XP9452GG

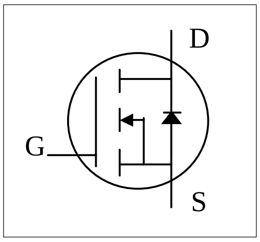
Halogen-Free Product

YAGEO XSEMI

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

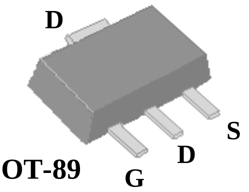
- ▼ **Lower Gate Charge**
- ▼ **Capable of 2.5V Gate Drive**
- ▼ **Simple Drive Requirement**
- ▼ **RoHS Compliant**



BV_{DSS}	20V
$R_{DS(ON)}$	50mΩ
I_D	4A

Description

XP9452 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.



SOT-89

Absolute Maximum Ratings@T_j=25^{o}C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±16	V
I_D@T_A=25℃	Drain Current, V_{GS} @ 4.5V[3]	4	A
I_D@T_A=70℃	Drain Current, V_{GS} @ 4.5V[3]	2.5	A
I_{DM}	Pulsed Drain Current[1]	12	A
P_D@T_A=25℃	Total Power Dissipation	1.25	W
	Linear Derating Factor	0.01	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	100	℃/W

Electrical Characteristics@T_j=25^{o}C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=1mA	-	0.03	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=4A	-	-	38	mΩ
		V_{GS}=4.5V, I_D=4A	-	-	50	mΩ
		V_{GS}=2.5V, I_D=3A	-	-	80	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.5	-	1.5	V
g_{fs}	Forward Transconductance[2]	V_{DS}=5V, I_D=3A	-	10	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	-	-	1	uA
	Drain-Source Leakage Current (T_j=70^{o}C)	V_{DS}=16V ,V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= $\pm$16V, V_{DS}=0V	-	-	$\pm$100	nA
Q_g	Total Gate Charge[2]	I_D=4A	-	6	10	nC
Q_{gs}	Gate-Source Charge	V_{DS}=16V	-	1	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	2	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=10V	-	8	-	ns
t_r	Rise Time	I_D=1A	-	9	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω	-	13	-	ns
t_f	Fall Time	V_{GS}=5V	-	3	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	360	570	pF
C_{oss}	Output Capacitance	V_{DS}=20V	-	80	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	65	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=1A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=4A, V_{GS}=0V,	-	18	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/µs	-	10	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mount on FR4 board, t $\leq$ 10s.

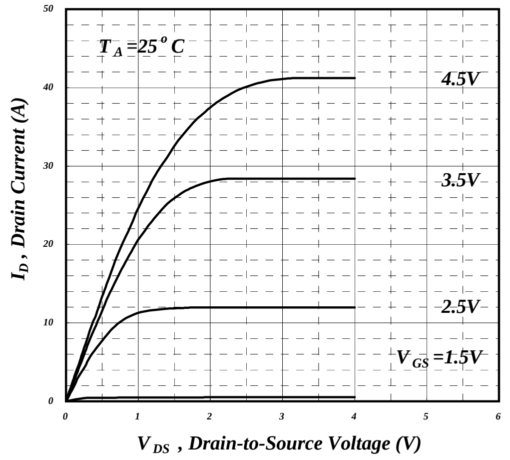


Fig 1. Typical Output Characteristics

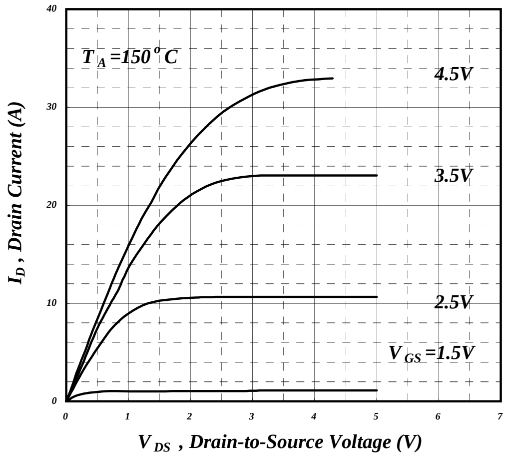


Fig 2. Typical Output Characteristics

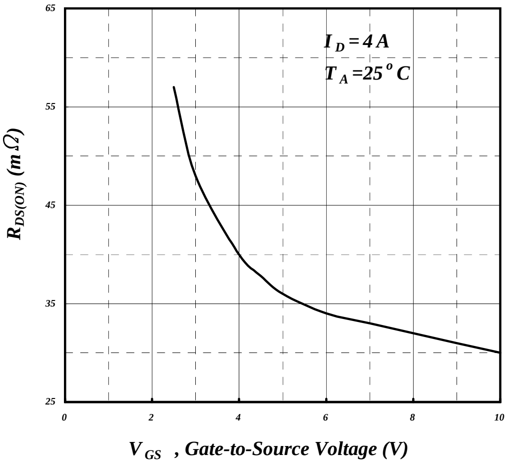


Fig 3. On-Resistance v.s. Gate Voltage

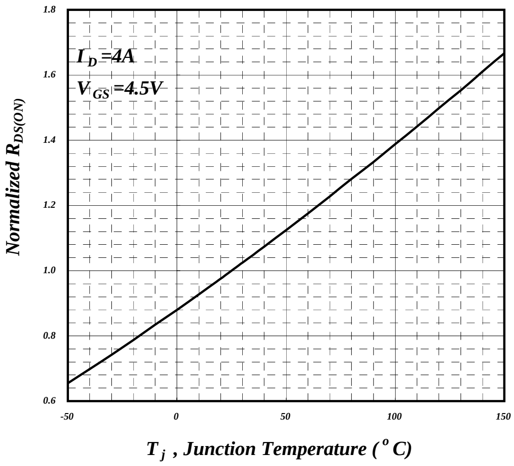


Fig 4. Normalized On-Resistance v.s. Junction Temperature

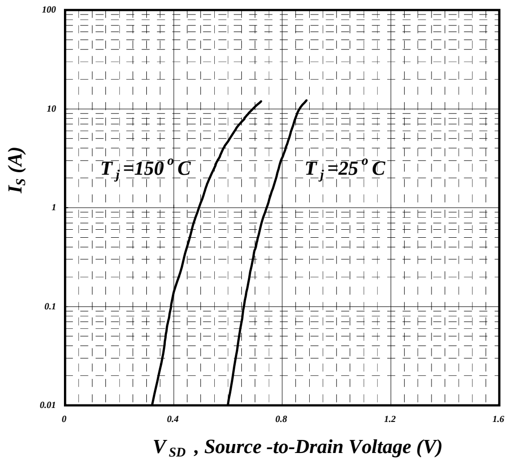


Fig 5. Forward Characteristic of Reverse Diode

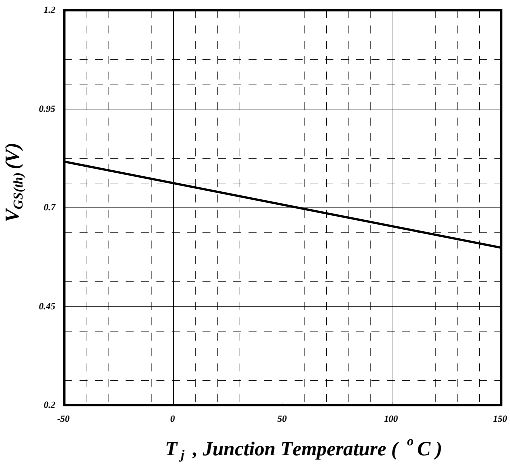


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

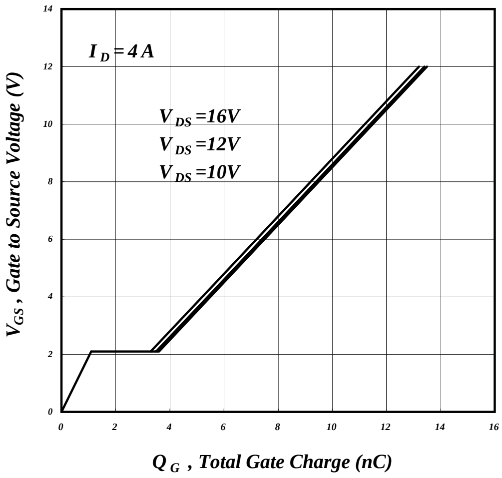


Fig 7. Gate Charge Characteristics

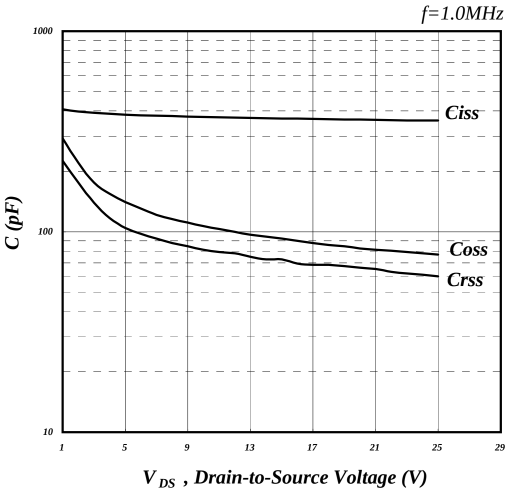


Fig 8. Typical Capacitance Characteristics

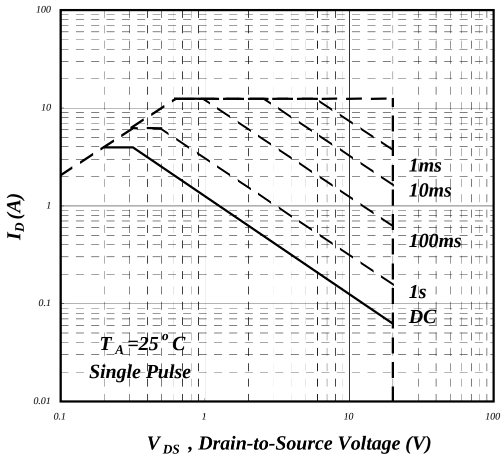


Fig 9. Maximum Safe Operating Area

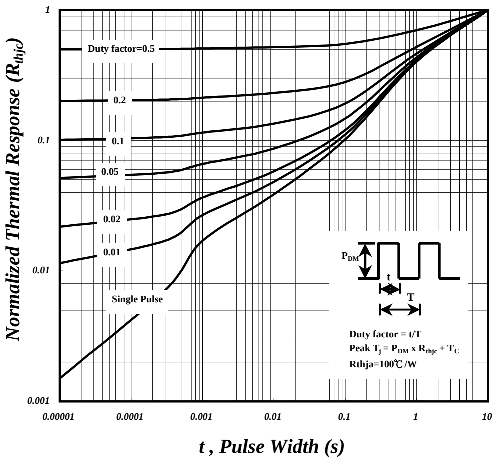
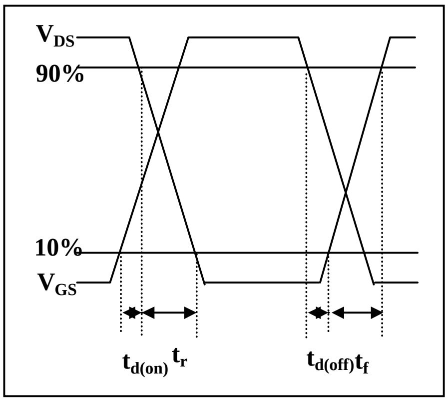


Fig 10. Effective Transient Thermal Impedance



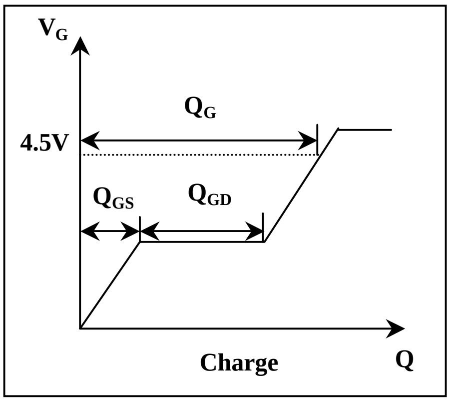
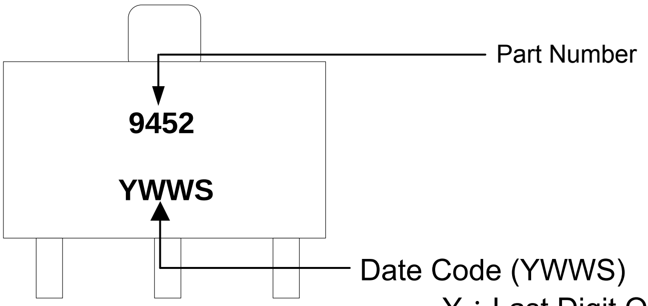


Fig 11. Switching Time Waveform

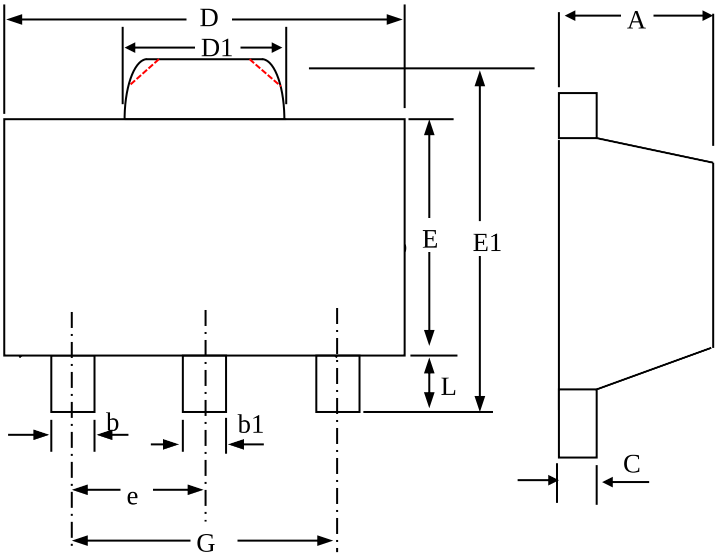
Fig 12. Gate Charge Waveform

MARKING INFORMATION



Y：Last Digit Of The Year
WW：Week
S：Sequence

Package Outline & Packing : SOT-89



	Millimeters		
SYMBOLS	MIN	NOM	MAX
b	0.30	0.43	0.55
b1	0.40	0.50	0.60
D1	1.40	1.60	1.80
D	4.40	4.50	4.60
E	2.30	2.45	2.60
E1	3.80	4.05	4.30
e	1.30	1.50	1.70
G	2.80	3.00	3.20
A	1.40	1.50	1.60
C	0.34	0.39	0.44
L	0.80	1.00	1.20

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.

3.Two package structure , obtuse angle and circular bead,is acceptable.

SOT-89 FOOTPRINT：