

General Description

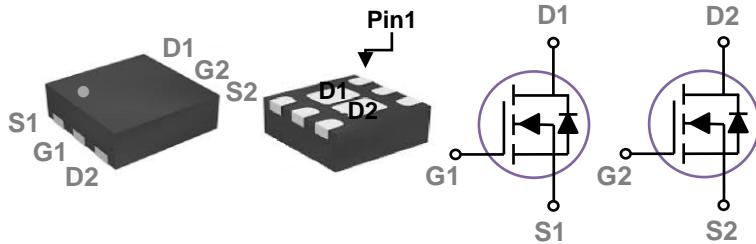
These dual N Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

BVDSS	RDS(ON)	ID
20V	34mΩ	4.8A

Features

- 20V, 4.8A, $RDS(ON) = 34m\Omega @ VGS = 4.5V$
- Fast switching
- Green Device Available
- Suit for 1.8V Gate Drive Applications

DFN2X2 Dual 2EP Pin Configuration



Applications

- Notebook
- Load Switch
- Networking
- Hand-held Instruments

Absolute Maximum Ratings $T_c=25^\circ C$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
I_D	Drain Current – Continuous ($T_A=25^\circ C$)	4.8	A
	Drain Current – Continuous ($T_A=70^\circ C$)	3.8	A
I_{DM}	Drain Current – Pulsed ¹	19.2	A
P_D	Power Dissipation ($T_A=25^\circ C$)	1.25	W
	Power Dissipation – Derate above 25°C	0.01	W/°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	100	°C/W

Electrical Characteristics (T_J=25 °C, unless otherwise noted)
Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250µA	20	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =20V, V _{GS} =0V, T _J =25°C	---	---	1	µA
		V _{DS} =16V, V _{GS} =0V, T _J =125°C	---	---	10	µA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±10V, V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =4.5V, I _D =3A	---	28	34	mΩ
		V _{GS} =2.5V, I _D =2A	---	36	47	mΩ
		V _{GS} =1.8V, I _D =1.5A	---	51	66	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250µA	0.4	0.6	1	V
gfs	Forward Transconductance	V _{DS} =10V, I _D =2A	---	3.5	---	S

Dynamic and switching Characteristics

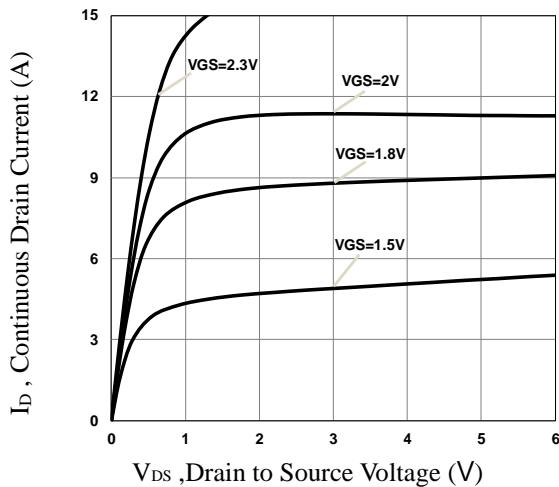
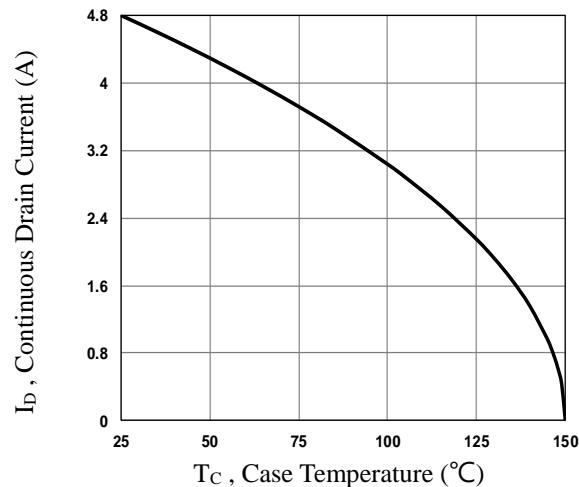
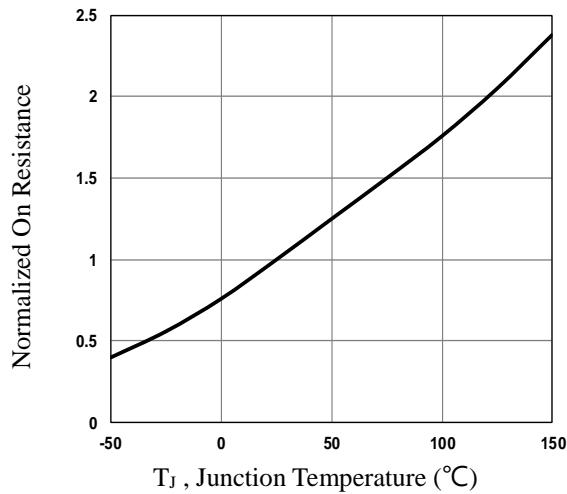
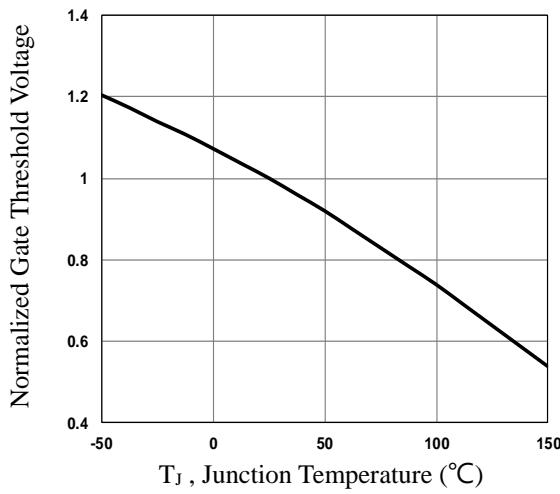
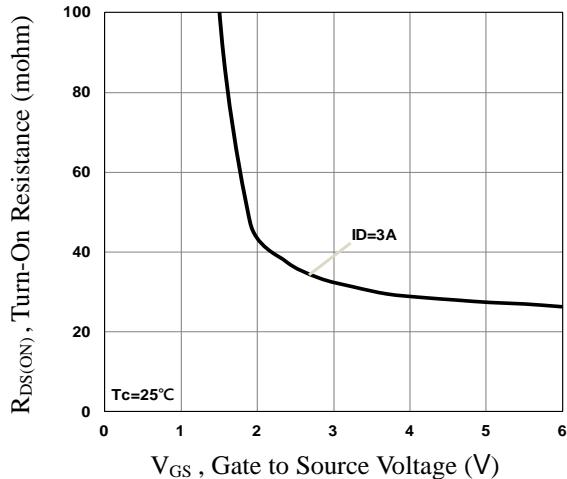
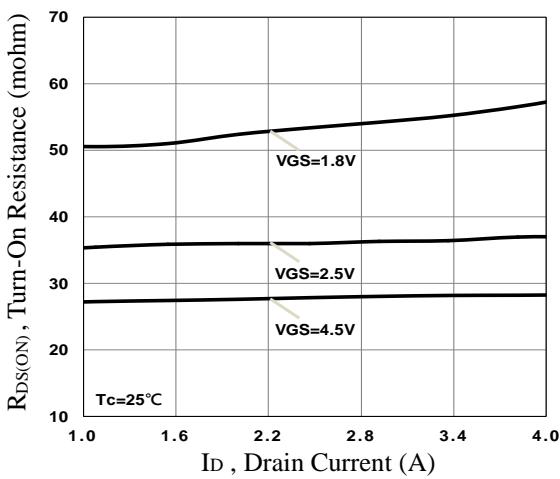
Q _g	Total Gate Charge ^{2,3}	V _{DS} =10V, V _{GS} =4.5V, I _D =3A	---	3.2	5	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	0.5	1.5	
Q _{gd}	Gate-Drain Charge ^{2,3}		---	1.3	3	
T _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =10V, V _{GS} =4.5V, R _G =6Ω I _D =3A	---	2.9	4.5	ns
T _r	Rise Time ^{2,3}		---	8.4	13	
T _{d(off)}	Turn-Off Delay Time ^{2,3}		---	19.2	30	
T _f	Fall Time ^{2,3}		---	5.6	9	
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, F=1MHz	---	280	420	pF
C _{oss}	Output Capacitance		---	50	75	
C _{rss}	Reverse Transfer Capacitance		---	45	68	

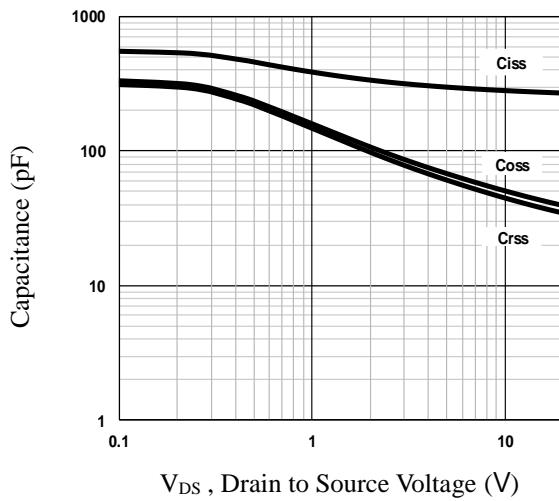
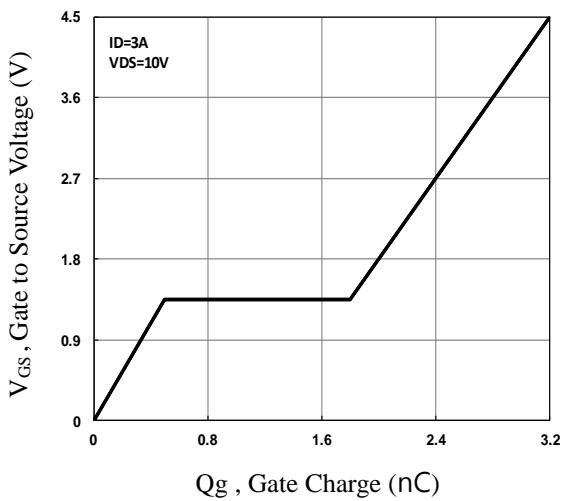
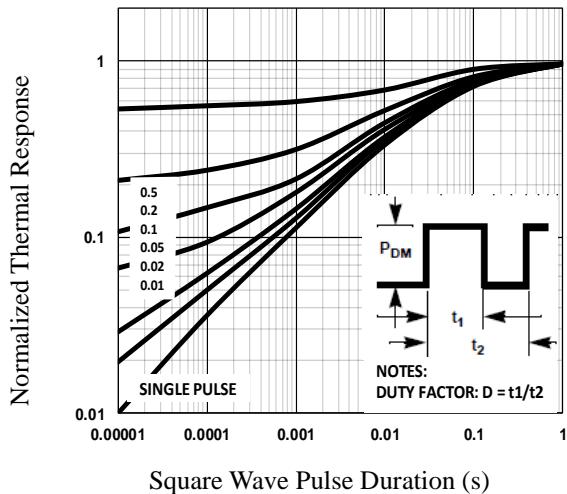
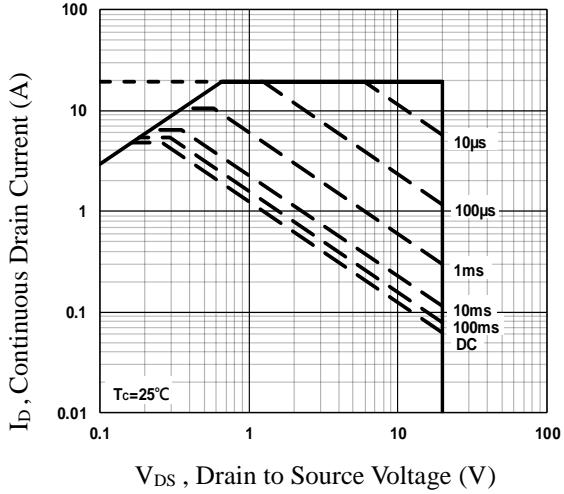
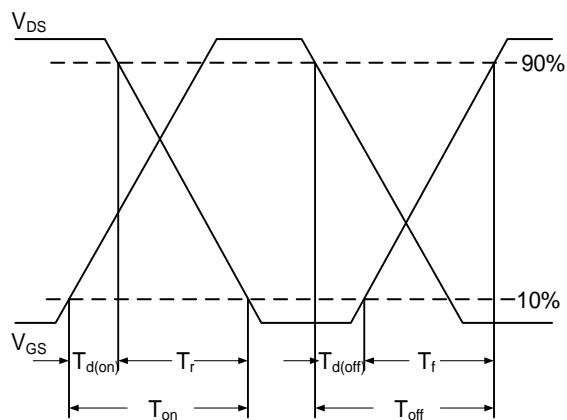
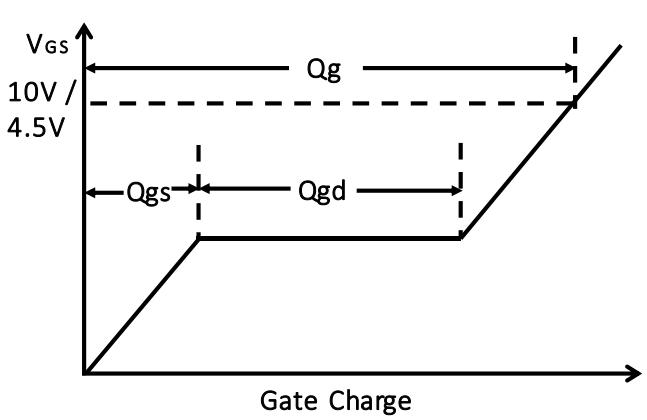
Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _s	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	4.8	A
I _{SM}	Pulsed Source Current		---	---	9.6	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _s =1A, T _J =25°C	---	---	1	V

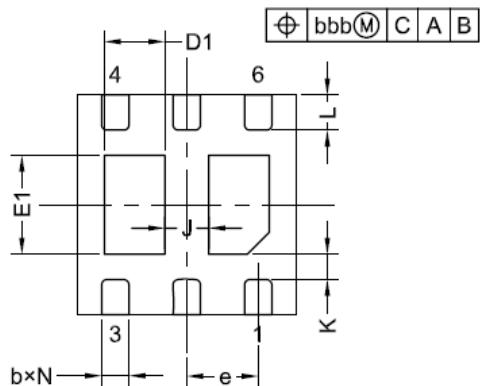
Note :

- Repetitive Rating : Pulsed width limited by maximum junction temperature.
- The data tested by pulsed, pulse width ≤ 300µs, duty cycle ≤ 2%.
- Essentially independent of operating temperature.

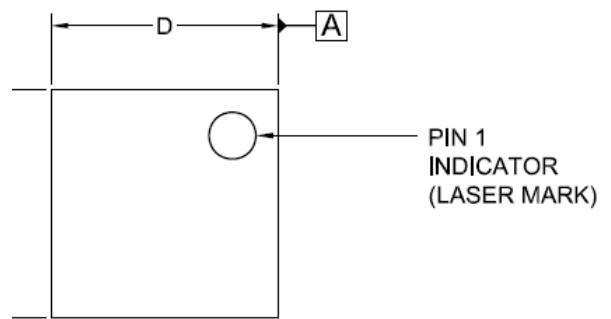

Fig.1 Typical Output Characteristics

Fig.2 Continuous Drain Current vs. T_c

Fig.3 Normalized $R_{DS(ON)}$ vs. T_j

Fig.4 Normalized V_{th} vs. T_j

Fig.5 Turn-On Resistance vs. V_{GS}

Fig.6 Turn-On Resistance vs. I_D


Fig.7 Capacitance Characteristics

Fig.8 Gate Charge Characteristics

Fig.9 Normalized Transient Impedance

Fig.10 Maximum Safe Operation Area

Fig.11 Switching Time Waveform

Fig.12 Gate Charge Waveform

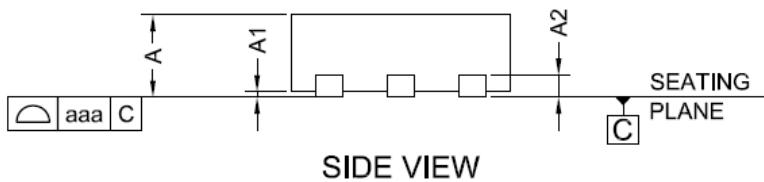
PPAK2X2 Dual 2EP PACKAGE INFORMATION



BOTTOM VIEW



TOP VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.203	
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	0.50	0.55	0.60
E	1.95	2.00	2.05
E1	0.85	0.90	0.95
e		0.65BSC	
L	0.27	0.32	0.37
J		0.40BSC	
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	