P3MNG6P0

60V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
60 V	6 mΩ	66 A

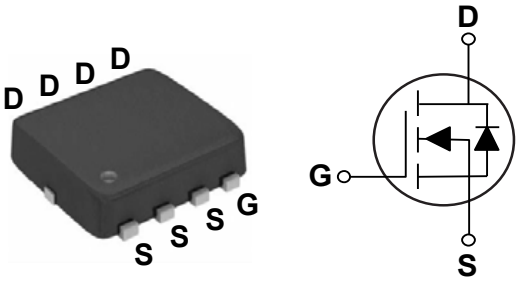
General Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features

- $R_{DS(ON)} \leqq 6m\Omega @ V_{GS}=10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

PPAK3X3 Pin Configuration



Applications

- Networking
- Load Switch
- LED Applications

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous (T_C=25°C)	66	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	90	A
EAS	Single Pulse Avalanche Energy (L=0.1mH)	22	mJ
IAS	Single Pulse Avalanche Current (L=0.1mH)	21	A
P_D	Power Dissipation (T_C=25°C)	31.25	W
T_J	Operating Junction Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		NG6P0	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	4	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	60	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=48V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=15A	---	---	6	mΩ
		V_{GS}=4.5V , I_D=8A	---	---	10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	1.0	---	3.0	V
gfs	Forward Transconductance	V_{DS}=5V , I_{DS}=20A	---	31	---	S

Dynamic and switching Characteristics (NOTE 3)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=30V , V_{GS}=10V , I_D=20A	---	37.4	---	nC
Q_{gs}	Gate-Source Charge		---	6.5	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=30V , V_{GS}=10V , R_{GEN}=3Ω , I_D=1A	---	9.5	---	nS
T_r	Rise Time		---	26	---	
$T_{d(off)}$	Turn-Off Delay Time		---	29	---	
T_f	Fall Time		---	19.5	---	
C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , F=1MHz	---	2083	---	pF
C_{oss}	Output Capacitance		---	793	---	
C_{rss}	Reverse Transfer Capacitance		---	16.5	---	
R_g	Gate Resistance	V_{GS}=0V , V_{DS}=0V , F=1MHz	---	2.1	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A	---	---	1.1	V
t_{rr}	Reverse Recovery Time	I_F=20A , V_R=30V , di/dt=100A/us	---	40	---	nS
Q_{rr}	Reverse Recovery Charge		---	48.7	---	nC

NOTES：

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Guaranteed by design, not subject to production testing.

Characteristics Curves

FIG. 1-I_D vs T_C

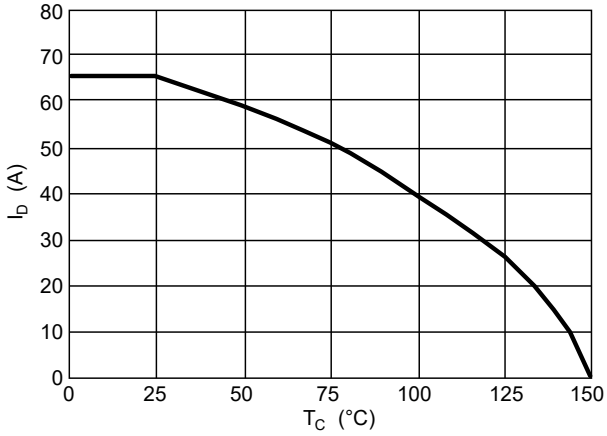


FIG. 2-Normalized $V_{GS(th)}$ vs T_J

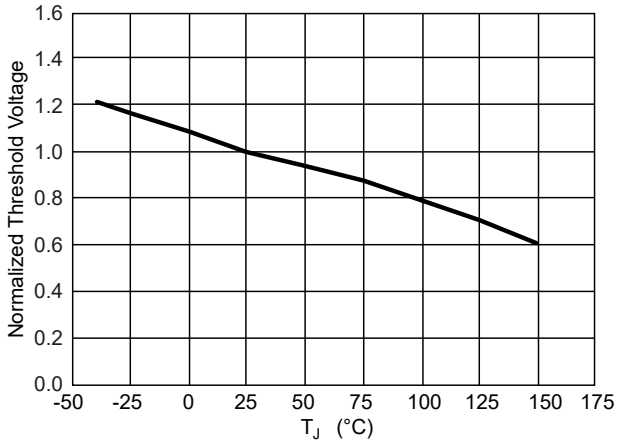


FIG. 3-Normalized $R_{DS(ON)}$ vs T_J

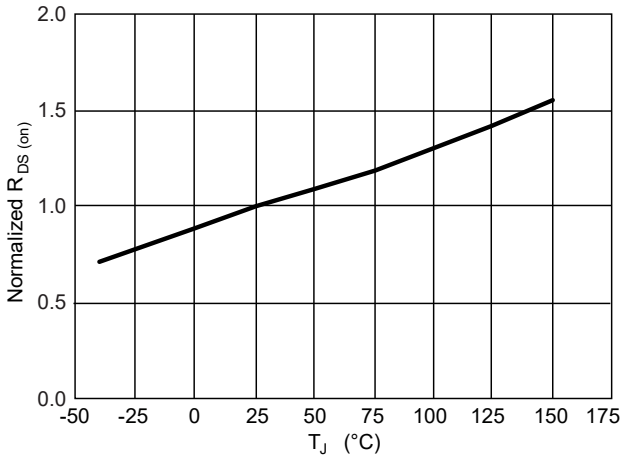


FIG. 4-Gate Charge Characteristics

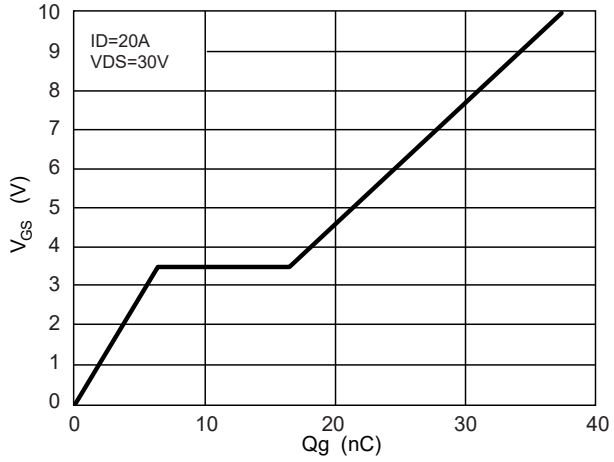


FIG. 5-$R_{DS(ON)}$ vs I_D

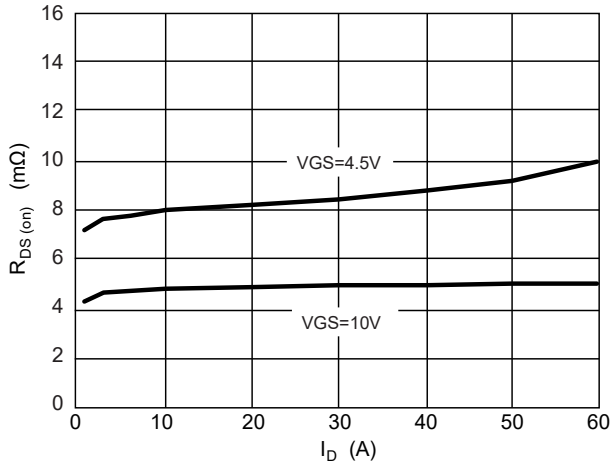
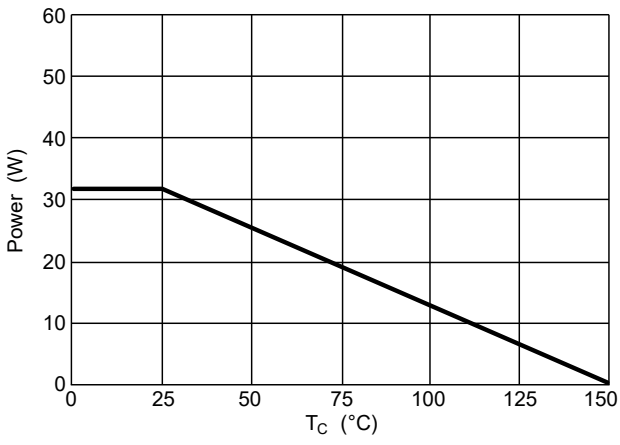


FIG. 6-Power Dissipation



Characteristics Curves

FIG. 7-Switching Time Waveform

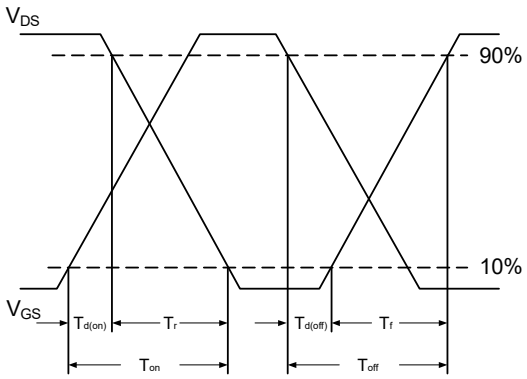
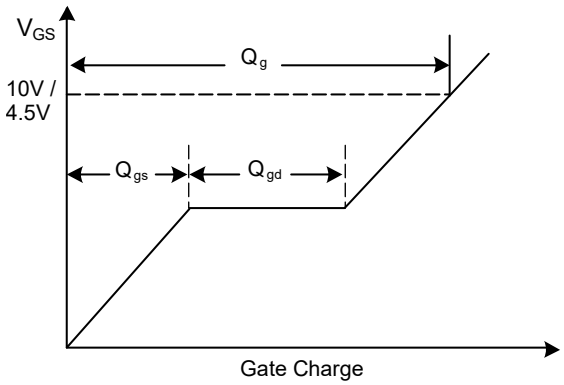
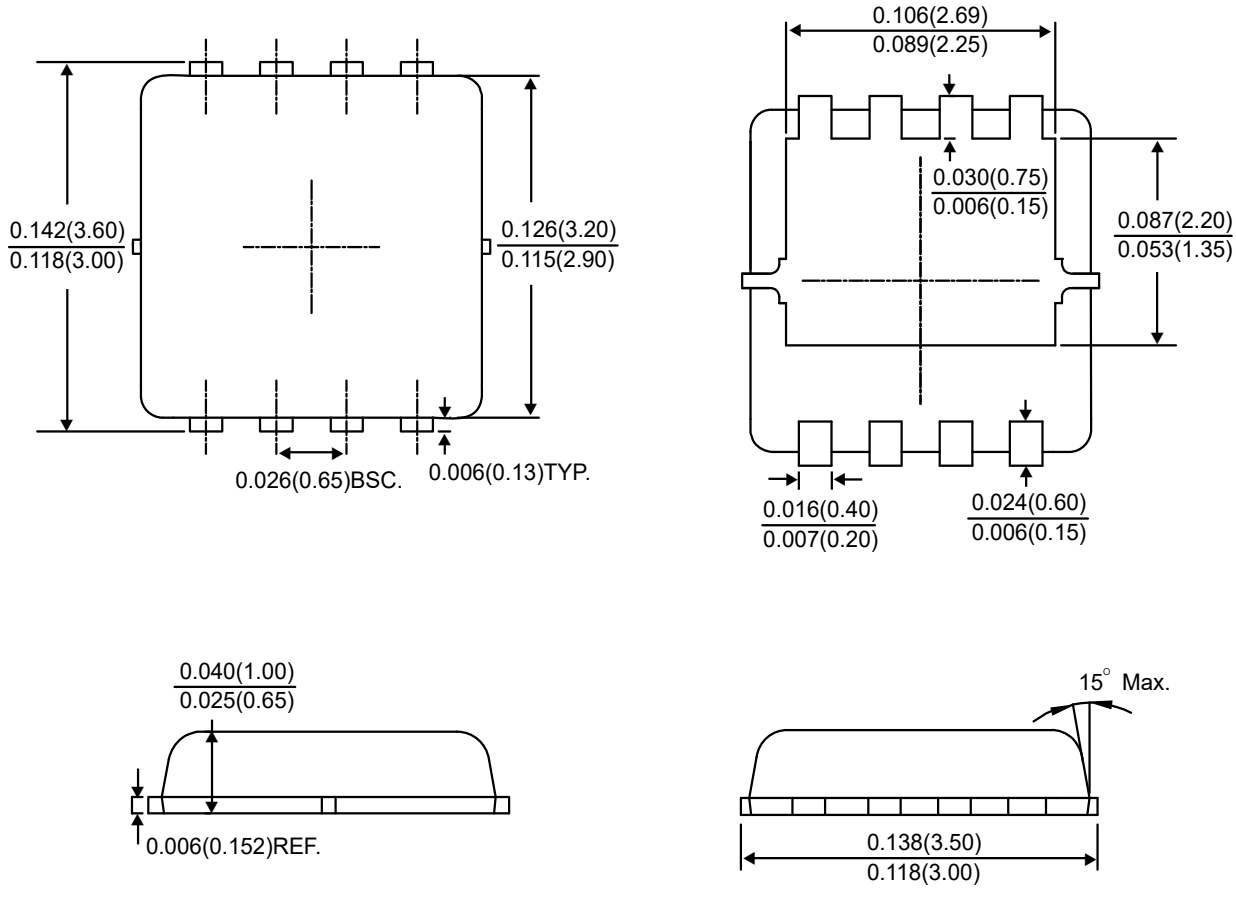


FIG. 8-Gate Charge Waveform



Package Outline Dimensions



PPAK3X3

Dimensions in inches and (millimeters)

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