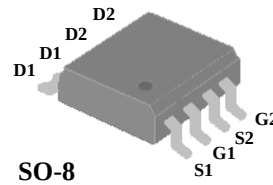


- ▼ Low Gate Charge
- ▼ Simple Drive Requirement
- ▼ Surface Mount Package
- ▼ RoHS Compliant & Halogen-Free

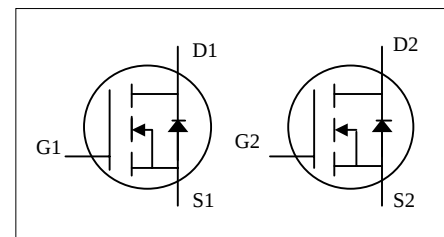


BV_{DSS}	80V
$R_{DS(ON)}$	52m Ω
I_D	4.6A

Description

XP9980 series are innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The SO-8 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for voltage conversion or switch applications.



Absolute Maximum Ratings@ $T_J=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	4.6	A
$I_D@T_A=70^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	2.9	A
I_{DM}	Pulsed Drain Current ¹	30	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	2	W
E_{AS}	Single Pulse Avalanche Energy ⁴	3.2	mJ
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

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

Electrical Characteristics@T_J=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =1mA	80	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =4.6A	-	-	52	mΩ
		V _{GS} =4.5V, I _D =3.6A	-	-	60	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =4A	-	7	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _J =70°C)	V _{DS} =64V, V _{GS} =0V	-	-	25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = +20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =4A	-	19	30	nC
Q _{gs}	Gate-Source Charge	V _{DS} =64V	-	5	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	10	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =40V	-	11	-	ns
t _r	Rise Time	I _D =1A	-	6	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	30	-	ns
t _f	Fall Time	R _D =40Ω	-	16	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	1820	2910	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	130	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	94	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1.6A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _S =4A, V _{GS} =0V,	-	44	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	90	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, t ≤10sec ; 135°C/W when mounted on min. copper pad.
- 4.Starting T_J=25°C , V_{DD}=40V , L=0.1mH , R_G=25Ω , I_{AS}=8A.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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XSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN.

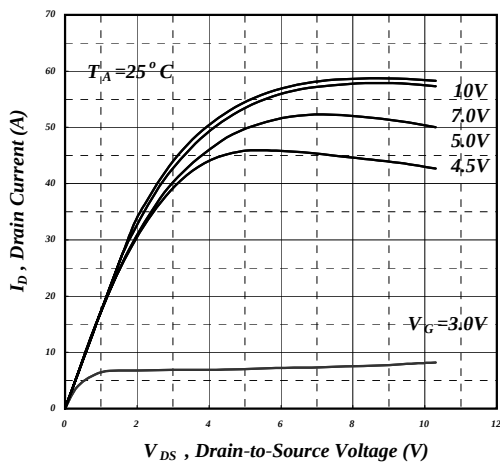


Fig 1. Typical Output Characteristics

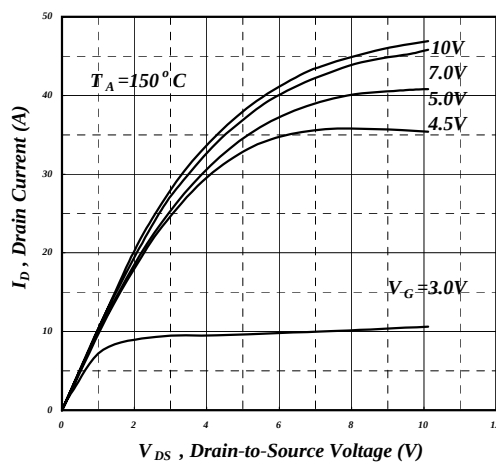


Fig 2. Typical Output Characteristics

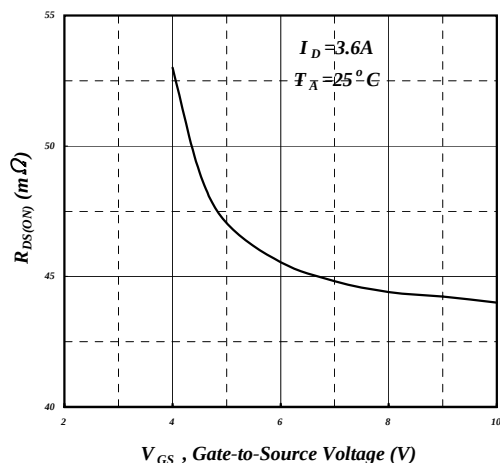


Fig 3. On-Resistance v.s. Gate Voltage

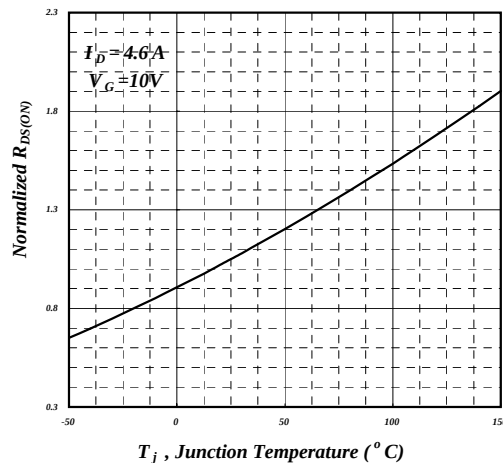


Fig 4. Normalized On-Resistance v.s. Junction Temperature

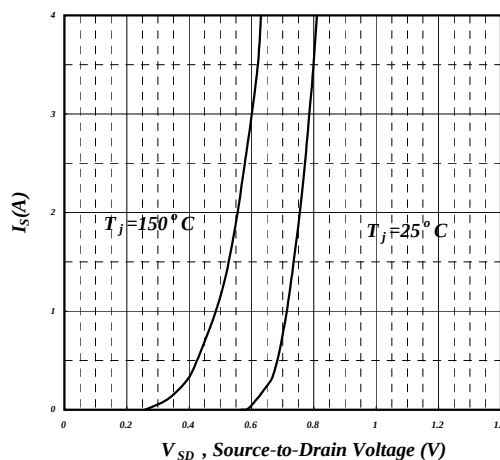


Fig 5. Forward Characteristic of Reverse Diode

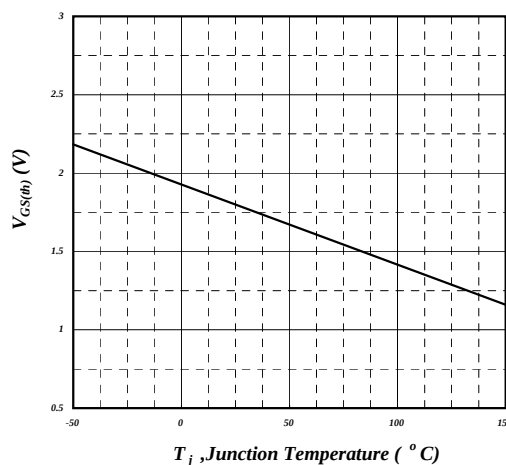


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

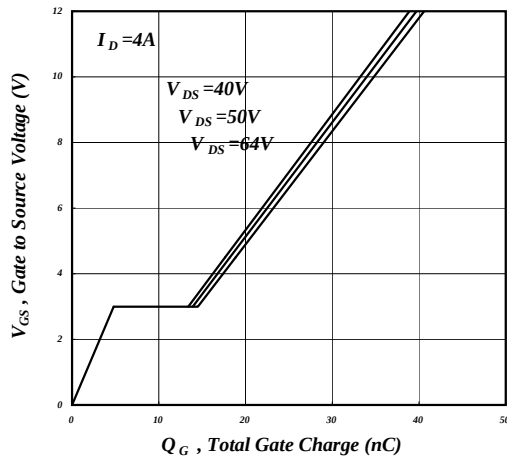


Fig 7. Gate Charge Characteristics

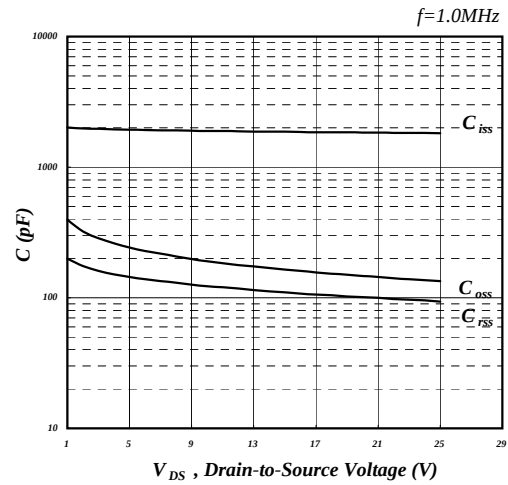


Fig 8. Typical Capacitance Characteristics

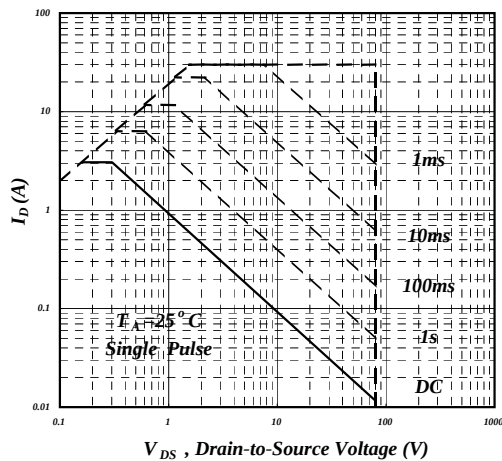


Fig 9. Maximum Safe Operating Area

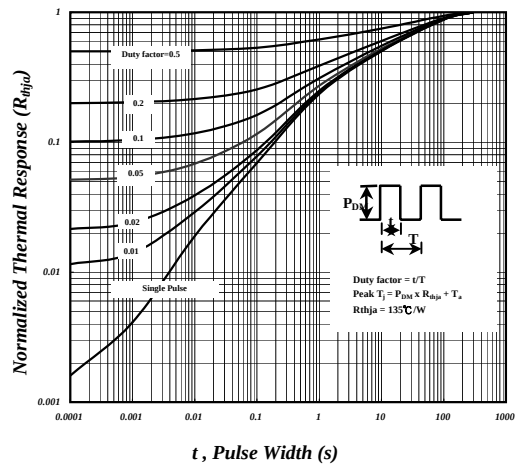


Fig 10. Effective Transient Thermal Impedance

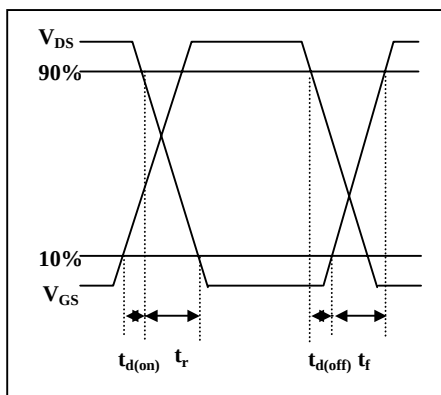


Fig 11. Switching Time Waveform

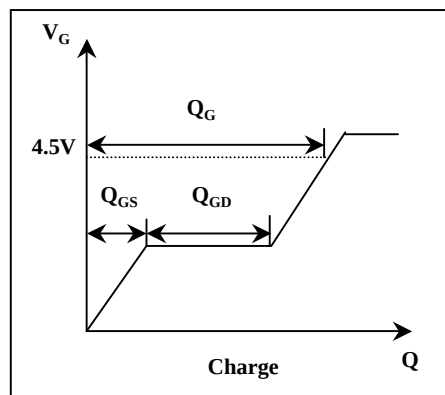
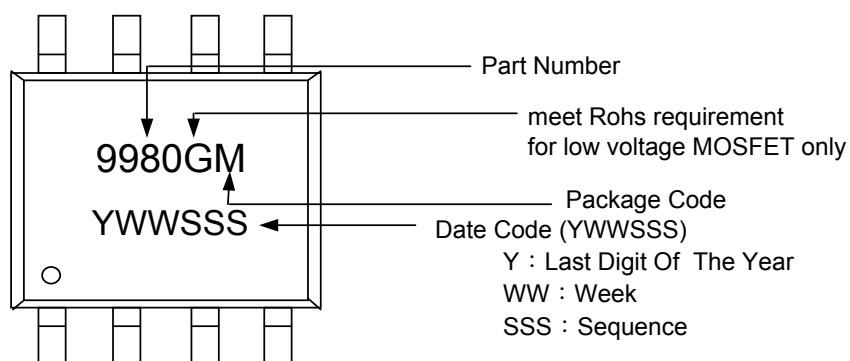
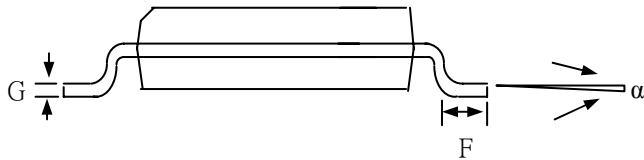
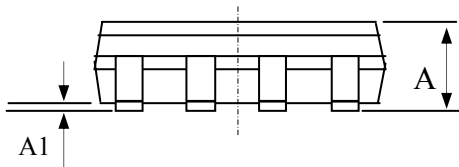
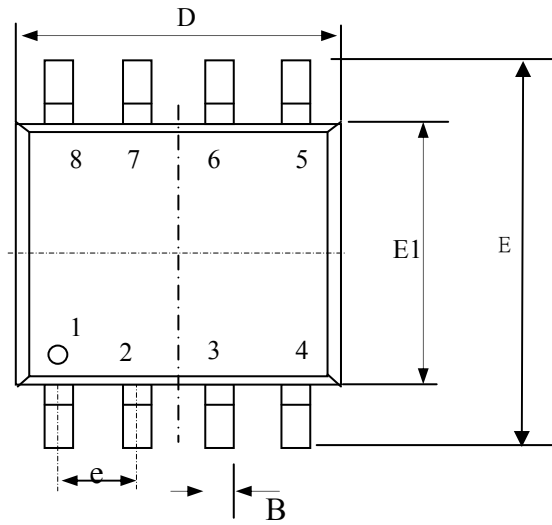


Fig 12. Gate Charge Waveform

MARKING INFORMATION

Package Outline : SO-8



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.05	0.15	0.25
B	0.30	0.41	0.51
D	4.80	5.05	5.30
E	5.79	6.00	6.20
E1	3.70	3.90	4.10
e	1.27 TYP		
G	0.17	0.21	0.25
F	0.38	0.83	1.27
α	0°	4°	8°

1.All Dimension Are In Millimeters.

2.Dimension Does Not Include Mold Protrusions.

SO-8 FOOTPRINT :