

PPAK5X6 Pin Configuration

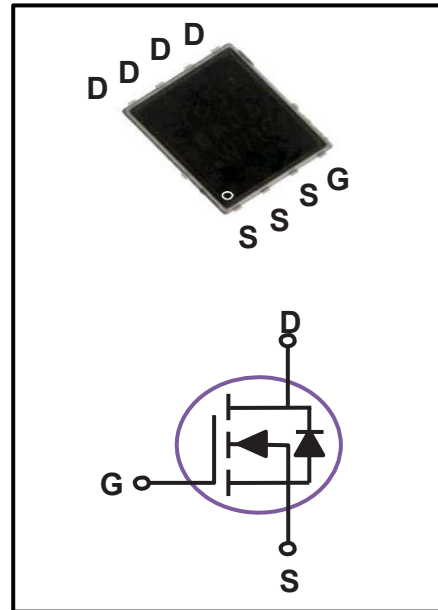
BVDSS	R _{DS(ON)}	I _D
65V	4.4mΩ	95A

Features

- 65V,95A, $R_{DS(ON)} = 4.4m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- Networking
- Load Switch
- LED applications



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous ($T_C=25^\circ C$)	I_D	95	A
Drain Current – Continuous ($T_C=100^\circ C$)		60	A
Drain Current – Pulsed ¹	I_{DM}	380	A
Single Pulse Avalanche Energy ²	EAS	151.3	mJ
Single Pulse Avalanche Current ²	IAS	55	A
Power Dissipation ($T_C=25^\circ C$)	P_D	96	W
Power Dissipation – Derate above 25°C		0.77	W/°C
Storage Temperature Range	T_{STG}	-50 to 150	°C
Operating Junction Temperature Range	T_J	-50 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	62	°C/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	1.3	°C/W

MOSFET ELECTRICAL CHARACTERISTICS $T_A=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	65	---	---	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=48V, V_{GS}=0V, T_J=85^\circ\text{C}$	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA

On Characteristics

Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	---	3.7	4.4	m Ω
		$V_{GS}=4.5V, I_D=15A$	---	5.8	7.5	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.6	2.5	V
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=3A$	---	10	---	S

Dynamic and switching Characteristics

Total Gate Charge ^{3,4}	Q_g	$V_{DS}=48V, V_{GS}=10V, I_D=30A$	---	36	54	nC
Gate-Source Charge ^{3,4}	Q_{gs}		---	4.7	7.1	
Gate-Drain Charge ^{3,4}	Q_{gd}		---	13.5	20	
Turn-On Delay Time ^{3,4}	$T_{d(on)}$	$V_{DD}=48V, V_{GS}=10V, R_G=6\Omega, I_D=1A$	---	10.2	15	ns
Rise Time ^{3,4}	T_r		---	16	24	
Turn-Off Delay Time ^{3,4}	$T_{d(off)}$		---	42	63	
Fall Time ^{3,4}	T_f		---	38	57	
Input Capacitance	C_{iss}	$V_{DS}=48V, V_{GS}=0V, F=1\text{MHz}$	---	1675	2510	pF
Output Capacitance	C_{oss}		---	322	485	
Reverse Transfer Capacitance	C_{rss}		---	14	25	
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	1.2	---	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	---	---	95	A
Pulsed Source Current	I_{SM}		---	---	190	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1	V
Reverse Recovery Time ³	t_{rr}	$V_R=50V, I_S=10A$	---	54	---	ns
Reverse Recovery Charge ³	Q_{rr}	$di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	67	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=55A, R_G=25\Omega, \text{Starting } T_J=25^\circ\text{C}$.
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

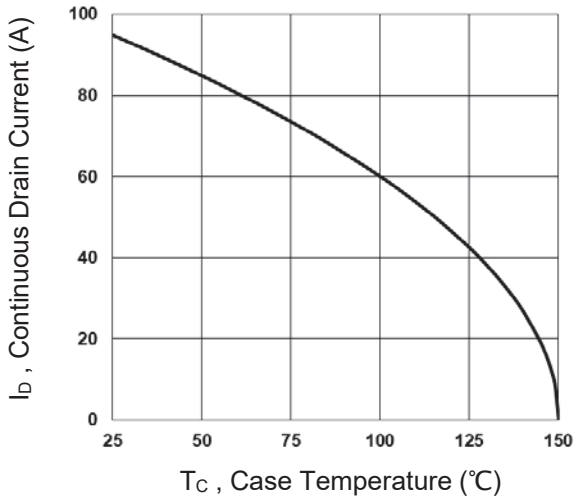


Fig.1 Continuous Drain Current vs. T_c

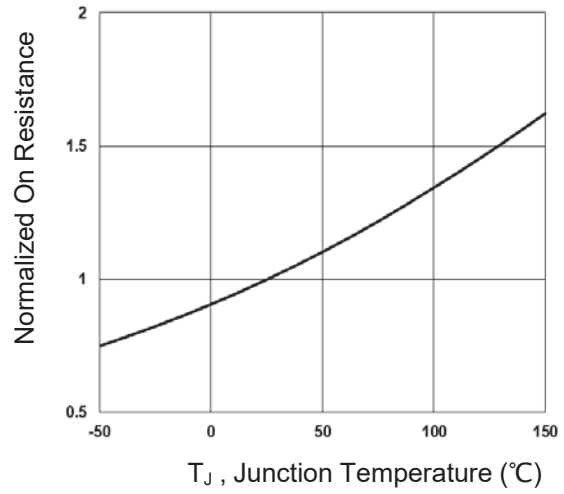


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

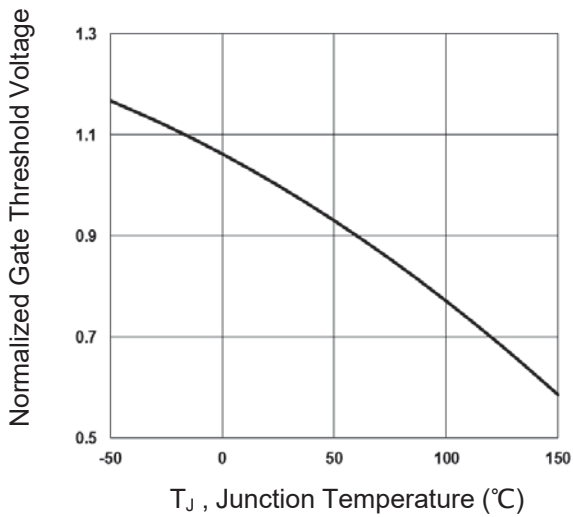


Fig.3 Normalized V_{th} vs. T_j

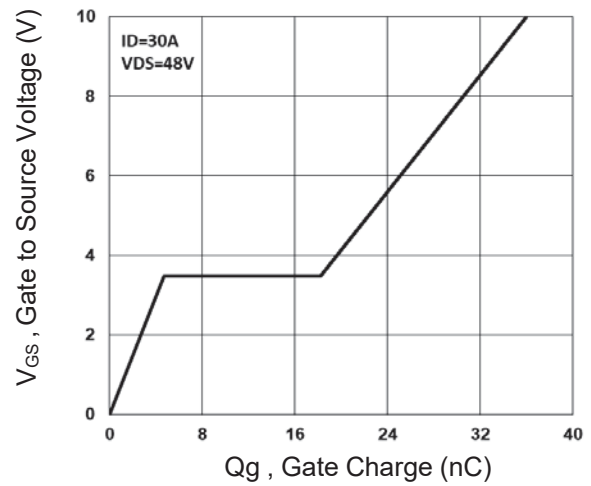


Fig.4 Gate Charge Characteristics

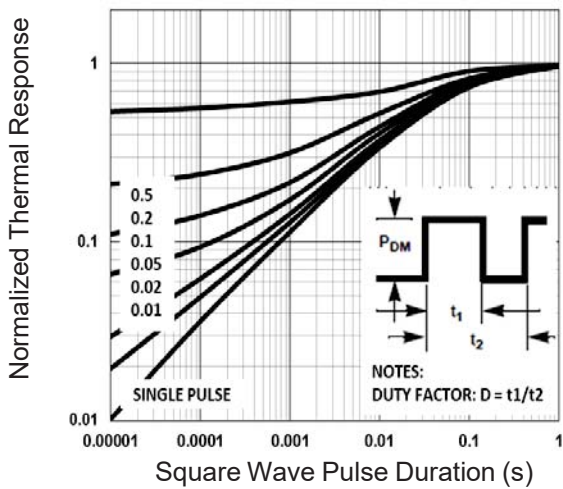


Fig.5 Normalized Transient Impedance

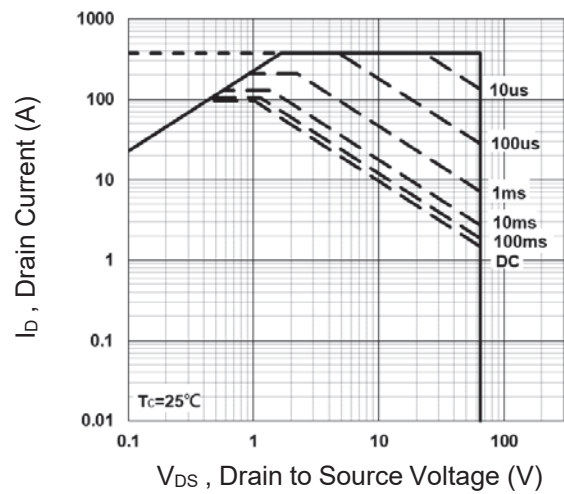


Fig.6 Maximum Safe Operation Area

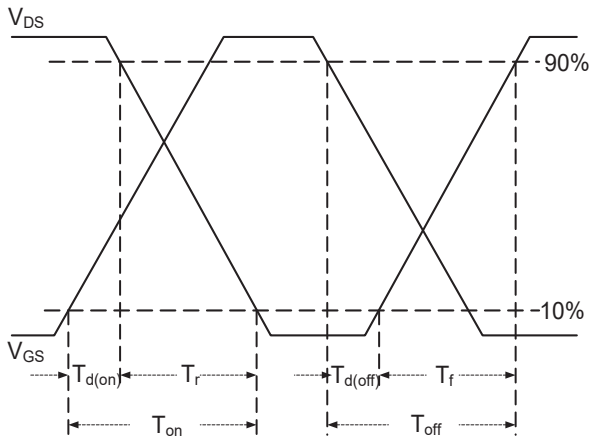


Fig.7 Switching Time Waveform

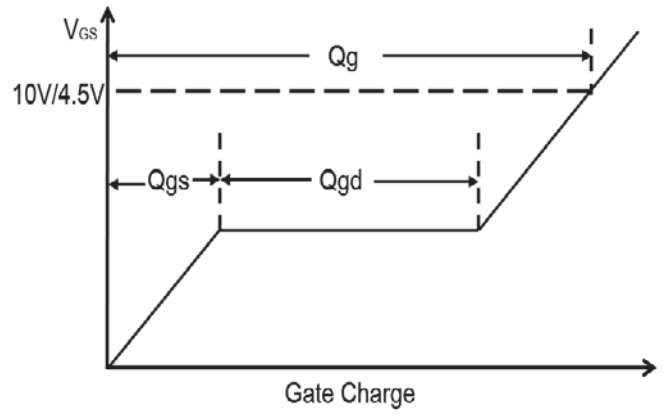
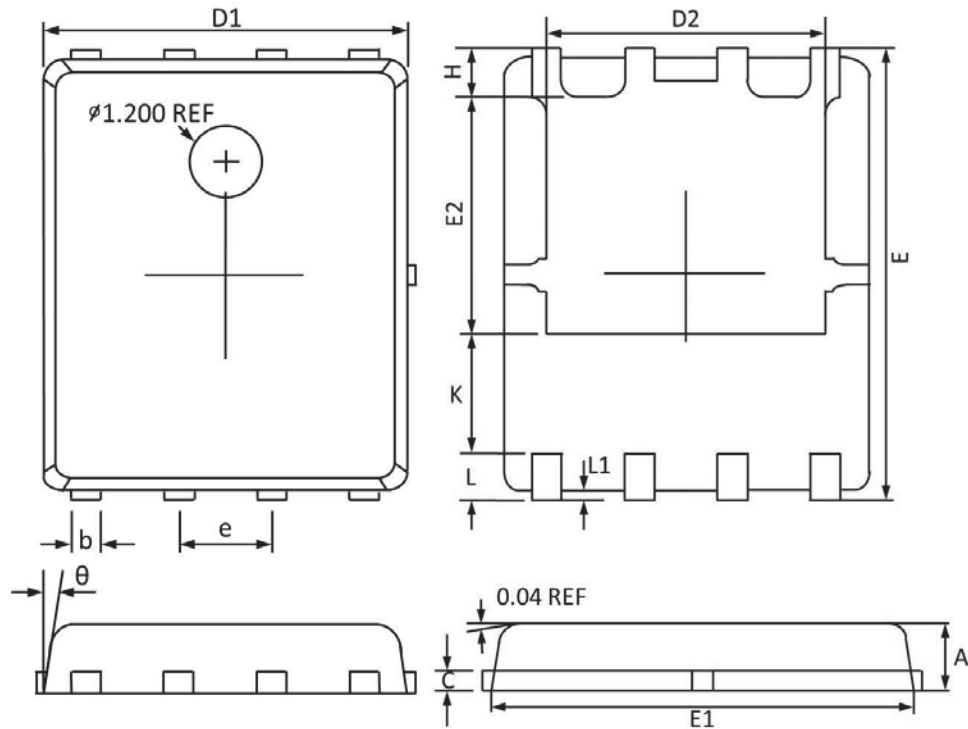


Fig.8 Gate Charge Waveform

PPAK5X6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	MAX		MIN	MAX		MIN
A	1.100		0.800	0.043		0.031
b	0.510		0.330	0.020		0.013
C	0.300		0.200	0.012		0.008
D1	5.100		4.800	0.201		0.189
D2	4.100		3.610	0.161		0.142
E	6.200		5.900	0.244		0.232
E1	5.900		5.700	0.232		0.224
E2	3.780		3.350	0.149		0.132
e		1.27BS			0.05BSC	
H	0.700		0.410	0.028		0.016
K	1.500		1.100	0.059		0.043
L	0.710		0.510	0.028		0.020
L1	0.200		0.060	0.008		0.002
θ	12°		0°	12°		0°