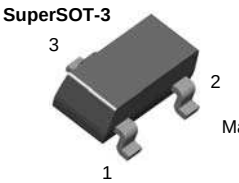
FAIRCHILD SEMICONDUCTOR®

April 2011

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

Absolute Maximum Ratings* T_A=25°C unless otherwise noted

Symbol	Parameter	Value	Units
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

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

NOTES:

1) These ratings 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_A=25°C unless otherwise noted

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

* Device mounted on a minimum pad.

Electrical Characteristics T_A=25°C unless otherwise noted

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

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

Typical Performance Characteristics

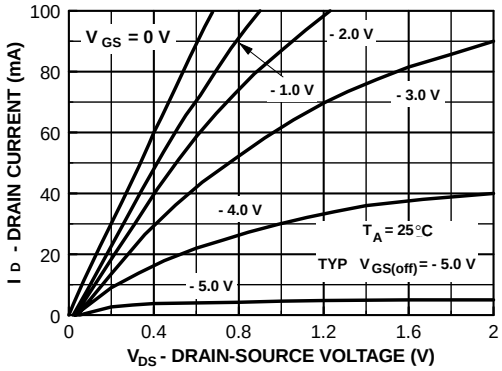


Figure 1. Common Drain-Source

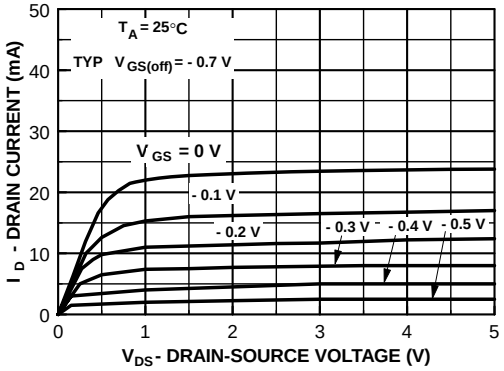


Figure 2. Common Drain-Source

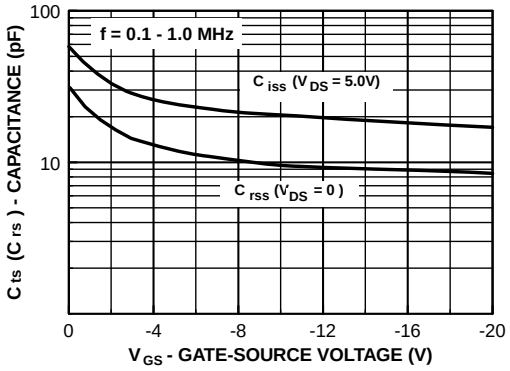


Figure 3. Capacitance vs Gate-Source Voltage

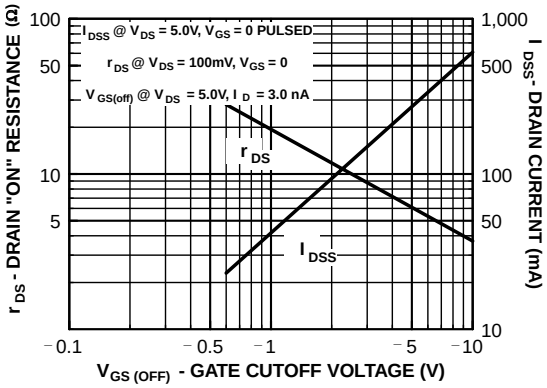


Figure 4. Parameter Interactions

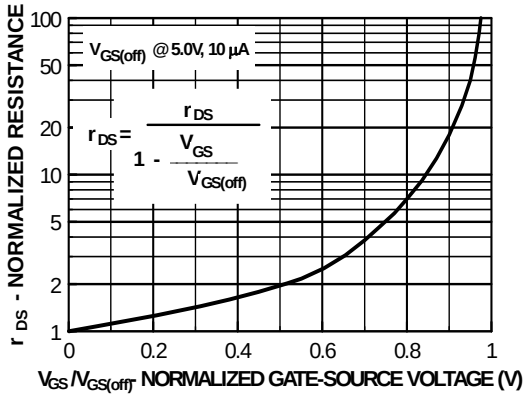


Figure 5. Normalized Drain Resistance vs Bias Voltage

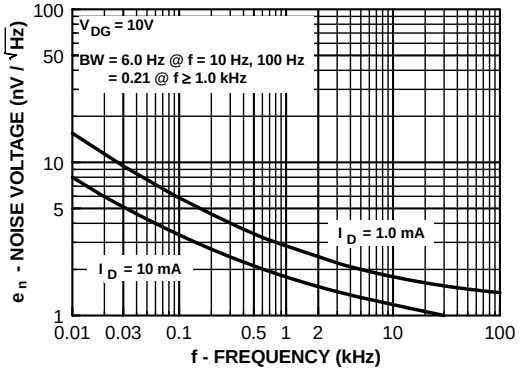


Figure 6. Noise Voltage vs Frequency

Typical Performance Characteristics (Continued)

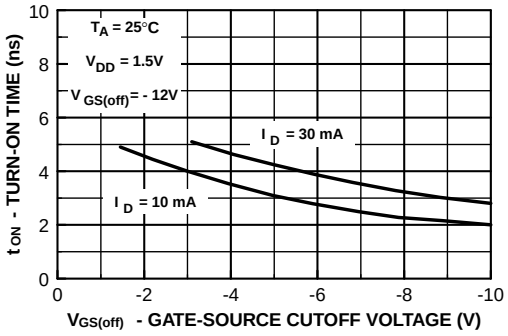


Figure 7. Switching Turn-On Time vs Gate-Source Cutoff Voltage

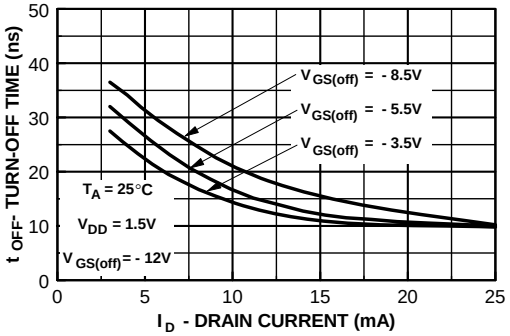


Figure 8. Switching Turn-On Time vs Drain Current

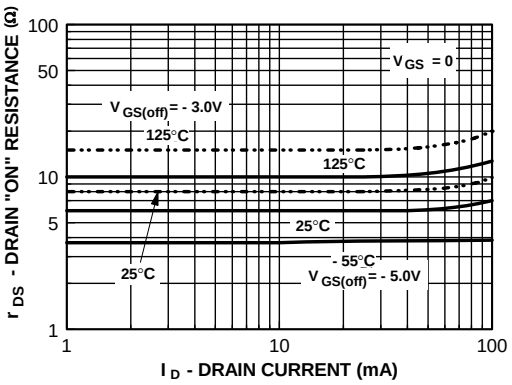


Figure 9. On Resistance vs Drain Current

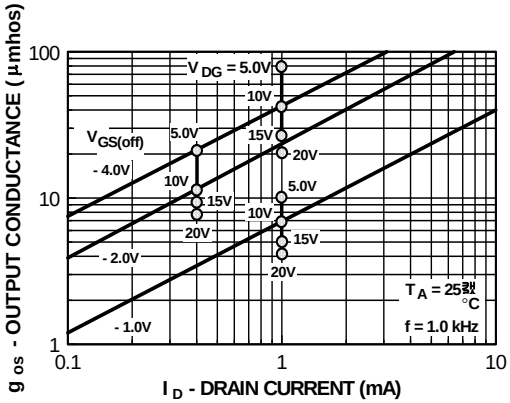


Figure 10. Output Conductance vs Drain Current

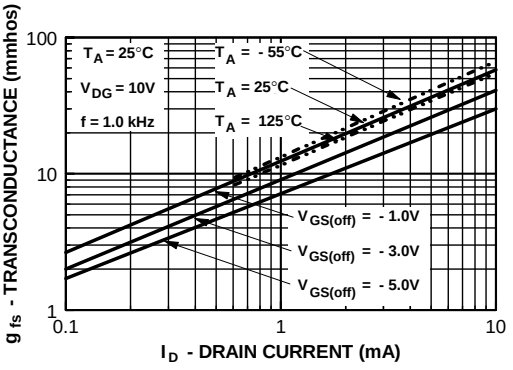


Figure 11. Transconductance vs Drain Current

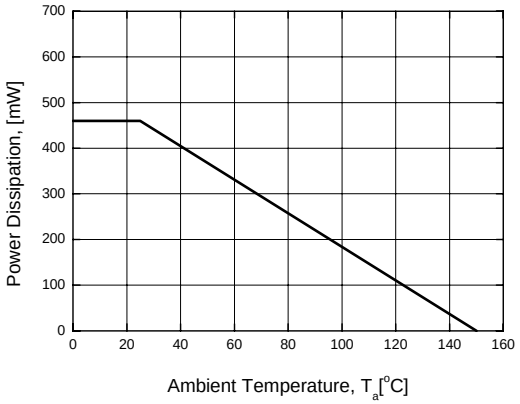
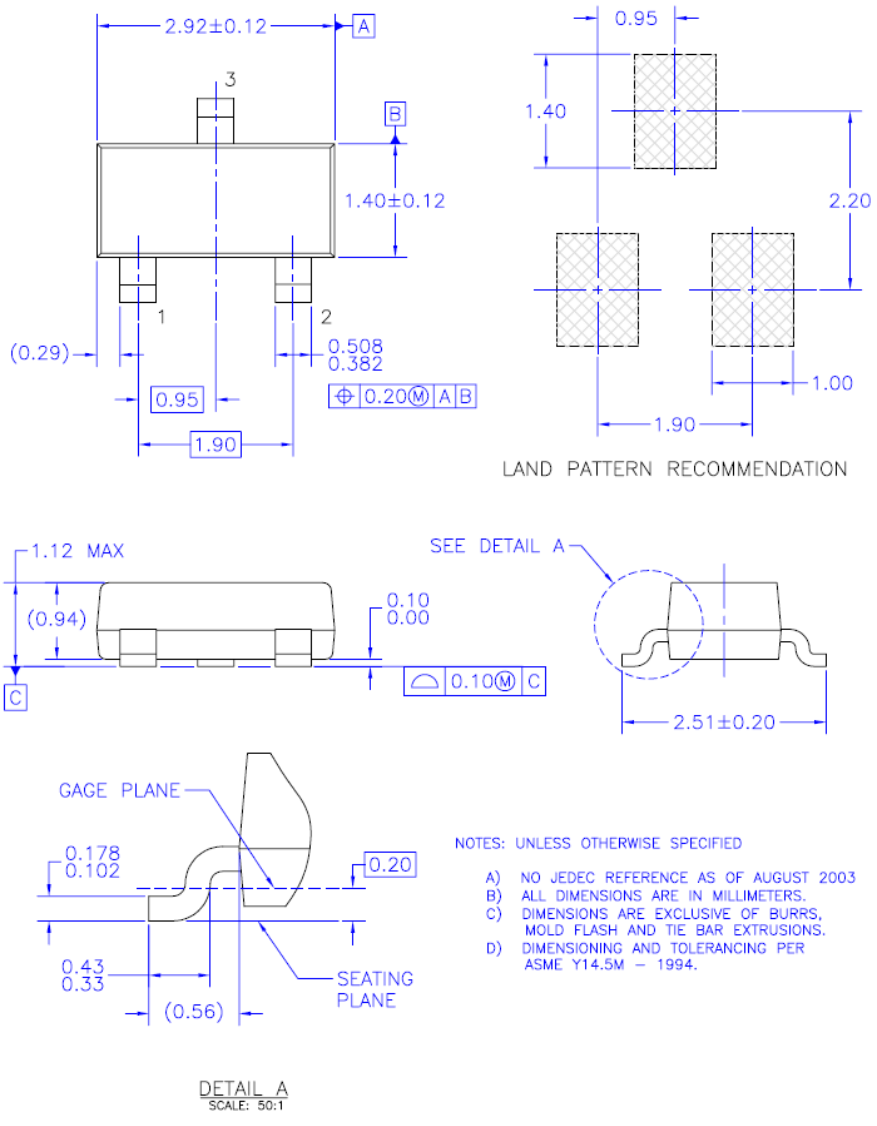


Figure 12. Power Dissipation vs Ambient Temperature

Physical Dimensions

SuperSOT-3



Dimensions in Millimeters

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