

## PPAK5X6 Pin Configuration

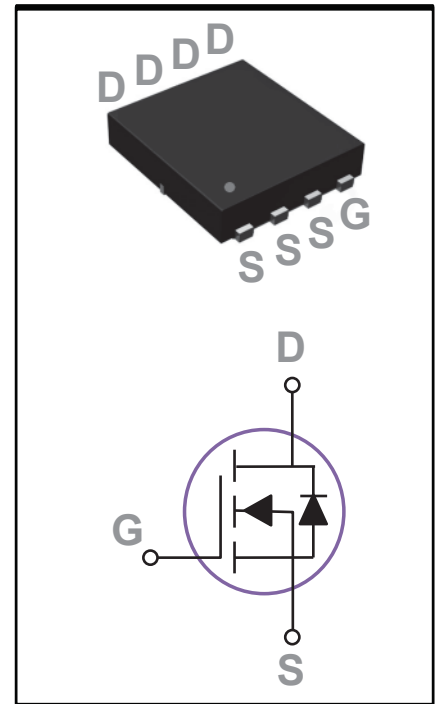
BVDSS	RDSON	ID
150V	19mΩ	65A

### FEATURES

- 150V,65A, RDS(ON) =19mΩ @VGS = 10V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available
- N-Channel MOSFETS

### APPLICATIONS

- Networking
- Load Switch
- LED applications
- Quick Charger



## MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	150	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current – Continuous (T <sub>C</sub> =25°C)	I <sub>D</sub>	65	A
Drain Current – Continuous (T <sub>C</sub> =100°C)		41	A
Drain Current – Pulsed <sup>1</sup>	I <sub>DM</sub>	260	A
Single Pulse Avalanche Energy <sup>2</sup>	EAS	153	mJ
Single Pulse Avalanche Current <sup>2</sup>	IAS	17.5	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	192	W
Power Dissipation – Derate above 25°C		1.54	W/°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	R <sub>θJA</sub>	---	62	°C/W
Thermal Resistance Junction to Case	R <sub>θJC</sub>	---	0.65	°C/W

**PPAK5X6 Pin Configuration**
**Off Characteristics**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	150	---	---	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=120V, V_{GS}=0V, T_J=25^\circ C$	---	---	1	$\mu A$
		$V_{DS}=120V, V_{GS}=0V, T_J=85^\circ C$	---	---	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA

**On Characteristics**

Static Drain-Source On-Resistance <sup>3</sup>	$R_{DS(ON)}$	$V_{GS}=10V, I_D=25A$	---	16	19	m $\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	3	4	V
Forward Transconductance	gfs	$V_{DS}=10V, I_D=3A$	---	11	---	S

**Dynamic and switching Characteristics**

Total Gate Charge <sup>3, 4</sup>	$Q_g$	$V_{DS}=75V, V_{GS}=10V, I_D=30A$	---	39	60	nC
Gate-Source Charge <sup>3, 4</sup>	$Q_{gs}$		---	9.5	15	
Gate-Drain Charge <sup>3, 4</sup>	$Q_{gd}$		---	15	23	
Turn-On Delay Time <sup>3, 4</sup>	$T_{d(on)}$	$V_{DD}=75V, V_{GS}=10V, R_G=6\Omega, I_D=30A$	---	15	23	ns
Rise Time <sup>3, 4</sup>	$T_r$		---	28	42	
Turn-Off Delay Time <sup>3, 4</sup>	$T_{d(off)}$		---	45	68	
Fall Time <sup>3, 4</sup>	$T_f$		---	32	48	
Input Capacitance	$C_{iss}$	$V_{DS}=75V, V_{GS}=0V, F=1MHz$	---	2300	3450	pF
Output Capacitance	$C_{oss}$		---	220	330	
Reverse Transfer Capacitance	$C_{rss}$		---	10	15	
Gate Resistance	$R_g$	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	---	1.5	---	$\Omega$

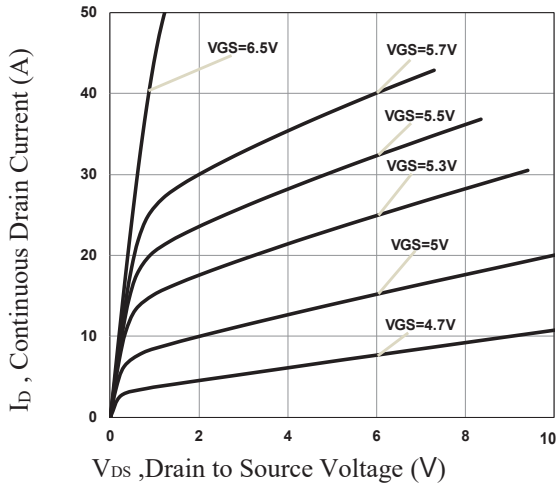
**Drain-Source Diode Characteristics and Maximum Ratings**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	$I_S$	$V_G=V_D=0V, \text{Force Current}$	---	---	65	A
Pulsed Source Current	$I_{SM}$		---	---	130	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	---	---	1	V
Reverse Recovery Time <sup>3</sup>	$t_{rr}$	$V_R=100V, I_S=10A$ $di/dt=100A/\mu s, T_J=25^\circ C$	---	90	---	ns
Reverse Recovery Charge <sup>3</sup>	$Q_{rr}$		---	355	---	nC

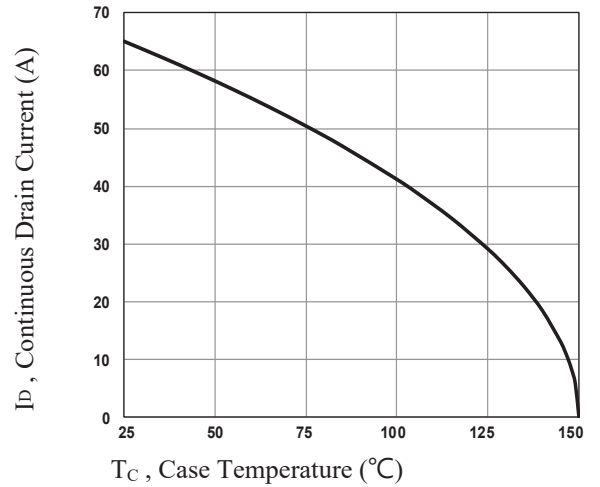
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2.  $V_{DD}=50V, V_{GS}=10V, L=1mH, I_{AS}=17.5A, R_G=25\Omega, \text{Starting } T_J=25^\circ C.$
3. The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
4. Essentially independent of operating temperature.

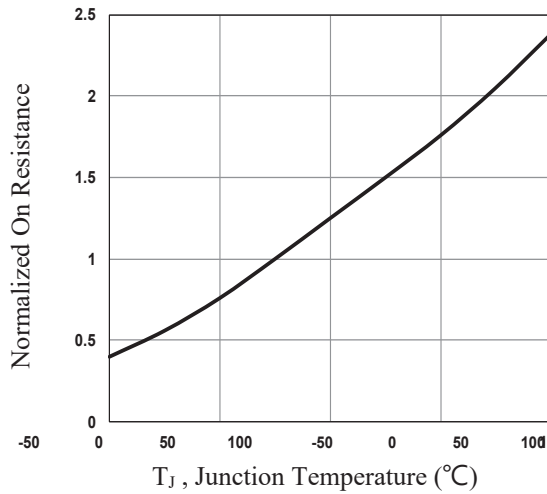
## RATINGS AND CHARACTERISTIC CURVES



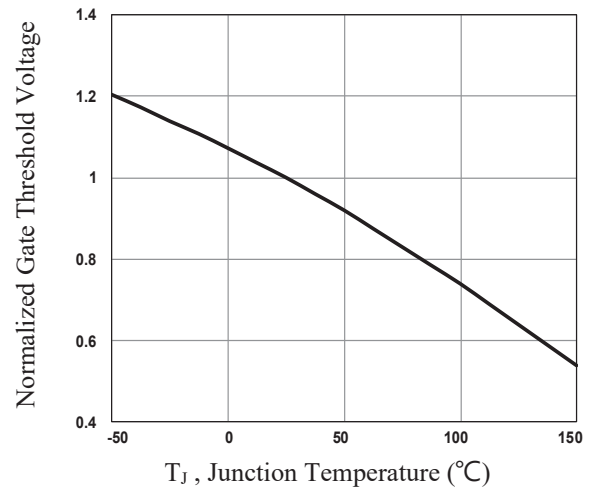
**Fig.1 Typical Output Characteristics**



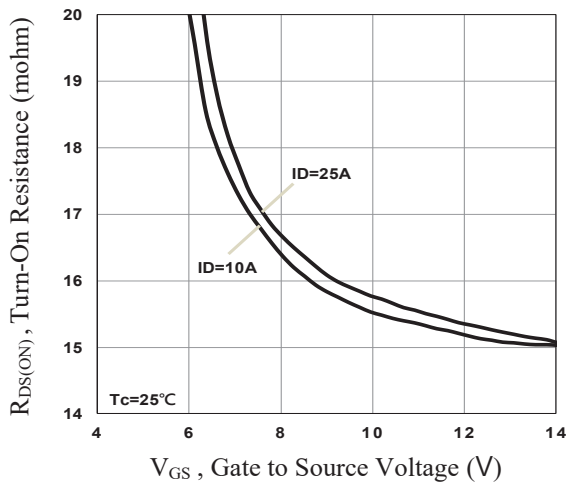
**Fig.2 Continuous Drain Current vs.  $T_C$**



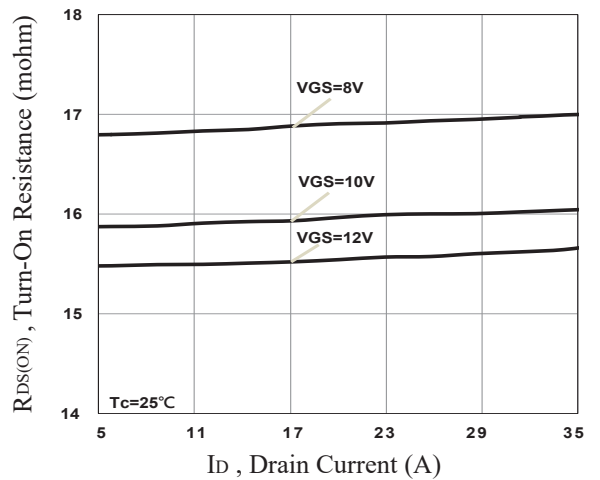
**Fig.3 Normalized  $R_{DS(ON)}$  vs.  $T_J$**



**Fig.4 Normalized  $V_{th}$  vs.  $T_J$**

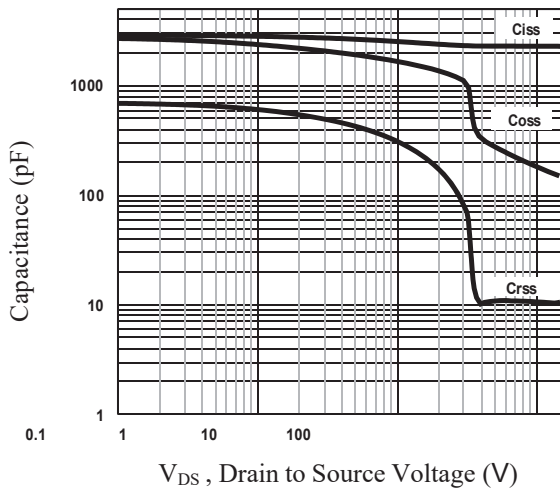


**Fig.5 Turn-On Resistance vs.  $V_{GS}$**

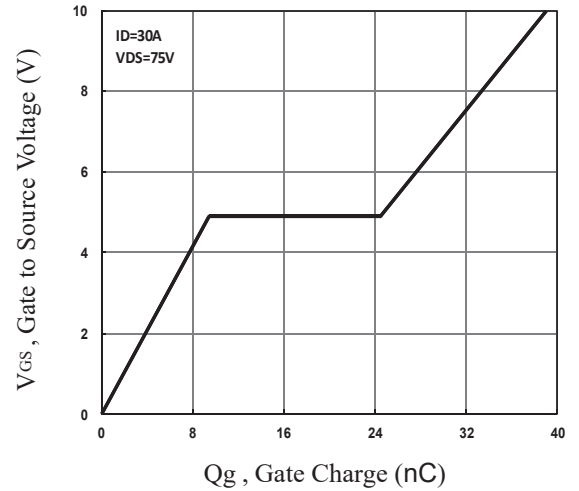


**Fig.6 Turn-On Resistance vs.  $I_D$**

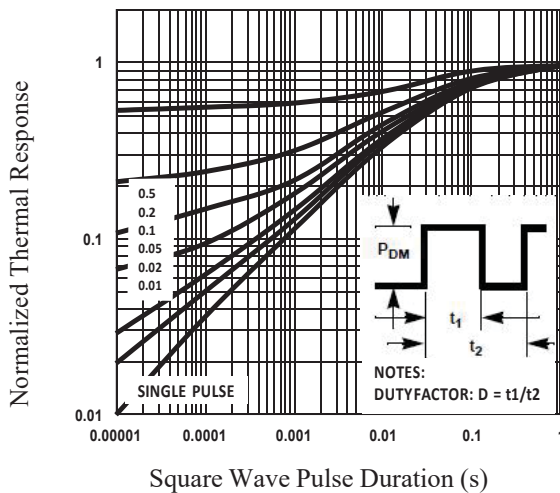
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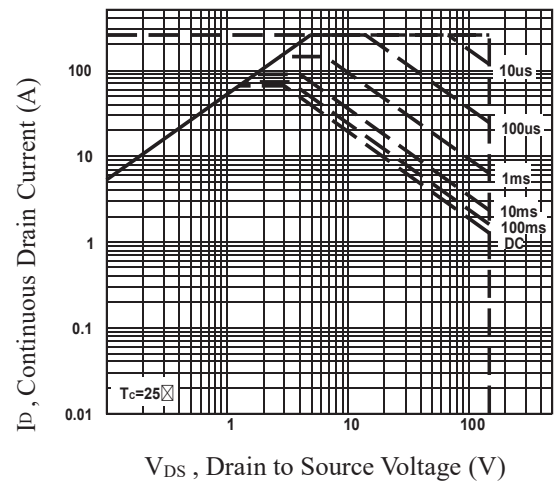
**Fig.7 Capacitance Characteristics**



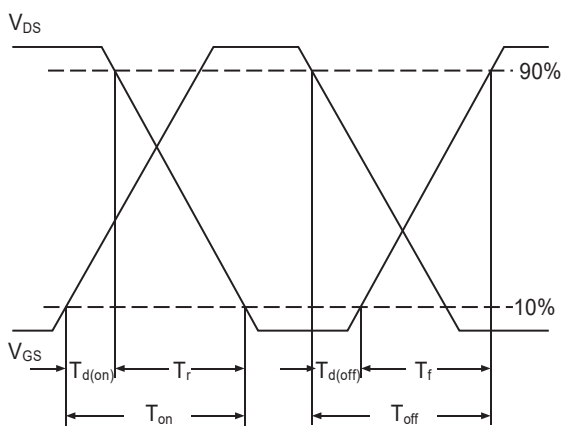
**Fig.8 Gate Charge Characteristics**



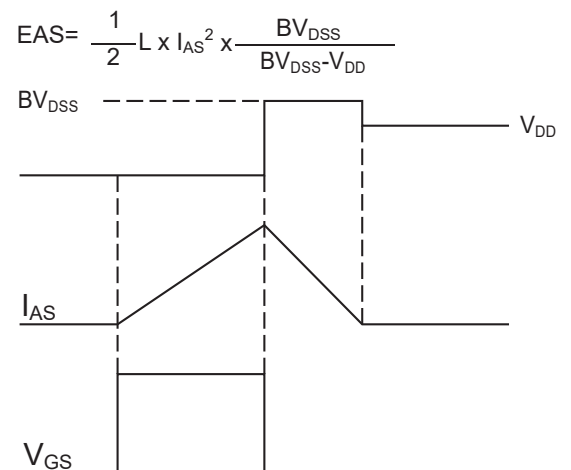
**Fig.9 Normalized Transient Impedance**



**Fig.10 Maximum Safe Operation Area**

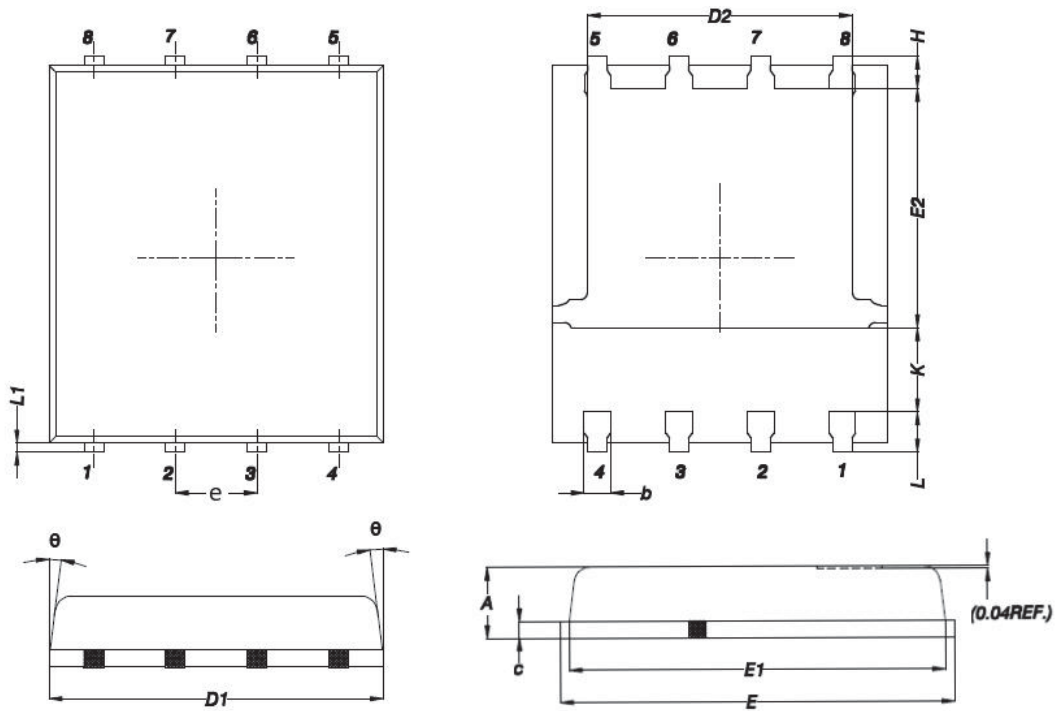


**Fig.11 Switching Time Waveform**



**Fig.12 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
theta	12°	0°	12°	0°