

65V N-Channel MOSFETs

PPAK5X6 Pin Configuration

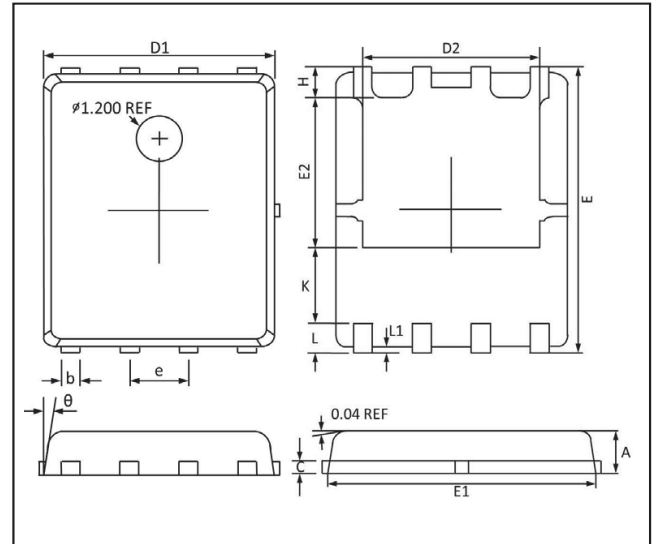
BVDSS	RDS(ON)	ID
65V	2.8mΩ	100A

Features

- 65V, 100A, $R_{DS(ON)} = 2.8m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

Applications

- Networking
- Load Switch
- LED applications
- Quick Charger



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/-12	V
Drain Current – Continuous ($T_C=25^\circ C$)	I_D	100	A
Drain Current – Continuous ($T_C=100^\circ C$)		63	A
Drain Current – Pulsed ¹	I_{DM}	400	A
Single Pulse Avalanche Energy ²	EAS	245	mJ
Single Pulse Avalanche Current ²	IAS	70	A
Power Dissipation ($T_C=25^\circ C$)	P_D	142	W
Power Dissipation – Derate above 25°C		1.14	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	$R_{\theta JC}$	---	0.88	°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
BV_{DSS} Temperature Coefficient	$L: BV_{DSS}/L; T_J$	Reference to 25°C , $I_D=1\text{mA}$	---	0.05	---	V/C
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}	$V_{GS}=20V$, $V_{DS}=0V$	---	---	100	nA

On Characteristics

Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V$, $I_D=20A$	---	2.3	2.8	$m\Omega$
		$V_{GS}=4.5V$, $I_D=10A$	---	4.2	5.4	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	1.6	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$L: V_{GS(th)}$		---	-5	---	mV/C
Forward Transconductance	g_{fs}	$V_{DS}=10V$, $I_D=5A$	---	11	---	S

Dynamic and switching Characteristics

Total Gate Charge ^{3, 4}	Q_g	$V_{DS}=48V$, $V_{GS}=10V$, $I_D=10A$	---	59	120	nC
Gate-Source Charge ^{3, 4}	Q_{gs}		---	10.4	20	
Gate-Drain Charge ^{3, 4}	Q_{gd}		---	19.6	38	
Turn-On Delay Time ^{3, 4}	$T_{d(on)}$	$V_{DD}=30V$, $V_{GS}=10V$, $R_G=6\Omega$ $I_D=1A$	---	22	44	ns
Rise Time ^{3, 4}	T_r		---	14	28	
Turn-Off Delay Time ^{3, 4}	$T_{d(off)}$		---	40	80	
Fall Time ^{3, 4}	T_f		---	20	40	
Input Capacitance	C_{iss}	$V_{DS}=25V$, $V_{GS}=0V$, $F=1\text{MHz}$	---	4780	9500	pF
Output Capacitance	C_{oss}		---	1365	2700	
Reverse Transfer Capacitance	C_{rss}		---	51	102	
Gate resistance	R_g	$V_{GS}=0V$, $V_{DS}=0V$, $F=1\text{MHz}$	---	1.8	3.6	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	---	---	100	A
Pulsed Source Current	I_{SM}		---	---	200	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$, $I_S=1A$, $T_J=25^{\circ}\text{C}$	---	---	1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V$, $V_{GS}=10V$, $L=0.1\text{mH}$, $I_{AS}=70A$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.
3. The data tested by pulsed , pulse width $\diamond 300\mu s$, duty cycle $\diamond 2\%$.
4. Essentially independent of operating temperature.

RATINGS AND CHARACTERISTIC CURVES

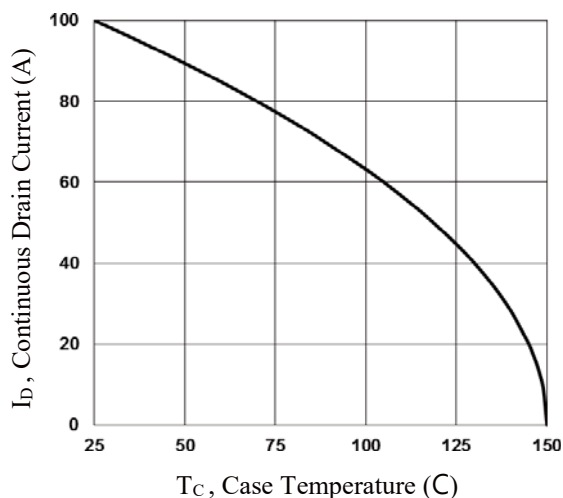
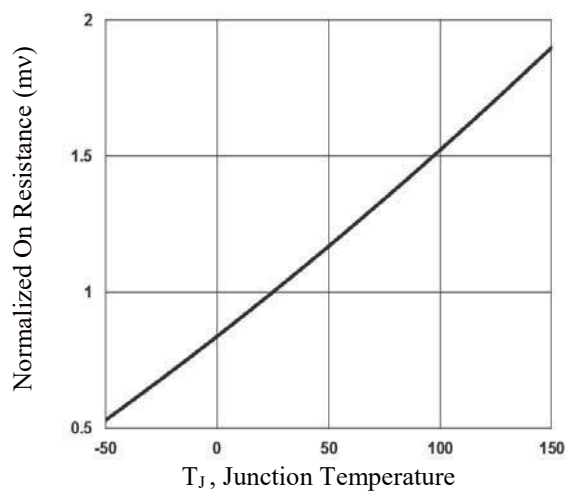
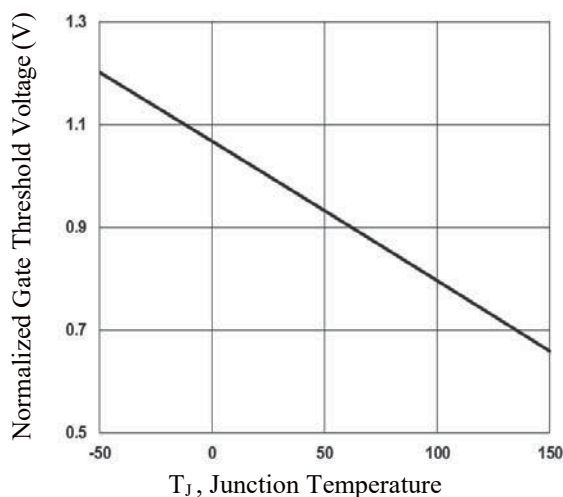


Fig.1 Continuous Drain Current vs. T_C



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



(C) Fig.3 Normalized V_{th} vs. T_J

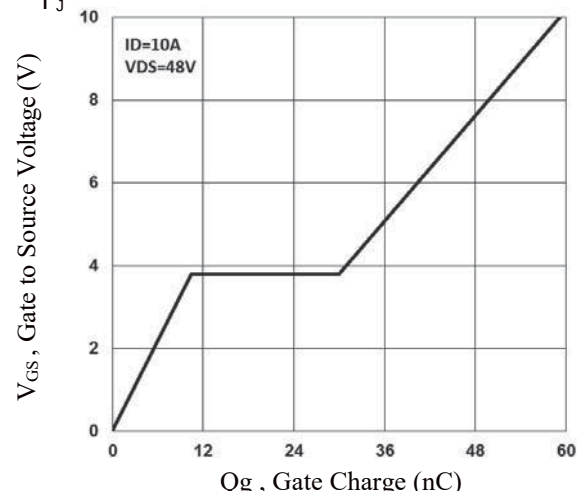


Fig.4 Gate Charge Characteristics

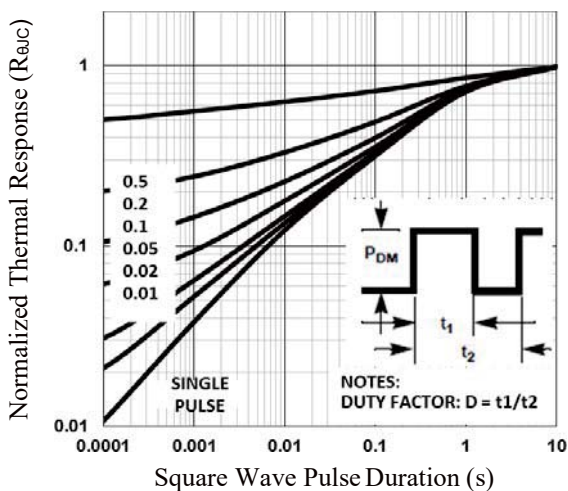


Fig.5 Normalized Transient Impedance

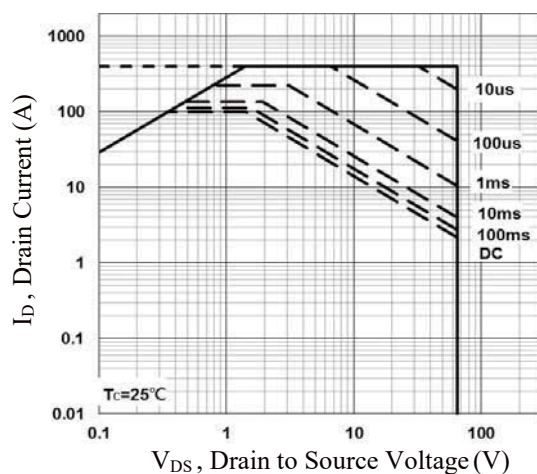


Fig.6 Maximum Safe Operation Area

RATINGS AND CHARACTERISTIC CURVES

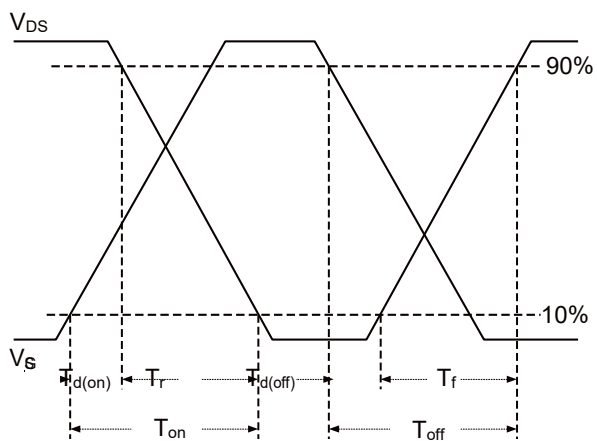


Fig.7 Switching Time Waveform

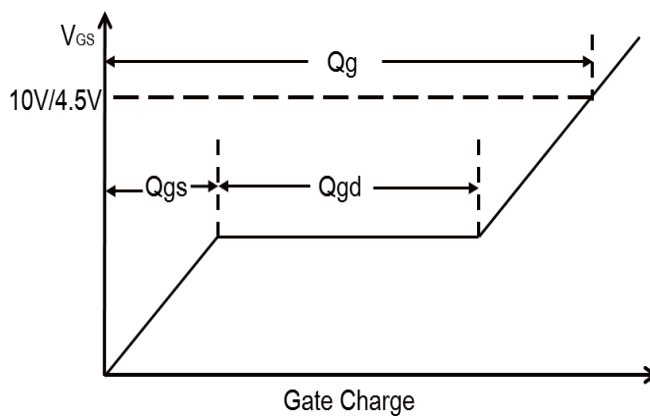


Fig.8 Gate Charge Waveform