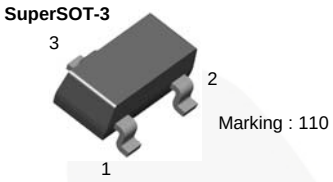
February 2015

MMBFJ110
N-Channel Switch

Features

- This device is designed for digital switching applications where very low on resistance is mandatory.
- Sourced from process 58



1. Drain 2. Source 3. Gate

Ordering Information

Part Number	Top Mark	Package	Packing Method
MMBFJ110	110	SSOT 3L	Tape and Reel

Absolute Maximum Ratings[1], [2]

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

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	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C

Notes:

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

Thermal Characteristics[3]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
P_D	Total Device Dissipation	460	mW
	Derate Above 25°C	3.68	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	270	°C/W

Note:

3. Device mounted on FR-4 PCB 36mm × 18mm × 1.5mm; mounting pad for the collector lead minimum 6cm^2.

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
Off Characteristics					
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	I_G = -10 μA, V_{DS} = 0	-25		V
I_{GSS}	Gate Reverse Current	V_{GS} = -15 V, V_{DS} = 0		-3.0	nA
		V_{GS} = -15 V, V_{DS} = 0, T_A = 100°C		-200	
V_{GS}(off)	Gate-Source Cut-Off Voltage	V_{DS} = 15 V, I_D = 10 nA	-0.5	-4.0	V
On Characteristics					
I_{DSS}	Zero-Gate Voltage Drain Current[4]	V_{DS} = 15 V, V_{GS} = 0	10		mA
r_{DS}(on)	Drain-Source On Resistance	V_{DS} ≤ 0.1 V, V_{GS} = 0		18	Ω
Small Signal Characteristics					
C_{dg}(on) C_{sg}(on)	Drain-Gate &Source-Gate On Capacitance	V_{DS} = 0, V_{GS} = 0, f = 1.0 MHz		85	pF
C_{dg}(off) C_{sg}(off)	Drain-Gate & Source-Gate Off Capacitance	V_{DS} = 0, V_{GS} = -10 V, f = 1.0 MHz		15	pF

Note:

4. Pulse test: pulse width ≤ 300 μs, duty cycle ≤ 2%.

Typical Performance Characteristics

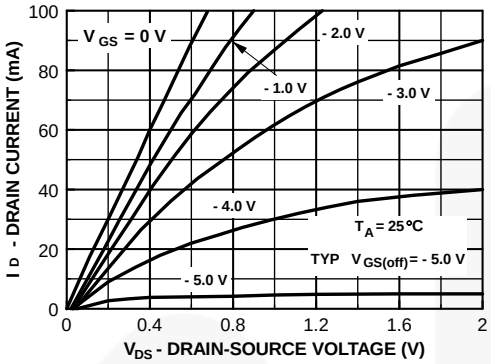


Figure 1. Common Drain-Source

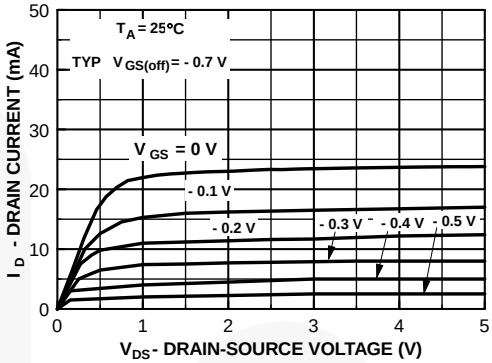


Figure 2. Common Drain-Source

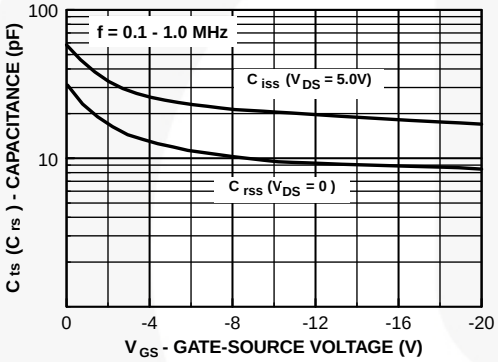


Figure 3. Capacitance vs. Gate-Source Voltage

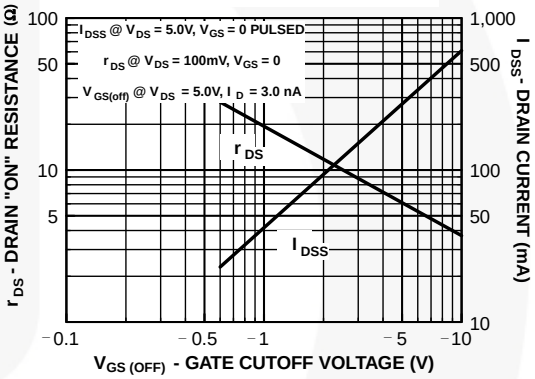


Figure 4. Parameter Interactions

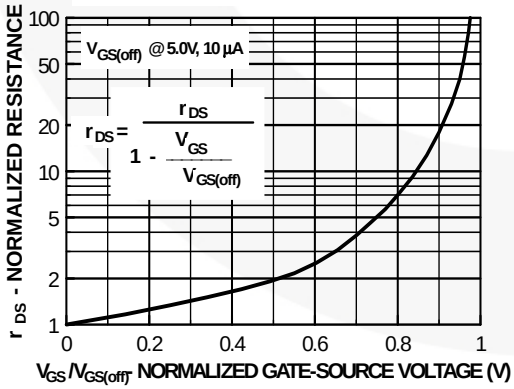


Figure 5. Normalized Drain Resistance vs. Bias Voltage

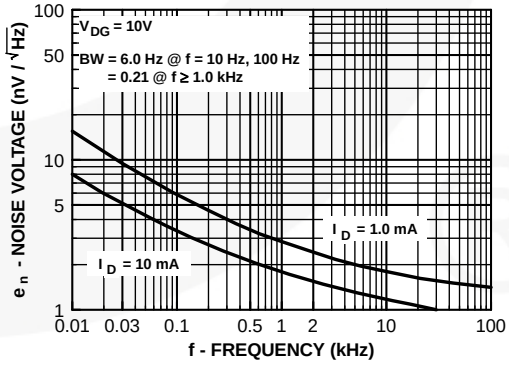


Figure 6. Noise Voltage vs. Frequency

Typical Performance Characteristics (Continued)

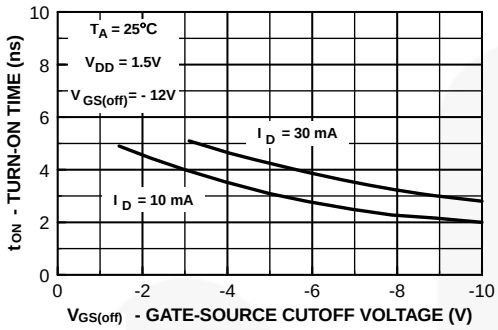


Figure 7. Switching Turn-On Time vs. Gate-Source Cutoff Voltage

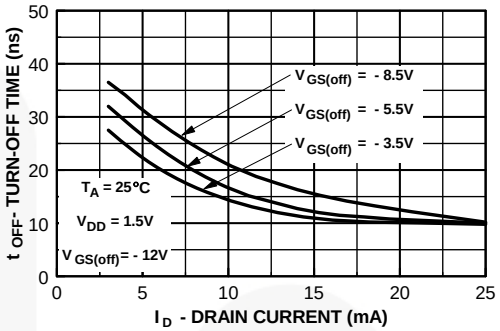


Figure 8. Switching Turn-On Time vs. Drain Current

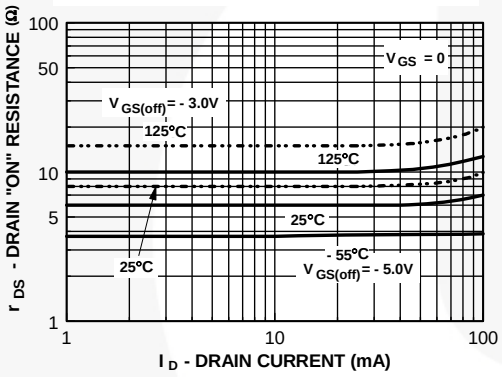


Figure 9. On Resistance vs. Drain Current

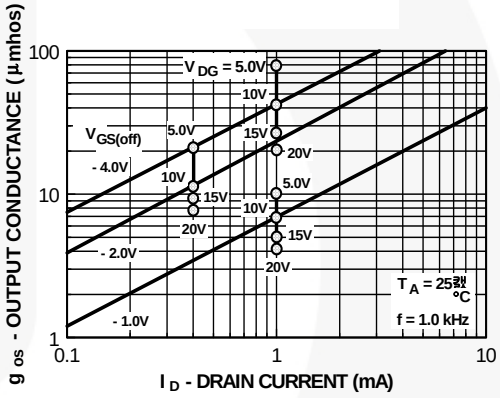


Figure 10. Output Conductance vs. Drain Current

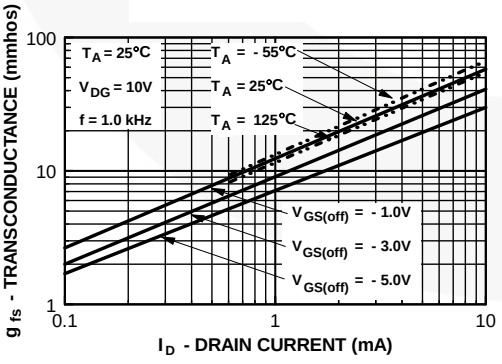


Figure 11. Transconductance vs. Drain Current

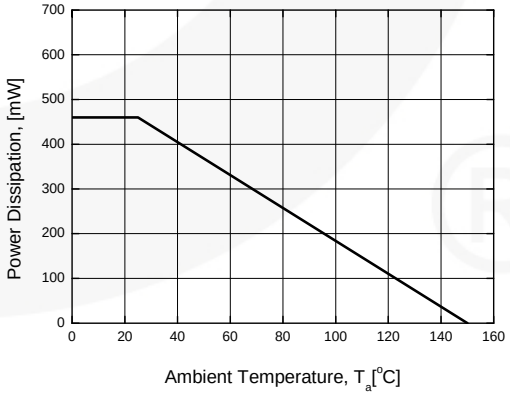


Figure 12. Power Dissipation vs Ambient Temperature

Physical Dimensions

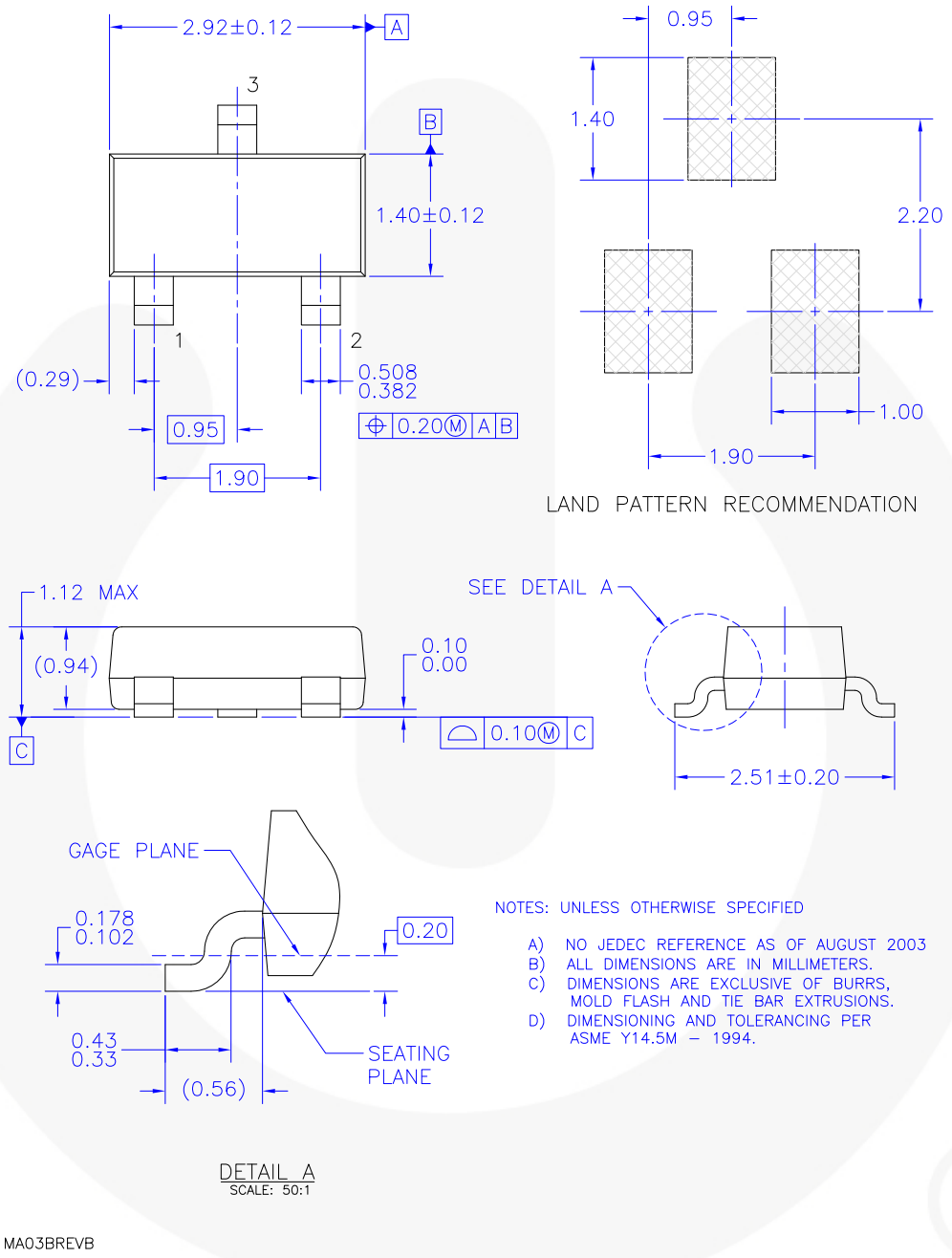


Figure 13. MOLDED PACKAGE, SUPERSOT, 3-LEAD

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