

# N-Channel JFET

## MMBFJ110

### Features

- This Device is Designed for Digital Switching Applications where Very Low On Resistance is Mandatory
- Sourced from Process 58
- This is a Pb-Free Device

### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise specified) (Notes 1, 2)

Symbol	Parameter	Value	Unit
$V_{DG}$	Drain–Gate Voltage	25	V
$V_{GS}$	Gate–Source Voltage	–25	V
$I_{GF}$	Forward Gate Current	10	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_J, T_{STG}$	Storage 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.

1. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
2. These are steady-state limits. ON Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

### THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified) (Note 3)

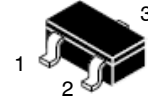
Symbol	Parameter	Max	Unit
$P_D$	Total Device Dissipation	460	mW
	Derate Above $25^\circ\text{C}$	3.68	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction–to–Ambient	270	$^\circ\text{C}/\text{W}$

3. Device mounted on FR–4 PCB 36 mm x 18 mm x 1.5 mm; mounting pad for the collector lead minimum 6  $\text{cm}^2$ .



ON Semiconductor®

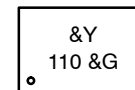
[www.onsemi.com](http://www.onsemi.com)



SOT–23/SUPERSOT™ –23,  
3 LEAD, 1.4x2.9  
CASE 527AG

1. Drain, 2. Source, 3. Gate

### MARKING DIAGRAM



110 = Specific Device Code

&Y = Year Coding

&G = Weekly Date Code

### ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.

# MMBFJ110

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

Symbol	Parameter	Test Condition	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>					
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = -10 \mu\text{A}, V_{DS} = 0$	-25	-	V
$I_{GSS}$	Gate Reverse Current	$V_{GS} = -15 \text{ V}, V_{DS} = 0$	-	-3.0	nA
		$V_{GS} = -15 \text{ V}, V_{DS} = 0, T_A = 100^\circ\text{C}$	-	-200	
$V_{GS(off)}$	Gate-Source Cut-Off Voltage	$V_{DS} = 15 \text{ V}, I_D = 10 \text{ nA}$	-0.5	-4.0	V

## ON CHARACTERISTICS

$I_{DSS}$	Zero-Gate Voltage Drain Current (Note 4)	$V_{DS} = 15 \text{ V}, V_{GS} = 0$	10	-	mA
$r_{DS(on)}$	Drain-Source On Resistance	$V_{DS} \leq 0.1 \text{ V}, V_{GS} = 0$	-	18	$\Omega$

## SMALL SIGNAL CHARACTERISTICS

$C_{dg(on)}$ $C_{sg(on)}$	Drain-Gate & Source-Gate On Capacitance	$V_{DS} = 0, V_{GS} = 0, f = 1.0 \text{ MHz}$	-	85	pF
$C_{dg(off)}$ $C_{sg(off)}$	Drain-Gate & Source-Gate Off Capacitance	$V_{DS} = 0, V_{GS} = -10 \text{ V}, f = 1.0 \text{ MHz}$	-	15	pF

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  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

## TYPICAL PERFORMANCE CHARACTERISTICS

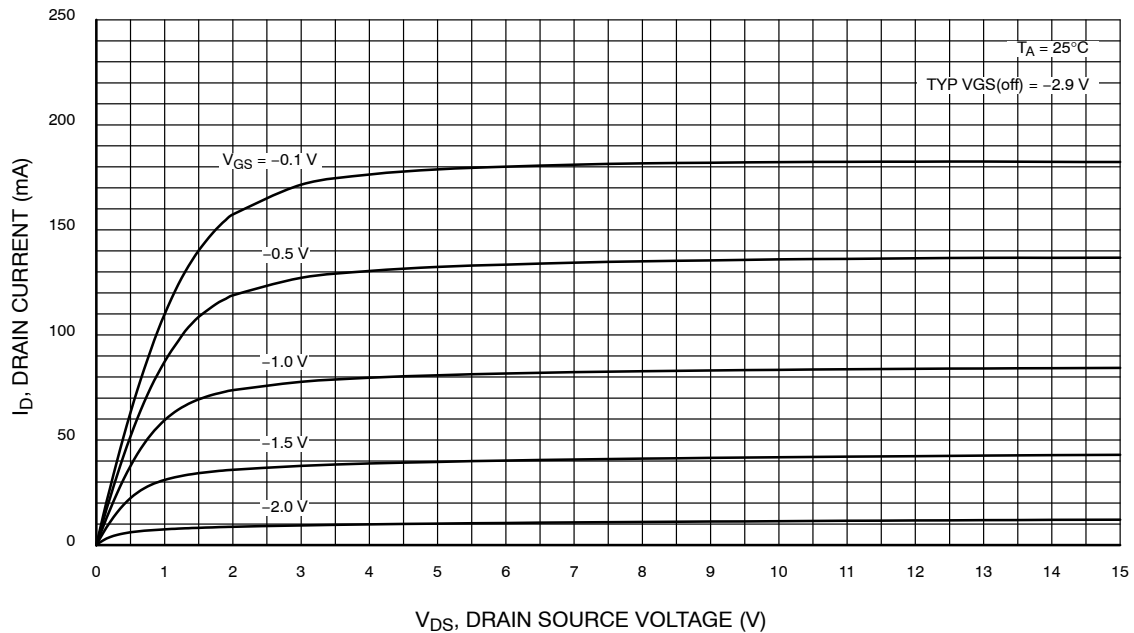
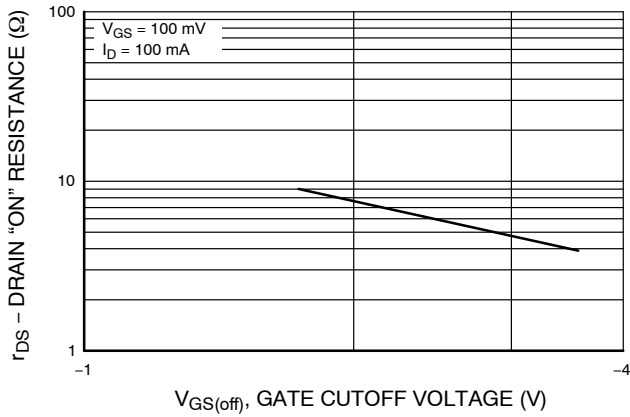


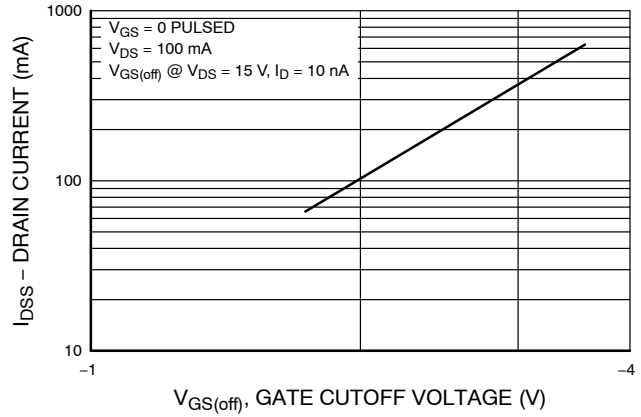
Figure 1. Common Drain-Source

# MMBFJ110

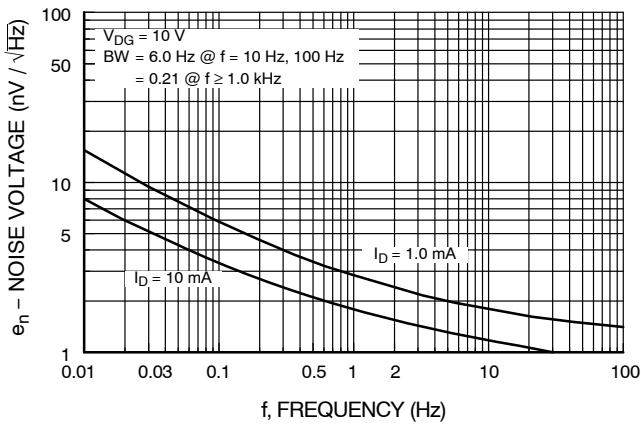
## TYPICAL PERFORMANCE CHARACTERISTICS (continued)



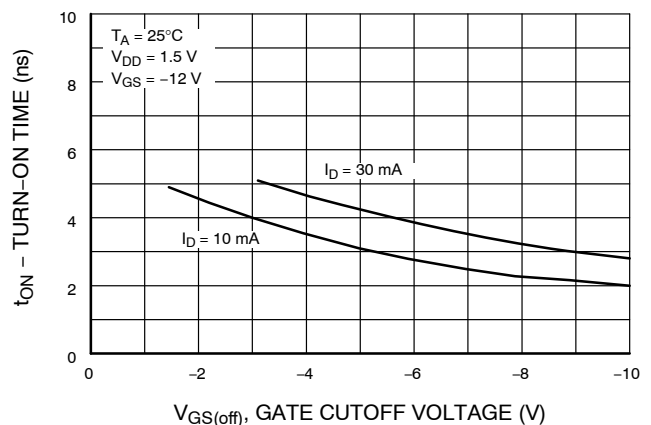
**Figure 2. Drain ON Resistance**



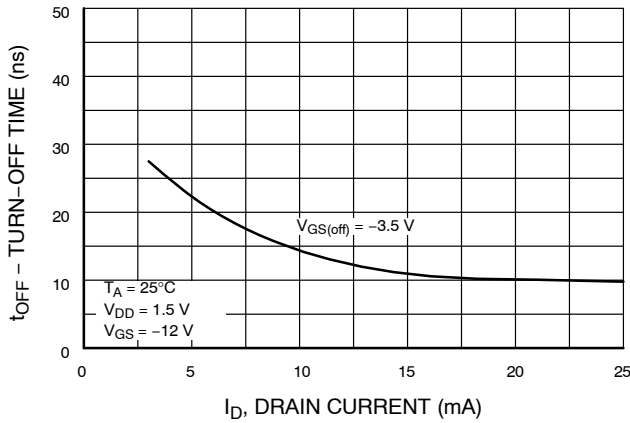
**Figure 3. Drain Current vs. Gate-Source Cut-Off Voltage**



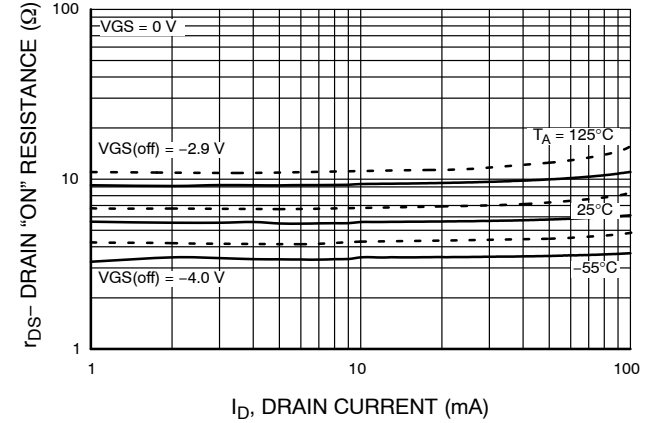
**Figure 4. Noise Voltage vs. Frequency**



**Figure 5. Switching Turn-On Time vs. Gate-Source Cut-Off Voltage**



**Figure 6. Switching Turn-Off Time vs. Drain Current**



**Figure 7. On Resistance vs. Drain Current**

# MMBFJ110

## TYPICAL PERFORMANCE CHARACTERISTICS (continued)

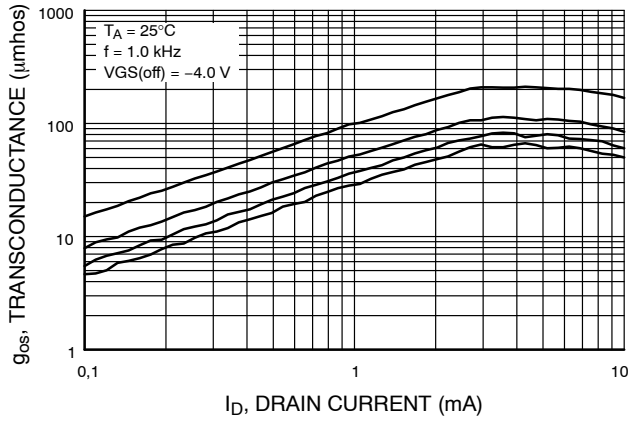


Figure 8. Output Conductance vs. Drain Current

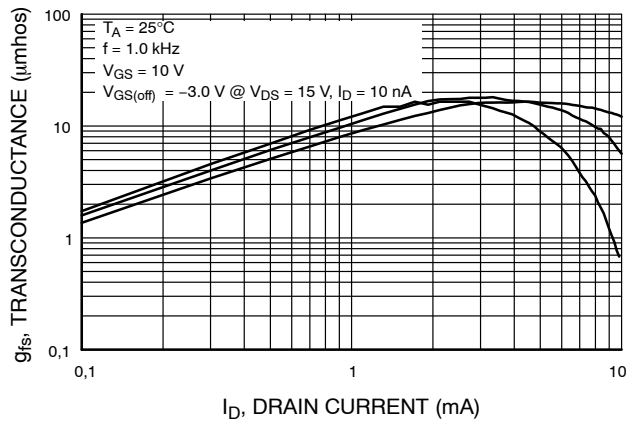


Figure 9. Output Conductance vs. Drain Current

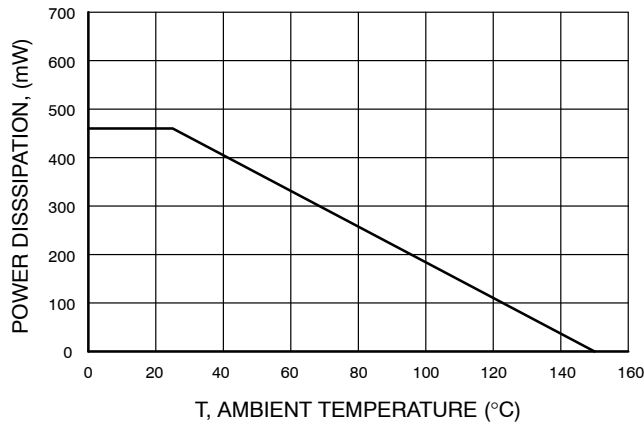


Figure 10. Power Dissipation vs. Ambient Temperature

### ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping <sup>†</sup>
MMBFJ108	110	SSOT 3L (Pb-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 Specifications Brochure, BRD8011/D.

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

ON Semiconductor®



### SOT-23/SUPERSOT™ -23, 3 LEAD, 1.4x2.9

CASE 527AG  
ISSUE A

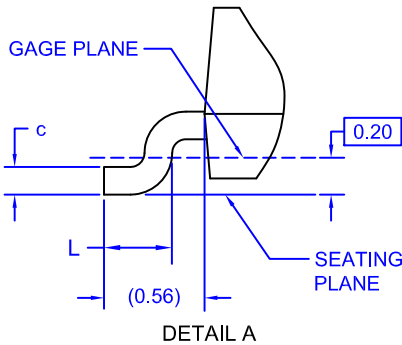
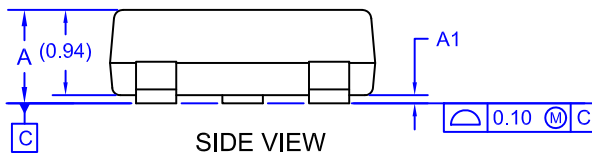
DATE 09 DEC 2019



NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.

DIM	MIN.	NOM.	MAX.
A	0.85	0.95	1.12
A1	0.00	0.05	0.10
b	0.370	0.435	0.508
c	0.085	0.150	0.180
D	2.80	2.92	3.04
E	2.31	2.51	2.71
E1	1.20	1.40	1.52
e	0.95 BSC		
e1	1.90 BSC		
L	0.33	0.38	0.43



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

#### GENERIC MARKING DIAGRAM\*



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

(Note: Microdot may be in either location)

\*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.

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<b>DESCRIPTION:</b>	<b>SOT-23/SUPERSOT-23, 3 LEAD, 1.4X2.9</b>	<b>PAGE 1 OF 1</b>

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