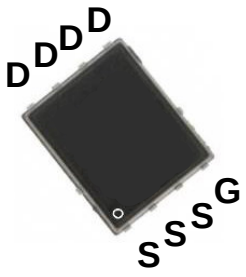
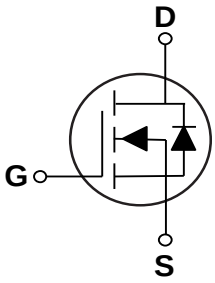
P5MND3P8-Q

40V N-Channel MOSFETs





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BV_{DSS}	$R_{DS(ON)}$	I_D
40 V	3.8 mΩ	92 A

Features

- $R_{DS(ON)} \leqq 3.8m\Omega @ V_{GS}=10V$
- Fast switching speed
- Surface mount package
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- AEC-Q101 qualified

Applications

- DC-DC Converters
- Motor Control.
- Portable equipment application

Absolute Maximum Ratings $T_J=25^oC$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_S	Diode Continuous Forward Current	32	A
I_{DM}	Pulse Drain Current Tested (NOTE 1) ($T_C=25^oC$)	103	A
I_D	Drain Current - Continuous ($T_A=25^oC$)	20	A
	Drain Current - Continuous ($T_A=70^oC$)	17	A
	Drain Current - Continuous ($T_C=25^oC$)	92	A
P_D	Maximum Power Dissipation ($T_C=25^oC$)	50	W
IAS	Avalanche Current, Single pulse (L=0.1mH)	15	A
EAS	Avalanche Energy, Single pulse (L=0.1mH)	11.25	mJ
T_J	Maximum Junction Temperature	175	^oC
T_{STG}	Storage Temperature Range	-50 to 175	^oC
Marking Code		ND3P8	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (Steady State)	60	$^oC/W$
$R_{\theta JC}$	Thermal Resistance Junction to Case (Steady State)	2.5	$^oC/W$

NOTE：

1. Max. current is limited by bonding wire.
2. Continuous current is limited by package.

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	V_{GS}=10V , I_D=20A	---	3.2	3.8	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	1.5	---	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	---	53.4	---	nC
Q_{gs}	Gate-Source Charge		---	11.8	---	
Q_{gd}	Gate-Drain Charge		---	16.3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=15V , V_{GS}=10V , R_{GEN}=1Ω , I_D=1A	---	28	---	nS
T_r	Rise Time		---	21	---	
$T_{d(off)}$	Turn-Off Delay Time		---	38	---	
T_f	Fall Time		---	19	---	
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , F=1MHz	---	3183	---	pF
C_{oss}	Output Capacitance		---	305	---	
C_{rss}	Reverse Transfer Capacitance		---	183	---	
Rg	Gate resistance	V_{GS}=0V , V_{DS}=0V , F=1MHz	---	2.9	---	Ω

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=15A	---	0.81	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS}=0V , I_F=15A , dI/dt=100A/us	---	19.1	---	nS
Q_{rr}	Reverse Recovery Charge		---	10.4	---	nC

NOTES：

3. Pulse test (pulse width ≦ 300us , duty cycle ≦ 2%).
4. Guaranteed by design, not subject to production testing.

Characteristics Curves

FIG. 1-Output Characteristic

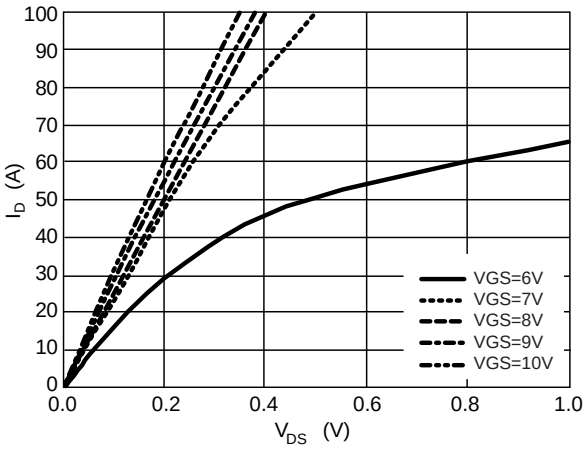


FIG. 2-On−Resistance vs. I_D

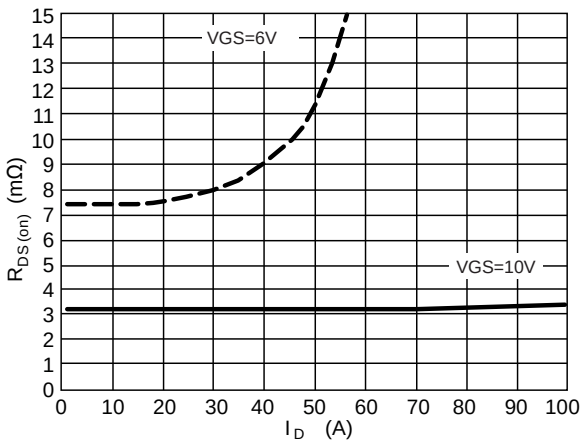


FIG. 3-On−Resistance vs. V_{GS}

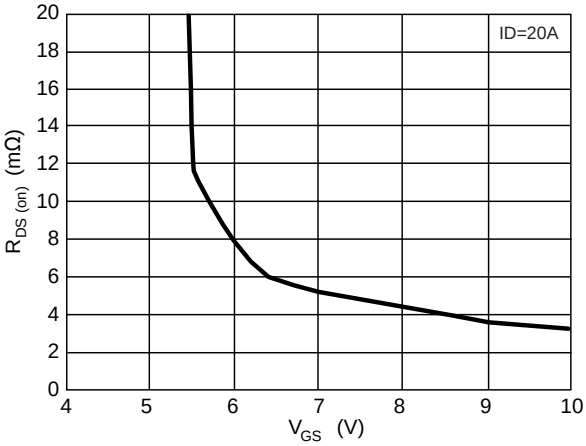


FIG. 4-Source-Drain Diode Forward

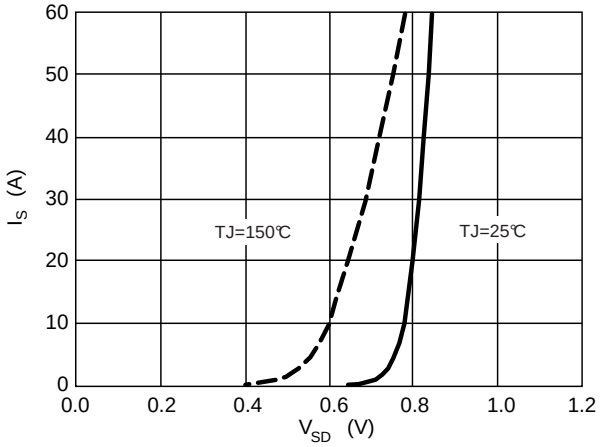


FIG. 5-Gate Charge Characteristics

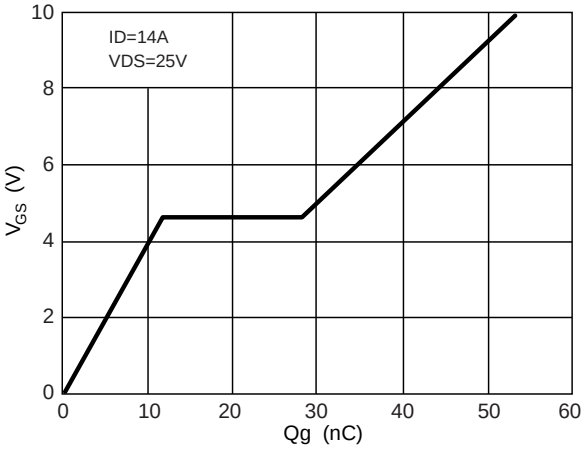
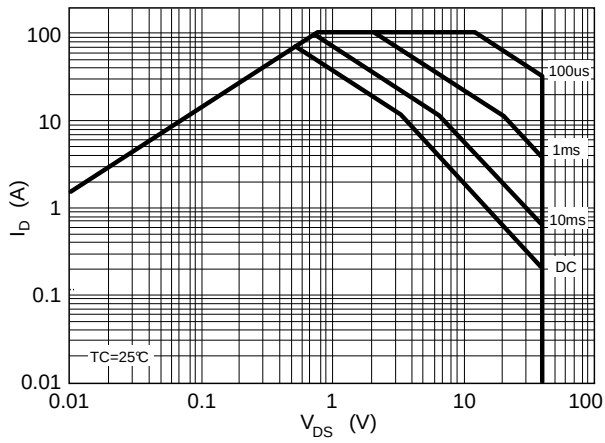


FIG. 6-Safe Operating Area



Characteristics Curves

FIG. 7-Normalized Transient Impedance

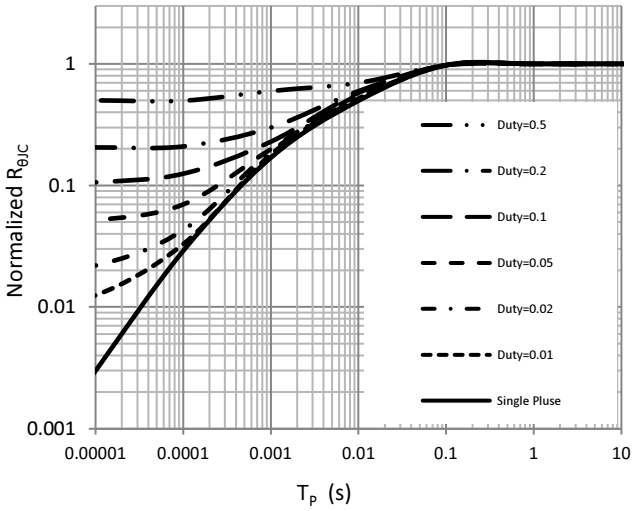


FIG. 8-Capacitance

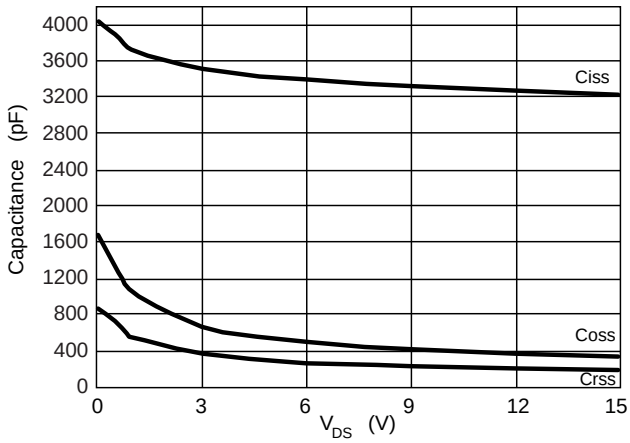


FIG. 9-Normalized $R_{DS(ON)}$ vs. T_J

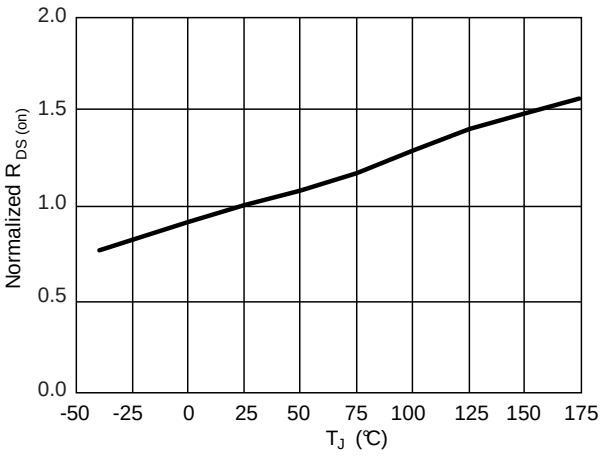
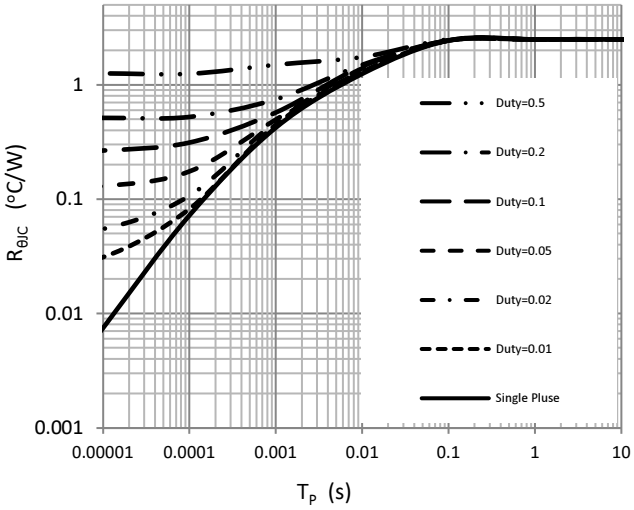
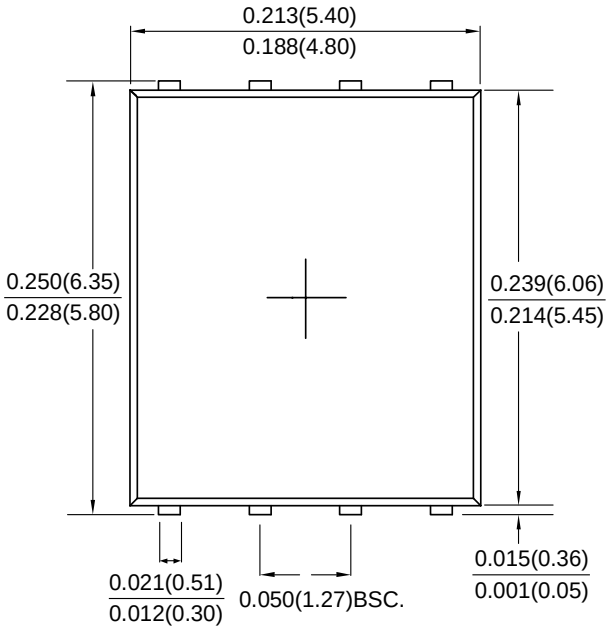
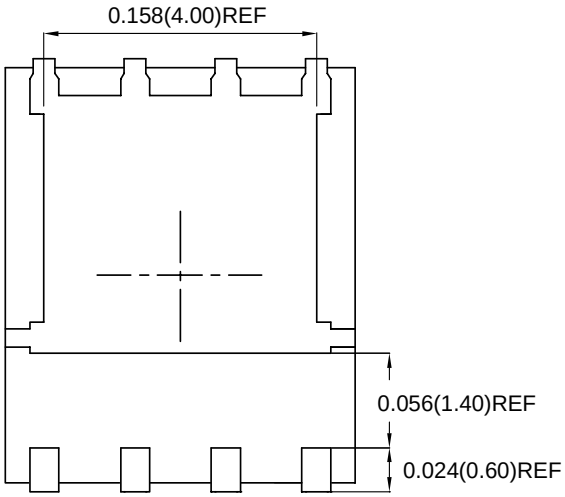


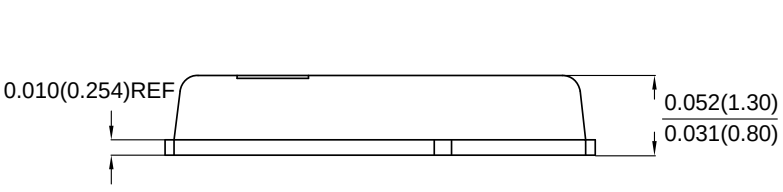
FIG. 10-Max. Transient Thermal Impedance

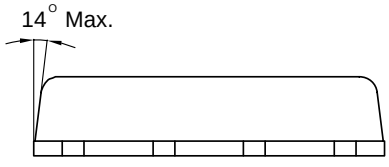


Package Outline Dimensions









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Dimensions in inches and (millimeters)

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