100V N-Channel MOSFETS

PPAK5X6 Pin Configuration

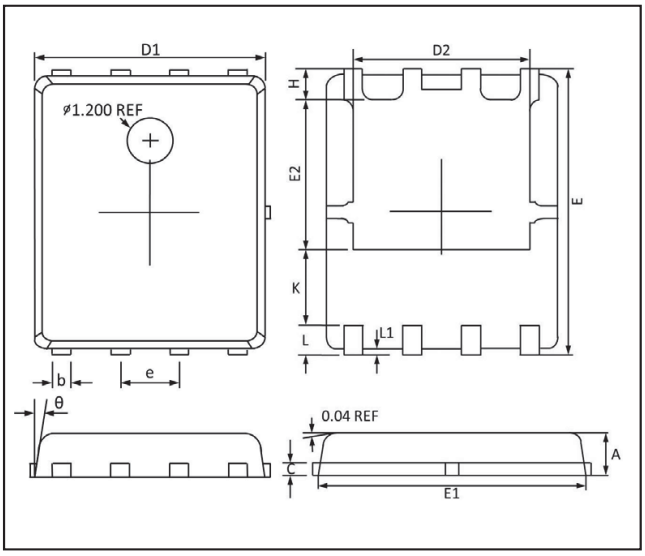
BVDSS	RDSON	ID
100V	16.5mΩ	45A

Features

- *100V,45A, RDS(ON) =16.5mΩ@VGS = 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℃)	I_D	45	A
Drain Current – Continuous (T_C=100℃)		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℃)	P_D	83	W
Power Dissipation – Derate above 25℃		0. 6	W/℃
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

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Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	62	℃/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	1.51	℃/W

MOSFET ELECTRICAL CHARACTERISTICS T_A= 25c unless otherwise specified

Off Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	100	---	---	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=85℃	---	---	10	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±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	mΩ
		V_{GS}=4.5V , I_D=12A	---	18	23	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1.2	1.6	2.5	V
Forward Transconductance	gfs	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=6Ω 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=1MHz	---	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=1MHz	---	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 , 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℃	---	---	1	V
Reverse Recovery Time	t_{rr}	V_R=100V, I_S=10A	---	140	---	ns
Reverse Recovery Charge	Q_{rr}	di/dt=100A/μs , T_J=25℃	---	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=25Ω, Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

RATINGS AND CHARACTERISTIC CURVES

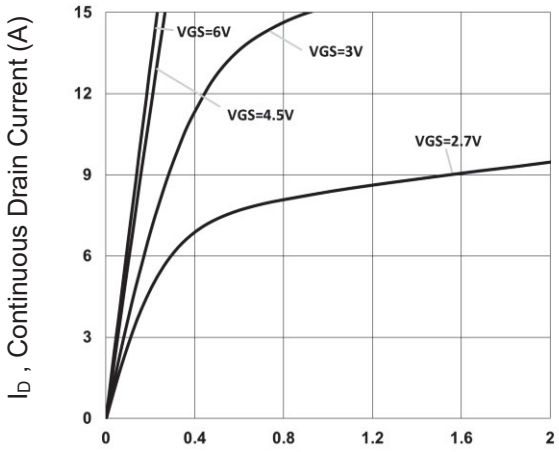

Fig.1 Typical Output Characteristics

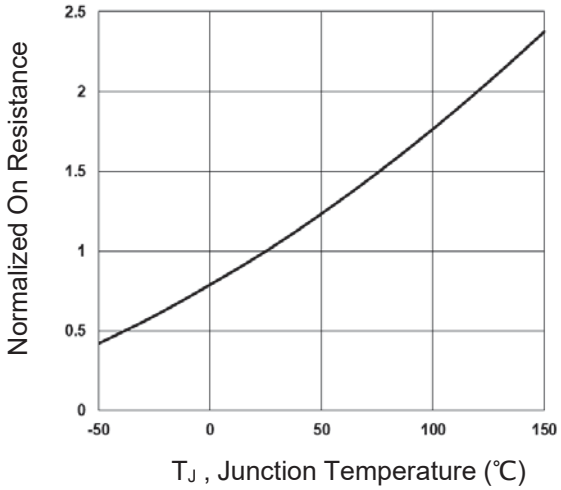

Fig.2 Normalized RDSON vs. T_J

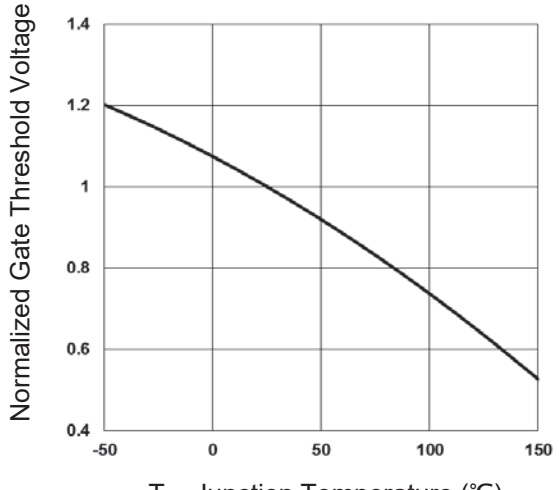

Fig.3 Normalized V_{th} vs. T_J

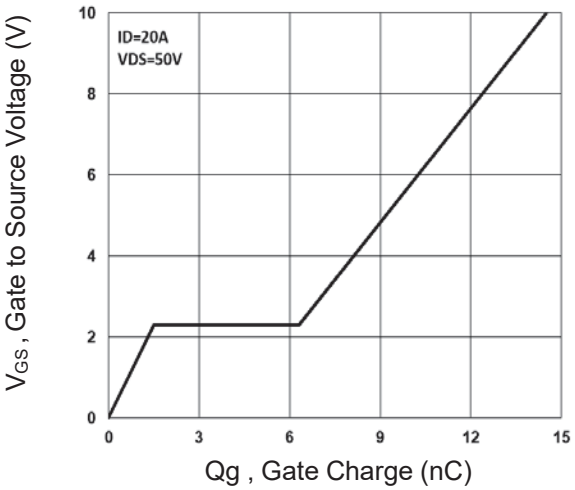

Fig.4 Gate Charge Waveform

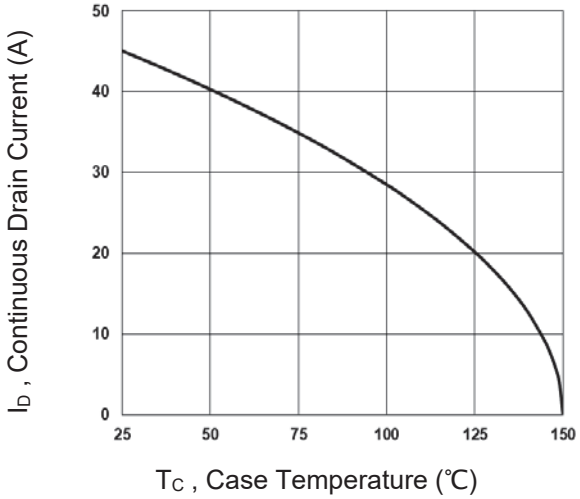

Fig.5 Continuous Drain Current vs. T_C

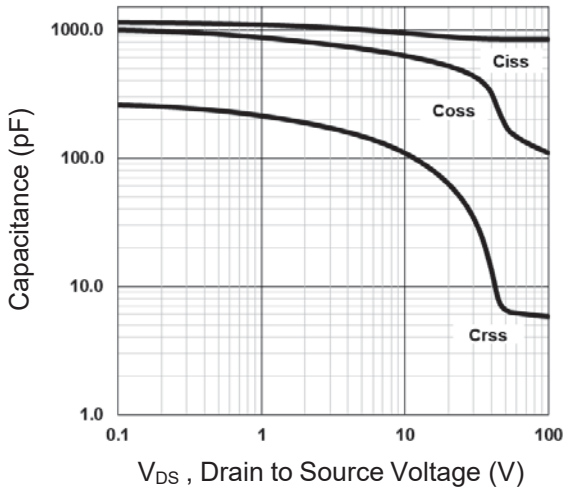

Fig.6 Capacitance Characteristics

RATINGS AND CHARACTERISTIC CURVES

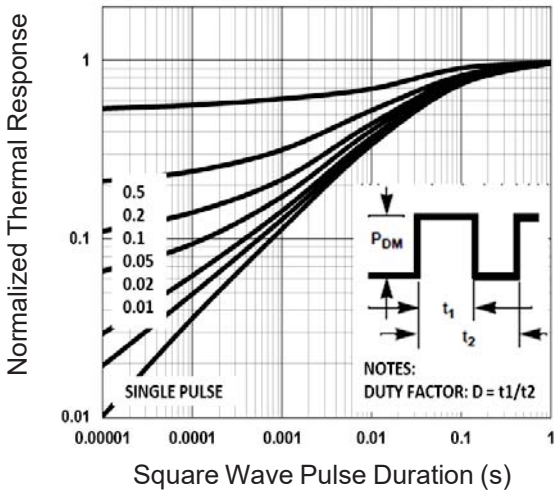

Fig.7 Normalized Transient Impedance

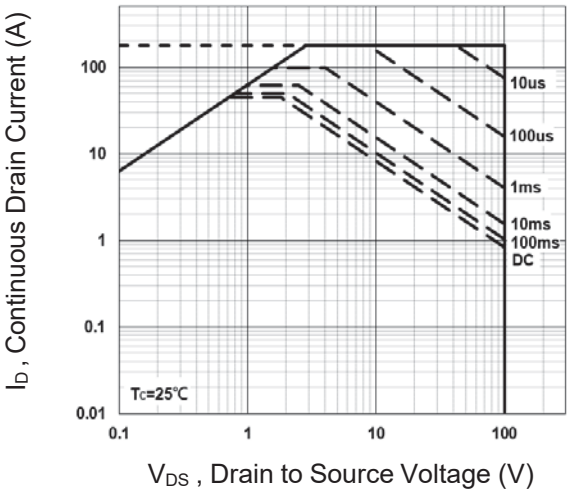

Fig.8 Maximum Safe Operation Area

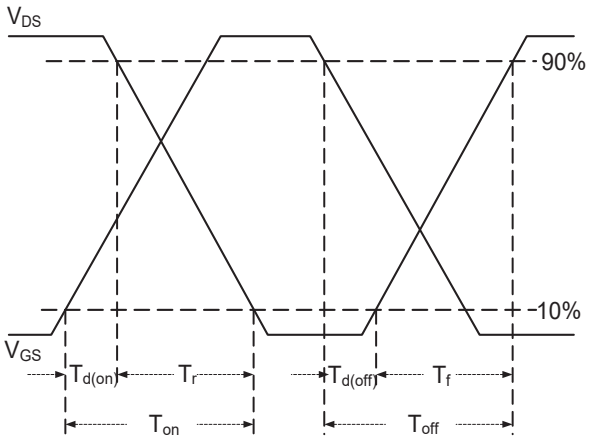

Fig.9 Switching Time Waveform

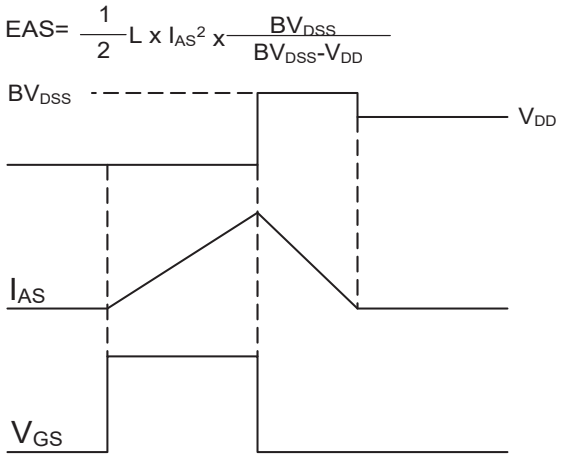

Fig.10 EAS Waveform