

GP9960

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	40V
RDS(ON)	25mΩ
ID	7A

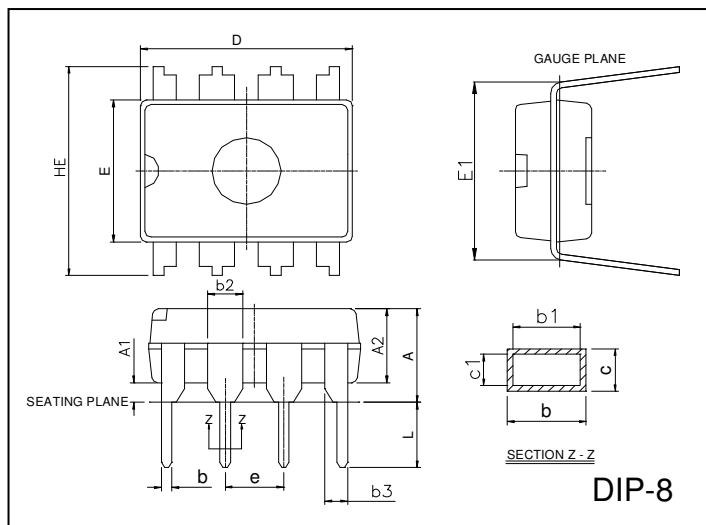
Description

The GP9960 provides the designer with the best combination of fast switching, ruggedized device design, ultra low on-resistance and cost-effectiveness.

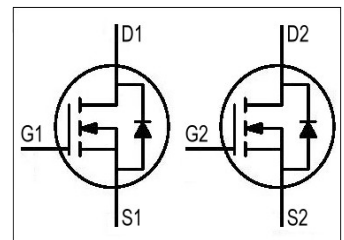
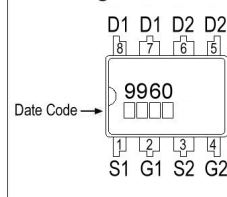
Features

- *Low On-Resistance
- *Fast Switching Speed

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}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ³	$I_D @ T_A=25^\circ\text{C}$	7	A
Continuous Drain Current ³	$I_D @ T_A=70^\circ\text{C}$	5.6	A
Pulsed Drain Current ¹	I_{DM}	20	A
Total Power Dissipation	$P_D @ T_A=25^\circ\text{C}$	2	W
Linear Derating Factor		0.016	W/ $^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	$^\circ\text{C}$

Thermal Data

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

Electrical Characteristics(T_j = 25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	40	-	-	V	V _{GS} =0, I _D =250uA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} / ΔT _j	-	0.032	-	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}	-	25	-	S	V _{DS} =10V, I _D =7A
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} =40V, V _{GS} =0
Drain-Source Leakage Current(T _j =70°C)		-	-	25	uA	V _{DS} =32V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	25	mΩ	V _{GS} =10V, I _D =7A
		-	-	40		V _{GS} =4.5V, I _D =5A
Total Gate Charge ²	Q _g	-	14.7	-	nC	I _D =7A
Gate-Source Charge	Q _{gs}	-	7.1	-		V _{DS} =20V
Gate-Drain ("Miller") Change	Q _{gd}	-	6.8	-		V _{GS} =4.5V
Turn-on Delay Time ²	T _{d(on)}	-	11.5	-	ns	V _{DS} =20V
Rise Time	T _r	-	6.3	-		I _D =1A
Turn-off Delay Time	T _{d(off)}	-	28.2	-		V _{GS} =10V
Fall Time	T _f	-	12.6	-		R _G =3.3Ω R _D =20Ω
Input Capacitance	C _{iss}	-	1725	-	pF	V _{GS} =0V
Output Capacitance	C _{oss}	-	235	-		V _{DS} =25V
Reverse Transfer Capacitance	C _{rss}	-	145	-		f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.3	V	I _S =2.3A, V _{GS} =0V
Continuous Source Current (Body Diode)	I _S	-	-	1.54	A	V _D =V _G =0V, V _S =1.3V

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

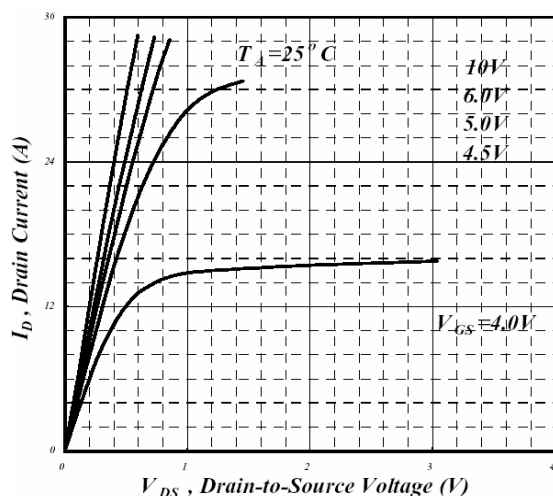


Fig 1. Typical Output Characteristics

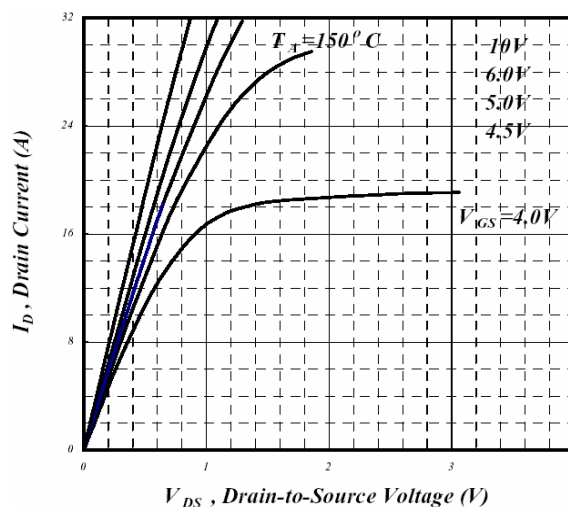


Fig 2. Typical Output Characteristics

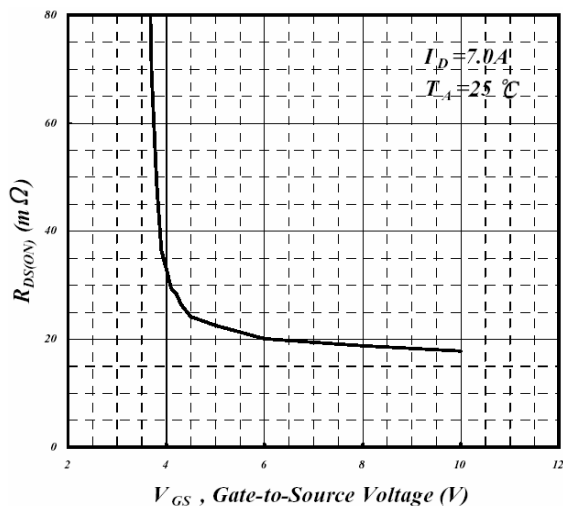
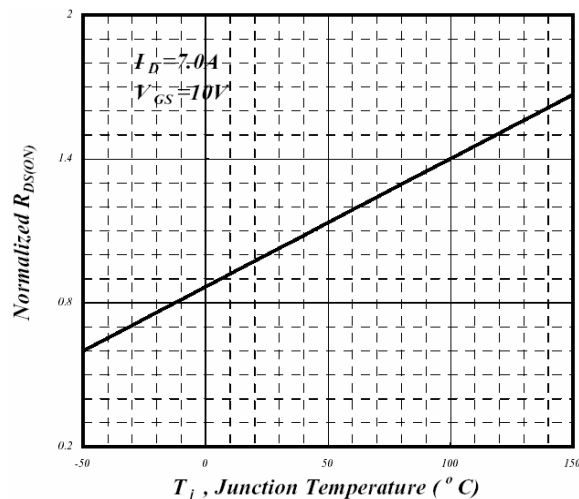
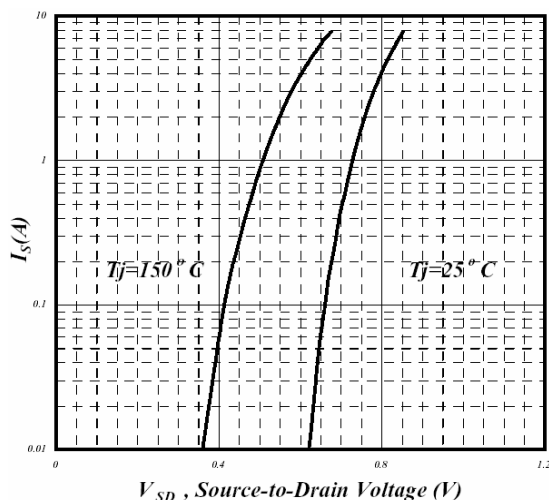
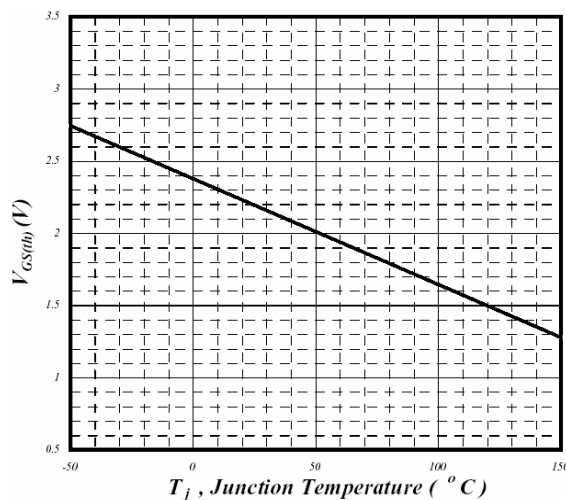


Fig 3. On-Resistance v.s. Gate Voltage

Fig 4. Normalized On-Resistance
v.s. Junction TemperatureFig 5. Forward Characteristics of
Reverse DiodeFig 6. Gate Threshold Voltage v.s.
Junction Temperature

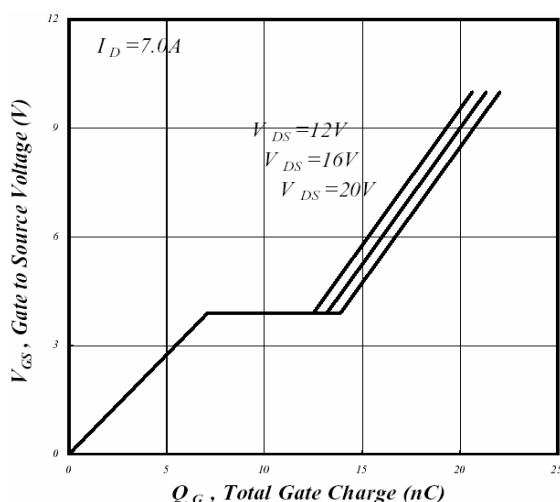


Fig 7. Gate Charge Characteristics

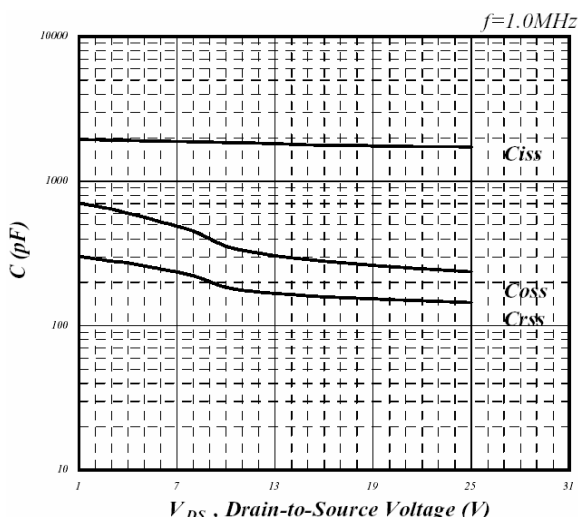


Fig 8. Typical Capacitance Characteristics

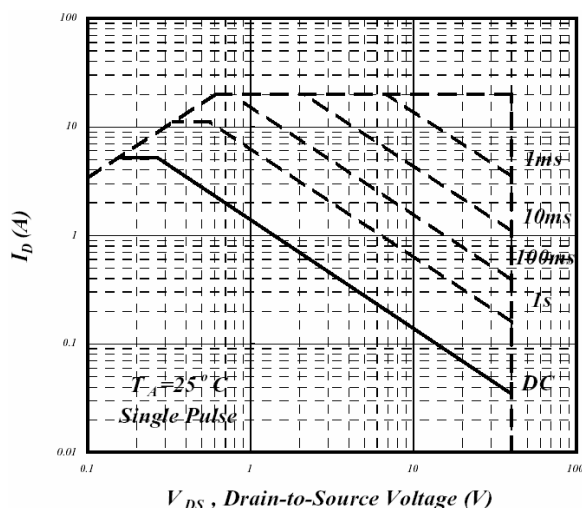


Fig 9. Maximum Safe Operating Area

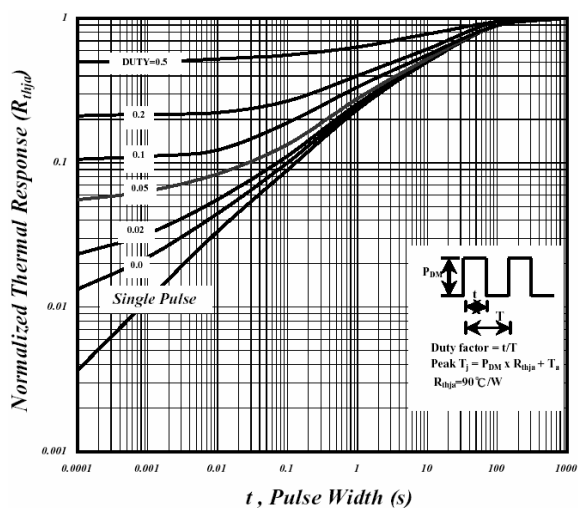


Fig 10. Effective Transient Thermal Impedance

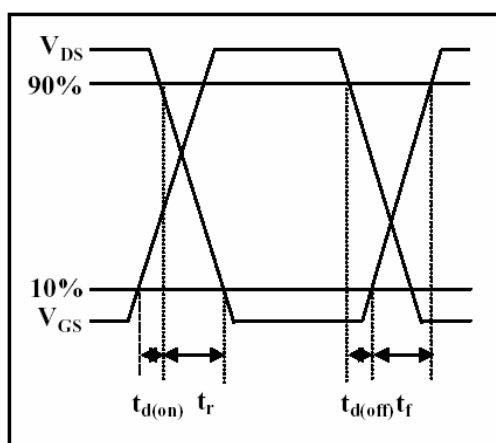


Fig 11. Switching Time Waveform

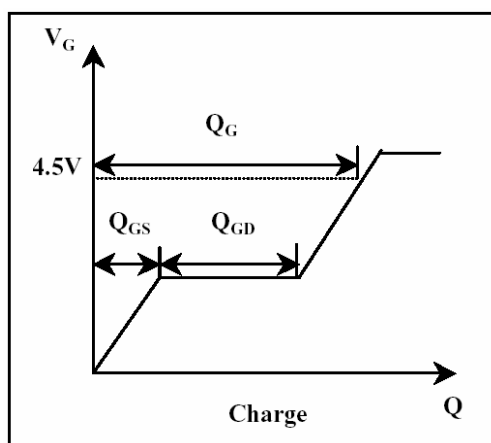


Fig 12. Gate Charge Waveform

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