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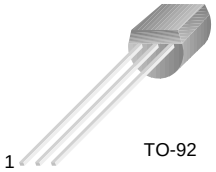
SEMICONDUCTOR®

J108/J109/J110/MMBFJ108

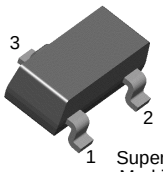
N-Channel Switch

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



TO-92

1. Drain 2. Source 3. Gate



SuperSOT-3
Marking: I8

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, T_{stg}	Operating and Storage Junction Temperature Range	-55 ~ +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 degrees C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Electrical Characteristics T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition		Min.	Max.	Units
Off Characteristics						
$V_{(BR)GSS}$	Gate-Source Breakdwon Voltage	I_G = -10μA, V_{DS} = 0		-25		V
I_{GSS}	Gate Reverse Current	V_{GS} = -15V, V_{DS} = 0			-3.0	nA
		V_{GS} = -15V, V_{DS} = 0, T_A = 100°C			-200	nA
V_{GS}(off)	Gate-Source Cutoff Voltage	V_{DS} = 15V, I_D = 10nA	108	-3.0	-10	V
			109	-2.0	-6.0	V
			110	-0.5	-4.0	V
On Characteristics						
I_{DSS}	Zero-Gate Voltage Drain Current *	V_{DS} = 15V, I_{GS} = 0	108	80		mA
			109	40		mA
			110	10		mA
r_{DS}(on)	Drain-Source On Resistance	V_{DS} ≤ 0.1V, V_{GS} = 0	108		8.0	Ω
			109		12	Ω
			110		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}(on)	Drain-Gate Off Capacitance	V_{DS} = 0, V_{GS} = -10, f = 1.0MHz			15	pF
C_{sg}(off)	Source-Gate Off Capacitance	V_{DS} = 0, V_{GS} = -10, f = 1.0MHz			15	pF

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

Thermal Characteristics T_A=25°C unless otherwise noted

Symbol	Parameter	Max.		Units
		J108 - 110	*MMBFJ108	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	556	°C/W

* Device mounted on FR-4 PCB 1.6" × 1.6" × 0.06"

Typical Characteristics

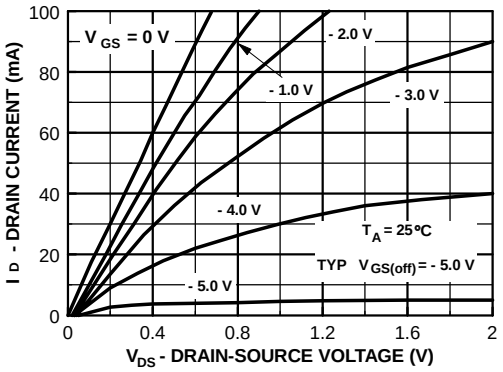


Figure 1. Common Drain-Source

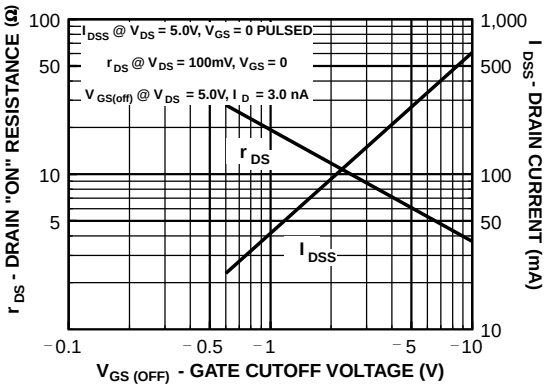


Figure 2. Parameter Interactions

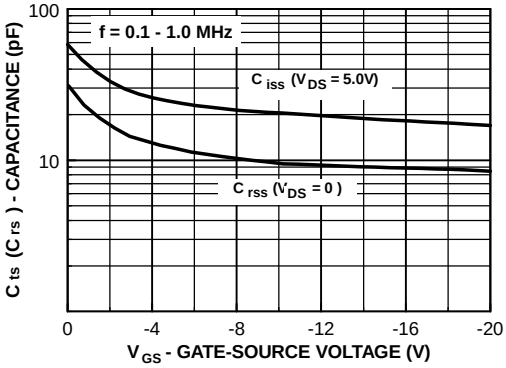


Figure 3. Common Drain-Source

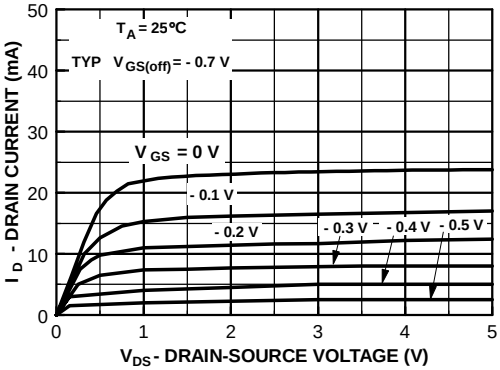


Figure 4. Common Drain-Source

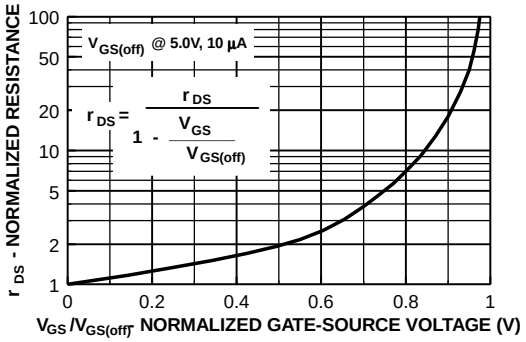


Figure 5. Normalized Drain Resistance vs Bias Voltage

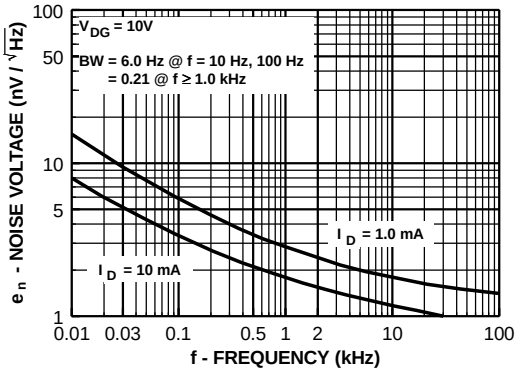


Figure 6. Noise Voltage vs Frequency

Typical Characteristics (Continued)

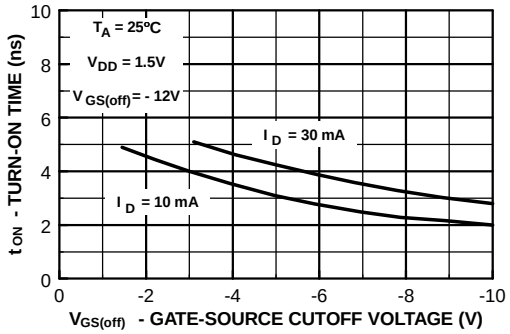


Figure 7. Switching Turn-On Time vs Gate-Source Cutoff Voltage

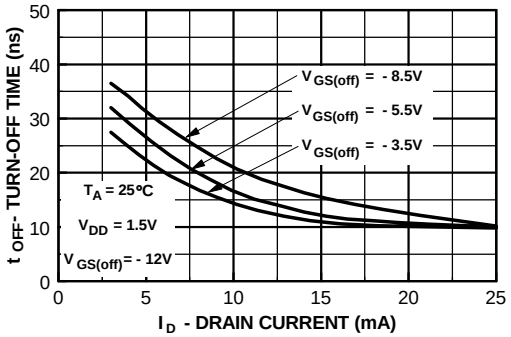


Figure 8. Switching Turn-On Time vs Drain Current

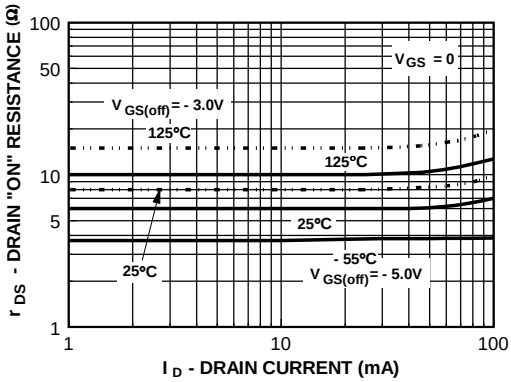


Figure 9. On Resistance vs Drain Current

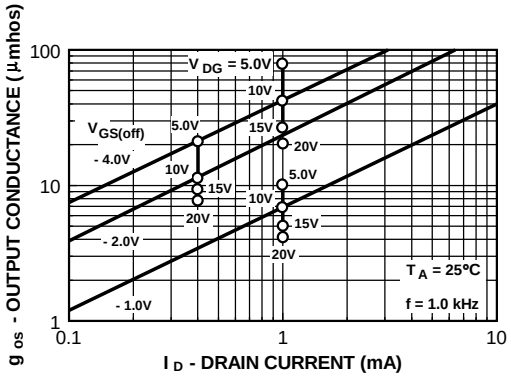


Figure 10. Output Conductance vs Drain Current

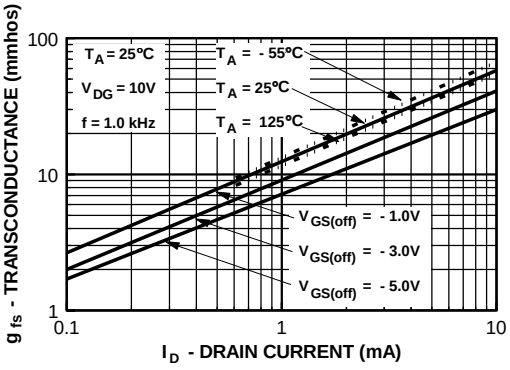


Figure 11. Transconductance vs Drain Current

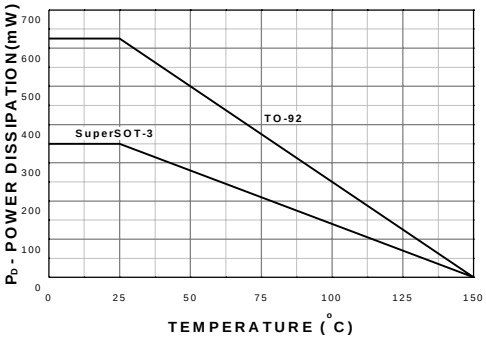
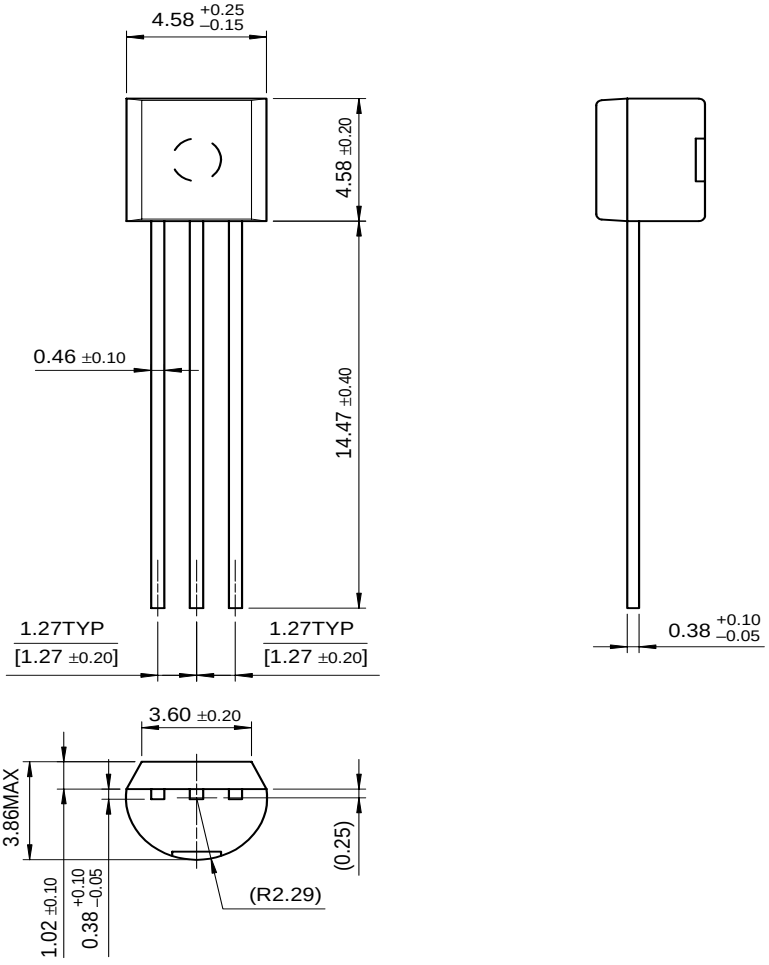


Figure 12. Power Dissipation vs Ambient Temperature

Package Dimensions

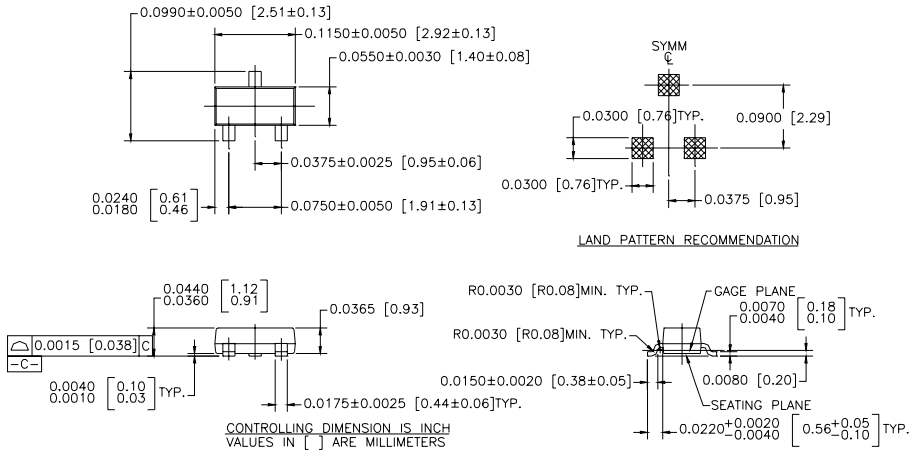
TO-92



Dimensions in Millimeters

Package Dimensions (Continued)

SuperSOT-3



Dimensions in Millimeters

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CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
DOME™	GlobalOptoisolator™	MICROWIRE™	QS™	SyncFET™
EcoSPARK™	GTO™	MSX™	QT Optoelectronics™	TinyLogic™
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EnSigna™	I^2C™	OCX™	RapidConfigure™	UHC™
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