

# G3403A

## P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	-30V
RDS(ON)	70mΩ
ID	-3.2A

### Description

The G3403A provide the designer with best combination of fast switching, low on-resistance and cost-effectiveness.

The G3403A is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

### Features

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

### Package Dimensions

SOT-23(PACKAGE)

P-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	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>3</sup>	$I_D @ TA=25^\circ C$	-3.2	A
Continuous Drain Current <sup>3</sup>	$I_D @ TA=70^\circ C$	-2.6	A
Pulsed Drain Current <sup>1,2</sup>	$I_{DM}$	-10	A
Power Dissipation	$P_D @ TA=25^\circ C$	1.38	W
Linear Derating Factor		0.01	W/°C
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 ~ +150	°C

### Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient <sup>3</sup> Max.	$R_{thj-a}$	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	$V_{GS(th)}$	-0.5	-	-1.2	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Forward Transconductance	$g_{fs}$	-	9	-	S	$V_{DS}=-5V, I_D=-3A$
Gate-Source Leakage Current	$I_{GSS}$	-	-	±100	nA	$V_{GS}= \pm 12V$
Drain-Source Leakage Current(Tj=25°C)	$I_{DSS}$	-	-	-1	uA	$V_{DS}=-30V, V_{GS}=0$
Drain-Source Leakage Current(Tj=70°C)		-	-	-25	uA	$V_{DS}=-24V, V_{GS}=0$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	70	mΩ	$V_{GS}=-10V, I_D=-2.6A$
		-	-	85		$V_{GS}=-4.5V, I_D=-2.0A$
		-	-	120		$V_{GS}=-2.5V, I_D=-1.0A$
Total Gate Charge <sup>2</sup>	$Q_g$	-	10	18	nC	$I_D=-3.2A$ $V_{DS}=-24V$ $V_{GS}=-4.5V$
Gate-Source Charge	$Q_{gs}$	-	1.8	-		
Gate-Drain ("Miller") Change	$Q_{gd}$	-	3.6	-		
Turn-on Delay Time <sup>2</sup>	$T_{d(on)}$	-	7	-	ns	$V_{DS}=-15V$ $I_D=-3.2A$ $V_{GS}=-10V$ $R_G=3.3\Omega$ $R_D=4.6\Omega$
Rise Time	$T_r$	-	15	-		
Turn-off Delay Time	$T_{d(off)}$	-	21	-		
Fall Time	$T_f$	-	15	-		
Input Capacitance	$C_{iss}$	-	735	1325	pF	$V_{GS}=0V$ $V_{DS}=-25V$ $f=1.0MHz$
Output Capacitance	$C_{oss}$	-	100	-		
Reverse Transfer Capacitance	$C_{rss}$	-	80	-		

**Source-Drain Diode**

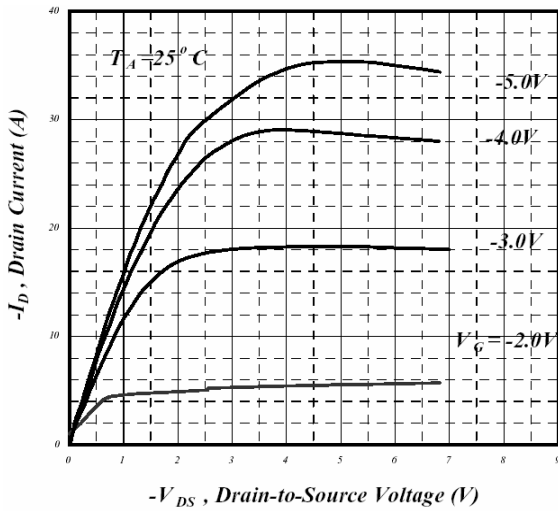
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>2</sup>	$V_{SD}$	-	-	-1.2	V	$I_S=-1.2A, V_{GS}=0V$
Reverse Recovery Time <sup>2</sup>	$T_{rr}$	-	24	-	ns	$I_S=-3.2A, V_{GS}=0V$ $di/dt=100A/\mu s$
Reverse Recovery Charge	$Q_{rr}$	-	19	-	nC	

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

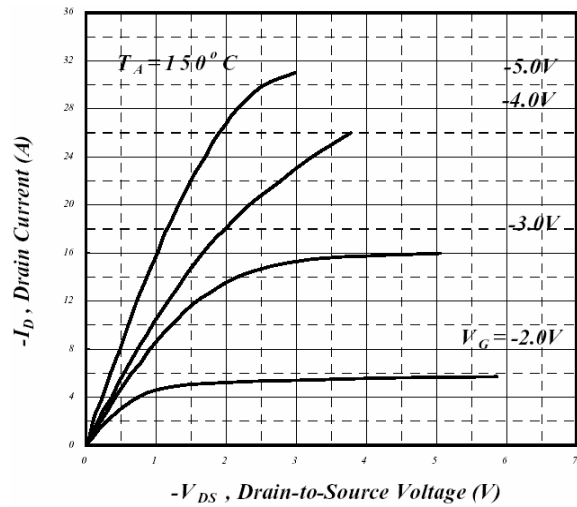
2. Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

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

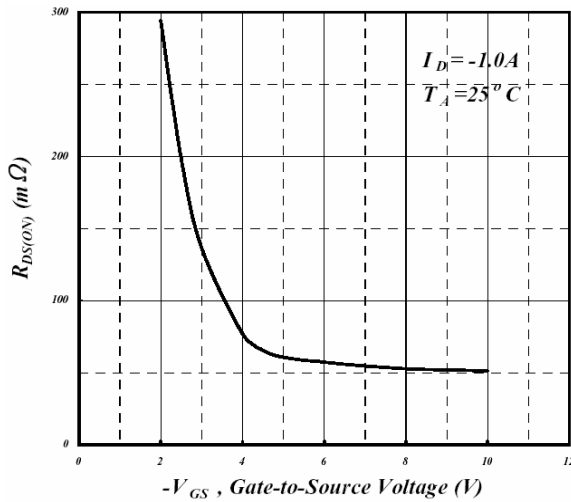
## Characteristics Curve



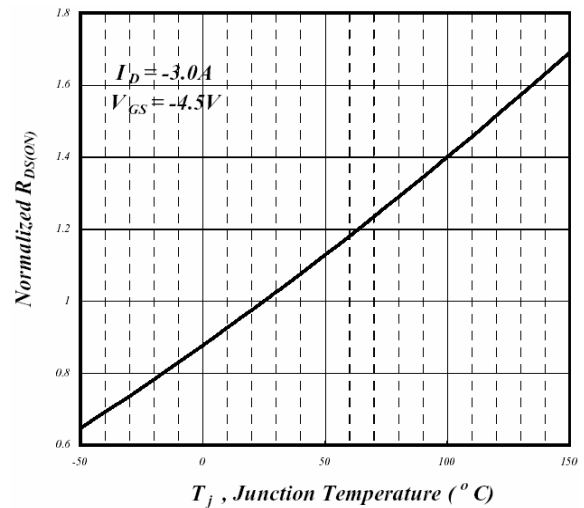
**Fig 1. Typical Output Characteristics**



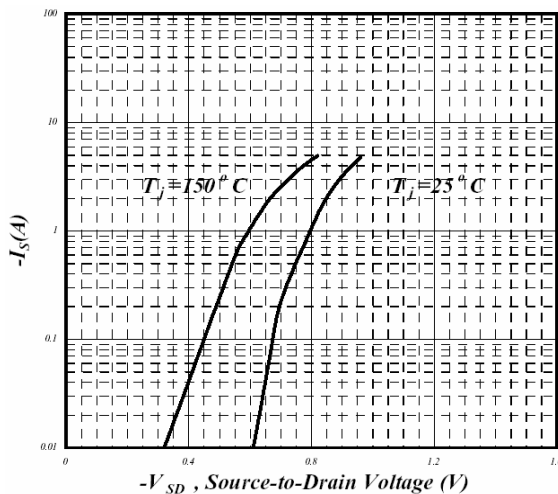
**Fig 2. Typical Output Characteristics**



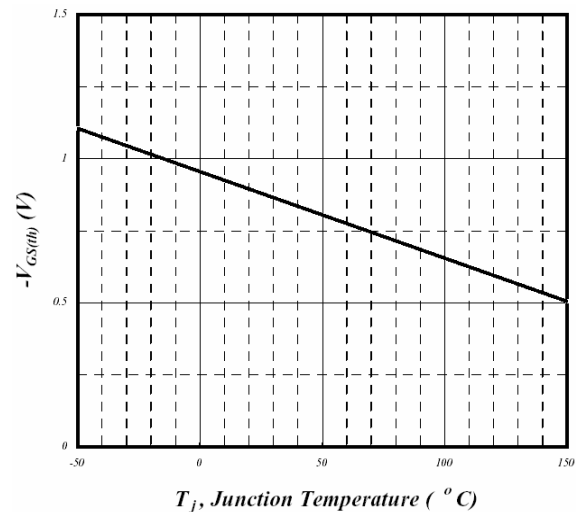
**Fig 3. On-Resistance v.s. Gate Voltage**



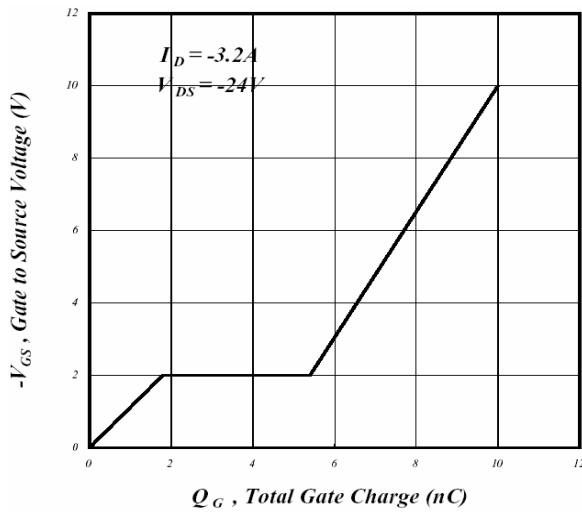
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



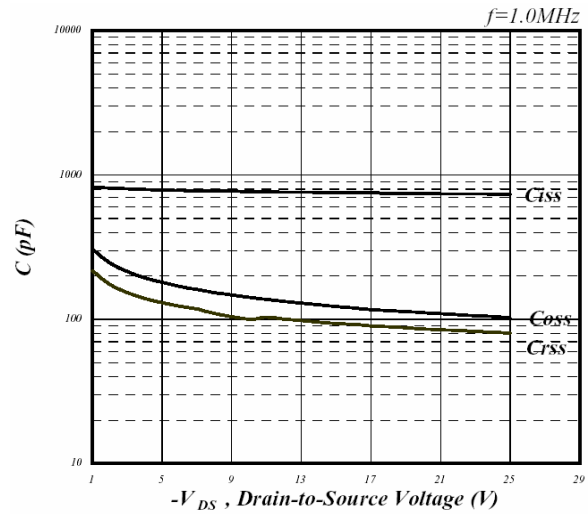
**Fig 5. Forward Characteristics of Reverse Diode**



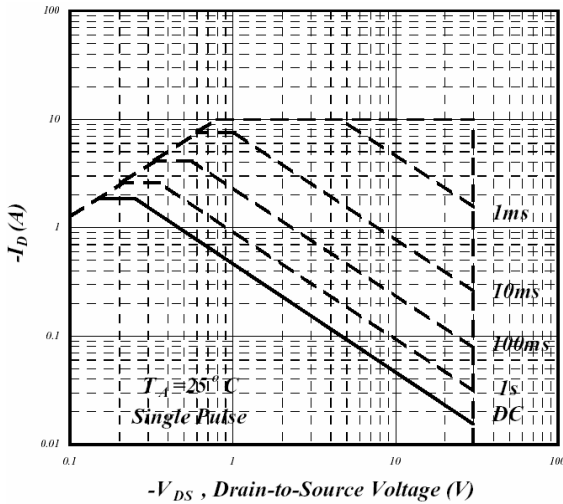
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



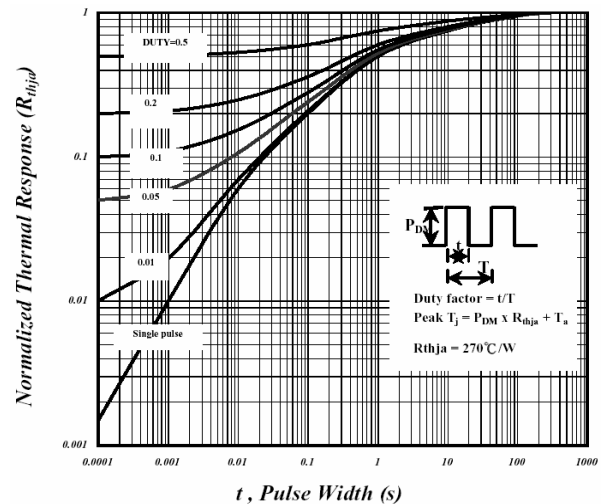
**Fig 7. Gate Charge Characteristics**



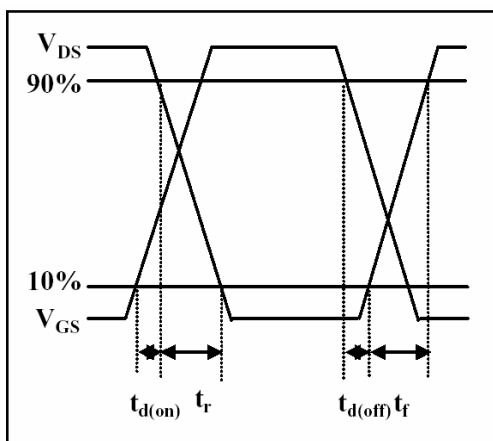
**Fig 8. Typical Capacitance Characteristics**



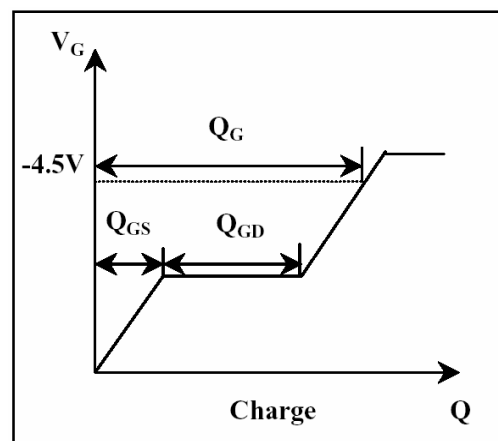
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

**Important Notice:**

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of GTM.
- GTM reserves the right to make changes to its products without notice.
- GTM semiconductor products are not warranted to be suitable for use in life-support Applications, or systems.
- GTM assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

**Head Office And Factory:**

- Taiwan: No. 17-1 Tatung Rd. Fu Kou Hsin-Chu Industrial Park, Hsin-Chu, Taiwan, R. O. C.
- TEL : 886-3-597-7061 FAX : 886-3-597-9220, 597-0785
- China: (201203) No.255, Jang-Jiang Tsai-Lueng RD. , Pu-Dung-Hsin District, Shang-Hai City, China
- TEL : 86-21-5895-7671 ~ 4 FAX : 86-21-38950165