P5MND4P0

40V Dual N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
40 V	4 mΩ (typ.)	70 A

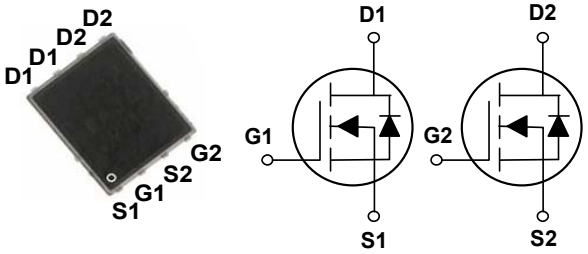
General Description

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

- $R_{DS(ON)}$=4mΩ(typ.)@V_{GS}=10V
- $R_{DS(ON)}$=5.6mΩ(typ.)@V_{GS}=6V
- Reliable and Rugged
- Green Device Available

PPAK5X6 Dual Pin Configuration



Applications

- Power Management in DC/DC Converters
- SMPS Synchronous Rectification

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous	70	A
I_{DM}	Drain Current - Pulsed	140	A
I_S	Diode Continuous Forward Current	30	A
T_J	Operating Junction Temperature Range	150	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C
Marking Code		ND4P0	

Thermal Characteristics

Symbol	Parameter	Typ.	Max	Unit
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	2	°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	40	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=32V , 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 (NOTE 3)	V_{GS}=10V , I_D=2A	---	4.0	---	mΩ
		V_{GS}=6V , I_D=2A	---	5.6	---	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	2	---	4	V

Dynamic and switching Characteristics (NOTE 4)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=25V , V_{GS}=10V , I_D=14A	---	53	---	nC
Q_{gs}	Gate-Source Charge		---	11.8	---	
Q_{gd}	Gate-Drain Charge		---	16.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_{GEN}=1Ω , I_D=1A	---	28	---	ns
T_r	Rise Time		---	21	---	
$T_{d(off)}$	Turn-Off Delay Time		---	39	---	
T_f	Fall Time		---	19	---	
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , F=1MHz	---	3222	---	pF
C_{oss}	Output Capacitance		---	305	---	
C_{rss}	Reverse Transfer Capacitance		---	183	---	

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage (NOTE 3)	V_{GS}=0V , I_S=2A	---	---	1.1	V

NOTES：

1. Currentmaybe limit by bonding wire.
2. The $R_{\theta JC}$ is the sum of the thermal impedance from junction to case and depend on package type.
3. MOS static characteristics test by wafer level.
4. Guaranteed by design, not subject to production testing.

Characteristics Curves

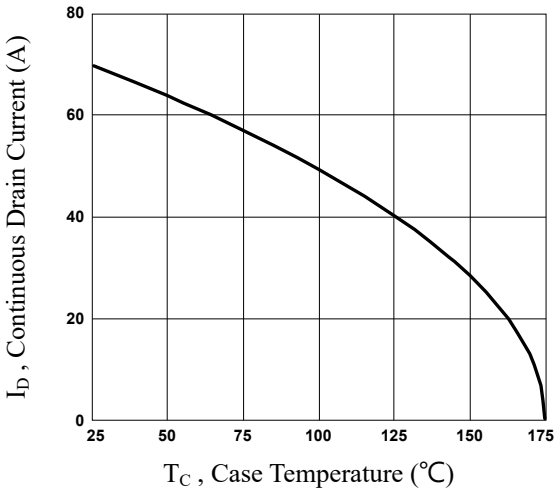


Fig.1 Continuous Drain Current vs. T_c

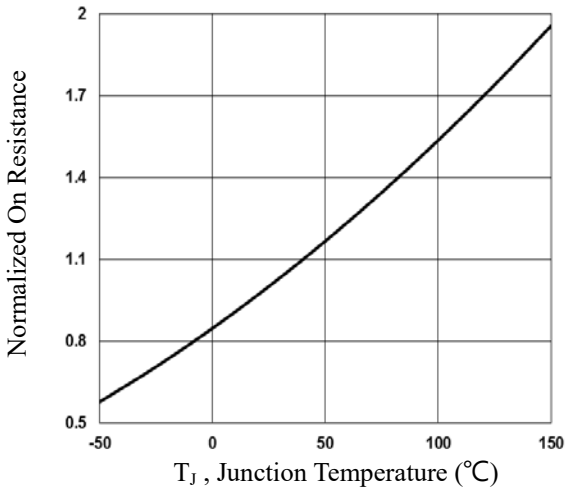


Fig.2 Normalized RDSON vs. T_J

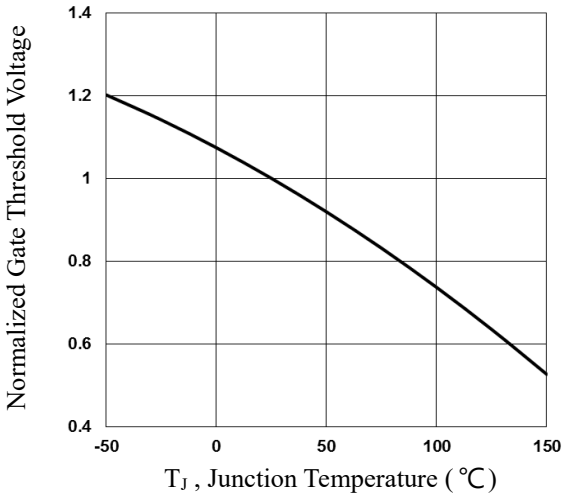


Fig.3 Normalized Vth vs. T_J

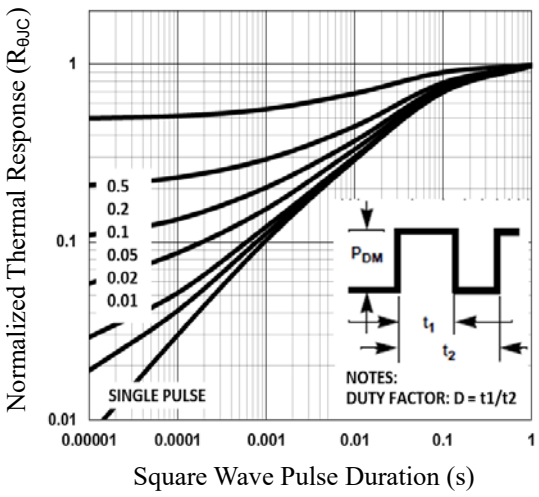


Fig.4 Normalized Transient Impedance

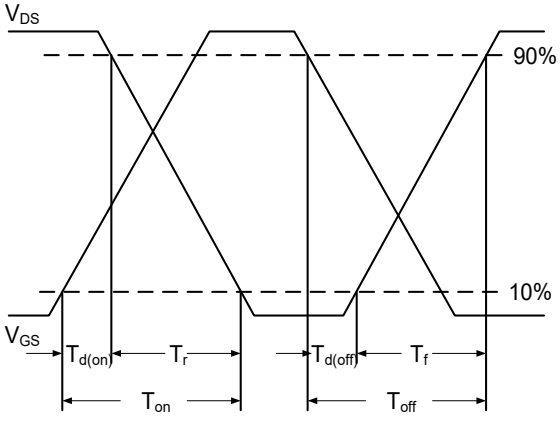


Fig.5 Switching Time Waveform

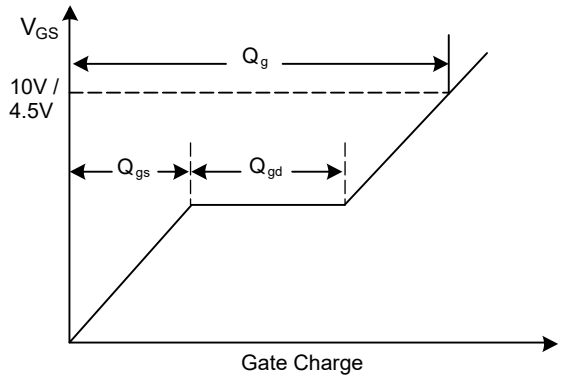
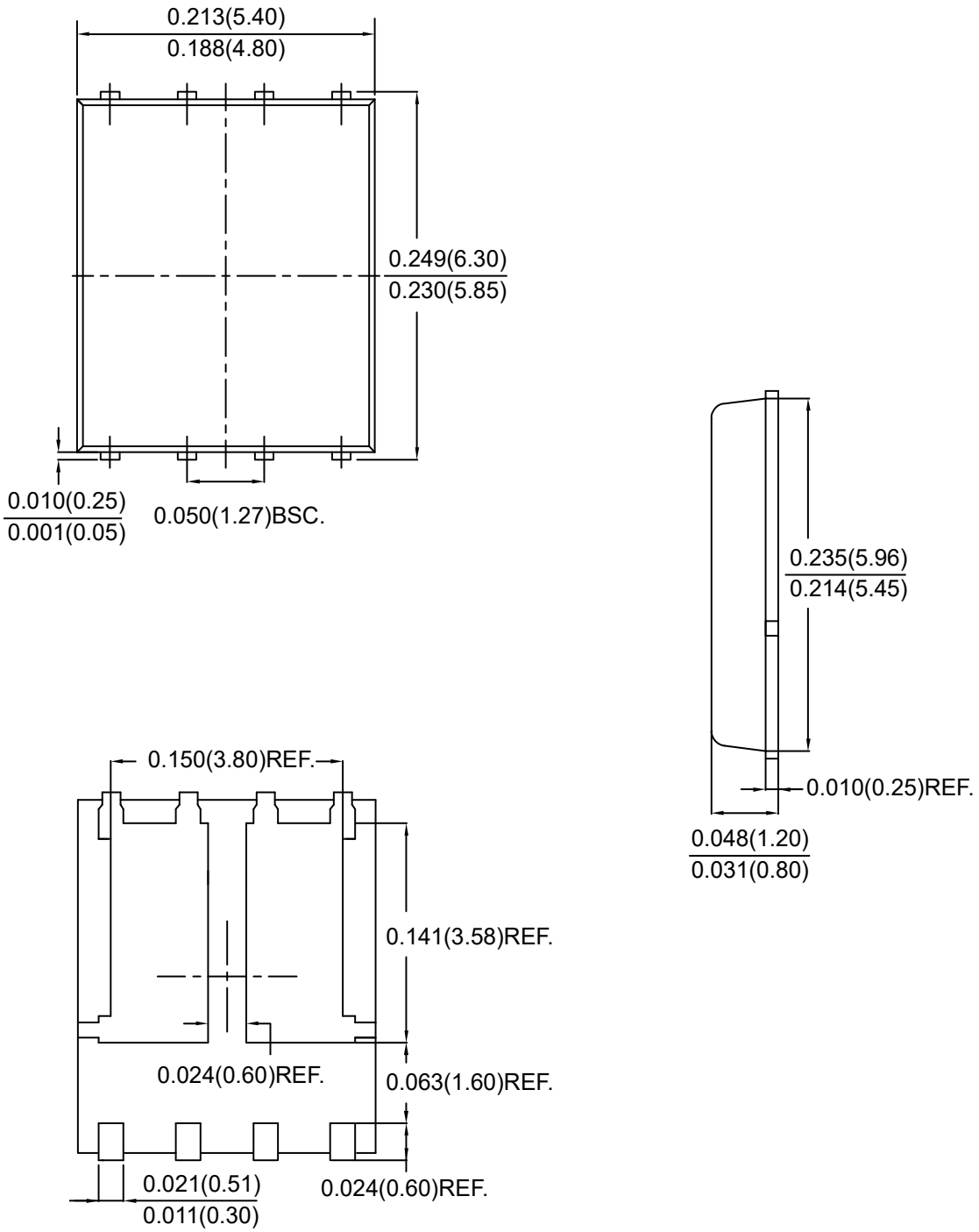


Fig.6 Gate Charge Waveform

Package Outline Dimensions



PPAK5X6 Dual

Dimensions in inches and (millimeters)

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