D2MND4P0

40V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
40 V	4 mΩ	85 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.

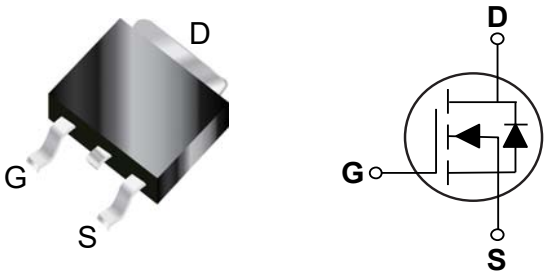
Features

- $R_{DS(ON)} \leqq 4m\Omega @ V_{GS}=10V$
- Fast Switching
- Green Device Available

Applications

- Synchronous Rectification
- DC/DC Converter

TO-263 Pin Configuration



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 (T_C=25°C)	85	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	340	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	200	mJ
IAS	Single Pulse Avalanche Current (NOTE 2)	20	A
P_D	Power Dissipation (T_C=25°C)	96.1	W
T_J	Operating Junction Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		ND4P0	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.3	°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	V_{GS}=10V , I_D=30A	---	---	4	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	1.0	---	3.0	V

Dynamic and switching Characteristics (NOTE 4)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=20V , V_{GS}=10V , I_D=40A	---	71	---	nC
Q_{gs}	Gate-Source Charge		---	14	---	
Q_{gd}	Gate-Drain Charge		---	13	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=20V , V_{GS}=10V , R_G=3Ω , I_D=40A	---	15	---	nS
T_r	Rise Time		---	60	---	
$T_{d(off)}$	Turn-Off Delay Time		---	97	---	
T_f	Fall Time		---	35.5	---	
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , f=1MHz	---	4150	---	pF
C_{oss}	Output Capacitance		---	400	---	
C_{rss}	Reverse Transfer Capacitance		---	378	---	
R_g	Gate Resistance	V_{GS}=0V , V_{DS}=0V , f=1MHz	---	2	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	85	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A	---	---	1	V

NOTES：

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=1mH, I_{AS}=20A.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Guaranteed by design, not subject to production testing.

Characteristics Curves

FIG. 1-Drain Current

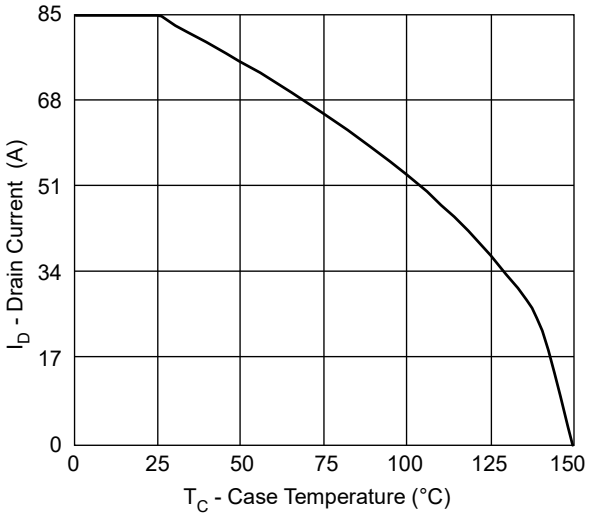


FIG. 2-Normalized $V_{GS(th)}$ vs T_J

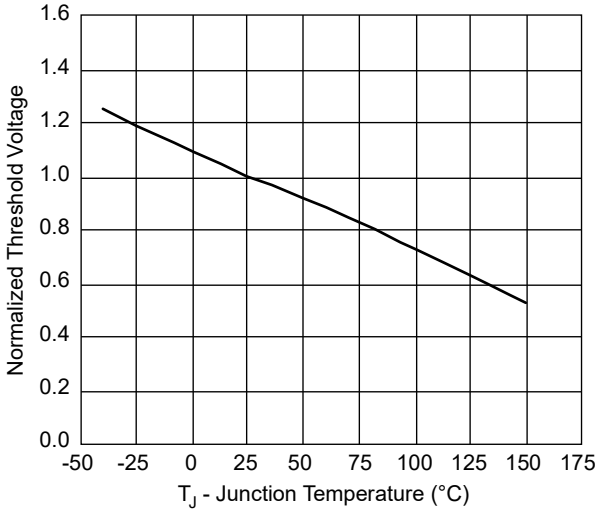


FIG. 2-Normalized $R_{DS(ON)}$ vs T_J

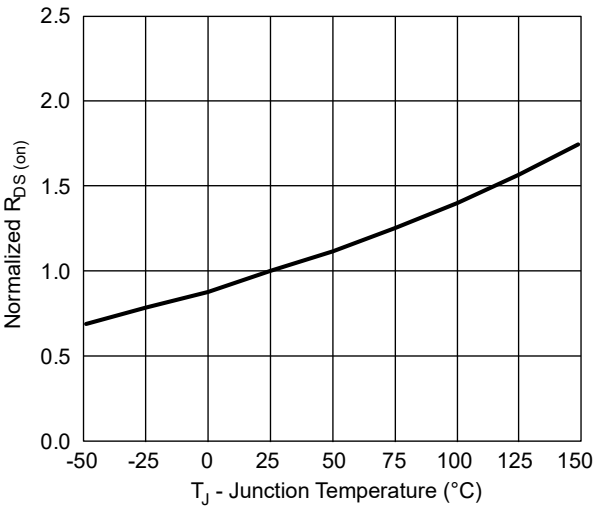


FIG. 4-Gate Charge Characteristics

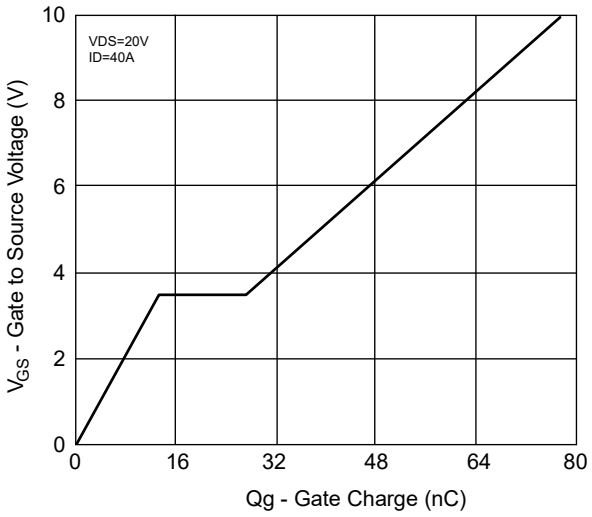


FIG. 5-Safe Operation Area

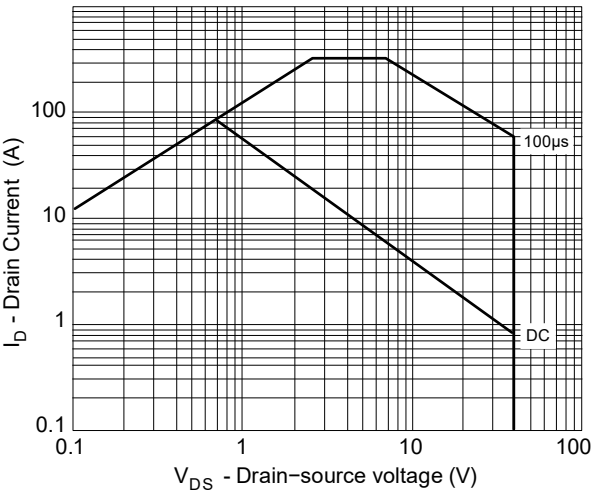
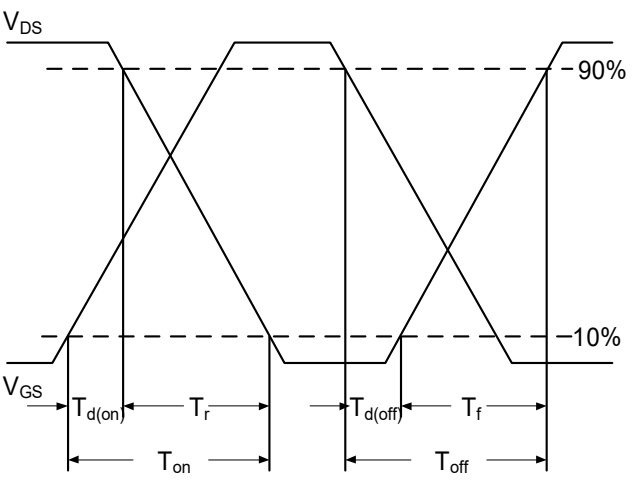
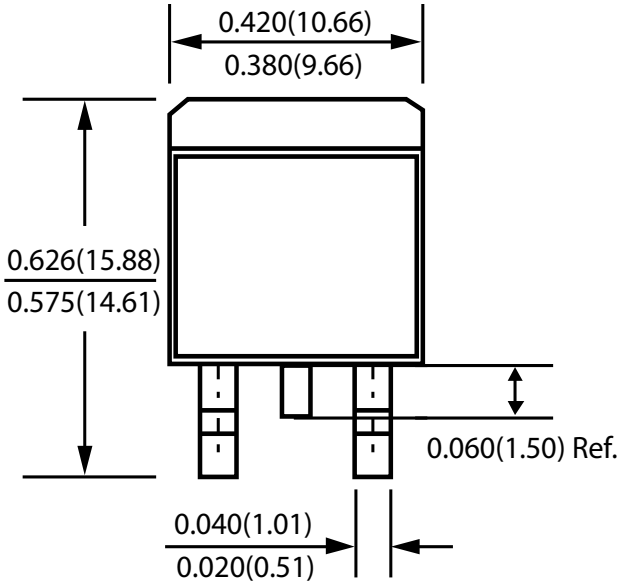
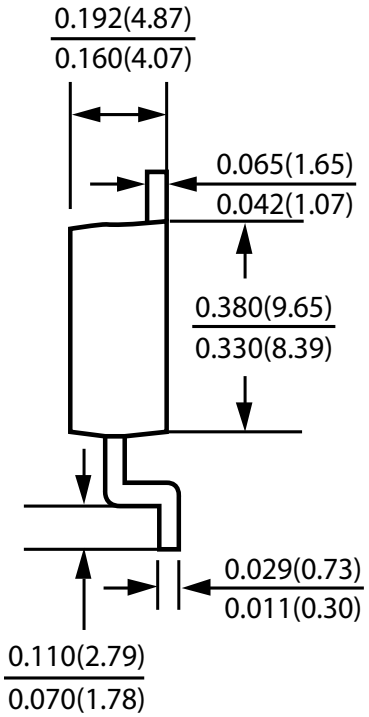


FIG. 6 - Switching Time Waveform



Package Outline Dimensions





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Dimensions in inches and (millimeters)

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