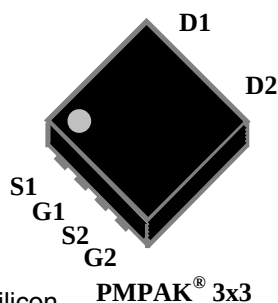


- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free

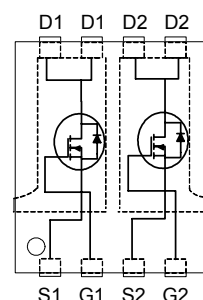


BV_{DSS}	100V
$R_{DS(ON)}$	250m Ω
I_D^3	2.1A

Description

XP10A250 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

The PMPAK[®] 3x3 package is special for voltage conversion application using standard infrared reflow technique with the backside heat sink to achieve the good thermal performance.



Absolute Maximum Ratings@T_J=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_A=25^\circ\text{C}$	Drain Current ³ , V_{GS} @ 10V	2.1	A
$I_D@T_A=70^\circ\text{C}$	Drain Current ³ , V_{GS} @ 10V	1.7	A
I_{DM}	Pulsed Drain Current ¹	10	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	2.5	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Rating	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	10	°C/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient ³	50	°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 =250uA	100	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =2A	-	-	250	mΩ
		V _{GS} =4.5V, I _D =1A	-	-	500	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 =2A	-	3	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, 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 =2A	-	5.5	8.8	nC
Q _{gs}	Gate-Source Charge	V _{DS} =50V	-	1.1	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	1.8	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V	-	6	-	ns
t _r	Rise Time	I _D =1A	-	7	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	10	-	ns
t _f	Fall Time	V _{GS} =10V	-	6	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	200	320	pF
C _{oss}	Output Capacitance	V _{DS} =50V	-	25	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	20	-	pF
R _g	Gate Resistance	f=1.0MHz	-	2	4	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1.9A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _S =2A, V _{GS} =0V	-	30	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	24	-	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 ; 90 °C/W on steady state.

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.

YAGEO XSEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

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

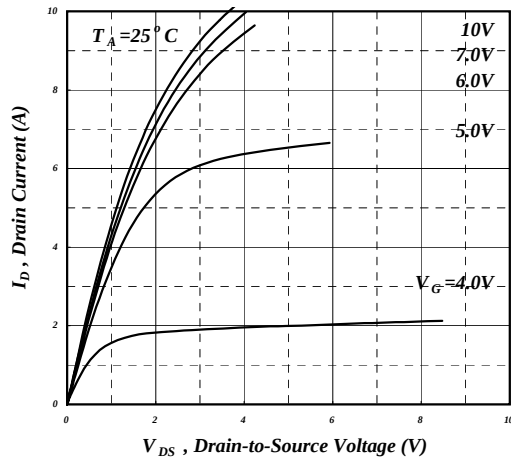


Fig 1. Typical Output Characteristics

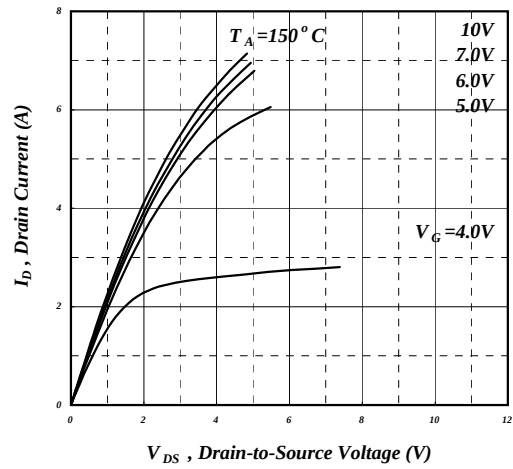


Fig 2. Typical Output Characteristics

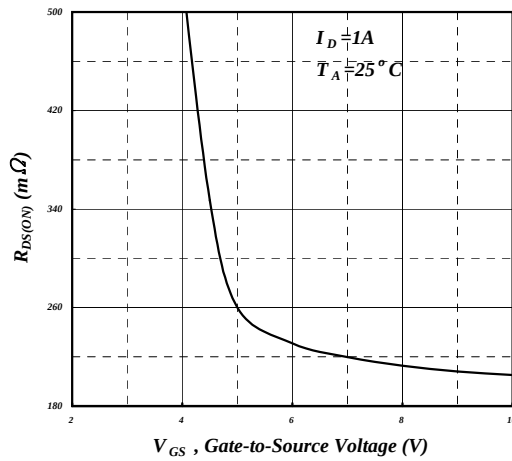
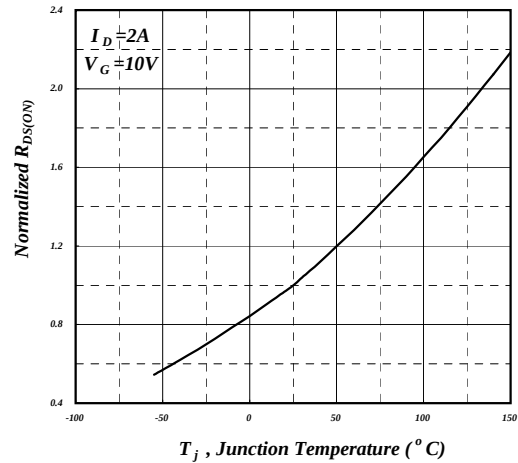
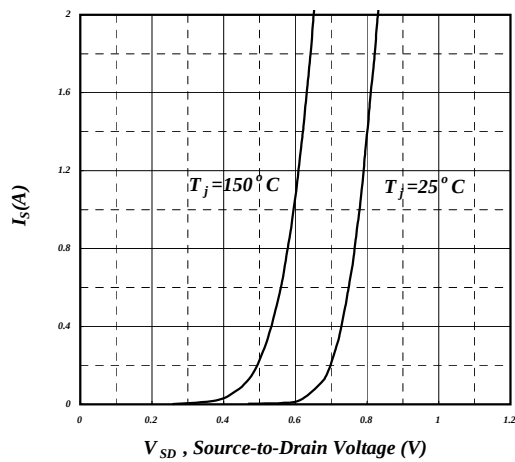


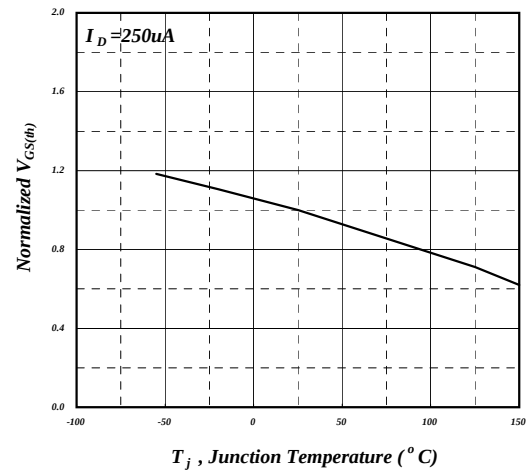
Fig 3. On-Resistance v.s. Gate Voltage



**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**

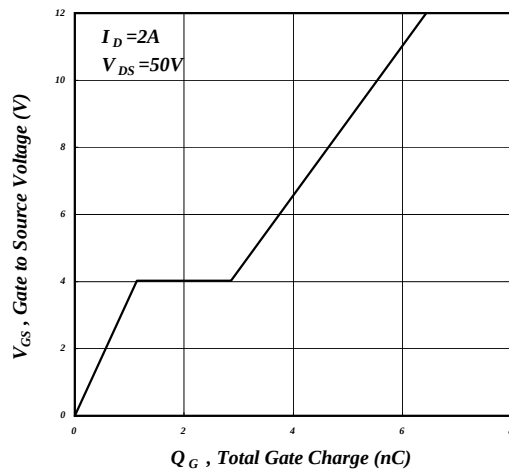


Fig 7. Gate Charge Characteristics

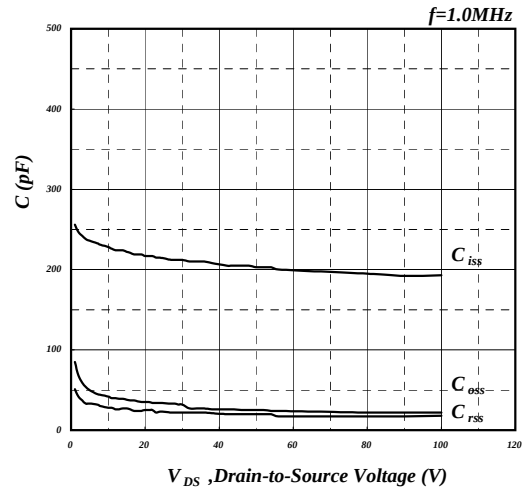


Fig 8. Typical Capacitance Characteristics

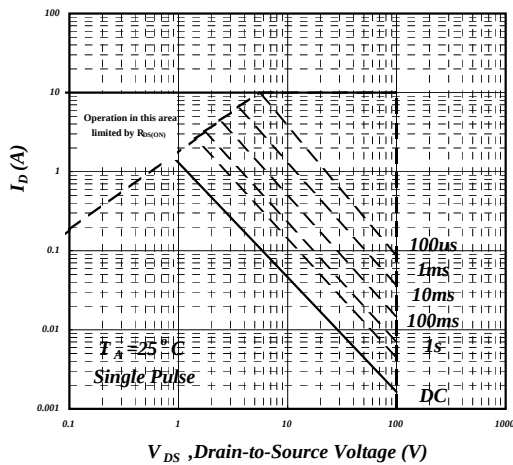


Fig 9. Maximum Safe Operating Area

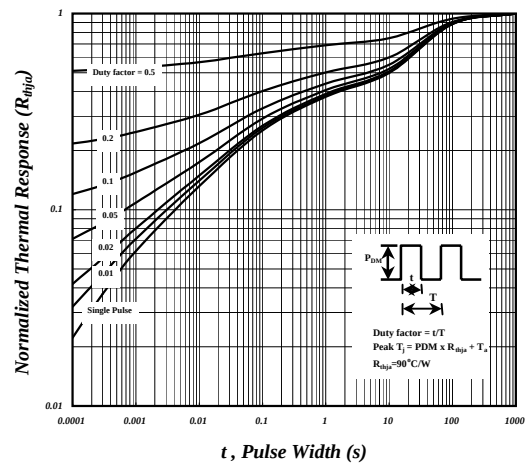


Fig 10. Effective Transient Thermal Impedance

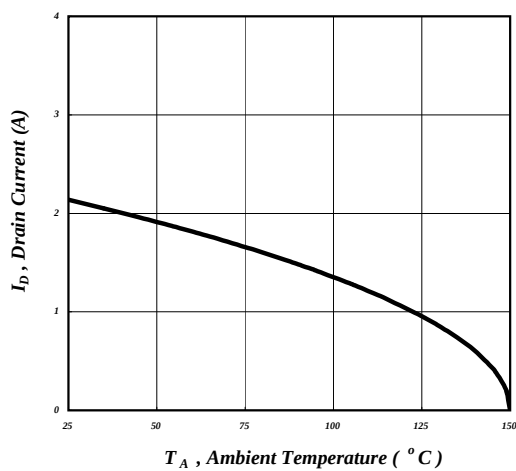


Fig 11. Drain Current v.s. Ambient Temperature

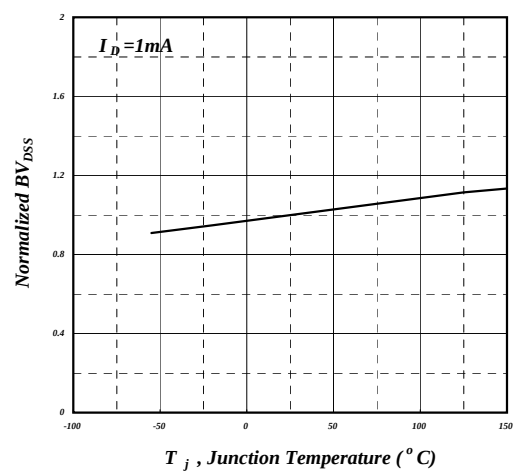
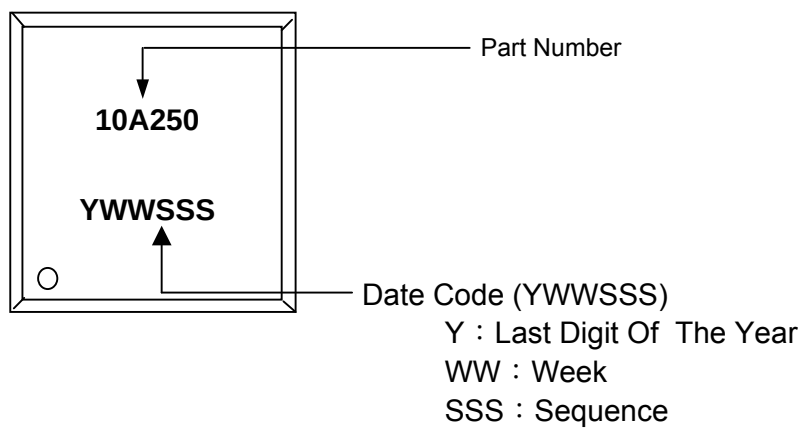
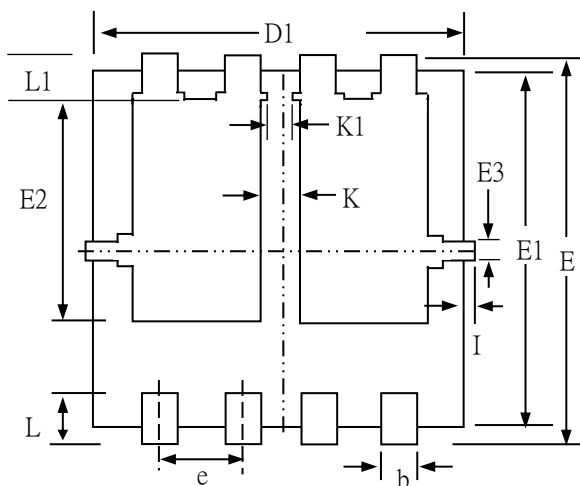


Fig 12. Normalized BV_{DSS} v.s. Junction Temperature

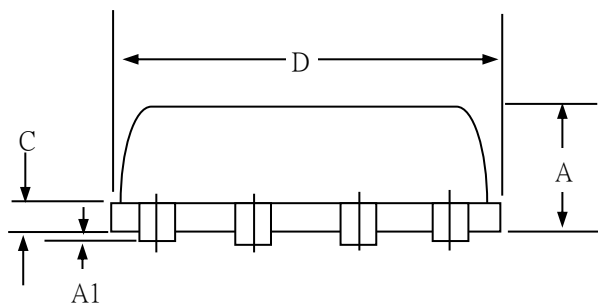
MARKING INFORMATION



Package Outline : PMPAK 3x3 (Dual Pad)



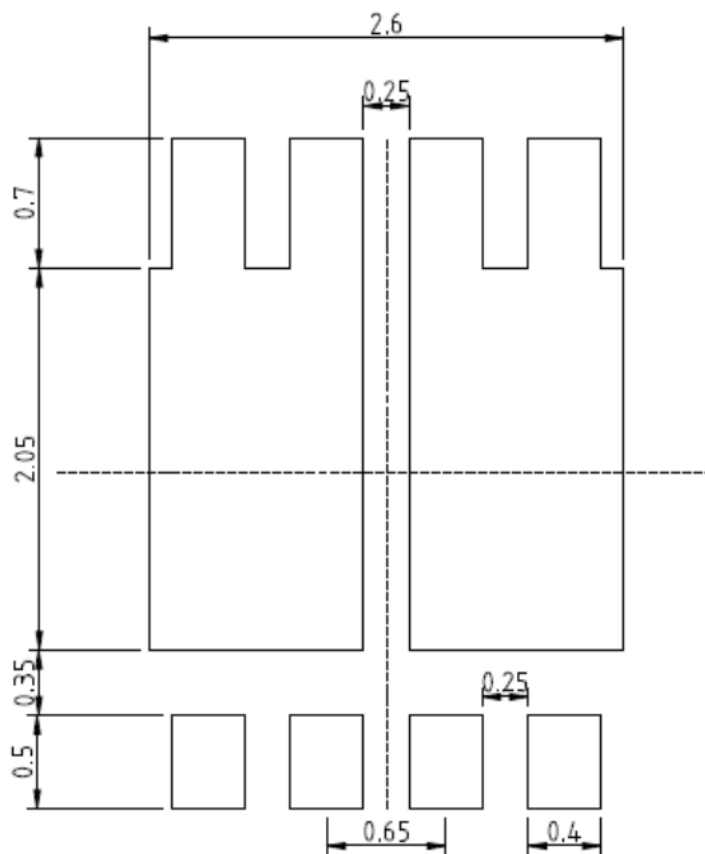
BACKSIDE VIEW



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	0.65	0.80	1.05
A1	-----	-----	0.15
b	0.20	0.35	0.50
C	0.10	0.15	0.25
D	2.85	3.30	3.60
D1	2.85	3.10	3.40
E	2.85	3.30	3.60
E1	2.85	3.10	3.40
E2	1.45	1.75	2.05
E3	0.10	0.20	0.30
e	0.65 (ref.)		
L	0.15	0.40	0.50
L1	0.15	0.50	0.70
K	0.20	0.38	0.65
K1	0.10	0.25	0.45
I	-----	-----	0.15

- 1.All Dimension Are In Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.

PMPAK3X3(Dual Pad) FOOTPRINT :



UNIT: mm