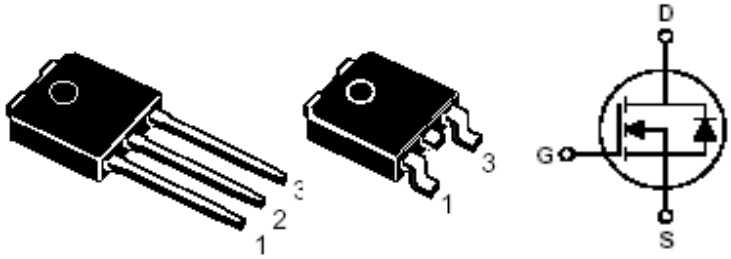
N Channel MOSFET **M02N60**

2.0A

PIN CONFIGURATION

TO-251 TO-252



1.Gate 2.Drain 3.Source

FEATURE

- Robust High Voltage Temination.
- Avalanche Energy Specified
- Source-to Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode
- Diode is Characterized for Use in Bridge Circurits
- I_{DSS} and V_{DS}(on) Specified at Elevated Temperature

ABSOLUTE MAXIMUM RATINGS

RATING	SYMBOL	VALUE	UNIT
Drain to Current - Continuous - Pulsed	I_D I_{DM}	2.0 9.0	A
Gate-to-Source Voltage – Continue - Non-repetitive	V_{GS} V_{GSM}	+/-20 +/-40	V V
Total Power Dissipation TO-251/252 TO-220	P_D	 60 60	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃
Single Pulse Drain-to-Source Avalanche Energy – Tj = 25℃ (V_{DD} =100V, V_{GS} = 10V, I_{AS} = 2A, L = 10mH, R_G = 25Ω)	E_{AS}	20	mJ
Thermal Resistance – Junction to Case - Junction to Ambient	θ_{JC} θ_{JA}	1.0 62.5	℃/W
Maximum Lead Temperature for Soldering Purposes, 1/8'' form 10 seconds	T_L	260	℃

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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS（Ta=25℃）

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT	CONDITION
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	600			Vdc	V_{GS}=0, I_D=250uA
Drain-Source Leakage Current	I_{DSS}			0.1 1.0	mA mA	V_{DS}=600V, V_{GS}=0 V_{DS}=480V, V_{GS}=0, Tj=125℃
Gate-Source Leakage Current-Forward	I_{GSSF}			100	nA	V_{GSF}=20V, V_{DS}=0
Gate Threshhold Voltage	$V_{GS(th)}$	2.0		4.0	V	V_{DS}=V_{GS}, I_D=250uA
Drain-Source On-Resistance	$R_{DS(on)}$			4.4	Ohm	V_{GS}=10V, I_D=1.2A*
Input Capacitance	C_{iss}		435		pF	V_{DS}=25V, V_{GS}=0, f=1 MHz
Output Capacitance	C_{oss}		56		pF	
Reverse Transfer Capacitance	C_{rss}		9.2		pF	
Turn-On Delay Time	$t_{d(on)}$		12		nS	V_{DD}=300V, I_D=2.0A, V_{GS}=10V, R_G=18Ω
Turn-Off Delay Time	$T_{d(off)}$		30		nS	
Rise Time	t_r		21		nS	
Fall Time	t_f		24		nS	
Total Gate Charge	Q_g		13	22	nC	V_{DS}=400V, I_D=2.0A V_{GS}=10V*
Gate-Drain Charge	Q_{gd}		6.0		nC	
Gate-Drain Charge	Q_{gs}		2.0		nC	
Intemal Drain Inductance	L_D		4.5		nH	Measured from the drain lead 0.25'' From package to center of die
Internal Drain Inductance	Ls		7.5		nH	Measured from the sorce lead 0.25'' form package to source bond pad
SOURCE-DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage(1)	VDS			1.5	V	Is=2.0A, VGS=0V d_{IS}/d_t = 100A/μS
Forward Tum Time	ton		**		nS	
Reverse Recovery Time	trr		340		nS	

*Pulse Test: Pulse Width ≦300 μS, Duty Cycle ≦ 2%

**Negligible, Dominated by circuit inductance

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Typical Characteristics

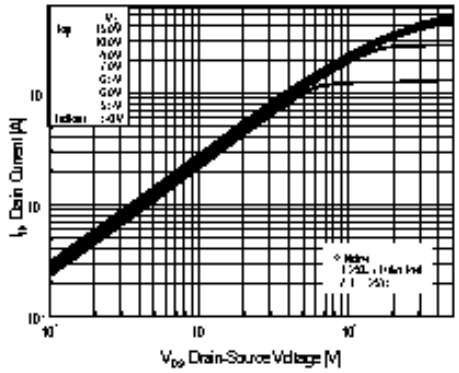

Figure 1. On-Region Characteristics

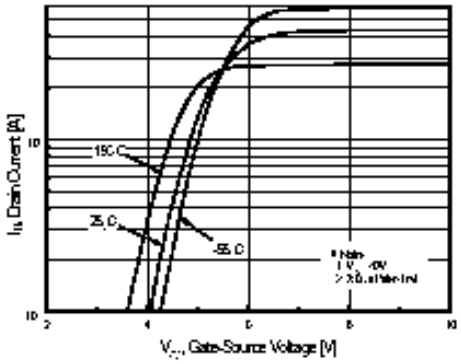

Figure 2. Transfer Characteristics

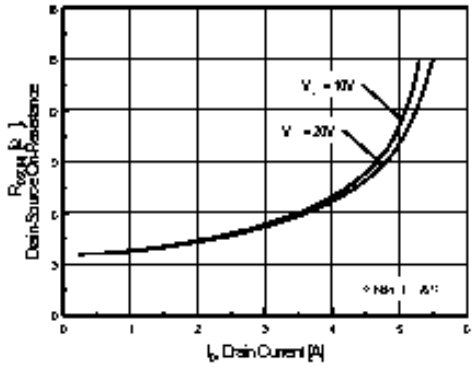

Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

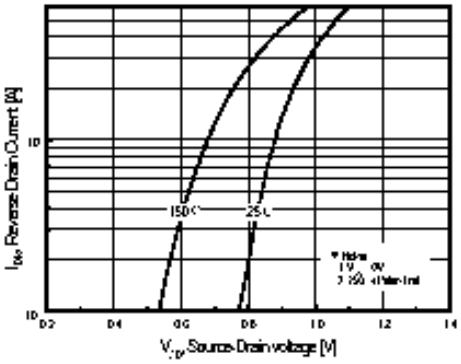

Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

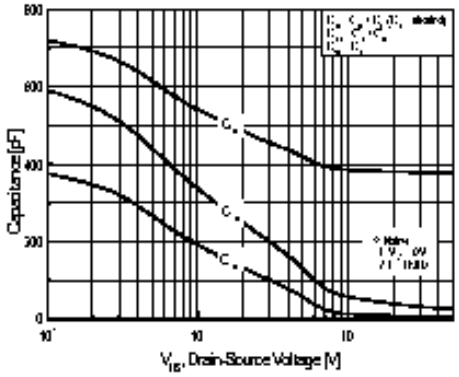

Figure 5. Capacitance Characteristics

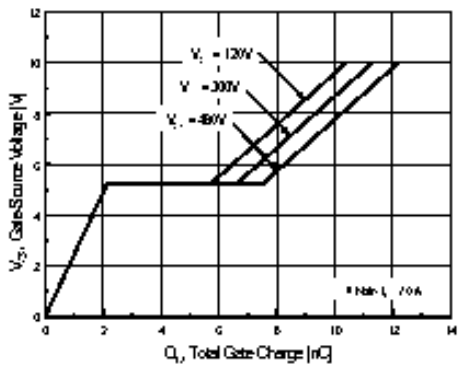

Figure 6. Gate Charge Characteristics

Typical Characteristics (Continued)

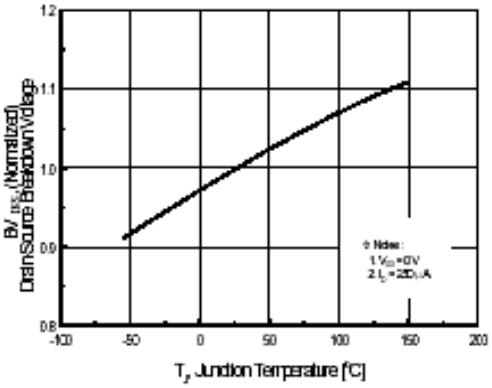

Figure 7. Breakdown Voltage Variation vs Temperature

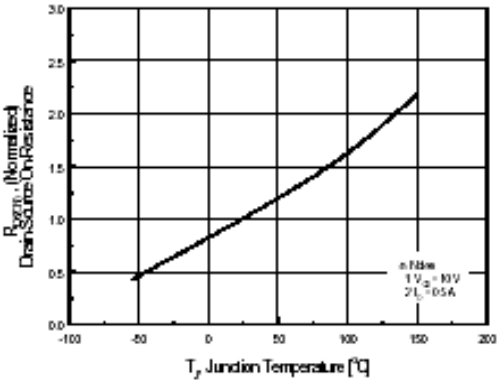

Figure 8. On-Resistance Variation vs Temperature

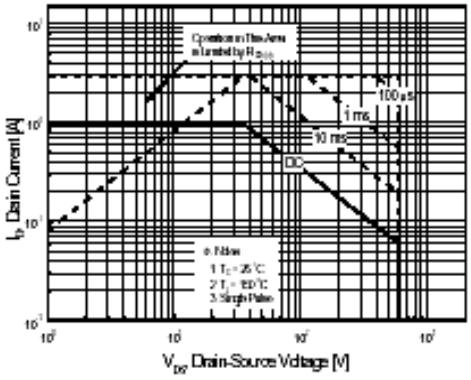

Figure 9-1. Maximum Safe Operating Area for SSP1N60B

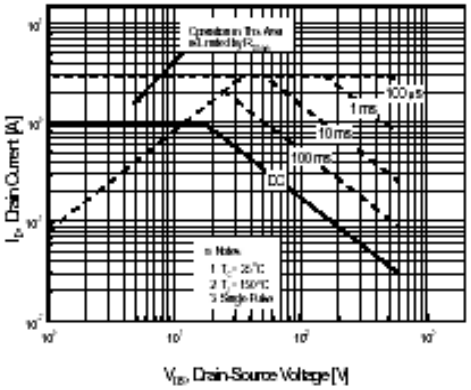

Figure 9-2. Maximum Safe Operating Area for SSS1N60B

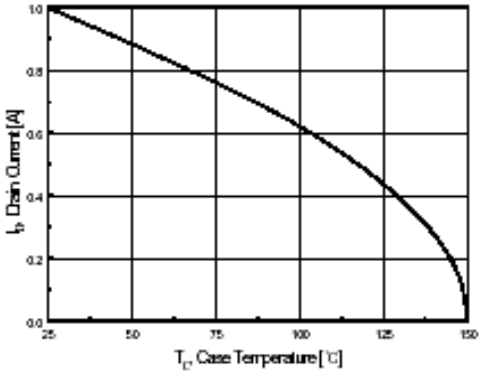

Figure 10. Maximum Drain Current vs Case Temperature