

65V N-Channel MOSFETS

PPAK5X6 Pin Configuration

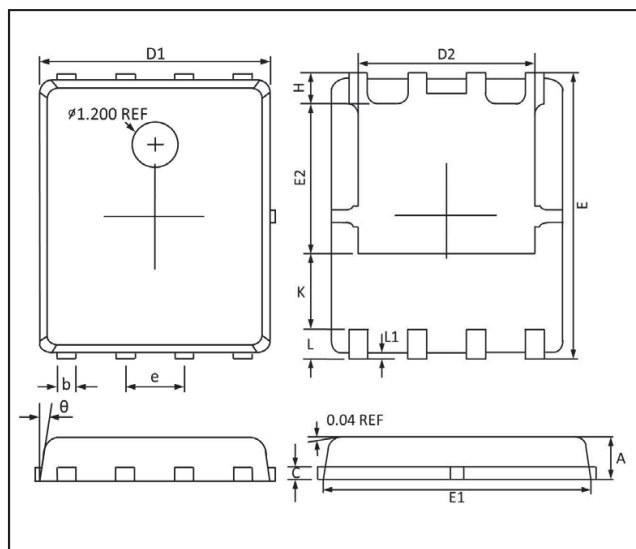
BVDSS	RDS(on)	ID
65V	3.5mΩ	120A

Features

- 65V, 120A, RDS(ON) = 3.5mΩ@VGS = 10V
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- Networking
- Load Switc
- 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°C)	I _D	120	A
Drain Current – Continuous (T _C =100°C)		77	A
Drain Current – Pulsed ¹	I _{DM}	480	A
Single Pulse Avalanche Energy ²	EAS	218	mJ
Single Pulse Avalanche Current ²	IAS	66	A
Power Dissipation (T _C =25°C)	P _D	125	W
Power Dissipation – Derate above 25°C		1	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 _{θJA}	---	62	°C/W
Thermal Resistance Junction to Case	R _{θJC}	---	1	°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_{DS}	$V_{GS}=0V, I_D=250\mu A$	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	---	2.9	3.5	m Ω
		$V_{GS}=4.5V, I_D=20A$	---	4.1	5.3	m Ω
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}	$V_{DS}=10V, I_D=3A$	---	16	---	S

Dynamic and switching Characteristics

Total Gate Charge ^{3, 4}	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=60A$	---	52	78	nC
Gate-Source Charge ^{3, 4}	Q_{gs}		---	7	11	
Gate-Drain Charge ^{3, 4}	Q_{gd}		---	18	27	
Turn-On Delay Time ^{3, 4}	$T_{d(on)}$	$V_{DD}=30V, V_{GS}=10V, R_G=6\Omega, I_D=60A$	---	14	21	ns
Rise Time ^{3, 4}	T_r		---	18	27	
Turn-Off Delay Time ^{3, 4}	$T_{d(off)}$		---	39	59	
Fall Time ^{3, 4}	T_f		---	14	21	
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, F=1\text{MHz}$	---	2400	3600	pF
Output Capacitance	C_{oss}		---	840	1260	
Reverse Transfer Capacitance	C_{rss}		---	37	56	
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	1.4	---	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	---	---	120	A
Pulsed Source Current	I_{SM}		---	---	240	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}	$V_R=50V, I_S=10A$	---	65	---	ns
Reverse Recovery Charge ³	Q_{rr}	$di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	100	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=66A, R_G=25\Omega$, Starting
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

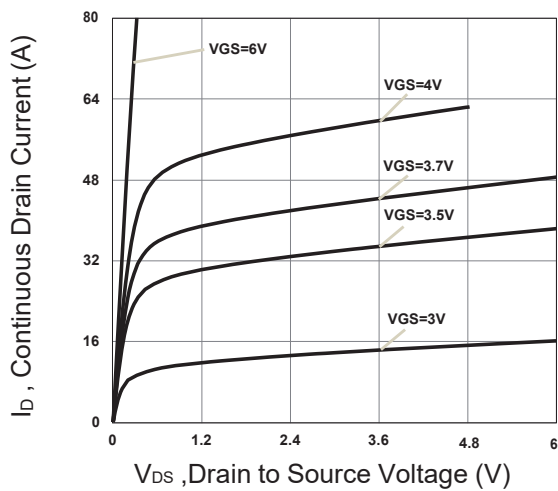


Fig.1 Typical Output Characteristics

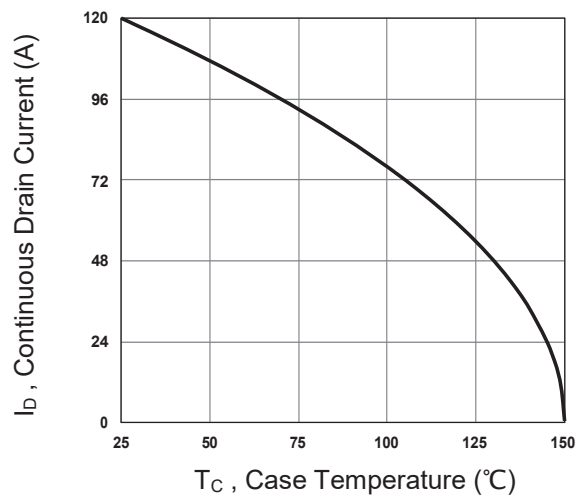


Fig.2 Continuous Drain Current vs. T_C

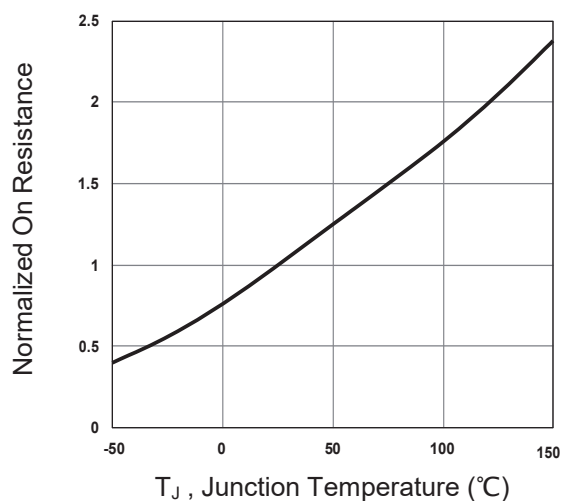


Fig.3 Normalized $R_{DS(on)}$ vs. T_J

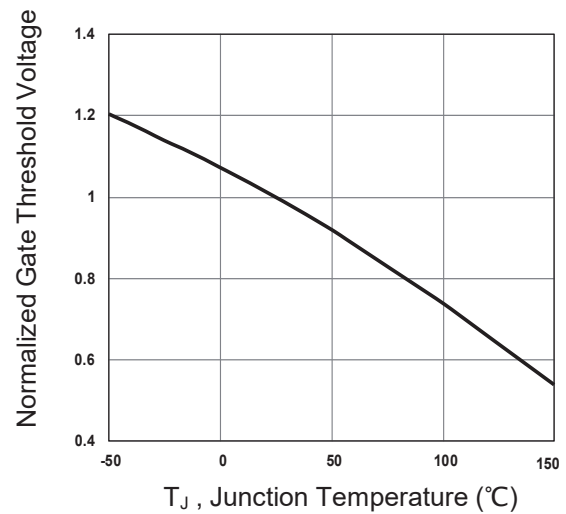


Fig.4 Normalized V_{th} vs. T_J

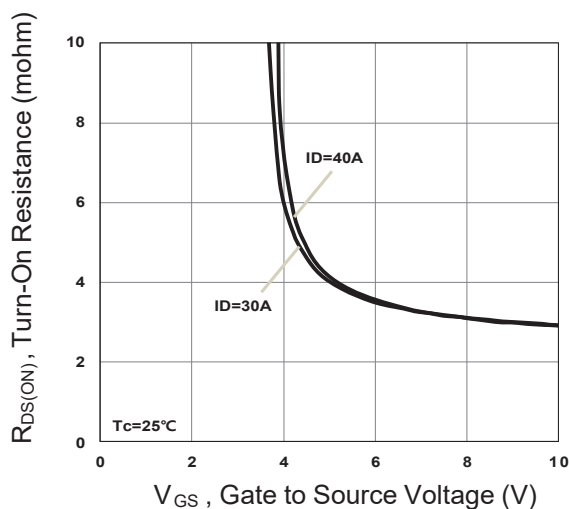


Fig.5 Turn-On Resistance vs. V_{GS}

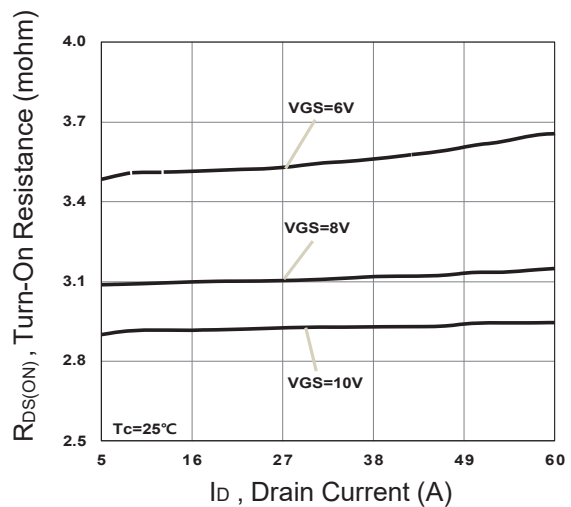


Fig.6 Turn-On Resistance vs. I_D

RATINGS AND CHARACTERISTIC CURVES

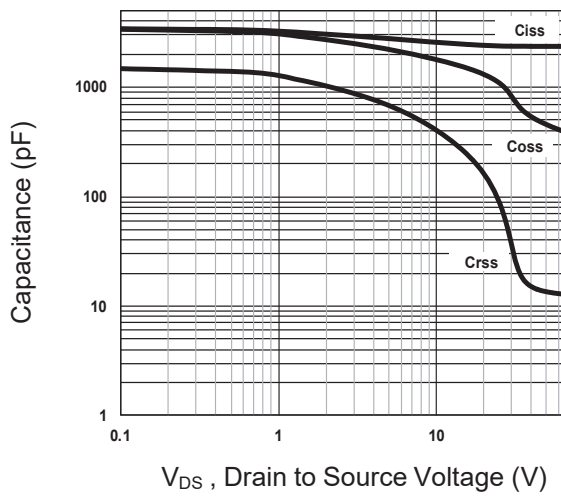


Fig.7 Capacitance Characteristics

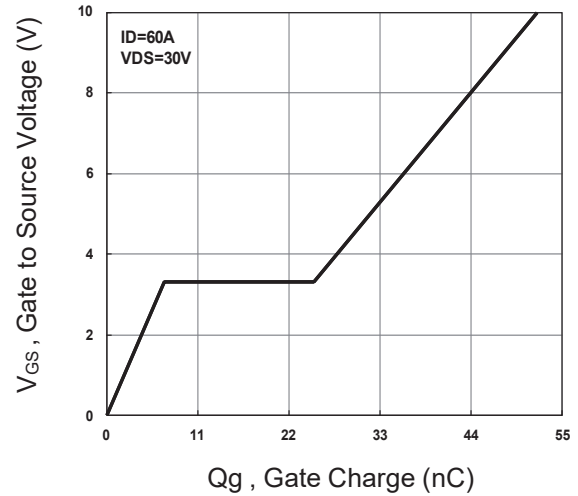


Fig.8 Gate Charge Characteristics

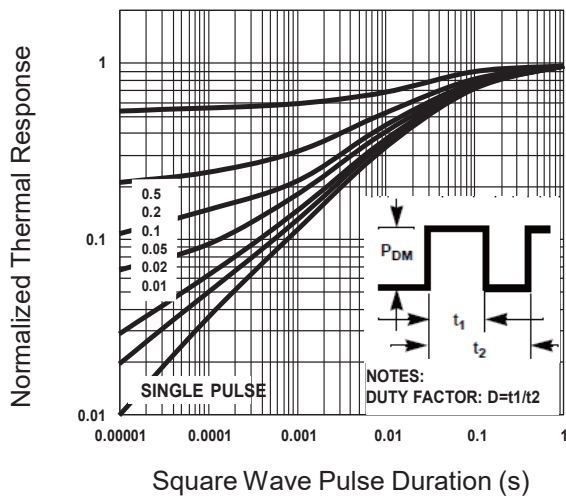


Fig.9 Normalized Transient Impedance

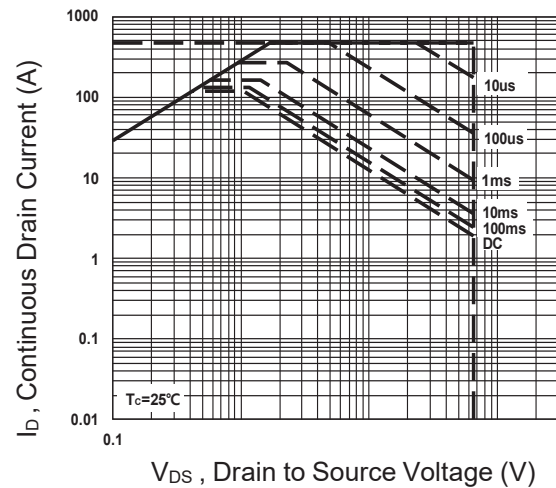


Fig.10 Maximum Safe Operation Area

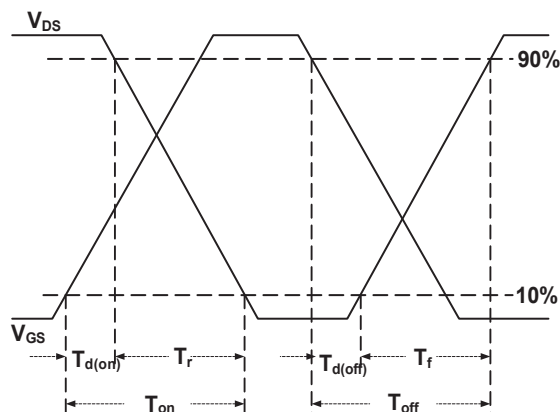


Fig.11 Switching Time Waveform

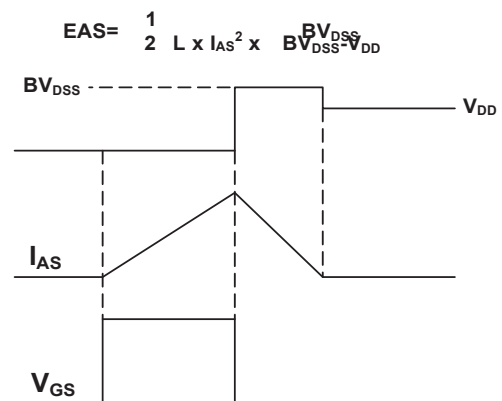


Fig.12 EAS Waveform