

# GI08P10

## P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV <sub>DSS</sub>	-100V
R <sub>DS(ON)</sub>	200mΩ
I <sub>D</sub>	-8A

### Description

The GI08P10 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-251 package is universally preferred for all commercial-industrial through hole applications.

### Features

- \*Simple Drive Requirement
- \*Lower On-resistance
- \*Fast Switching Characteristic
- \*RoHS Compliant

### Package Dimensions

**TO-251**

**Marking :**

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	0.50	0.70
B	5.20	5.50	H	2.20	2.40
C	6.80	7.20	J	0.45	0.55
D	7.20	7.80	K	0.45	0.60
E	2.30 REF.		L	0.90	1.50
F	0.60	0.90	M	5.40	5.80

### Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	-100	V
Gate-Source Voltage	V <sub>GS</sub>	±32	V
Continuous Drain Current, V <sub>GS</sub> @10V	I <sub>D</sub> @T <sub>C</sub> =25°C	-8	A
Continuous Drain Current, V <sub>GS</sub> @10V	I <sub>D</sub> @T <sub>C</sub> =100°C	-6	A
Pulsed Drain Current <sup>1</sup>	I <sub>DM</sub>	-32	A
Total Power Dissipation	P <sub>D</sub> @T <sub>C</sub> =25°C	45	W
Linear Derating Factor		0.36	W/°C
Single Pulse Avalanche Energy <sup>2</sup>	E <sub>AS</sub>	100	mJ
Avalanche Current	I <sub>AR</sub>	-8	A
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55 ~ +150	°C

### Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case Max.	R <sub>thj-c</sub>	2.8	°C/W
Thermal Resistance Junction-ambient Max.	R <sub>thj-a</sub>	110	°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 <sub>DSS</sub>	-100	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =-250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	-0.096	-	V/°C	Reference to 25°C, I <sub>D</sub> =-1mA
Gate Threshold Voltage	V <sub>GS(th)</sub>	-1.0	-	-3.0	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA
Forward Transconductance	g <sub>fs</sub>	-	8	-	S	V <sub>DS</sub> =-10V, I <sub>D</sub> =-6A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±32V
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	-1	uA	V <sub>DS</sub> =-100V, V <sub>GS</sub> =0
Drain-Source Leakage Current(T <sub>j</sub> =150°C)		-	-	-25	uA	V <sub>DS</sub> =-80V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>3</sup>	R <sub>DS(ON)</sub>	-	-	200	mΩ	V <sub>GS</sub> =-10V, I <sub>D</sub> =-6A
		-	-	250		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A
Total Gate Charge <sup>3</sup>	Q <sub>g</sub>	-	16	25.6	nC	I <sub>D</sub> =-6A V <sub>DS</sub> =-80V V <sub>GS</sub> =-4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	4.4	-		
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>	-	8.7	-		
Turn-on Delay Time <sup>3</sup>	T <sub>d(on)</sub>	-	9	-	ns	V <sub>DS</sub> =-50V I <sub>D</sub> =-6A V <sub>GS</sub> =-10V R <sub>G</sub> =3.3Ω R <sub>D</sub> =6.25Ω
Rise Time	T <sub>r</sub>	-	14	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	45	-		
Fall Time	T <sub>f</sub>	-	40	-		
Input Capacitance	C <sub>iss</sub>	-	1590	2550	pF	V <sub>GS</sub> =0V V <sub>DS</sub> =-25V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	110	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	70	-		
Gate Resistance	R <sub>g</sub>	-	8	12	Ω	f=1.0MHz

**Source-Drain Diode**

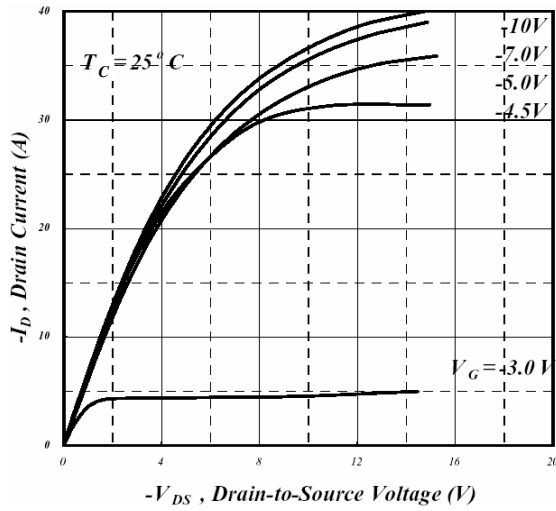
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>3</sup>	V <sub>SD</sub>	-	-	-1.7	V	I <sub>S</sub> =-8A, V <sub>GS</sub> =0V
Reverse Recovery Time <sup>3</sup>	T <sub>rr</sub>	-	49	-	ns	I <sub>S</sub> =-6A, V <sub>GS</sub> =0V dI/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	11	-	nC	

Notes: 1. Pulse width limited by safe operating area.

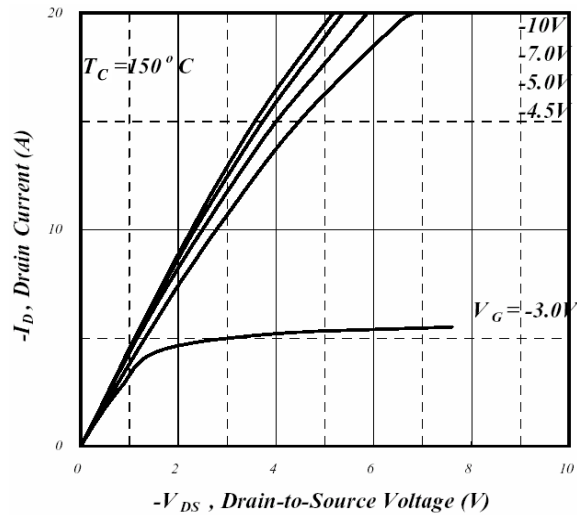
2. Staring T<sub>j</sub>=25°C, V<sub>DD</sub>=-50V, L=13mH, R<sub>G</sub>=25Ω, I<sub>AS</sub>=-3.9A.

3. Pulse width ≤ 300us, duty cycle ≤ 2%.

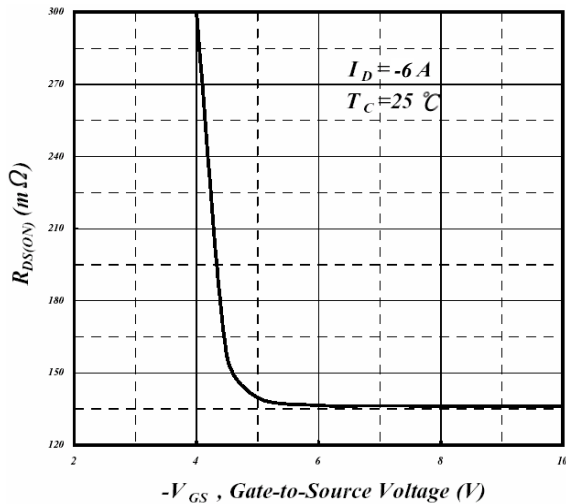
## Characteristics Curve



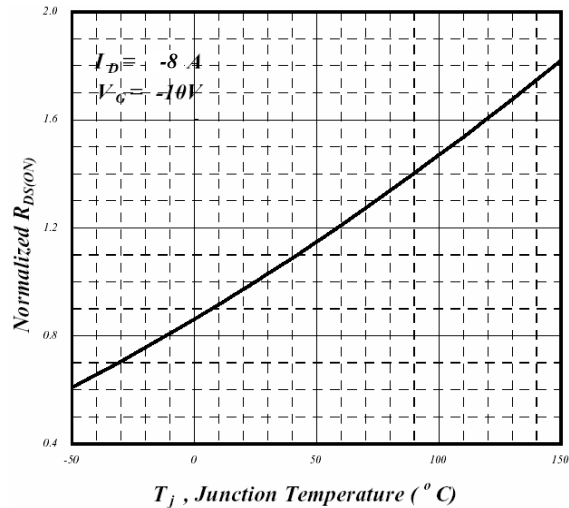
**Fig 1. Typical Output Characteristics**



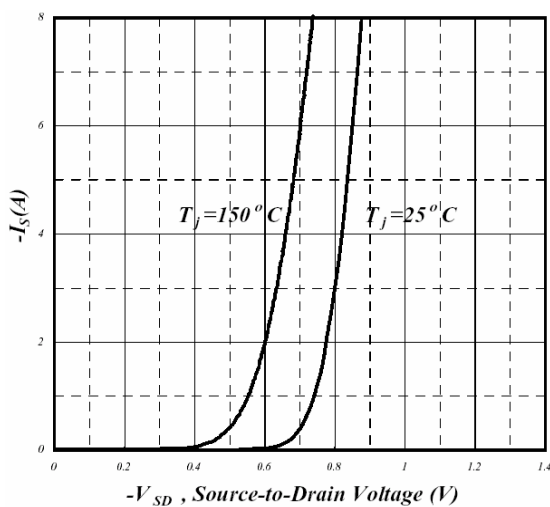
**Fig 2. Typical Output Characteristics**



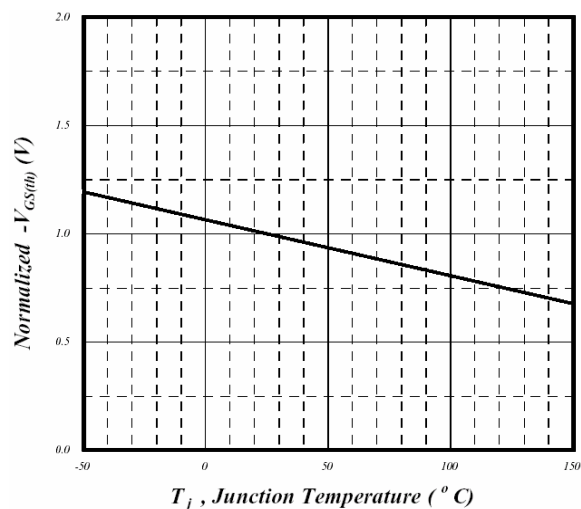
**Fig 3. On-Resistance v.s. Gate Voltage**



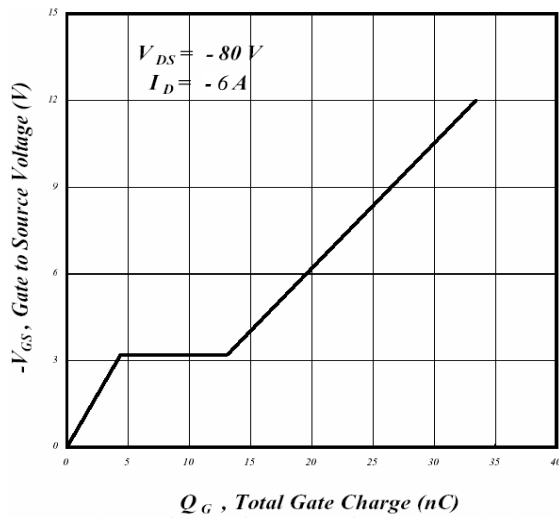
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



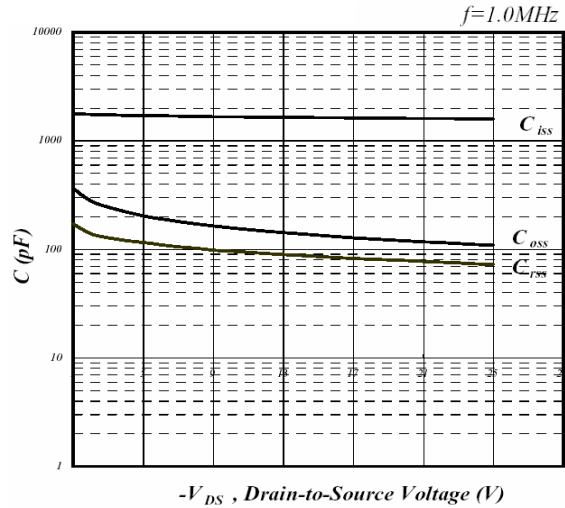
**Fig 5. Forward Characteristics of Reverse Diode**



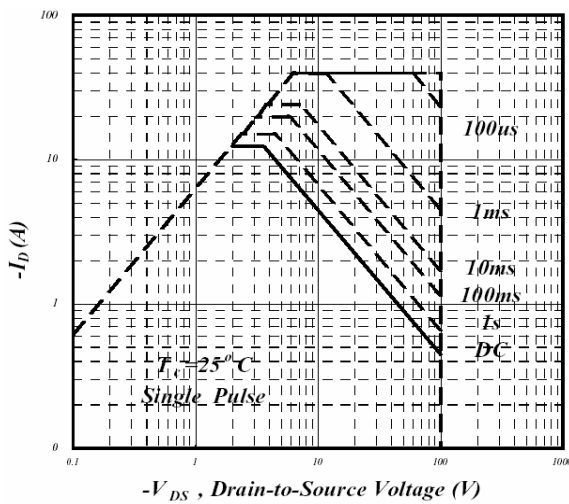
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



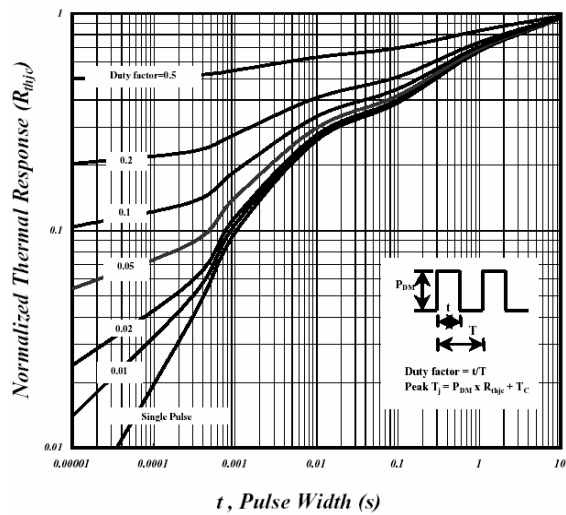
**Fig 7. Gate Charge Characteristics**



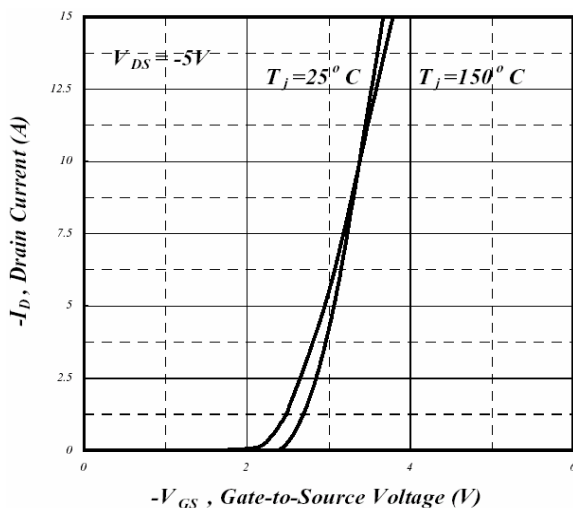
**Fig 8. Typical Capacitance Characteristics**



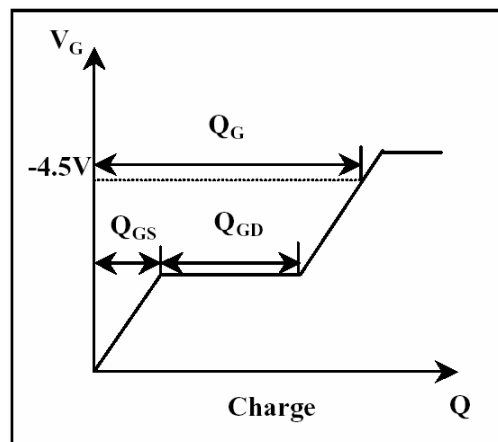
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Transfer Characteristics**



**Fig 12. Gate Charge Waveform**

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