

65V N-Channel MOSFETS

PPAK5X6 Pin Configuration

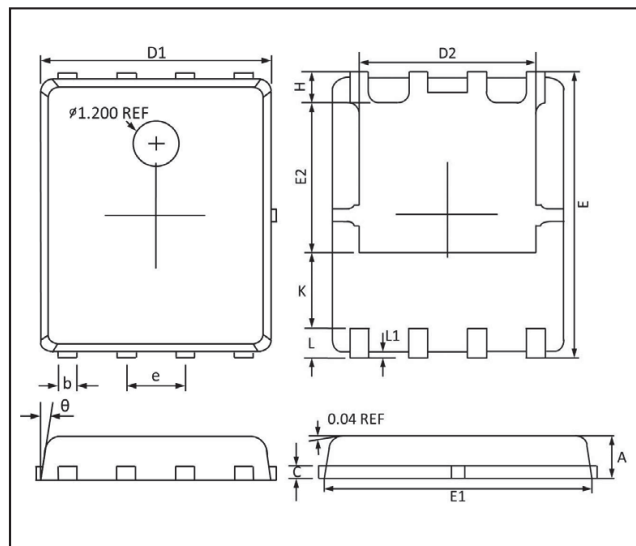
BVDSS	RDS(ON)	ID
65V	4.4mΩ	95A

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	$m\Omega$
		$V_{GS}=4.5V$, $I_D=15A$	---	5.8	7.5	$m\Omega$
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	$V_G=V_D=0V$, 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}	$V_R=50V$, $I_S=10A$ $di/dt=100A/\mu s$, $T_J=25^{\circ}\text{C}$	---	54	---	ns
Reverse Recovery Charge ³	Q_{rr}		---	67	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V$, $V_{GS}=10V$, $L=0.1mH$, $I_{AS}=55A$, $R_G=25\Omega$, 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.

RATINGS AND CHARACTERISTIC CURVES

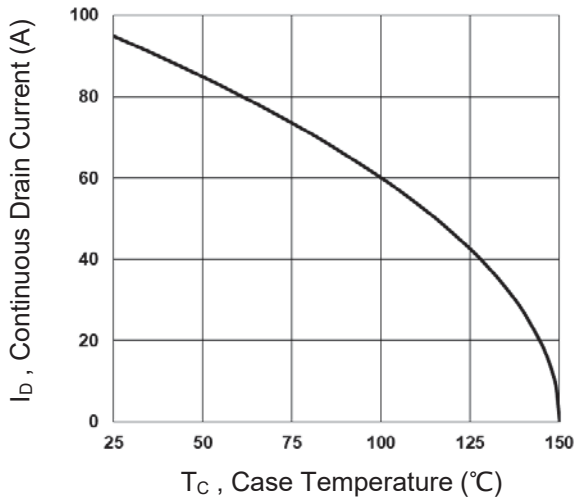


Fig.1 Continuous Drain Current vs. T_C

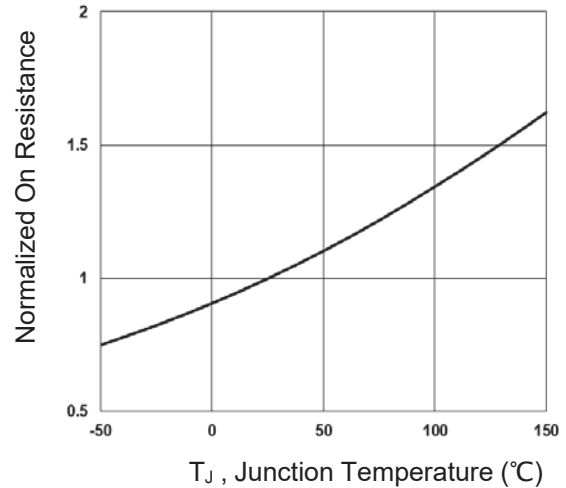


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

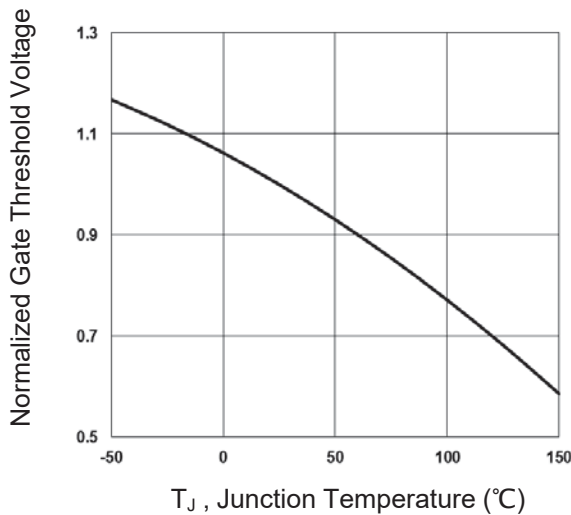


Fig.3 Normalized V_{th} vs. T_J

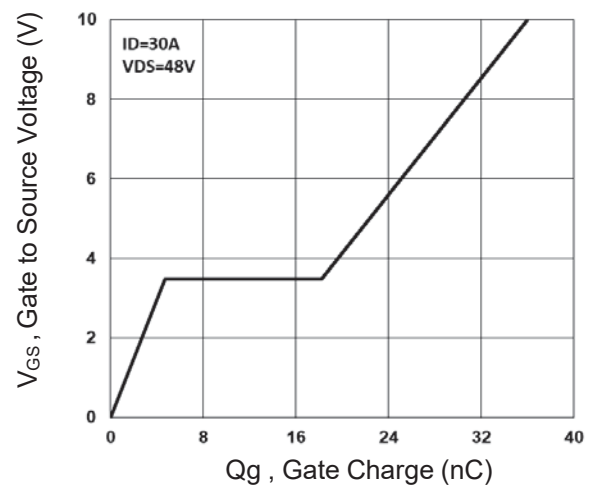


Fig.4 Gate Charge Characteristics

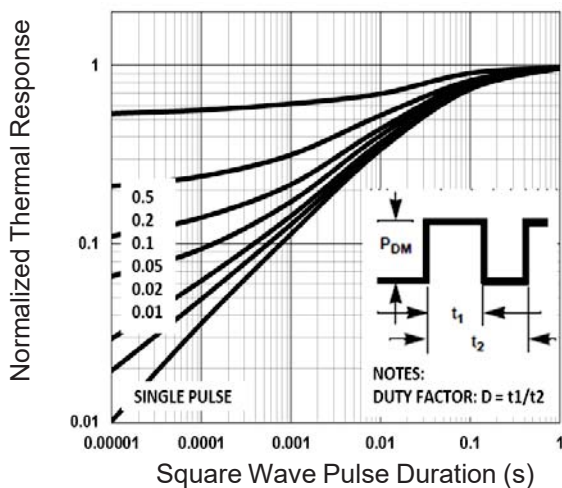


Fig.5 Normalized Transient Impedance

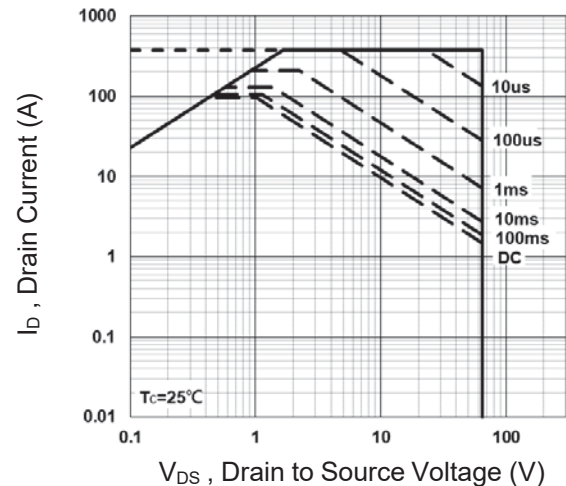


Fig.6 Maximum Safe Operation Area

RATINGS AND CHARACTERISTIC CURVES

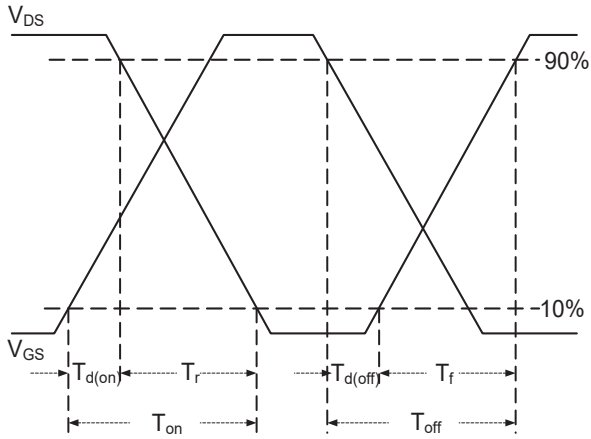


Fig.7 Switching Time Waveform

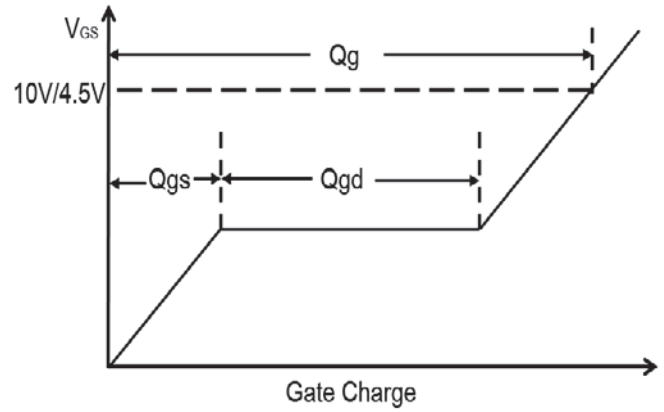


Fig.8 Gate Charge Waveform