

PPAK5X6 Pin Configuration

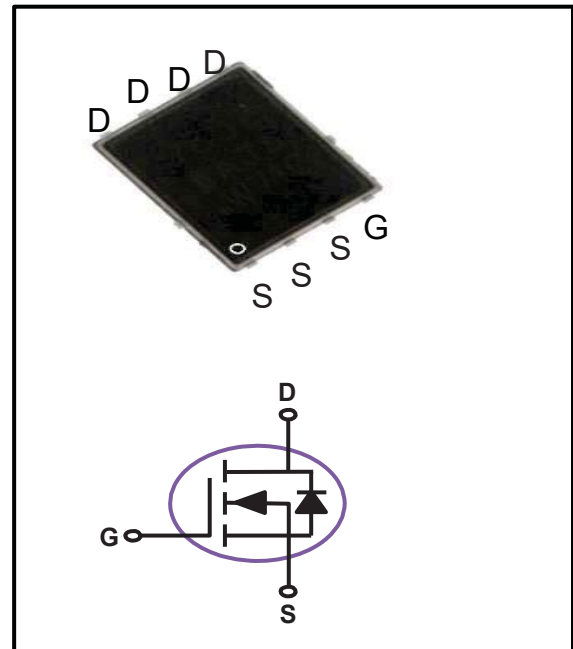
BVDSS	RDSON	ID
100V	16.5mΩ	45A

Features

- 100V,45A, $R_{DS(ON)} = 16.5m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- 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}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous ($T_C=25^\circ C$)	I_D	45	A
Drain Current – Continuous ($T_C=100^\circ C$)		28.5	A
Drain Current – Pulsed ¹	I_{DM}	180	A
Single Pulse Avalanche Energy ²	EAS	72	mJ
Single Pulse Avalanche Current ²	IAS	38	A
Power Dissipation ($T_C=25^\circ C$)	P_D	83	W
Power Dissipation – Derate above 25°C		0.6	W/°C
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 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	$R_{\theta JC}$	---	1.51	°C/W

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

Off Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ\text{C}$	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA

On Characteristics

Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=15A$	---	13.7	16.5	$m\Omega$
		$V_{GS}=4.5V, I_D=12A$	---	18	23	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2.5	V
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=3A$	---	7	---	S

Dynamic and switching Characteristics

Total Gate Charge ^{3,4}	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=20A$	---	14.5	22	nC
Gate-Source Charge ^{3,4}	Q_{gs}		---	1.5	3	
Gate-Drain Charge ^{3,4}	Q_{gd}		---	4.8	7.5	
Turn-On Delay Time ^{3,4}	$T_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=6\Omega, I_D=20A$	---	4.8	7.2	ns
Rise Time ^{3,4}	T_r		---	12.5	19	
Turn-Off Delay Time ^{3,4}	$T_{d(off)}$		---	27.6	42	
Fall Time ^{3,4}	T_f		---	8.2	13	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, F=1\text{MHz}$	---	850	1300	pF
Output Capacitance	C_{oss}		---	190	285	
Reverse Transfer Capacitance	C_{rss}		---	6.5	10	
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	0.9	---	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	---	---	45	A
Pulsed Source Current	I_{SM}		---	---	90	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1	V
Reverse Recovery Time	t_{rr}	$V_R=100V, I_S=10A$	---	140	---	ns
Reverse Recovery Charge	Q_{rr}	$di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	180	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=38A, R_G=25$ 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.

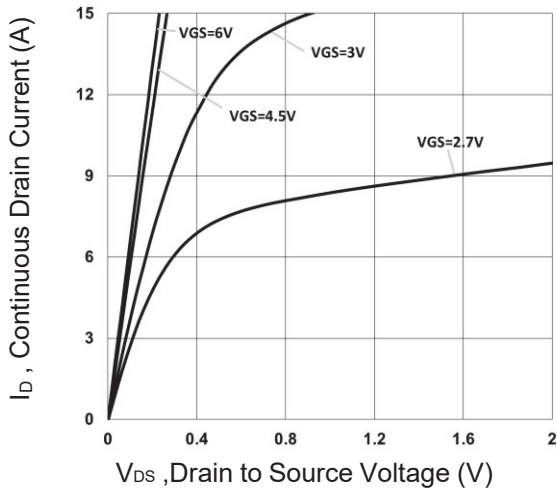


Fig.1 Typical Output Characteristics

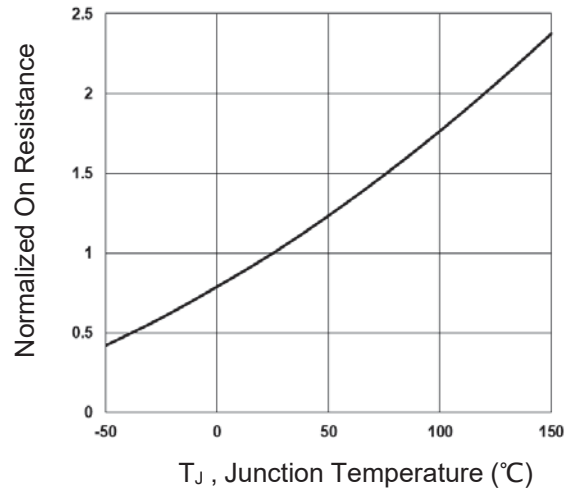


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

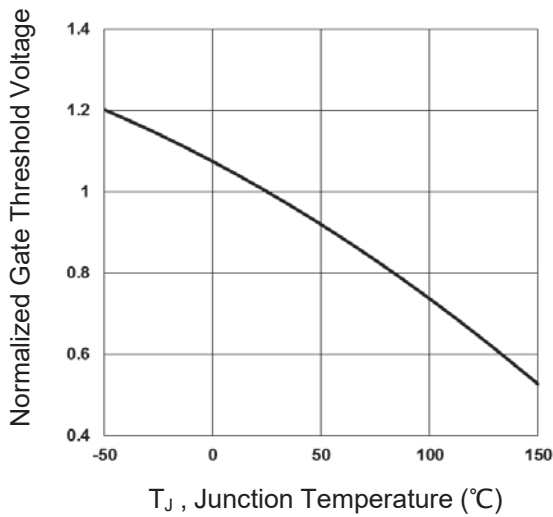


Fig.3 Normalized V_{th} vs. T_J

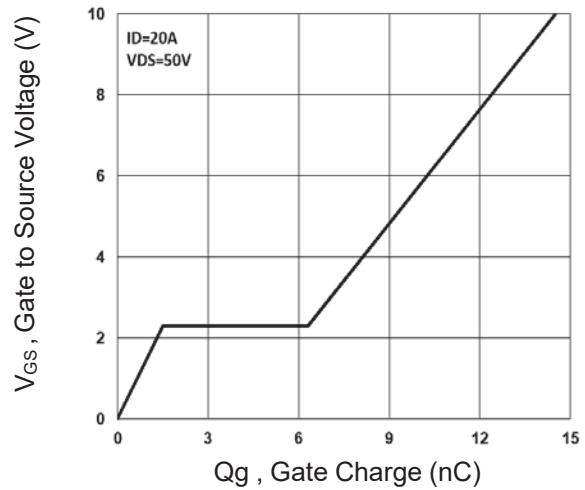


Fig.4 Gate Charge Waveform

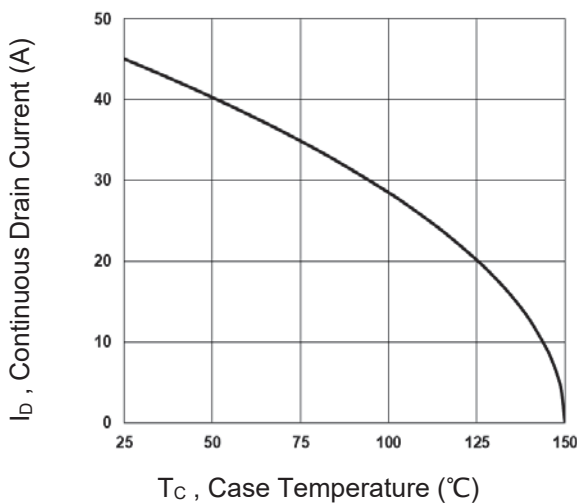


Fig.5 Continuous Drain Current vs. T_C

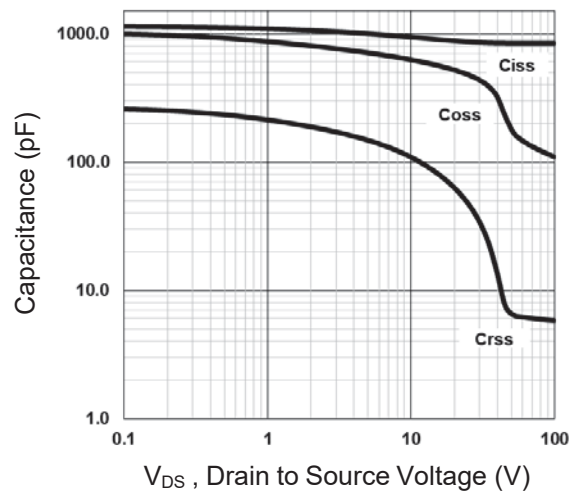


Fig.6 Capacitance Characteristics

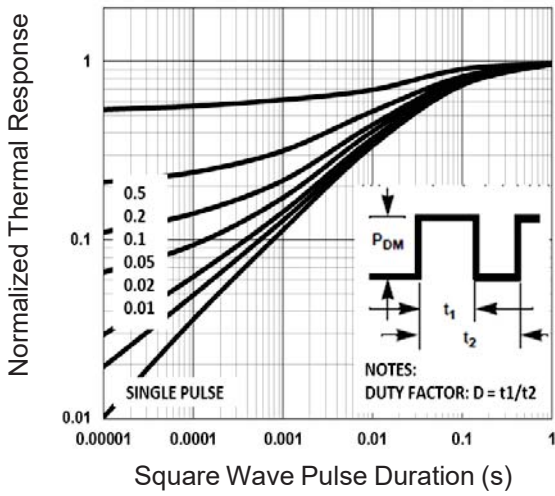


Fig.7 Normalized Transient Impedance

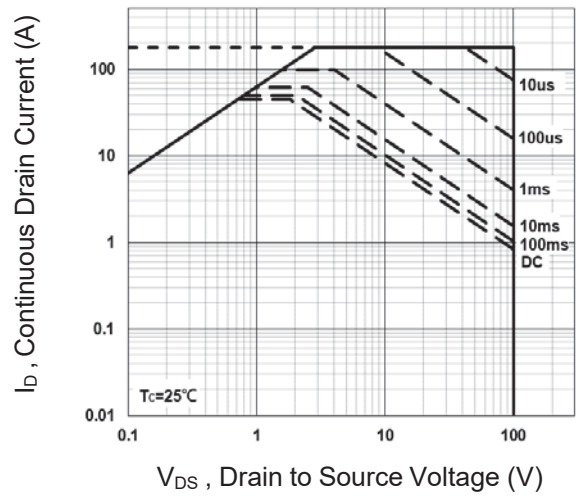


Fig.8 Maximum Safe Operation Area

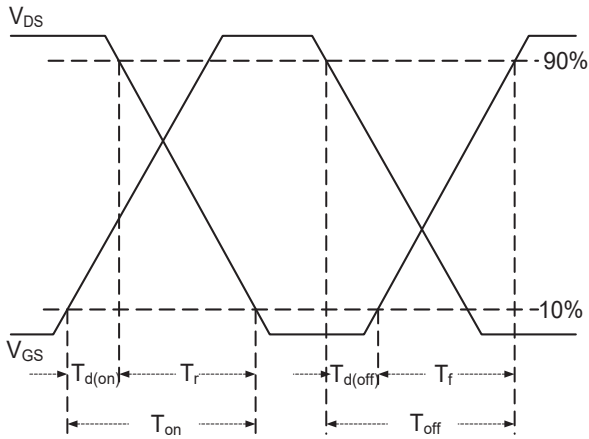


Fig.9 Switching Time Waveform

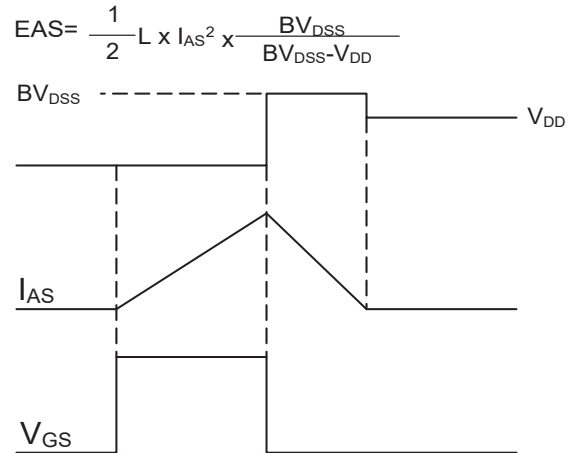
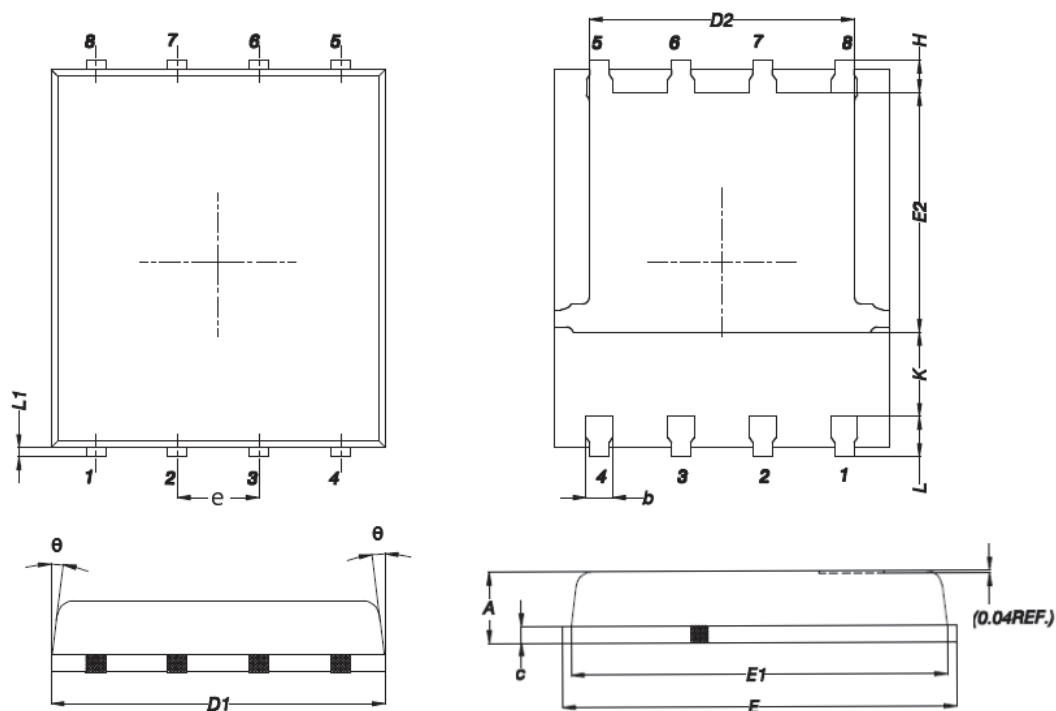


Fig.10 EAS Waveform

PPAK5x6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.200	0.850	0.047	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.400	4.800	0.212	0.189
D2	4.310	3.610	0.170	0.142
E	6.300	5.850	0.248	0.230
E1	5.960	5.450	0.235	0.215
E2	3.920	3.300	0.154	0.130
e	1.27BSC		0.05BSC	
H	0.650	0.380	0.026	0.015
K	---	1.100	---	0.043
L	0.710	0.380	0.028	0.015
L1	0.250	0.050	0.009	0.002
θ	12°	0°	12°	0°