Pb Free Plating Product

ISSUED DATE :2006/04/24
REVISED DATE :

GSS6982

DUAL N-CHANNEL ENHANCEMENT MODE POWER MOSFET

CH1	BV_{DSS}	30V
	$R_{DS(ON)}$	18mΩ
	I_D	8.5A
CH2	BV_{DSS}	30V
	$R_{DS(ON)}$	26mΩ
	I_D	7.3A

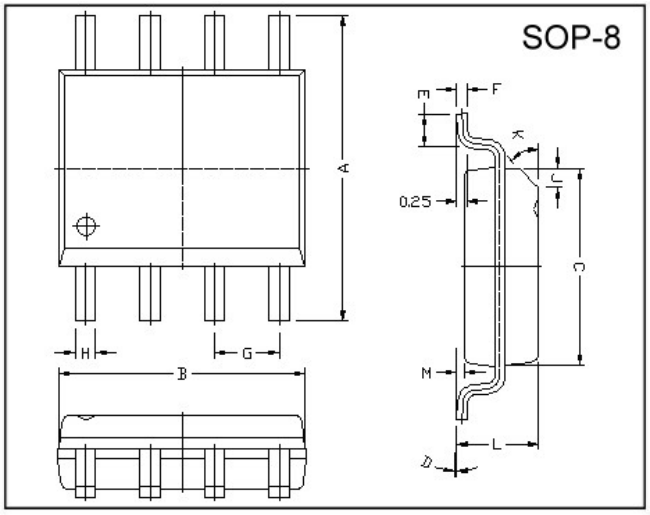
Description

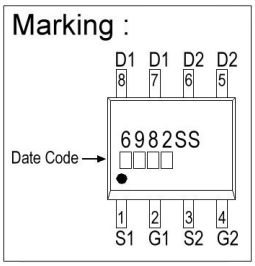
The GSS6982 provide the designer with the best combination of fast switching, ruggedized device design, ultra low on-resistance and cost-effectiveness.

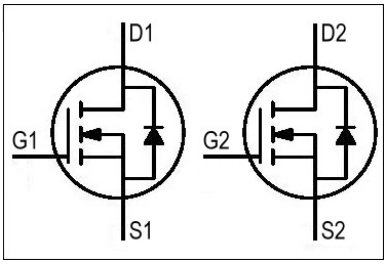
Features

*Low On-resistance
*Fast Switching

Package Dimensions







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	M	0.10	0.25
B	4.80	5.00	H	0.35	0.49
C	3.80	4.00	L	1.35	1.75
D	0°	8°	J	0.375 REF.	
E	0.40	0.90	K	45°	
F	0.19	0.25	G	1.27 TYP.	

Absolute Maximum Ratings

Parameter	Symbol	Ratings		Unit
		CH-1	CH-2	
Drain-Source Voltage	V_{DS}	30	30	V
Gate-Source Voltage	V_{GS}	±25	±25	V
Continuous Drain Current[3]	I_D @T_A=25℃	8.5	7.3	A
Continuous Drain Current[3]	I_D @T_A=70℃	6.8	5.8	A
Pulsed Drain Current[1]	I_{DM}	30	30	A
Total Power Dissipation	P_D @T_A=25℃	2.0		W
Linear Derating Factor		0.016		W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150		℃

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient[3] Max.	Rthj-a	62.5	℃/W

CH-1 Electrical Characteristics (Tj = 25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250uA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	0.03	-	V/℃	Reference to 25℃, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	3.0	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance	g_{fs}	-	12	-	S	V_{DS}=10V, I_D=8A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±25V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	V_{DS}=30V, V_{GS}=0
Drain-Source Leakage Current(Tj=70℃)		-	-	25	uA	V_{DS}=24V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	15	18	mΩ	V_{GS}=10V, I_D=8A
			23	30		V_{GS}=4.5V, I_D=6A
Total Gate Charge[2]	Q_g	-	14	22	nC	I_D=8A V_{DS}=24V V_{GS}=4.5V
Gate-Source Charge	Q_{gs}	-	4	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	8	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	12	-	ns	V_{DS}=15V I_D=1A V_{GS}=10 R_G=3.3Ω R_D=15Ω
Rise Time	T_r	-	7	-		
Turn-off Delay Time	$T_{d(off)}$	-	25	-		
Fall Time	T_f	-	9	-		
Input Capacitance	C_{iss}	-	1050	1680	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	240	-		
Reverse Transfer Capacitance	C_{rss}	-	165	-		
Gate Resistance	R_g	-	1.6	2.4	Ω	f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	1.2	V	I_S=1.7A, V_{GS}=0V
Reverse Recovery Time[2]	T_{rr}	-	23	-	ns	I_S=8A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	15	-	nC	

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

2. Pulse width≦300us, duty cycle≦2%.

3. Surface mounted on 1 in^2 copper pad of FR4 board, t≦10sec; 135℃/W when mounted on Min. copper pad.

CH-2 Electrical Characteristics (Tj = 25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250uA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	0.03	-	V/℃	Reference to 25℃, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	3.0	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance	g_{fs}	-	10	-	S	V_{DS}=10V, I_D=7A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±25V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	V_{DS}=30V, V_{GS}=0
Drain-Source Leakage Current(Tj=70℃)		-	-	25	uA	V_{DS}=24V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	22	26	mΩ	V_{GS}=10V, I_D=7A
			36	45		V_{GS}=4.5V, I_D=5A
Total Gate Charge[2]	Q_g	-	9	15	nC	I_D=7A V_{DS}=24V V_{GS}=4.5V
Gate-Source Charge	Q_{gs}	-	3	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	5	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	9	-	ns	V_{DS}=15V I_D=1A V_{GS}=10 R_G=3.3Ω R_D=15Ω
Rise Time	T_r	-	6	-		
Turn-off Delay Time	$T_{d(off)}$	-	19	-		
Fall Time	T_f	-	6	-		
Input Capacitance	C_{iss}	-	640	1030	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	150	-		
Reverse Transfer Capacitance	C_{rss}	-	105	-		
Gate Resistance	R_g	-	1.7	2.5	Ω	f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	1.2	V	I_S=1.7A, V_{GS}=0V
Reverse Recovery Time[2]	T_{rr}	-	18	-	ns	I_S=7A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	8	-	nC	

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

2. Pulse width≦300us, duty cycle≦2%.

3. Surface mounted on 1 in^2 copper pad of FR4 board, t≦10sec; 135℃/W when mounted on Min. copper pad.

Characteristics Curve CH-1

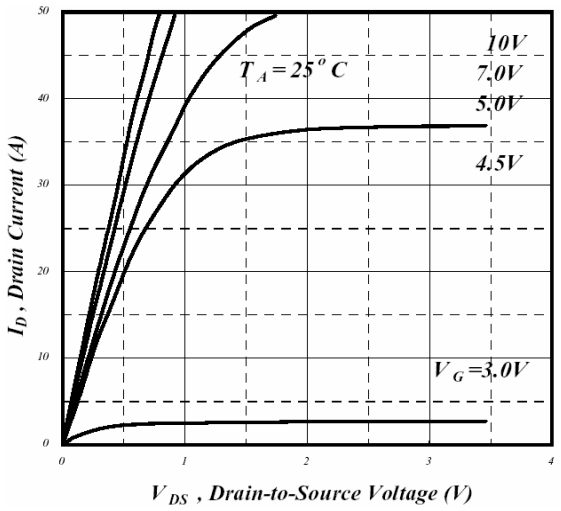


Fig 1. Typical Output Characteristics

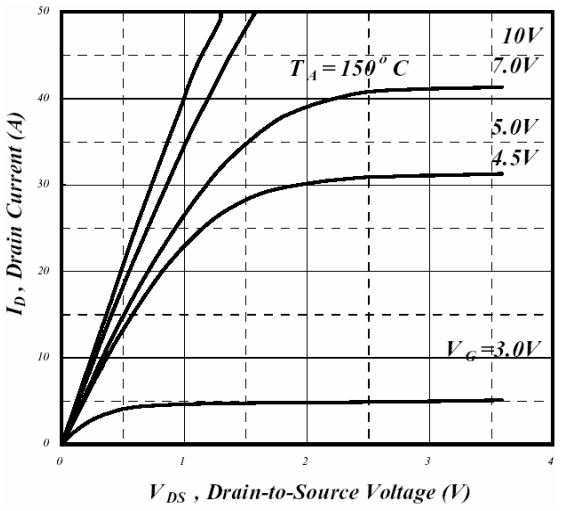


Fig 2. Typical Output Characteristics

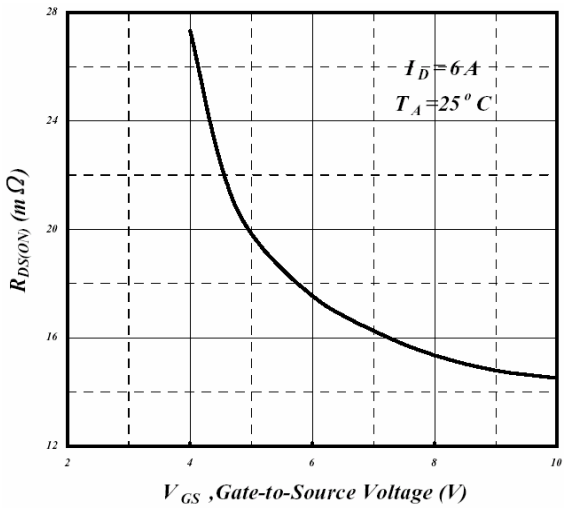


Fig 3. On-Resistance v.s. Gate Voltage

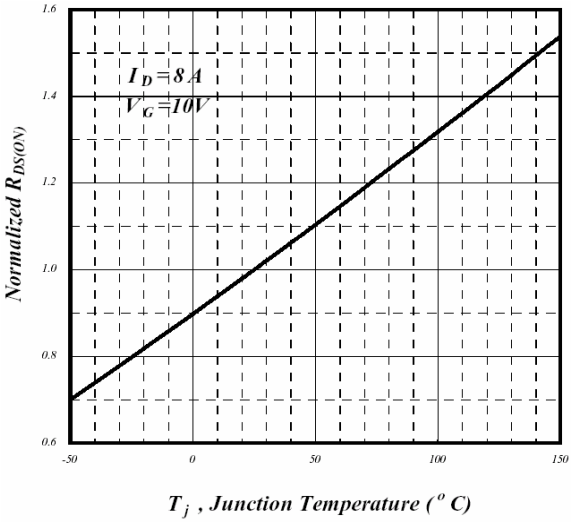


Fig 4. Normalized On-Resistance v.s. Junction Temperature

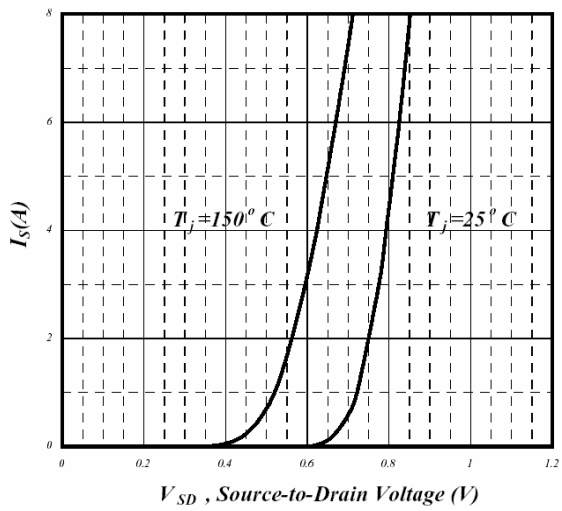


Fig 5. Forward Characteristics of Reverse Diode

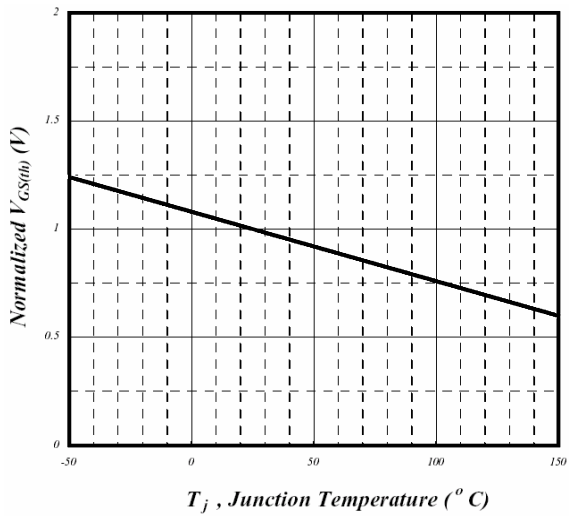


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CH-1

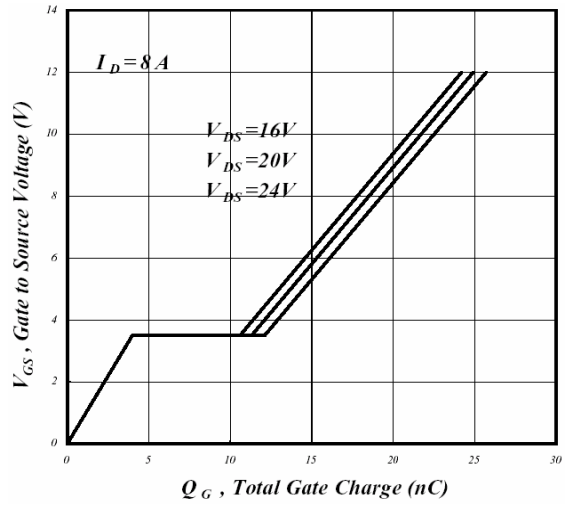


Fig 7. Gate Charge Characteristics

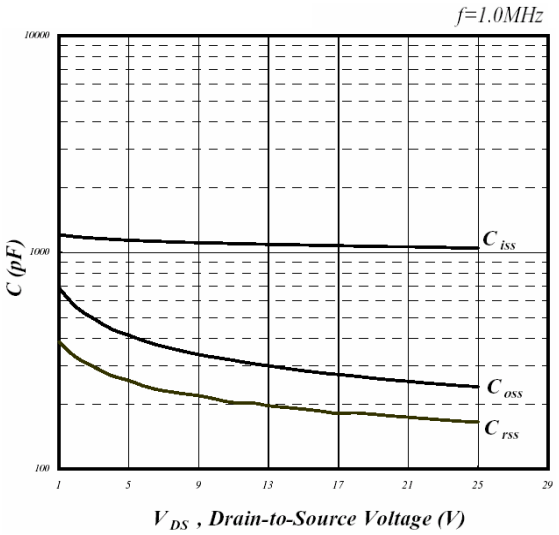


Fig 8. Typical Capacitance Characteristics

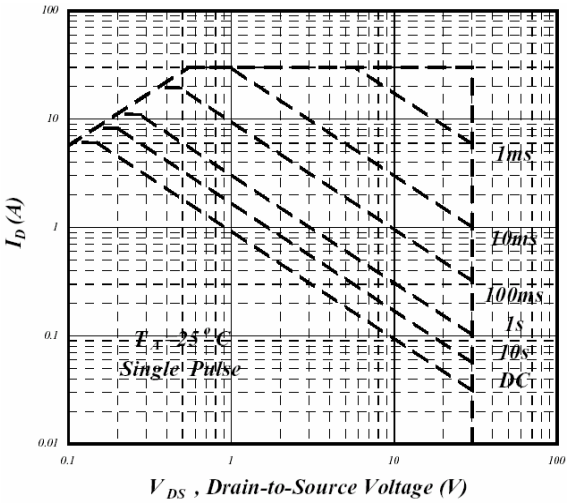


Fig 9. Maximum Safe Operating Area

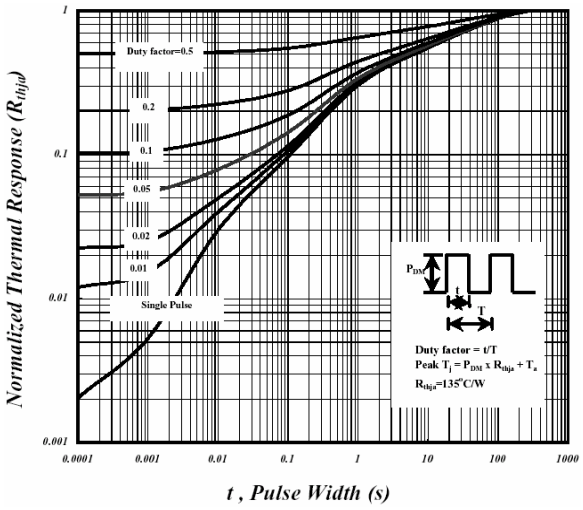


Fig 10. Effective Transient Thermal Impedance

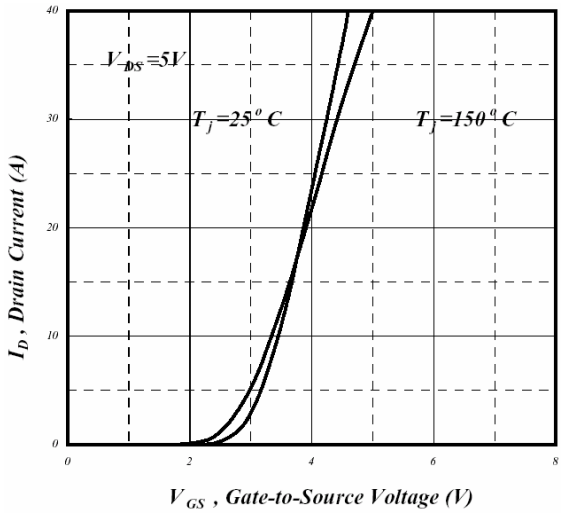


Fig 11. Transfer Characteristics

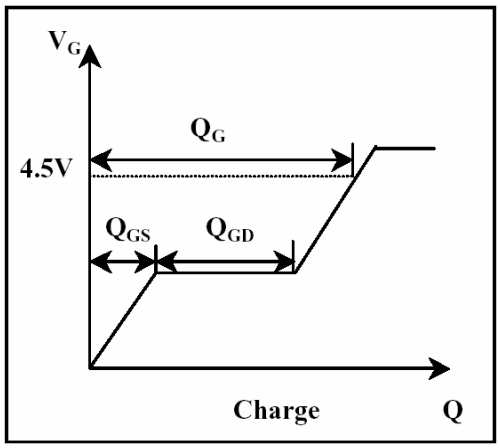


Fig 12. Gate Charge Waveform

CH-2

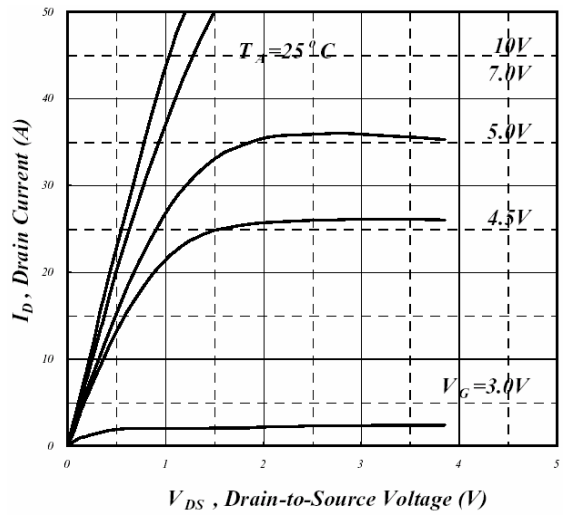


Fig 1. Typical Output Characteristics

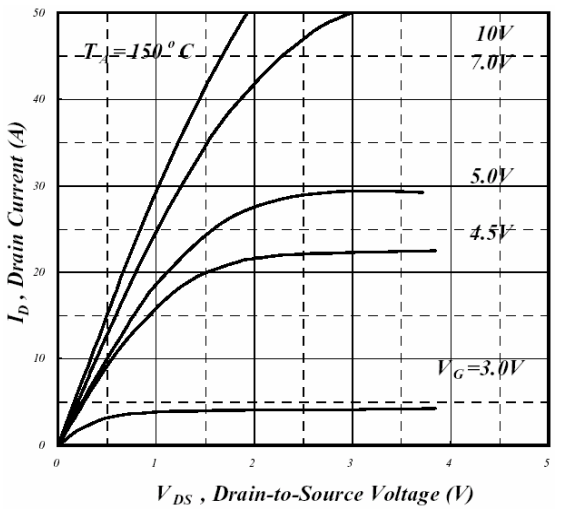


Fig 2. Typical Output Characteristics

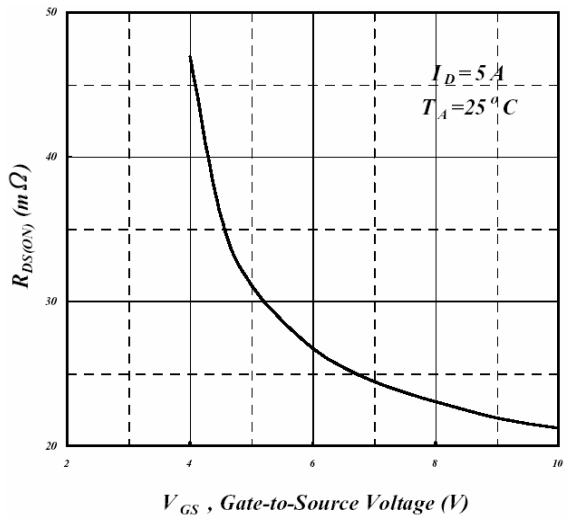


Fig 3. On-Resistance v.s. Gate Voltage

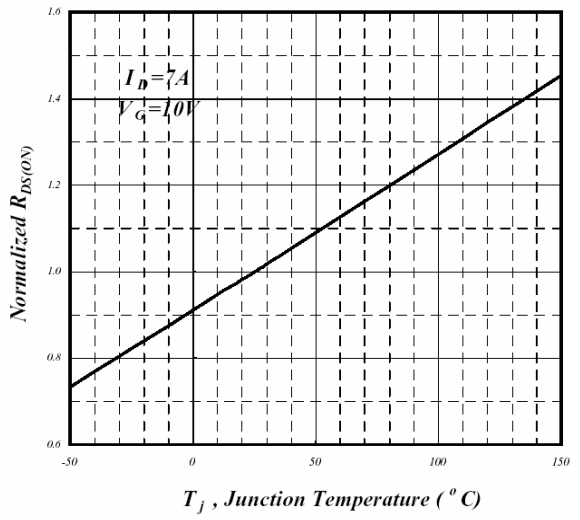


Fig 4. Normalized On-Resistance v.s. Junction Temperature

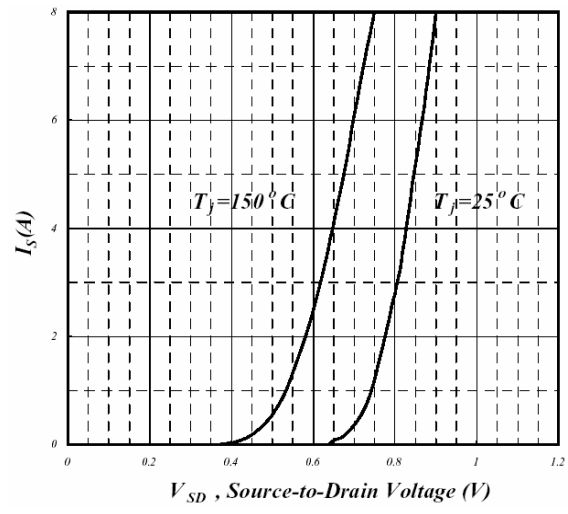


Fig 5. Forward Characteristics of Reverse Diode

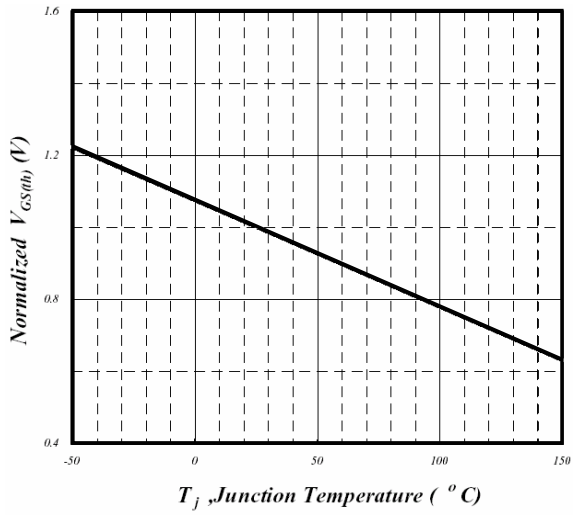


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CH-2

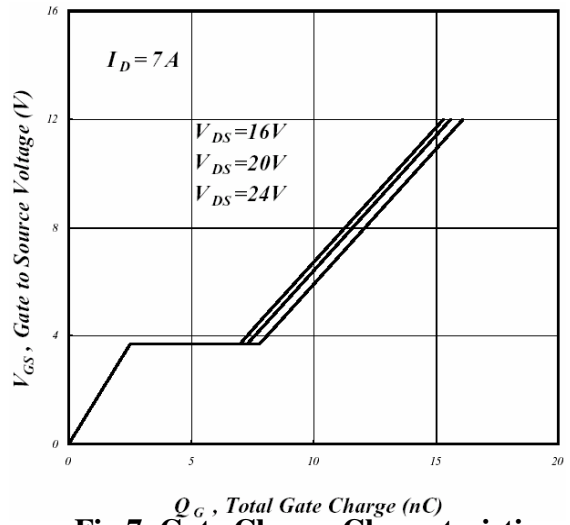


Fig 7. Gate Charge Characteristics

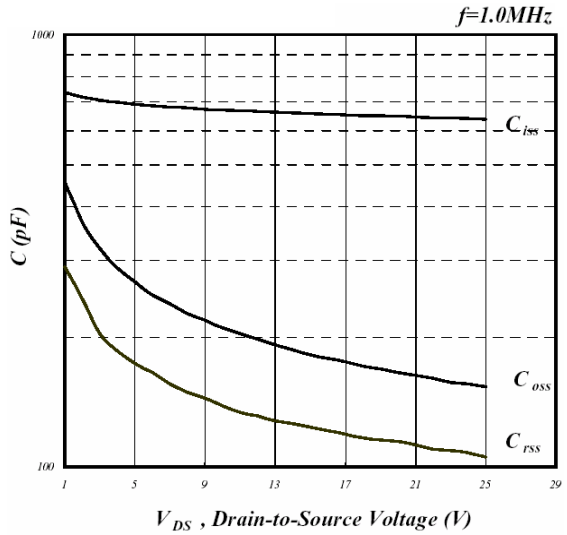


Fig 8. Typical Capacitance Characteristics

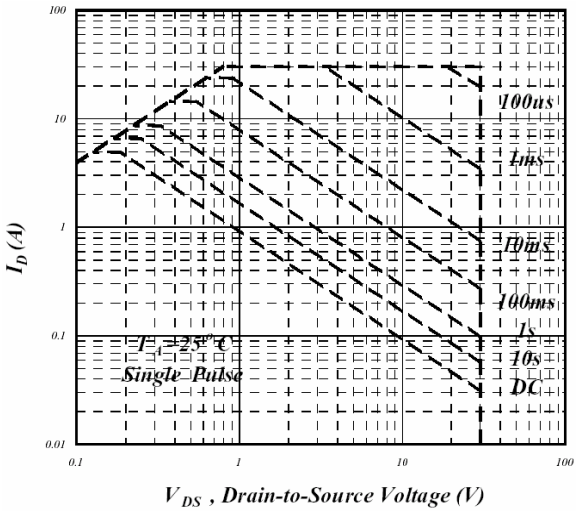


Fig 9. Maximum Safe Operating Area

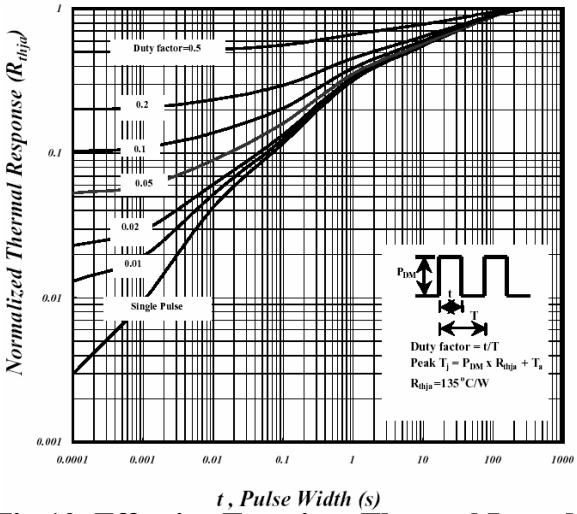


Fig 10. Effective Transient Thermal Impedance

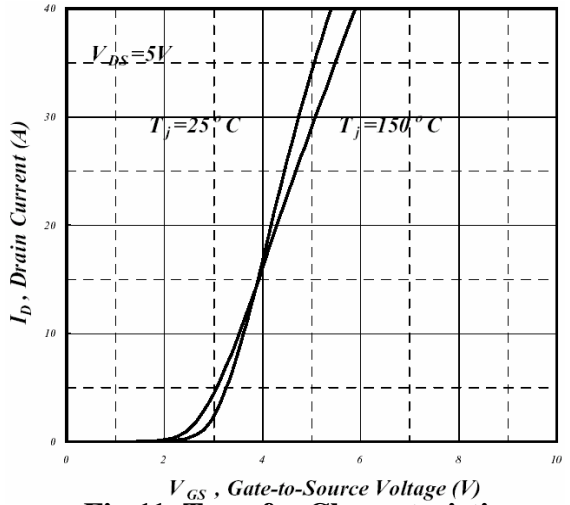


Fig 11. Transfer Characteristics

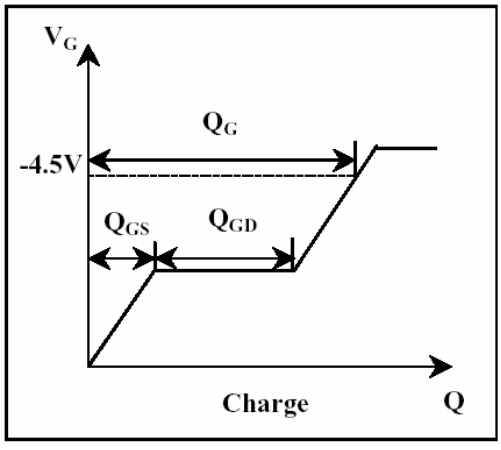


Fig 12. Gate Charge Waveform

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