

## G3314

### P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV <sub>DSS</sub>	-30V
R <sub>DS(ON)</sub>	240mΩ
I <sub>D</sub>	-1.9A

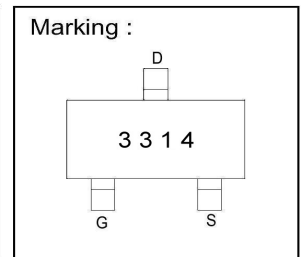
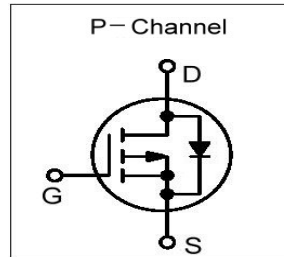
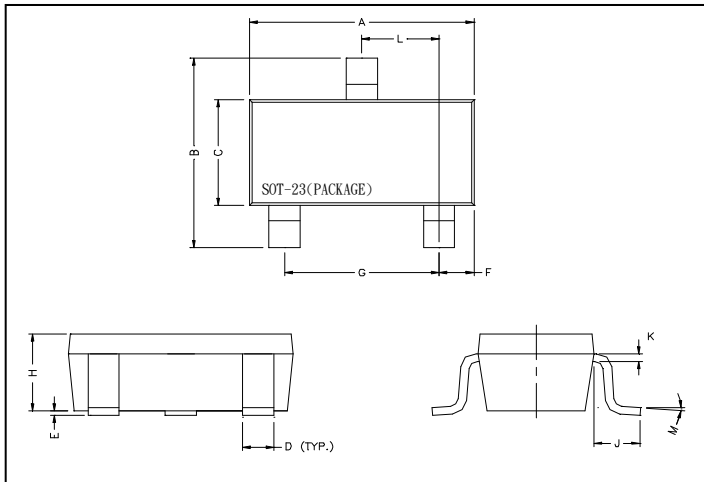
#### Description

The G3314 provides the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

#### Features

- \*Low On-resistance
- \*Ultrahigh-speed switching
- \*4V drive

#### Package Dimensions



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>	-30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>3</sup>	I <sub>D</sub> @TA=25°C	-1.9	A
Continuous Drain Current <sup>3</sup>	I <sub>D</sub> @TA=70°C	-1.5	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(Tj = 25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	-	-	V	$V_{GS}=0, I_D=-250\mu A$
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	-0.1	-	V/°C	Reference to 25°C, $I_D=-1mA$
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	-	-	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Forward Transconductance	$g_{fs}$	-	2	-	S	$V_{DS}=-10V, I_D=-1.7A$
Gate-Source Leakage Current	$I_{GSS}$	-	-	±100	nA	$V_{GS}= \pm 20V$
Drain-Source Leakage Current(Tj=25°C)	$I_{DSS}$	-	-	-1	uA	$V_{DS}=-30V, V_{GS}=0$
Drain-Source Leakage Current(Tj=70°C)		-	-	-10	uA	$V_{DS}=-30V, V_{GS}=0$
Static Drain-Source On-Resistance <sup>2</sup>	$R_{DS(ON)}$	-	-	240	mΩ	$V_{GS}=-10V, I_D=-1.7A$
		-	-	270		$V_{GS}=-10V, I_D=-0.8A$
		-	-	460		$V_{GS}=-4.5V, I_D=-1.3A$
		-	-	500		$V_{GS}=-4V, I_D=-0.4A$
Total Gate Charge <sup>2</sup>	$Q_g$	-	6.2	-	nC	$I_D=-1.7A$ $V_{DS}=-15V$ $V_{GS}=-10V$
Gate-Source Charge	$Q_{gs}$	-	1.4	-		
Gate-Drain ("Miller") Change	$Q_{gd}$	-	0.3	-		
Turn-on Delay Time <sup>2</sup>	$T_{d(on)}$	-	7.6	-	ns	$V_{DS}=-15V$ $I_D=-1A$ $V_{GS}=-10V$ $R_G=6\Omega$ $R_D=15\Omega$
Rise Time	$T_r$	-	8.2	-		
Turn-off Delay Time	$T_{d(off)}$	-	17.5	-		
Fall Time	$T_f$	-	9	-		
Input Capacitance	$C_{iss}$	-	230	-	pF	$V_{GS}=0V$ $V_{DS}=-15V$ $f=1.0MHz$
Output Capacitance	$C_{oss}$	-	130.4	-		
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	$I_S=-1.25A, V_{GS}=0V$
Continuous Source Current (Body Diode)	$I_S$	-	-	-1	A	$V_D= V_G=0V, V_S=-1.2V$
Pulsed Source Current (Body Diode) <sup>1</sup>	$I_{SM}$	-	-	-6.4	A	

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

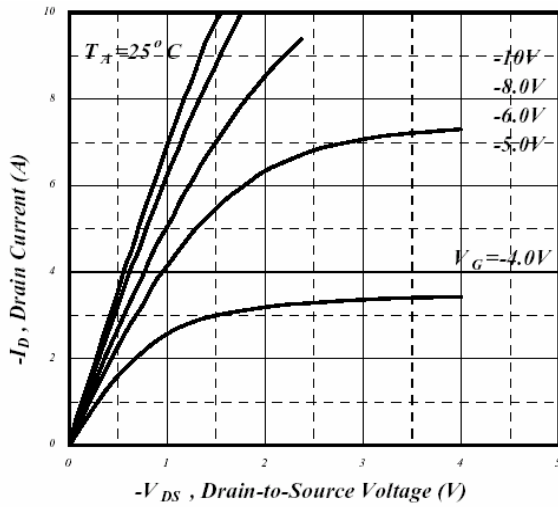


Fig 1. Typical Output Characteristics

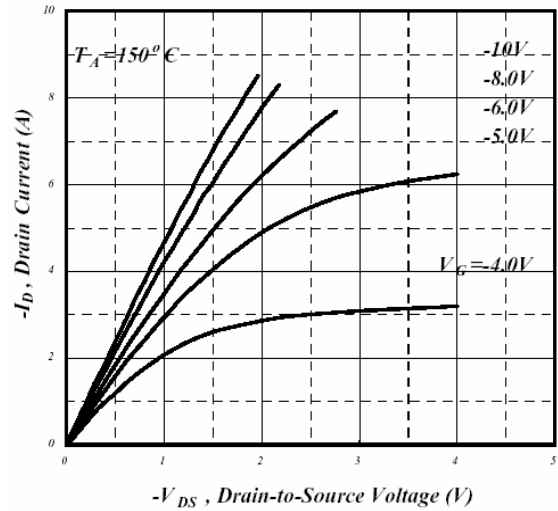


Fig 2. Typical Output Characteristics

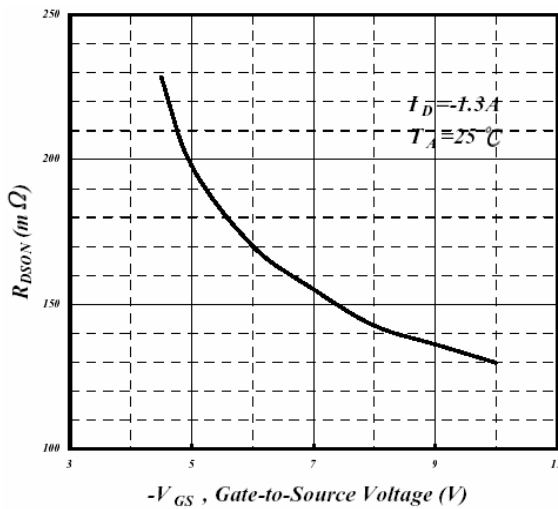


Fig 3. On-Resistance v.s. Gate Voltage

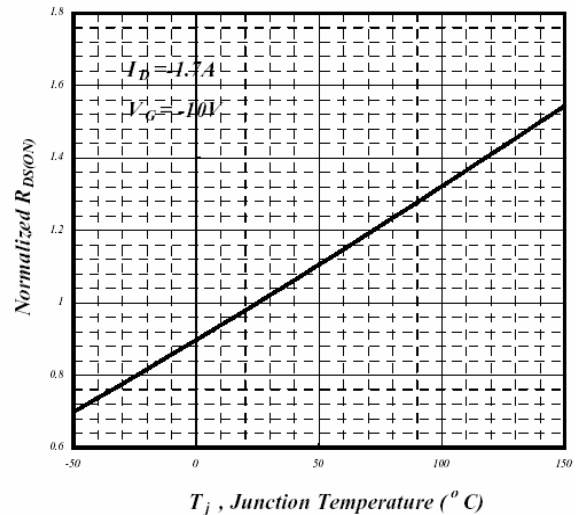


Fig 4. Normalized On-Resistance

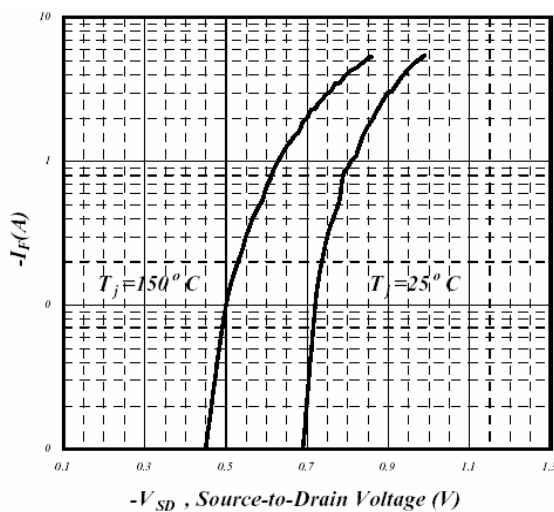


Fig 5. Forward Characteristic of Reverse Diode

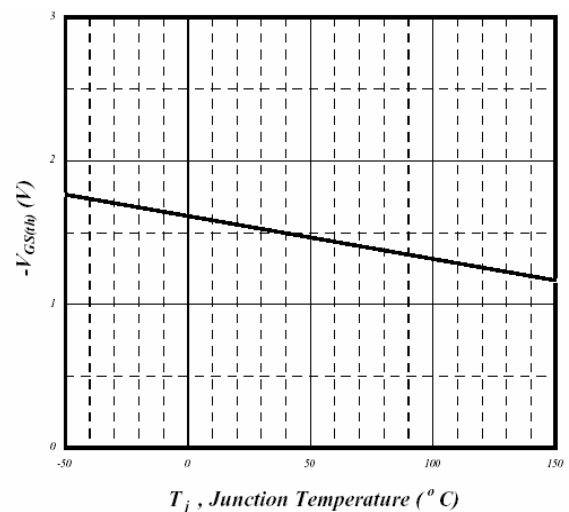
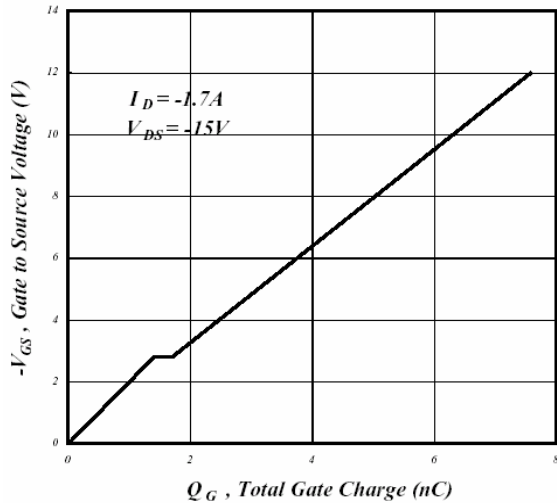
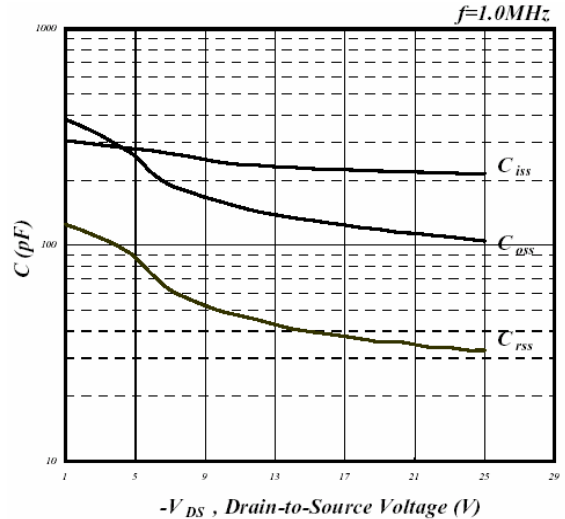


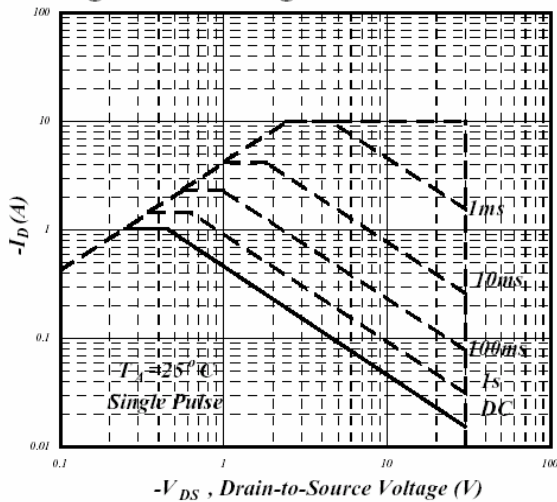
Fig 6. Gate Threshold Voltage v.s. Junction Temperature



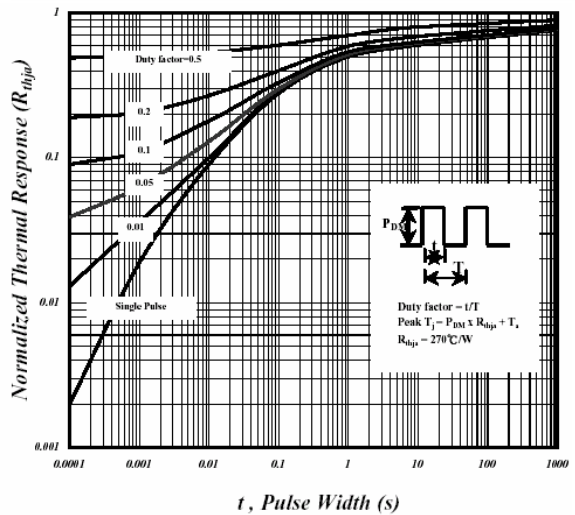
**Fig 7. Gate Charge Characteristics**



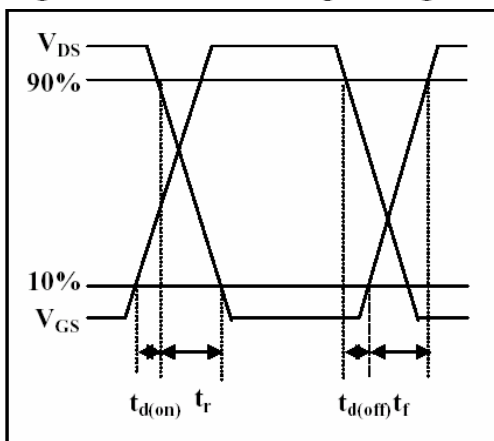
**Fig 8. Typical Capacitance Characteristics**



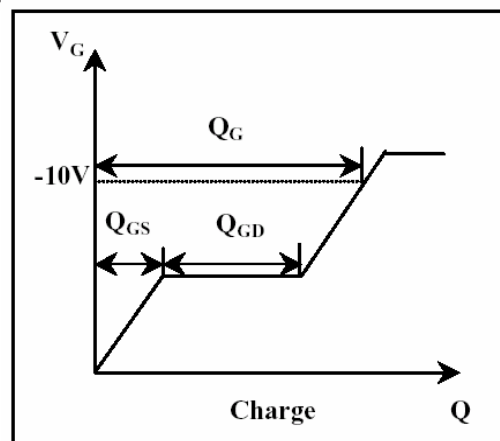
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

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