

General Description

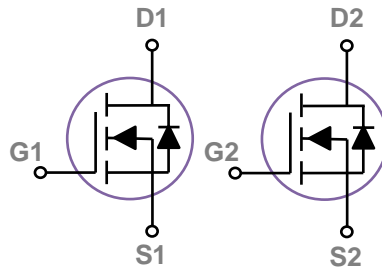
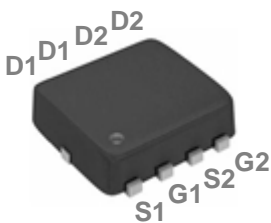
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BVDSS	RDSON	ID
150V	480mΩ	2A

Features

- 150V,2A, $R_{DS(ON)} = 480m\Omega$ @VGS = 10V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

PPAK3X3 Dual Pin Configuration



Applications

- Networking
- Load switch
- LED applications

Absolute Maximum Ratings Tc=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	150	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous (T _C =25°C)	2	A
	Drain Current – Continuous (T _C =100°C)	1.25	A
I _{DM}	Drain Current – Pulsed ¹	8	A
P _D	Power Dissipation (T _C =25°C)	27.1	W
	Power Dissipation – Derate above 25°C	0.21	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 _{θJA}	Thermal Resistance Junction to ambient	---	62	°C/W
R _{θJC}	Thermal Resistance Junction to Case	---	4.6	°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 =250uA	150	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =150V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =120V, V _{GS} =0V, T _J =125°C	---	---	10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =1A	---	380	480	mΩ
		V _{GS} =6V, I _D =0.5A	---	410	520	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	1.8	2.5	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =1A	---	1.7	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2, 3}	V _{DS} =75V, V _{GS} =10V, I _D =1A	---	8.1	16	nC
Q _{gs}	Gate-Source Charge ^{2, 3}		---	2	4	
Q _{gd}	Gate-Drain Charge ^{2, 3}		---	2.7	5.4	
T _{d(on)}	Turn-On Delay Time ^{2, 3}	V _{DD} =75V, V _{GS} =10V, R _G =10Ω I _D =1A	---	8.2	16	ns
T _r	Rise Time ^{2, 3}		---	5.8	12	
T _{d(off)}	Turn-Off Delay Time ^{2, 3}		---	14.8	28	
T _f	Fall Time ^{2, 3}		---	8	16	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, F=1MHz	---	350	700	pF
C _{oss}	Output Capacitance		---	34	68	
C _{rss}	Reverse Transfer Capacitance		---	26	52	
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	2	4	Ω

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	---	---	2	A
I _{SM}	Pulsed Source Current ²		---	---	4	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =1A, di/dt=100A/μs	---	43	---	ns
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	37	---	nC

Note :

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

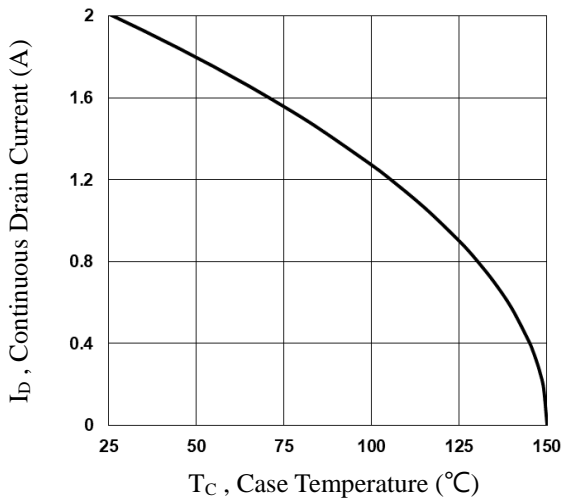


Fig.1 Continuous Drain Current vs. T_c

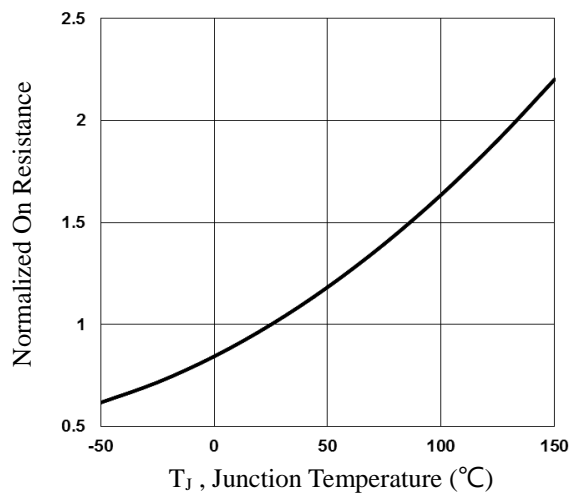


Fig.2 Normalized R_{DSon} vs. T_j

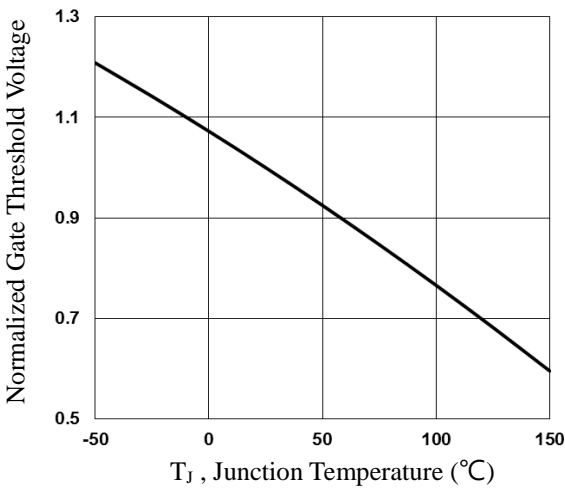


Fig.3 Normalized V_{th} vs. T_j

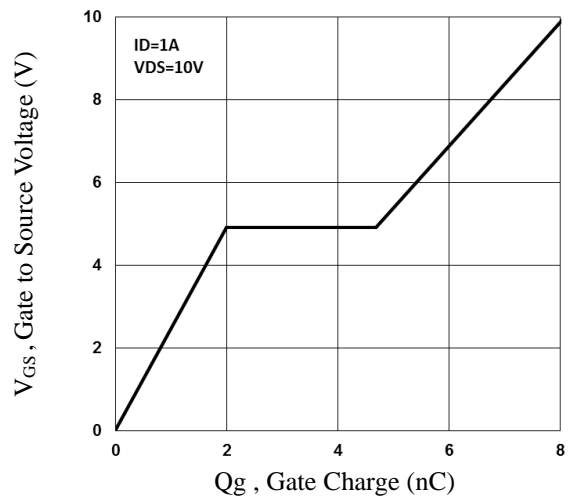


Fig.4 Gate Charge Waveform

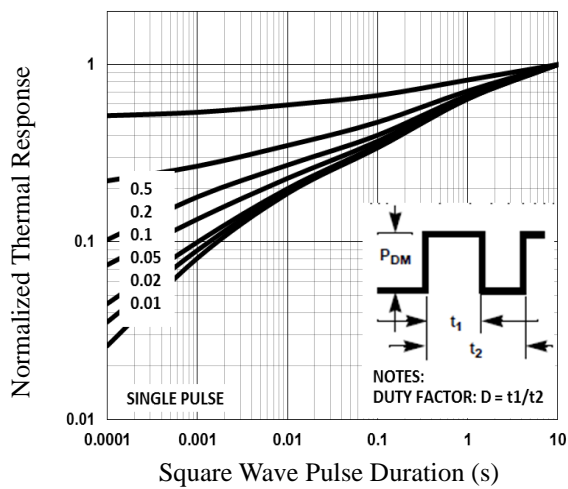


Fig.5 Normalized Transient Response

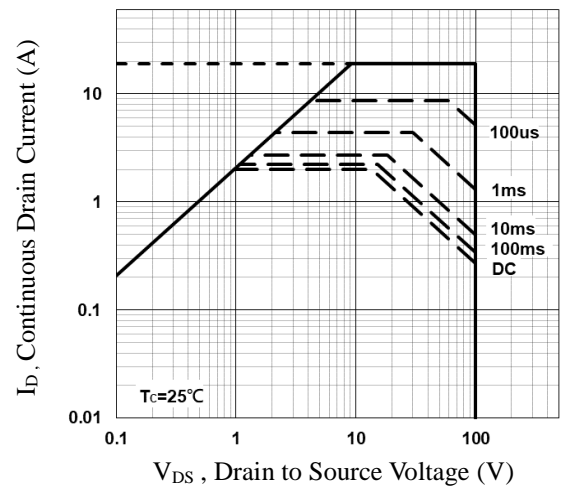


Fig.6 Maximum Safe Operation Area



Fig.7 Switching Time Waveform

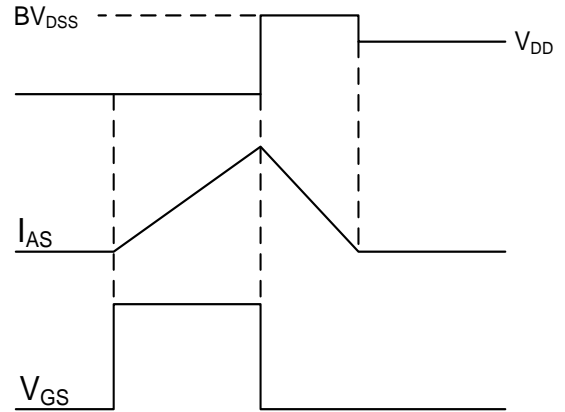
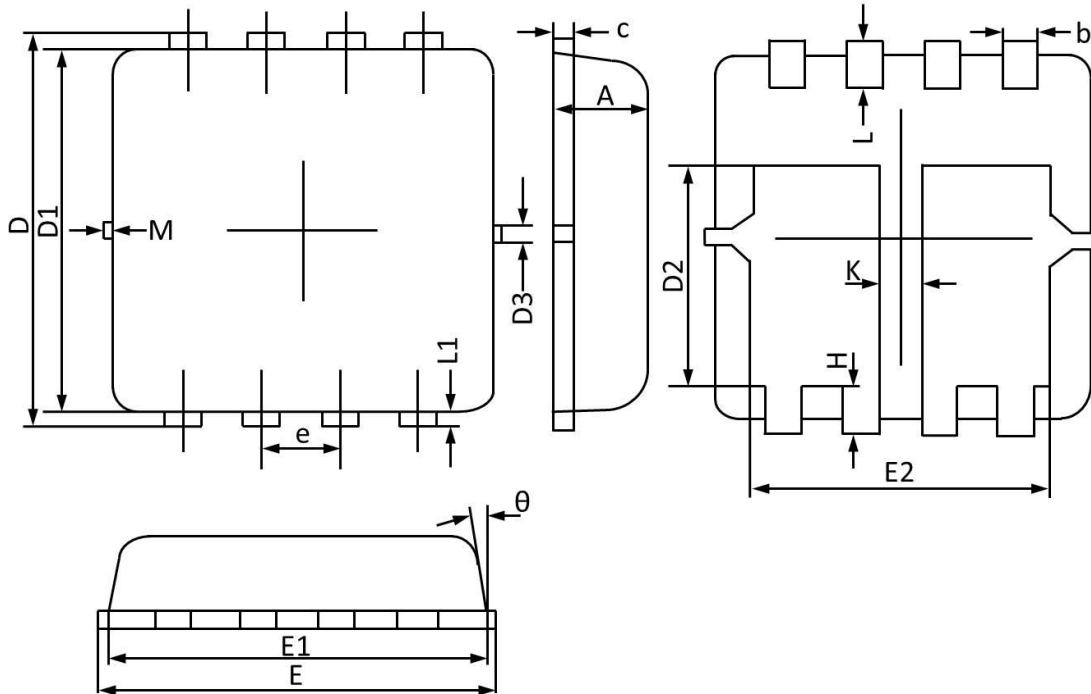


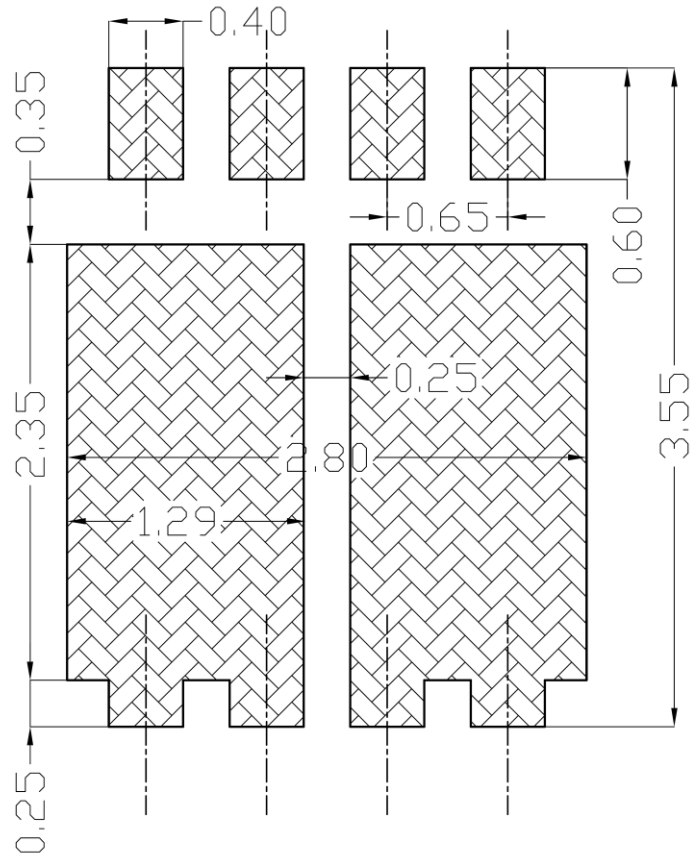
Fig.8 EAS Waveform

PPAK3x3 Dual PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.670	0.880	0.026	0.035
b	0.250	0.350	0.010	0.014
c	0.100	0.250	0.004	0.010
D	3.150	3.550	0.124	0.140
D1	3.000	3.300	0.118	0.130
D2	1.500	2.000	0.059	0.079
D3	0.130	0.200	0.005	0.008
E	3.100	3.500	0.122	0.138
E1	3.000	3.200	0.118	0.126
E2	2.350	2.600	0.093	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	0.130 REF		0.005 REF	
K	0.300 REF		0.012 REF	
theta	0°	12°	0°	12°
M	0.150 REF		0.006 REF	

PPAK3X3 Dual RECOMMENDED LAND PATTERN



unit : mm