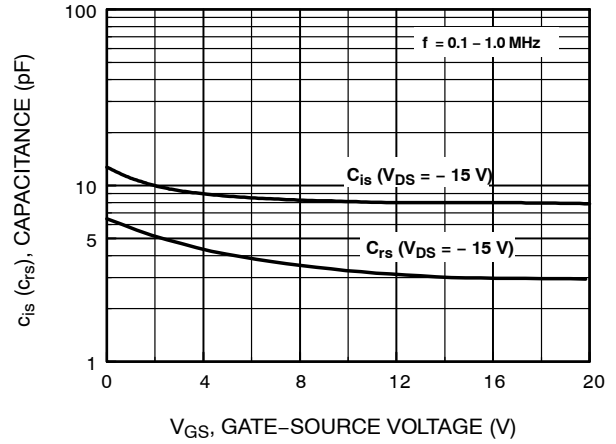


Figure 8. Capacitance vs. Voltage

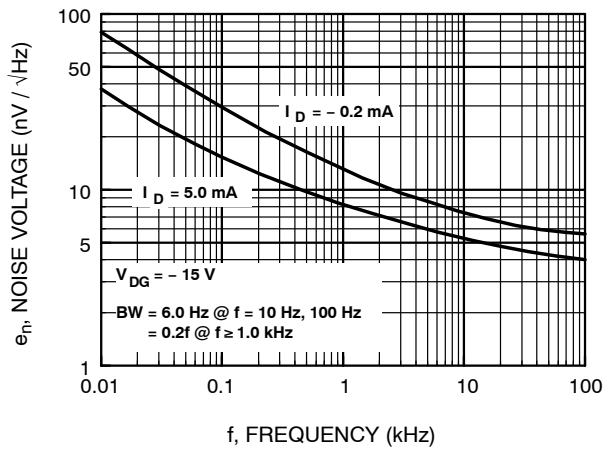


Figure 9. Noise Voltage vs. Frequency

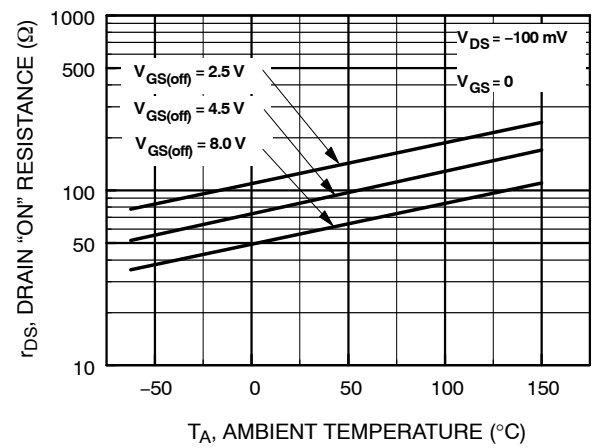


Figure 10. Channel Resistance vs. Temperature

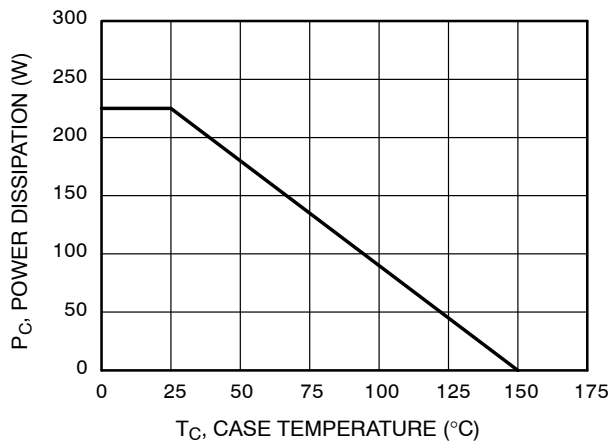


Figure 11. Power Derating

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