



100V N-Channel MOSFETs

General Description

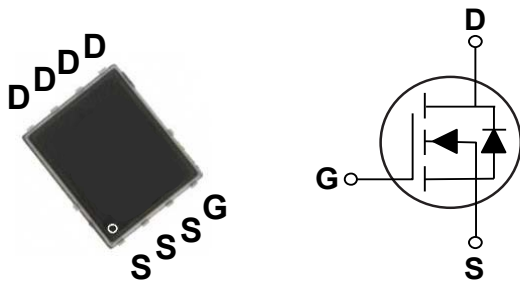
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV _{DSS}	R _{DS(ON)}	I _D
100 V	7.6 mΩ	103 A

Features

- R_{DS(ON)} ≤ 7.6mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- Green Device Available

PPAK5X6 Pin Configuration



Applications

- Networking
- Load Switch
- LED Applications
- Quick Charger

Absolute Maximum Ratings T_J=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	100	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous (T _C =25°C)	103	A
	Drain Current – Continuous (T _C =100°C)	65	A
I _{DM}	Drain Current – Pulsed (NOTE 1)	142	A
EAS	Single Pulse Avalanche Energy (L=0.1mH)	72	mJ
IAS	Single Pulse Avalanche Current (L=0.1mH)	38	A
P _D	Power Dissipation (T _C =25°C)	89	W
T _J	Operating Junction Temperature Range	-50 to 150	°C
T _{STG}	Storage Temperature Range	-50 to 150	°C
Marking Code		NM7P6	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to Ambient	---	62	°C/W
R _{θJC}	Thermal Resistance Junction to Case	---	1.4	°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	100	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, 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	---	---	7.6	mΩ
		V _{GS} =4.5V, I _D =8A	---	---	10.4	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1	---	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	---	15	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =20A (NOTE 2、3)	---	64.3	---	nC
Q _{gs}	Gate-Source Charge		---	15.2	---	
Q _{gd}	Gate-Drain Charge		---	14.6	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =25V, V _{GS} =10V, R _{GEN} =3Ω , I _D =1A (NOTE 2、3)	---	13.3	---	nS
T _r	Rise Time		---	4.2	---	
T _{d(off)}	Turn-Off Delay Time		---	2.9	---	
T _f	Fall Time		---	101.4	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, F=1MHz	---	3358	---	pF
C _{oss}	Output Capacitance		---	924	---	
C _{rss}	Reverse Transfer Capacitance		---	42	---	
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	0.5	---	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, T _J =25°C	---	---	1	V
t _{rr}	Reverse Recovery Time	V _R =50V, I _F =20A,	---	47.7	---	nS
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/us	---	59.4	---	nC

NOTES :

1. Max. current is limited by bonding wire.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. Guaranteed by design, not subject to production testing.



Characteristics Curves

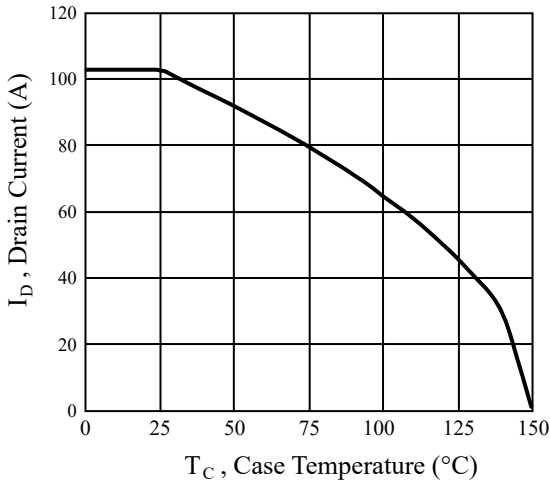


Fig.1 Drain Current vs. T_c

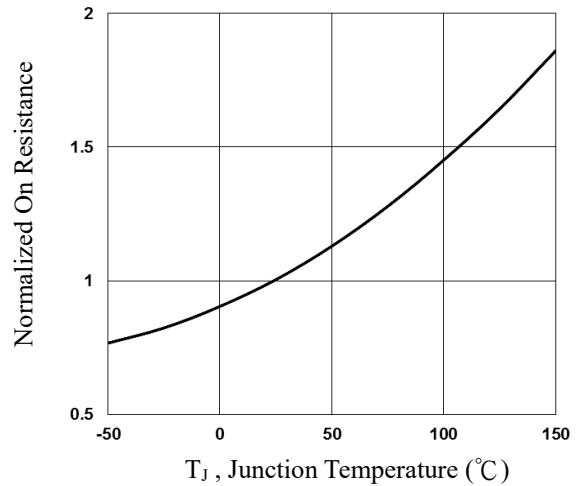


Fig.2 Normalized RDSON vs. T_j

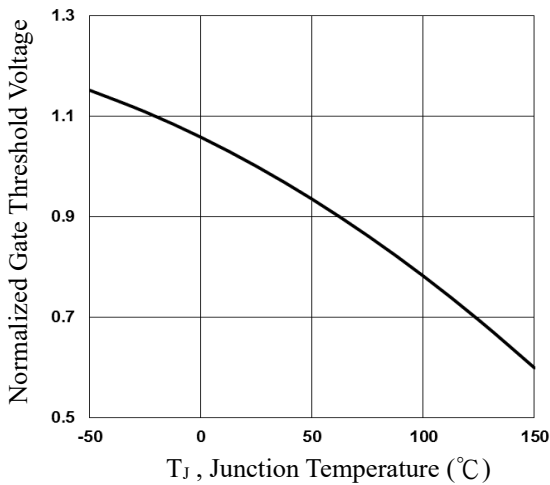


Fig.3 Normalized V_{th} vs. T_j

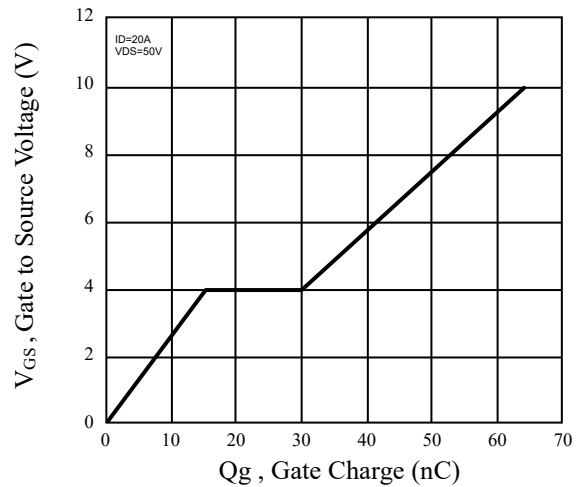


Fig.4 Gate Charge Characteristics

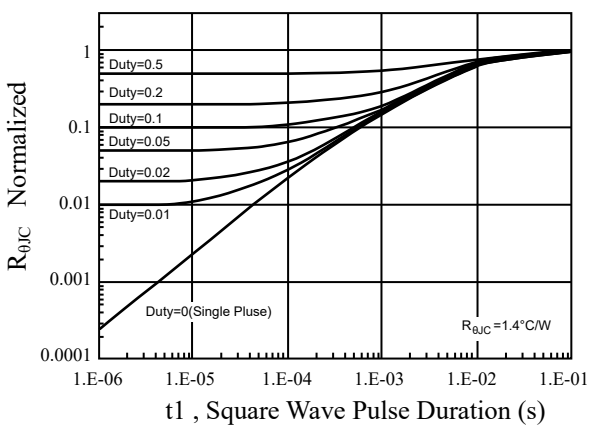


Fig.5 Transient Thermal Impedance

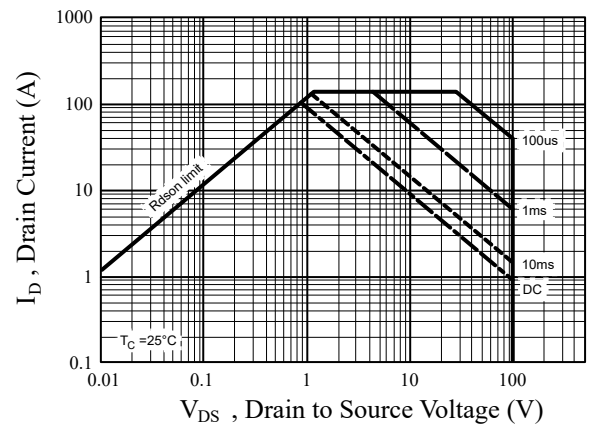


Fig.6 Safe Operation Area



Characteristics Curves

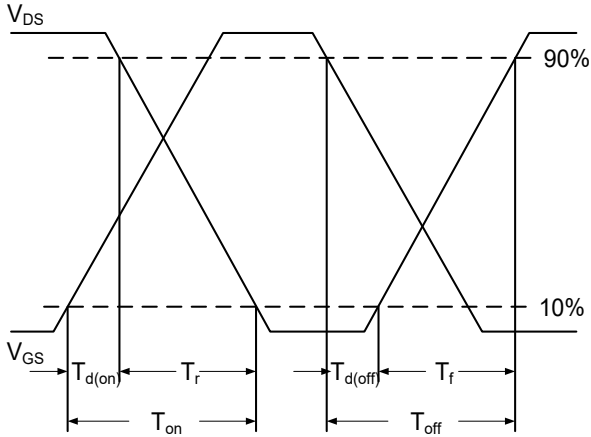


Fig.7 Switching Time Waveform

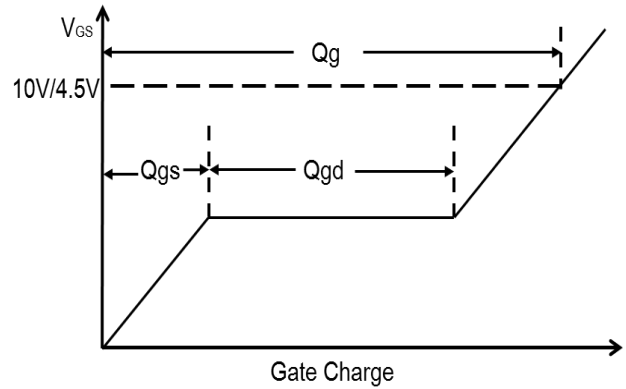
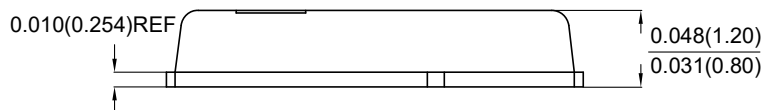
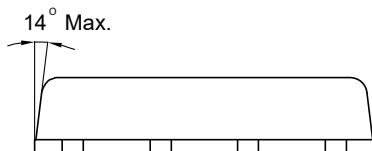
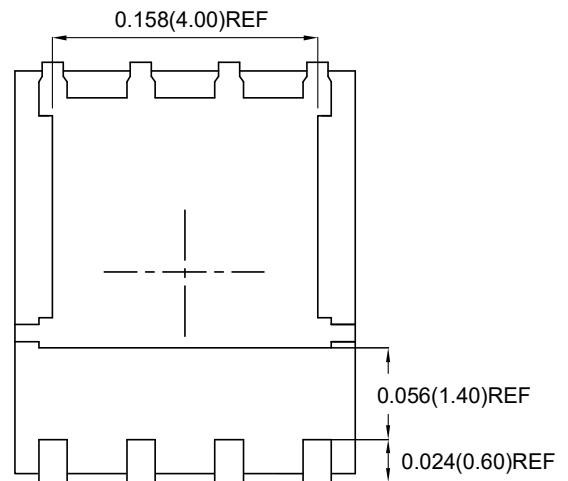
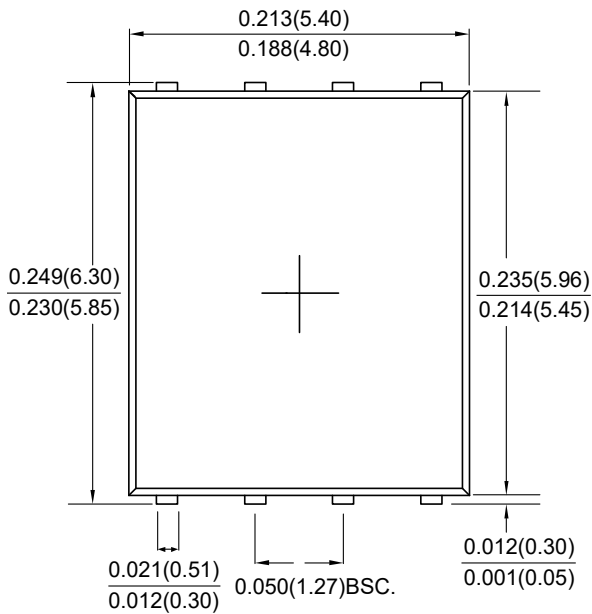


Fig.8 Gate Charge Waveform

Package Outline Dimensions



PPAK5X6

Dimensions in inches and (millimeters)



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