

GP9973

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	60V
RDS(ON)	80mΩ
ID	3.9A

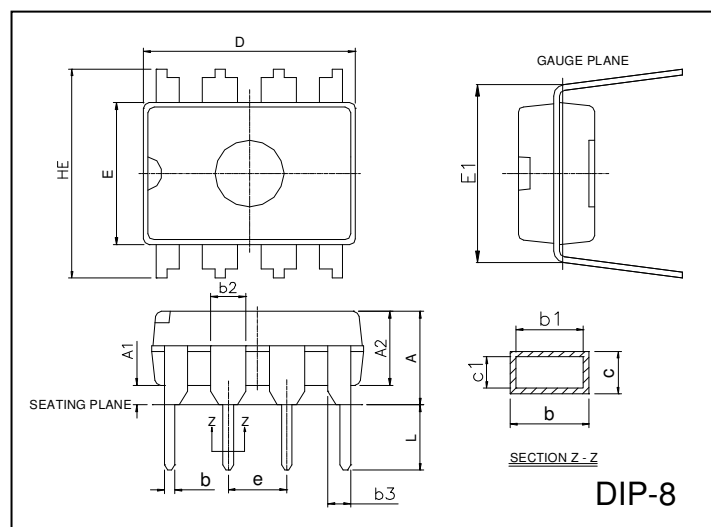
Description

The GP9973 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

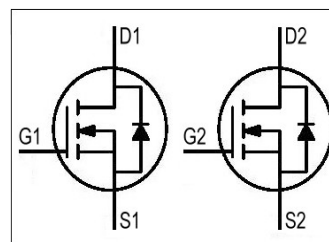
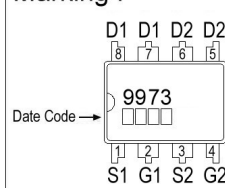
Features

- *Simple Drive Requirement
- *Low Gate Charge

Package Dimensions



Marking :



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	-	0.5334	c1	0.203	0.279
A1	0.381	-	D	9.017	10.16
A2	2.921	4.953	E	6.096	7.112
b	0.356	0.559	E1	7.620	8.255
b1	0.356	0.508	e	2.540 BSC	
b2	1.143	1.778	HE	-	10.92
b3	0.762	1.143	L	2.921	3.810
c	0.203	0.356			

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ³ , $V_{GS}@10V$	$I_D @T_A=25^\circ C$	3.9	A
Continuous Drain Current ³ , $V_{GS}@10V$	$I_D @T_A=70^\circ C$	2.5	A
Pulsed Drain Current ^{1,2}	I_{DM}	20	A
Total Power Dissipation	$P_D @T_A=25^\circ C$	2	W
Linear Derating Factor		0.016	W/ $^\circ C$
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	$^\circ C$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ³ Max.	$R_{thj-amb}$	62.5	$^\circ C/W$

Electrical Characteristics(T_j = 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 =250uA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} / ΔT _j	-	0.06	-	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 =250uA
Forward Transconductance	g _{fs}	-	3.5	-	S	V _{DS} =10V, I _D =3.9A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =60V, V _{GS} =0
Drain-Source Leakage Current(T _j =70°C)		-	-	25	uA	V _{DS} =48V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	80	mΩ	V _{GS} =10V, I _D =3.9A
		-	-	100		V _{GS} =4.5V, I _D =2.0A
Total Gate Charge ²	Q _g	-	8	13	nC	I _D =3.9A V _{DS} =48V V _{GS} =4.5V
Gate-Source Charge	Q _{gs}	-	2	-		
Gate-Drain ("Miller") Charge	Q _{gd}	-	4	-		
Turn-on Delay Time ²	T _{d(on)}	-	8	-	ns	V _{DS} =30V I _D =1A V _{GS} =10V R _G =3.3Ω R _D =30Ω
Rise Time	T _r	-	4	-		
Turn-off Delay Time	T _{d(off)}	-	20	-		
Fall Time	T _f	-	6	-		
Input Capacitance	C _{iss}	-	700	1120	pF	V _{GS} =0V V _{DS} =25V f=1.0MHz
Output Capacitance	C _{oss}	-	80	-		
Reverse Transfer Capacitance	C _{rss}	-	50	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.2	V	I _S =3.9A, V _{GS} =0V
Reverse Recovery Time	T _{rr}	-	28	-	ns	I _S =3.9A, V _{GS} =0V di/dt=100A/μs
Reverse Recovery Charge	Q _{rr}	-	25	-	nC	

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

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

 3. Mounted on 1 in² copper pad of FR4 board; 90°C/W when mounted on Min. copper pad.

Characteristics Curve

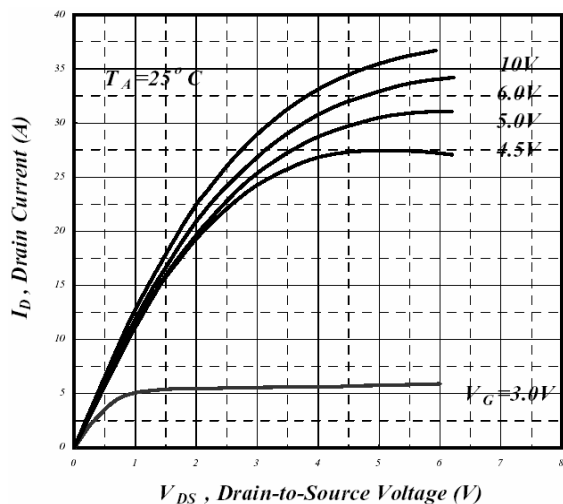


Fig 1. Typical Output Characteristics

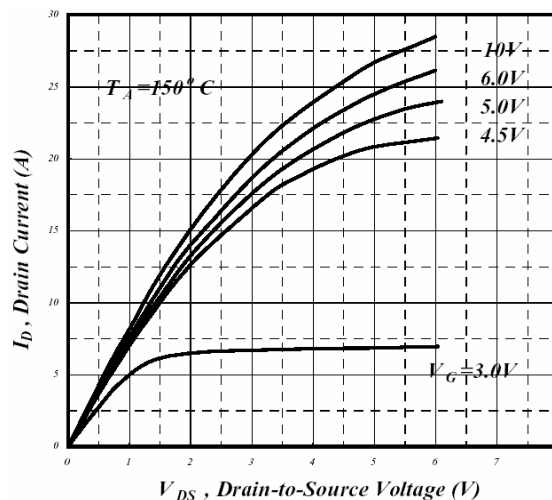


Fig 2. Typical Output Characteristics

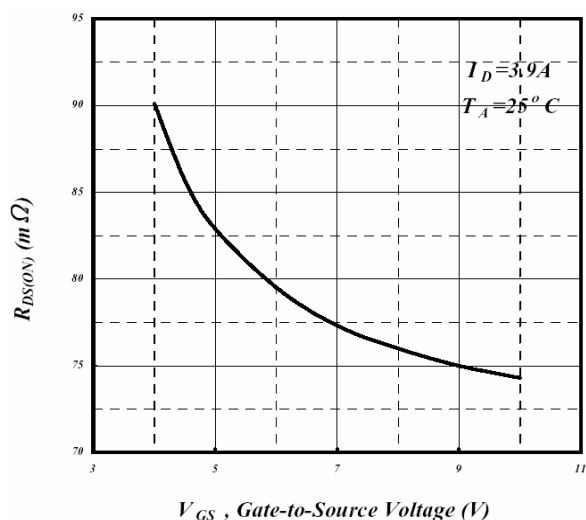
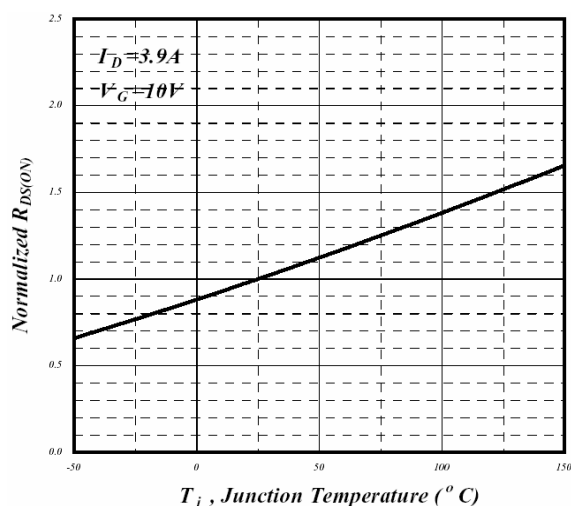
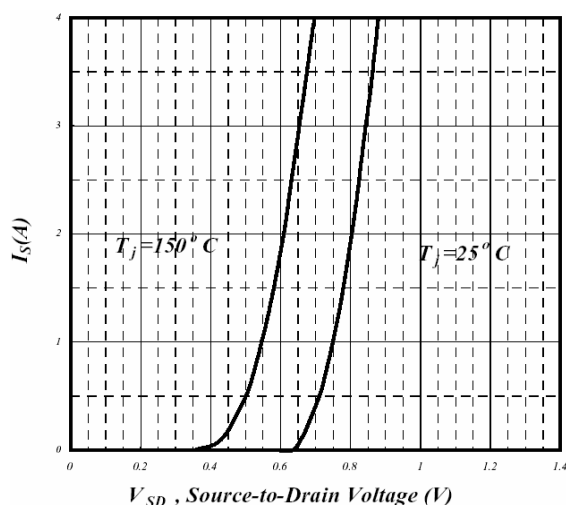
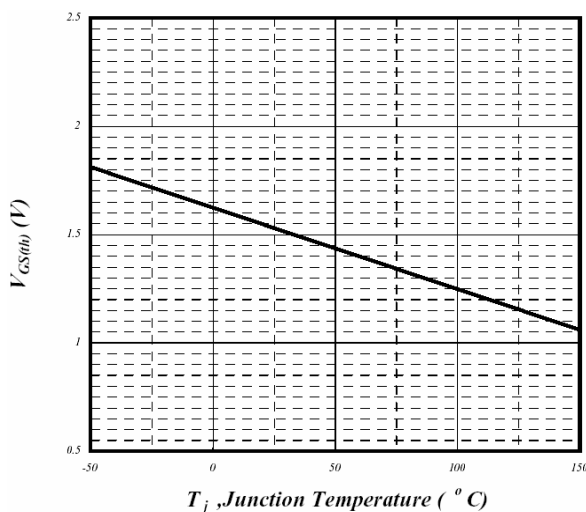
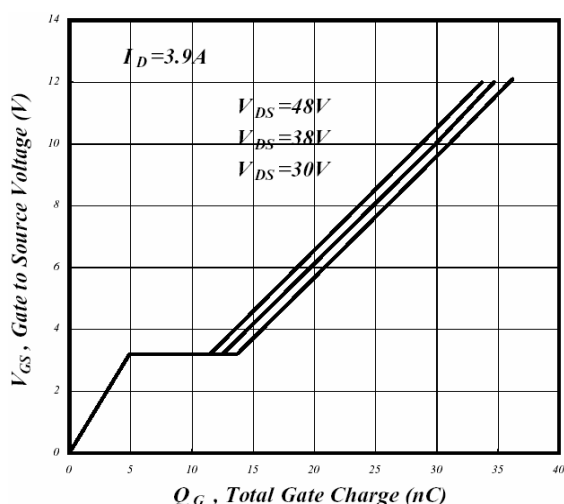
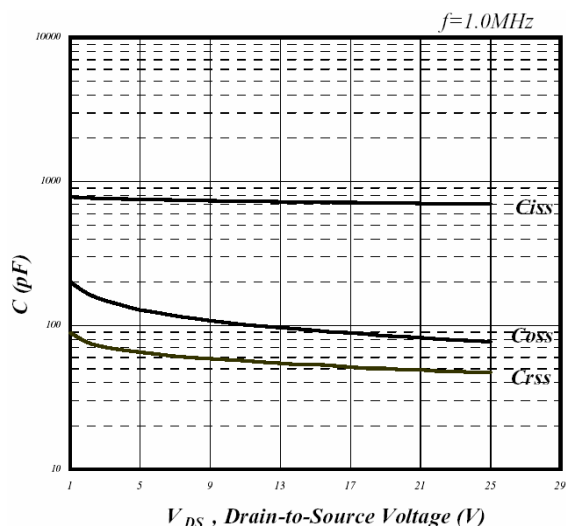
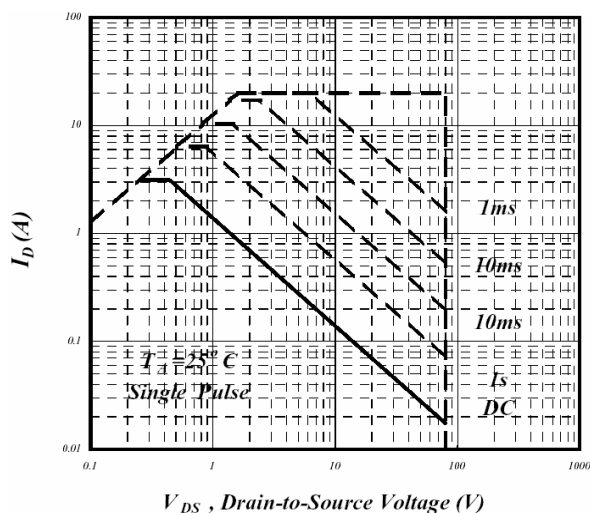
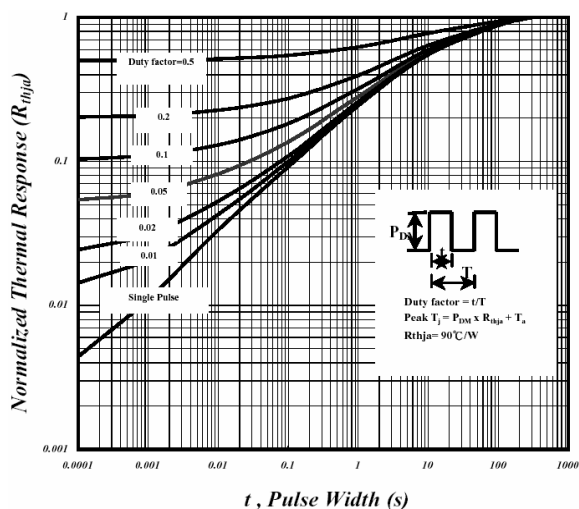
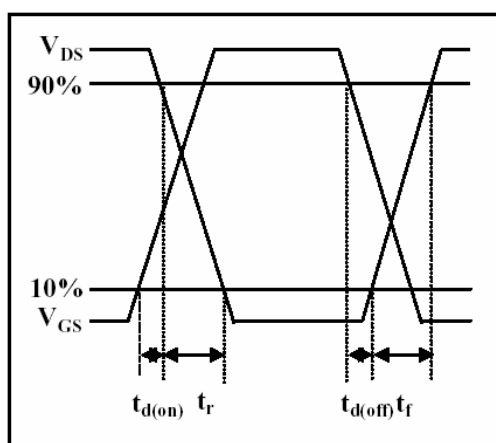
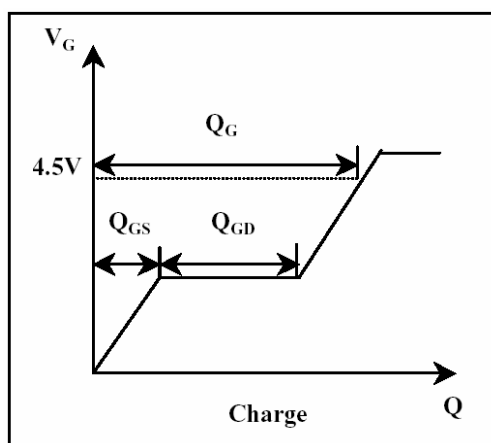


Fig 3. On-Resistance v.s. Gate Voltage

Fig 4. Normalized On-Resistance
v.s. Junction TemperatureFig 5. Forward Characteristics of
Reverse DiodeFig 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:**

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