

# G2308

## N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV <sub>DSS</sub>	60V
R <sub>DS(ON)</sub>	160mΩ
I <sub>D</sub>	3A

### Description

The G2308 utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.  
The G2308 is universally used for all commercial-industrial applications.

### Features

- \*Simple Drive Requirement
- \*Small Package Outline

### Package Dimensions

N-Channel

Marking :

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	1.90	REF.
B	2.40	2.80	H	1.00	1.30
C	1.40	1.60	K	0.10	0.20
D	0.35	0.50	J	0.40	-
E	0	0.10	L	0.85	1.15
F	0.45	0.55	M	0°	10°

### Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>3</sup> , V <sub>GS</sub> @4.5V	I <sub>D</sub> @TA=25°C	3.0	A
Continuous Drain Current <sup>3</sup> , V <sub>GS</sub> @4.5V	I <sub>D</sub> @TA=70°C	2.3	A
Pulsed Drain Current <sup>1,2</sup>	I <sub>DM</sub>	10	A
Power Dissipation	P <sub>D</sub> @TA=25°C	1.38	W
Linear Derating Factor		0.01	W/°C
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55 ~ +150	°C

### Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient <sup>3</sup> Max.	R <sub>thj-a</sub>	90	°C/W

**Electrical Characteristics(T<sub>j</sub> = 25°C Unless otherwise specified)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	60	-	-	V	$V_{GS}=0, I_D=250\mu A$
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.05	-	V/°C	Reference to 25°C, $I_D=1mA$
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	3.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Forward Transconductance	$g_{fs}$	-	5.0	-	S	$V_{DS}=5V, I_D=3A$
Gate-Source Leakage Current	$I_{GSS}$	-	-	±100	nA	$V_{GS}= \pm 20V$
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	$I_{DSS}$	-	-	10	uA	$V_{DS}=60V, V_{GS}=0$
Drain-Source Leakage Current(T <sub>j</sub> =70°C)		-	-	25	uA	$V_{DS}=48V, V_{GS}=0$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	160	mΩ	$V_{GS}=10V, I_D=2.0A$
		-	-	220		$V_{GS}=4.5V, I_D=1.7A$
Total Gate Charge <sup>2</sup>	$Q_g$	-	6	10	nC	$I_D=3A$ $V_{DS}=48V$ $V_{GS}=4.5V$
Gate-Source Charge	$Q_{gs}$	-	1.6	-		
Gate-Drain ("Miller") Change	$Q_{gd}$	-	3	-		
Turn-on Delay Time <sup>2</sup>	$T_{d(on)}$	-	6	-	ns	$V_{DS}=30V$ $I_D=1A$ $V_{GS}=10V$ $R_G=3.3\Omega$ $R_D=30\Omega$
Rise Time	$T_r$	-	5	-		
Turn-off Delay Time	$T_{d(off)}$	-	16	-		
Fall Time	$T_f$	-	3	-		
Input Capacitance	$C_{iss}$	-	490	780	pF	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0MHz$
Output Capacitance	$C_{oss}$	-	55	-		
Reverse Transfer Capacitance	$C_{rss}$	-	40	-		

**Source-Drain Diode**

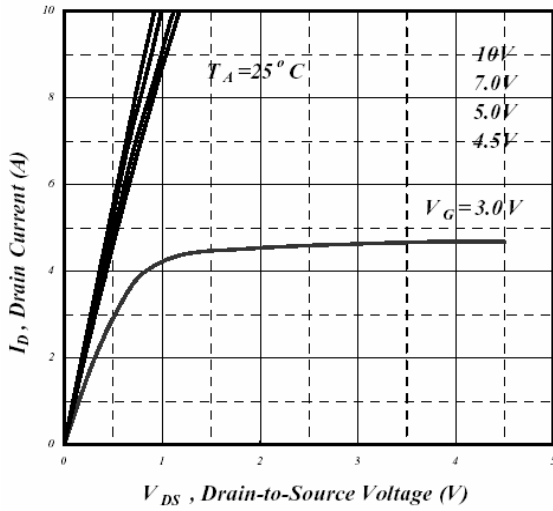
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>2</sup>	$V_{SD}$	-	-	1.2	V	$I_S=1.2A, V_{GS}=0V$
Reverse Recovery Time	$T_{rr}$	-	25	-	ns	$I_S=3A, V_{GS}=0V$ $di/dt=100A/\mu s$
Reverse Recovery Charge	$Q_{rr}$	-	26	-	nC	

Notes: 1. Pulse width limited by Max. junction temperature.

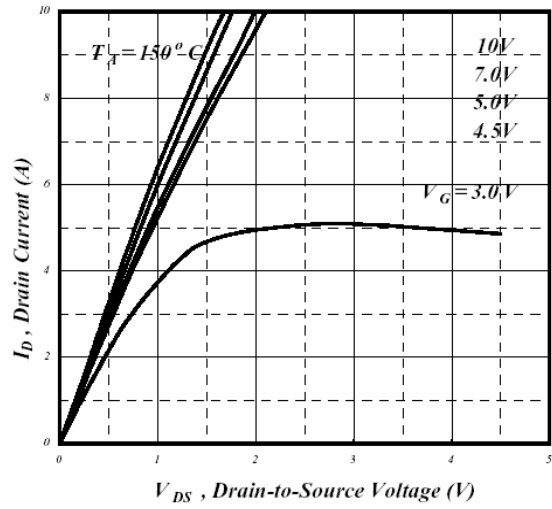
2. Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board;270°C/W when mounted on min. copper pad.

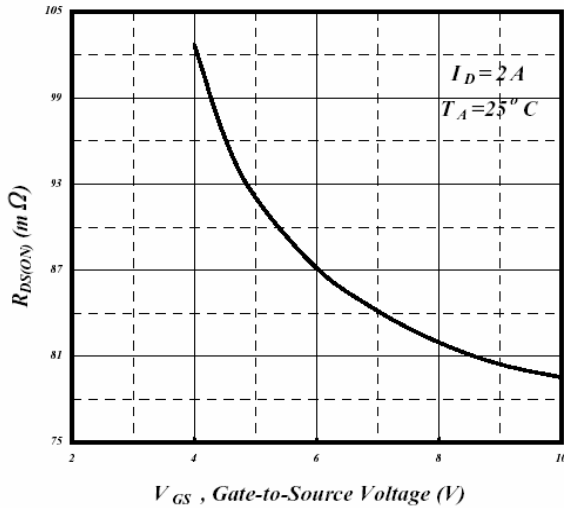
## Characteristics Curve



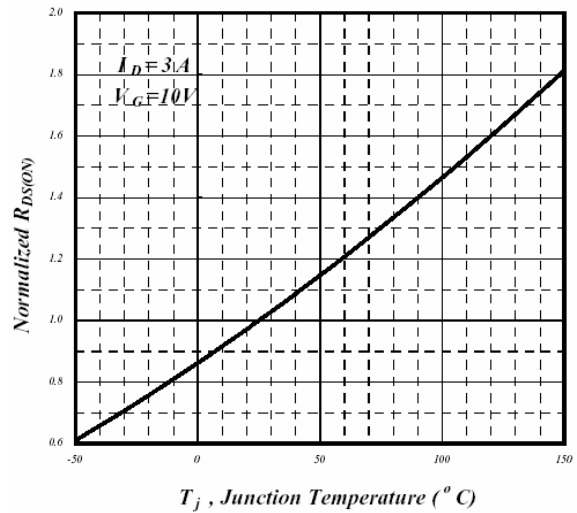
**Fig 1. Typical Output Characteristics**



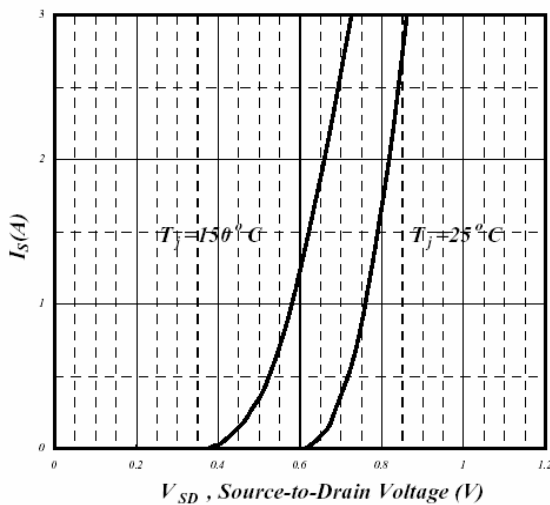
**Fig 2. Typical Output Characteristics**



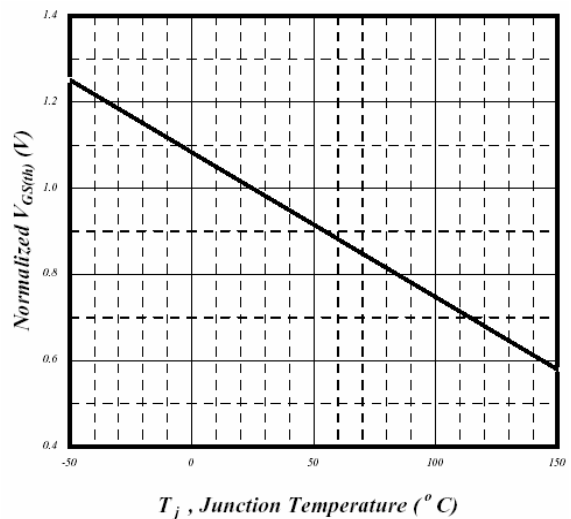
**Fig 3. On-Resistance v.s. Gate Voltage**



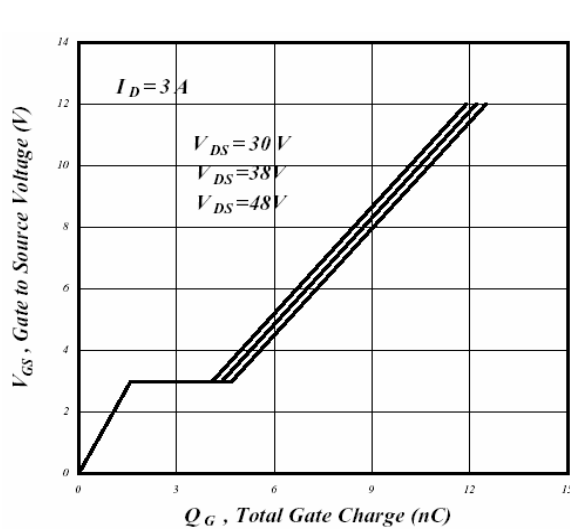
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



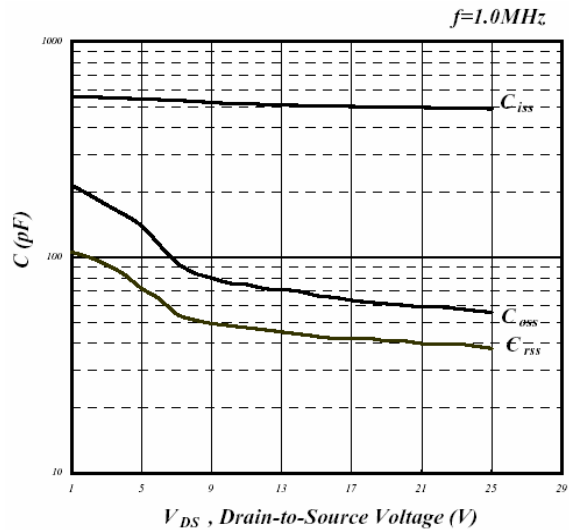
**Fig 5. Forward Characteristics of Reverse Diode**



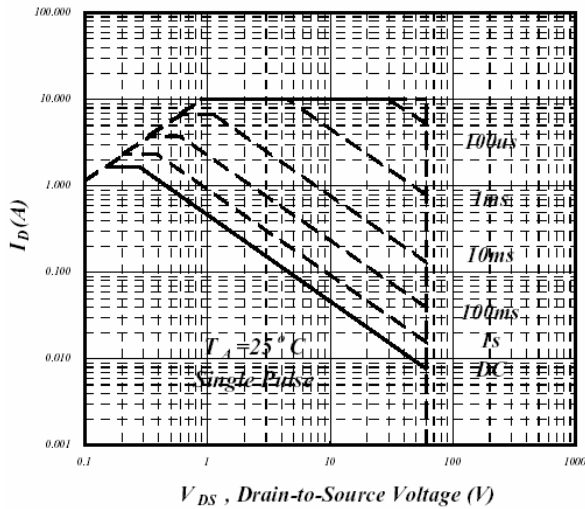
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



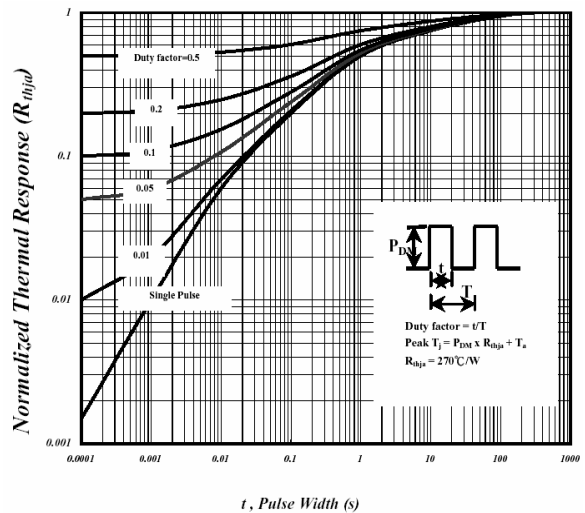
**Fig 7. Gate Charge Characteristics**



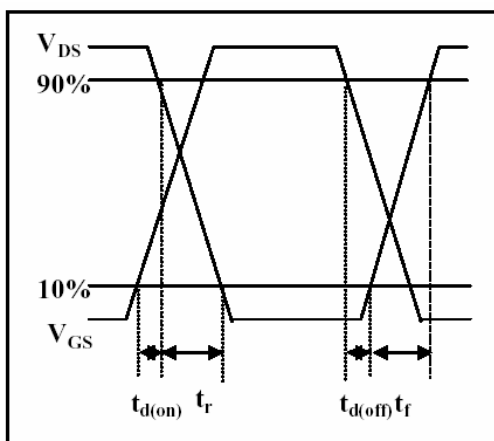
**Fig 8. Typical Capacitance Characteristics**



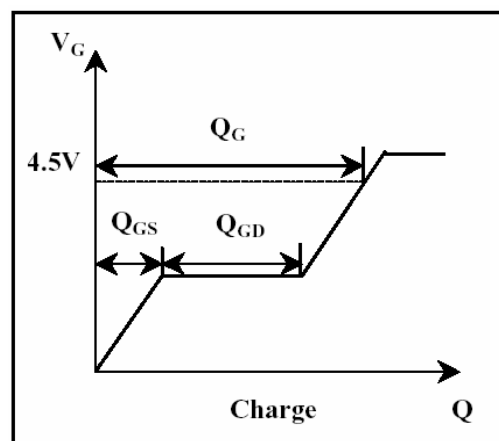
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

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