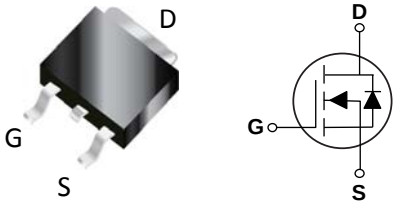
D1MNM100

100V N-Channel MOSFETs



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BV_{DSS}	$R_{DS(ON)}$	I_D
100 V	100 mΩ	12 A

Features

- 100V, 12A, $R_{DS(ON)}$=100mΩ@V_{GS}=10V
- Optimize factor of Rdson and Qg
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Applications

- DC-DC Conversion
- Networking Switch

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)	12	A
	Drain Current - Continuous (T_C=100°C)	8	
I_{DM}	Drain Current - Pulsed (T_C=25°C) (NOTE 1)	25	A
I_S	Diode Continuous Forward Current (T_C=25°C)	20	A
E_{AS}	Single Pulse Avalanche Energy (L=0.1mH)	7.2	mJ
I_{AS}	Single Pulse Avalanche Current (L=0.1mH)	12	A
P_D	Power Dissipation (T_C=25°C)	36.8	W
	Power Dissipation (T_C=100°C)	14.7	
T_J	Operating Junction Temperature Range	-50 to 150	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C
Marking Code		NM100 / 1AA00	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	60	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	3.4	°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 (NOTE 2)	V_{GS}=10V , I_D=7A	---	82	100	mΩ
		V_{GS}=4.5V , I_D=7A	---	87	113	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	1.2	1.7	2.5	V
gfs	Forward Transconductance	V_{DS}=5V , I_D=5A	---	10.5	---	S

Dynamic and switching Characteristics (NOTE3)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=50V , V_{GS}=10V , I_D=10A	---	15.3	---	nC
Q_{gs}	Gate-Source Charge		---	1.9	---	
Q_{gd}	Gate-Drain Charge		---	2.9	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=6Ω , I_D=1A	---	3.3	---	nS
T_r	Rise Time		---	20.3	---	
$T_{d(off)}$	Turn-Off Delay Time		---	31.4	---	
T_f	Fall Time		---	19.8	---	
C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	668	---	pF
C_{oss}	Output Capacitance		---	39	---	
C_{rss}	Reverse Transfer Capacitance		---	17	---	
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	6	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage (NOTE 2)	V_{GS}=0V , I_S=1A	---	0.7	1.1	V
trr	Reverse Recovery Time	I_F=1A , V_{GS}=0V , di/dt=100A/μs	---	17.6	---	nS
Qrr	Reverse Recovery Charge		---	12.6	---	nC

NOTES：

1. Max. current is limited by junction temperature.
2. Pulse test (pulse width ≦ 300us , duty cycle ≦ 2%).
3. Guaranteed by design, not subject to production testing.

Characteristics Curves

FIG. 1-Output Characteristics

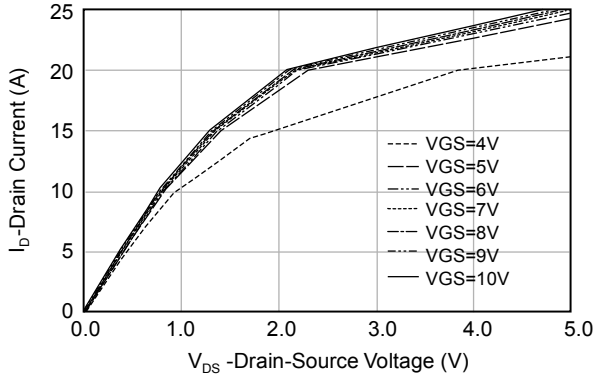


FIG. 2-On−Resistance vs. I_D

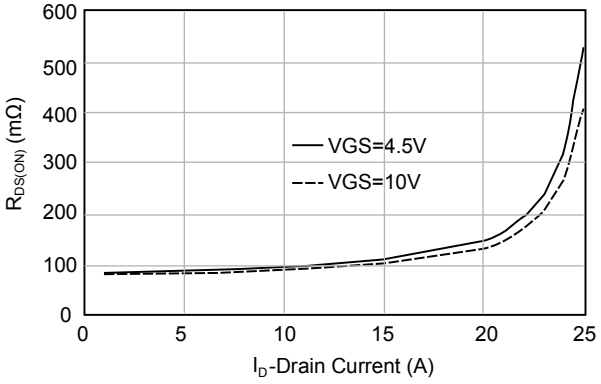


FIG. 3-On−Resistance vs. V_{GS}

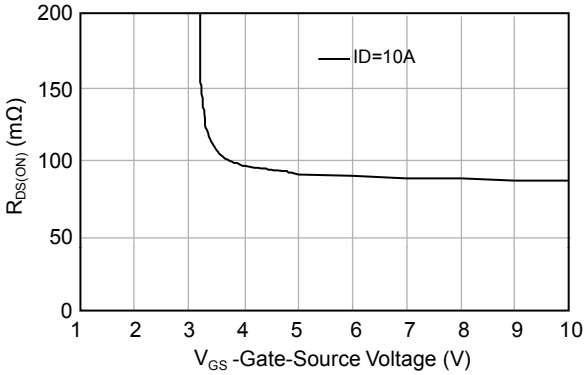


FIG. 4-Gate Threshold Voltage

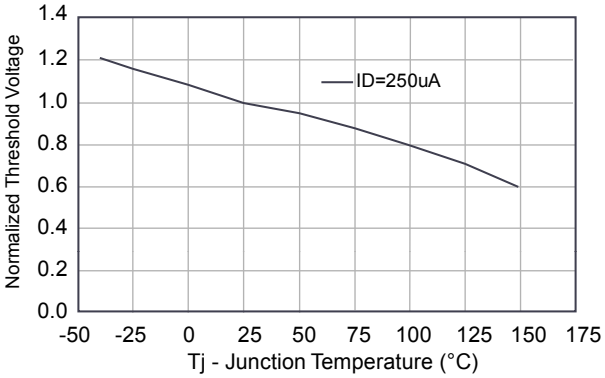


FIG. 5-Drain-Source On Resistance

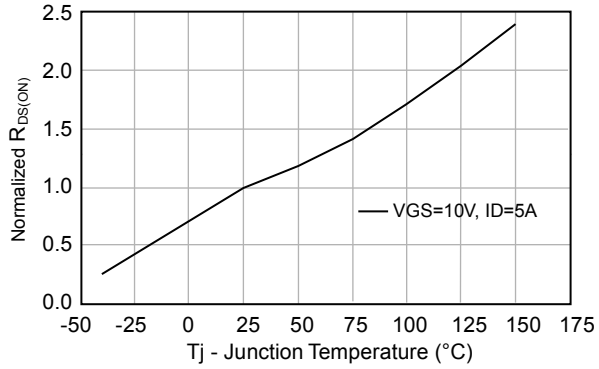


FIG. 6-Source-Drain Diode Forward

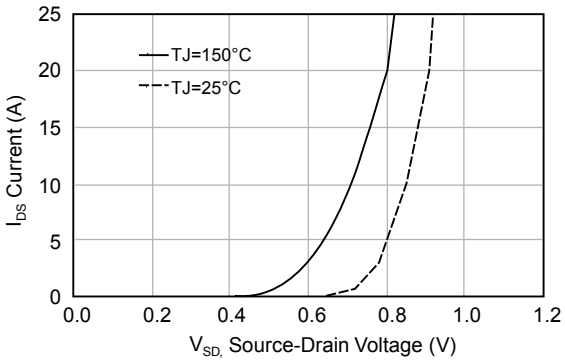


FIG. 7-Capacitance

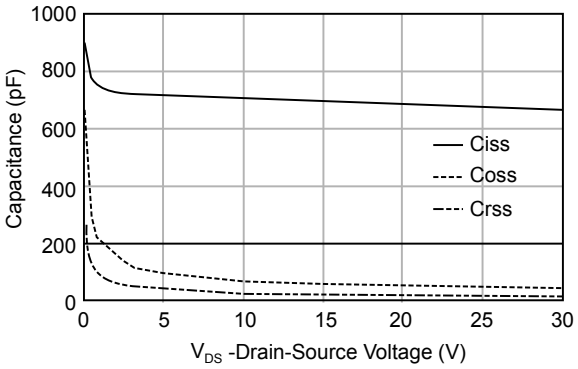
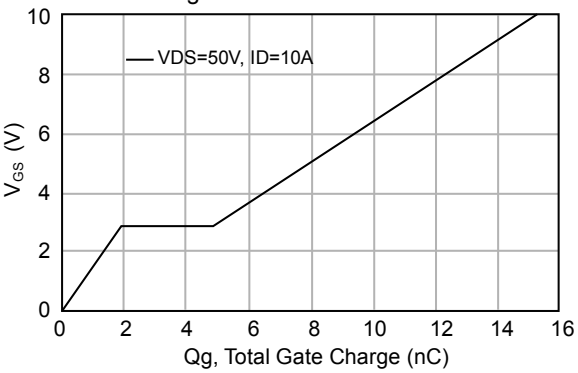


FIG. 8-Gate Charge Characteristics



Characteristics Curves

FIG. 9-Power Dissipation

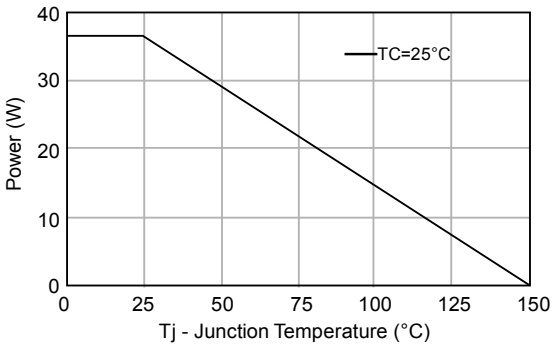


FIG. 10-Drain Current

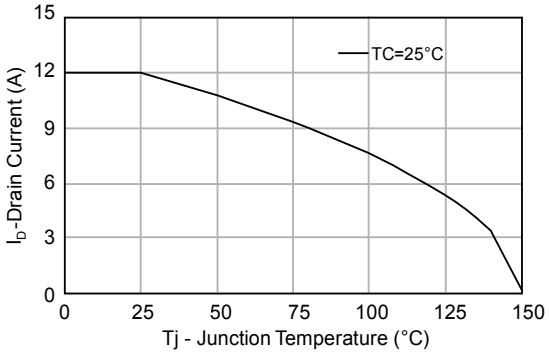


FIG. 11-Safe Operating Area

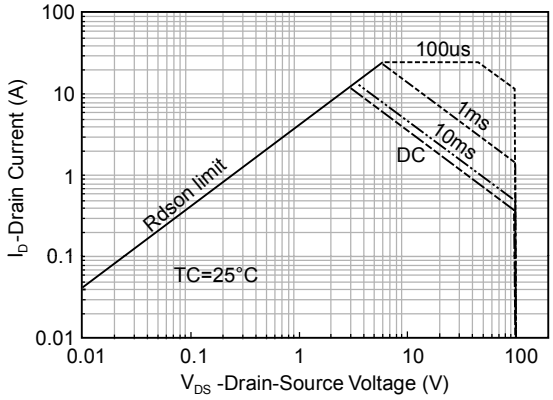
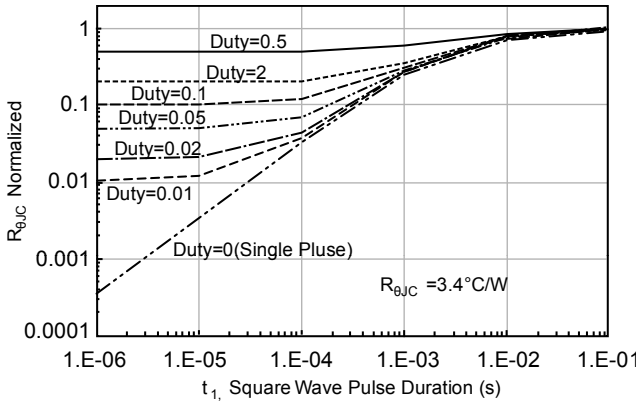
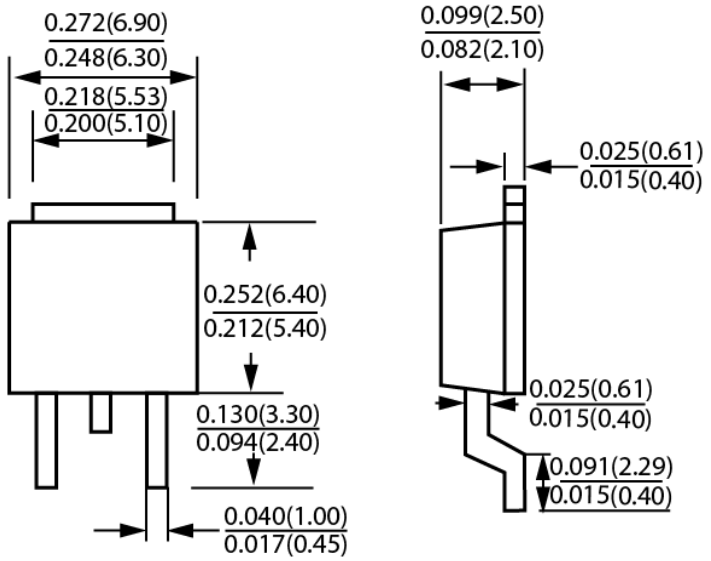


FIG. 12-$R_{\theta JC}$ Transient Thermal Impedance



Package Outline Dimensions



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Dimensions in inches and (millimeters)

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