S8MNM024

100V N-Channel MOSFETs

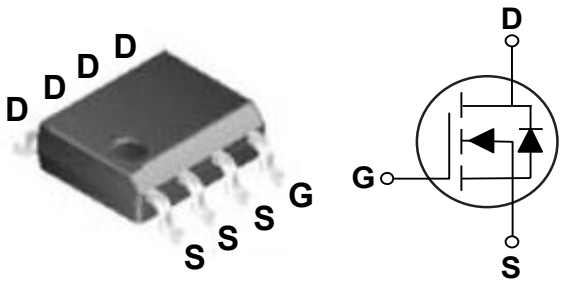
General Description

The S8MNM024 is the high cell density trenched N-ch MOSFETs, which provides excellent R_{DSON} and gate charge for most of the synchronous buck converter applications.

The S8MNM024 meets the RoHS and Green Product requirement with full function reliability approved.

BV_{DSS}	$R_{DS(ON)}$	I_D
100 V	24 mΩ	8 A

SOP-8 Pin Configuration



Features

- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Absolute Maximum Ratings T_C=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_A=25°C)	8	A
	Drain Current - Continuous (T_A=100°C)	6.6	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	32	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	29	mJ
IAS	Avalanche Current	24	A
P_D	Total Power Dissipation (T_A=25°C) (NOTE 3)	2.7	W
T_J	Operating Junction Temperature Range	-50 to 150	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C
Marking Code		S0032 , NM024	

Thermal Characteristics

Symbol	Parameter	Typ.	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (Steady State)	---	80	°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 , T_J=25°C	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=55°C	---	---	5	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 1)	V_{GS}=10V , I_D=8A	---	20	24	mΩ
		V_{GS}=4.5V , I_D=4A	---	23	28	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	1.2	---	2.5	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=30V , V_{GS}=10V , I_D=8A	---	57	---	nC
Q_{gs}	Gate-Source Charge		---	8.7	---	
Q_{gd}	Gate-Drain Charge		---	14	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V , V_{GS}=10V , R_G=3.3Ω , I_D=1A	---	16.2	---	ns
T_r	Rise Time		---	41.2	---	
$T_{d(off)}$	Turn-Off Delay Time		---	56.4	---	
T_f	Fall Time		---	16.2	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , F=1MHz	---	3307	---	pF
C_{oss}	Output Capacitance		---	201	---	
C_{rss}	Reverse Transfer Capacitance		---	151	---	

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current (NOTE 4)	V_G=V_D=0V , Force Current	---	---	8	A
V_{SD}	Diode Forward Voltage (NOTE 1)	V_{GS}=0V , I_S=1A , T_J=25°C	---	---	1.2	V
trr	Reverse Recovery Time	I_F=8A , di/dt=100A/us , T_J=25°C	---	44	---	ns
Qrr	Reverse Recovery Charge		---	25	---	nC

NOTES：

1. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
2. The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=24A
3. The power dissipation is limited by 150℃ junction temperature
4. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Characteristics Curves

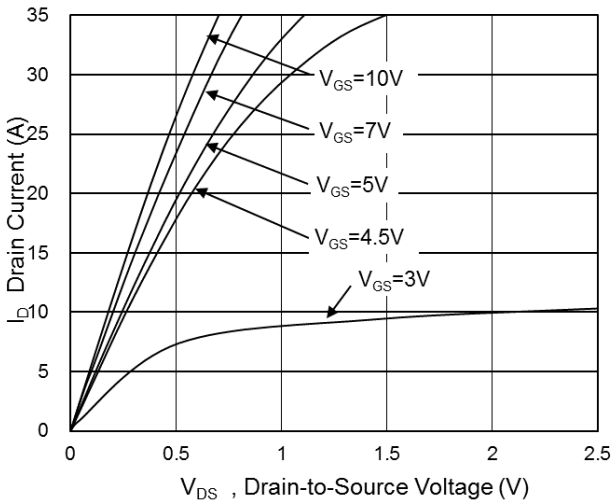


Fig.1 Typical Output Characteristics

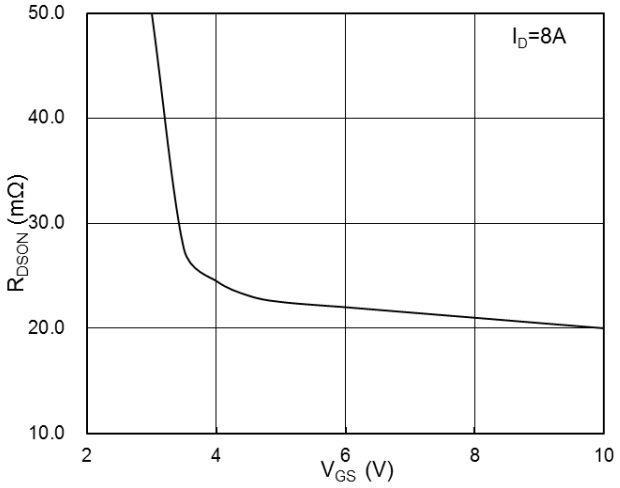


Fig.2 On-Resistance vs. G-S Voltage

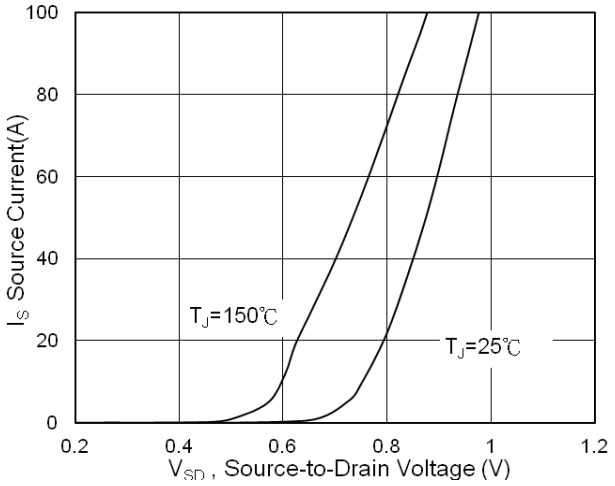


Fig.3 Source-Drain Diode Forward Voltage

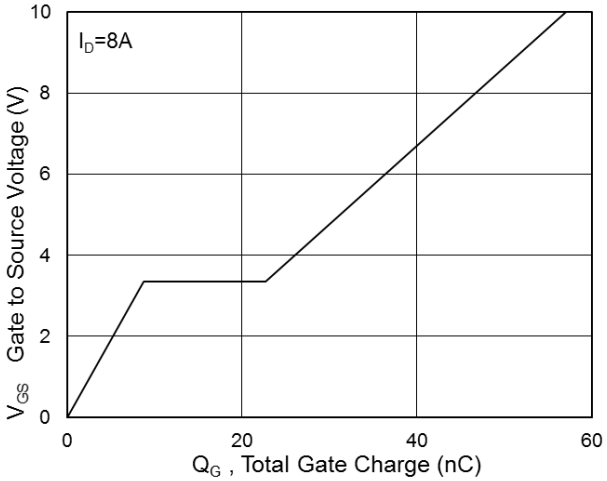


Fig.4 Gate-Charge Characteristics

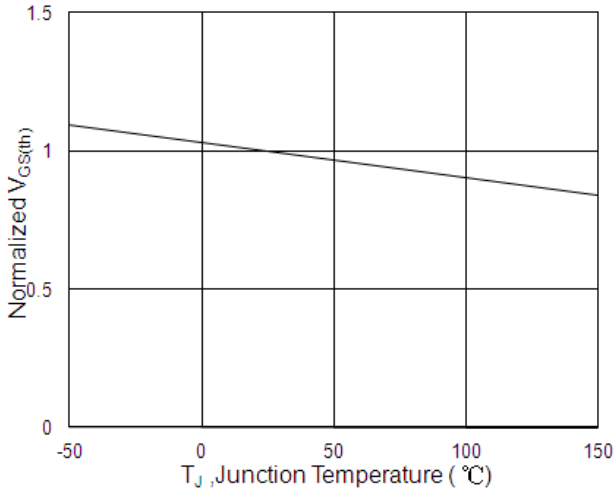


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

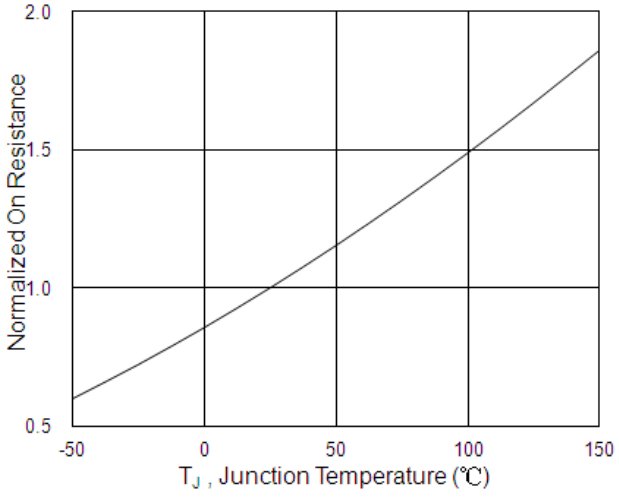


Fig.6 Normalized R_{DSON} vs. T_J

Characteristics Curves

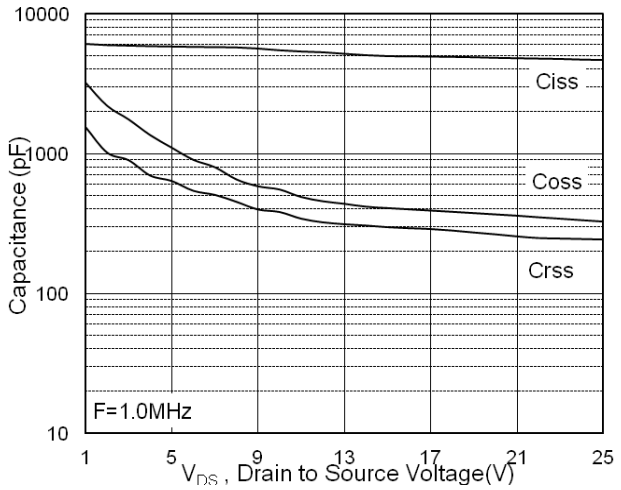


Fig.7 Capacitance

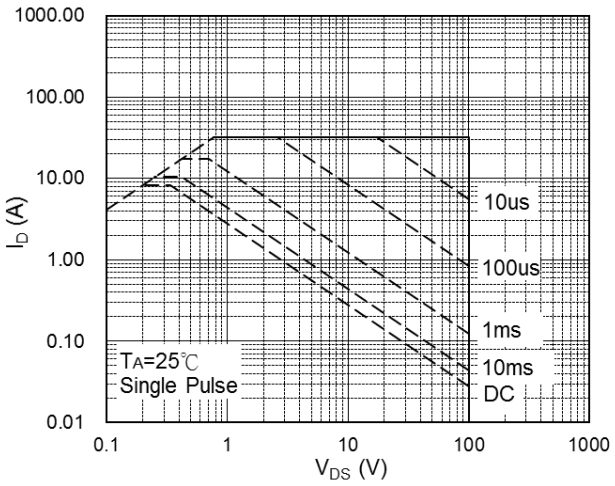


Fig.8 Safe Operating Area

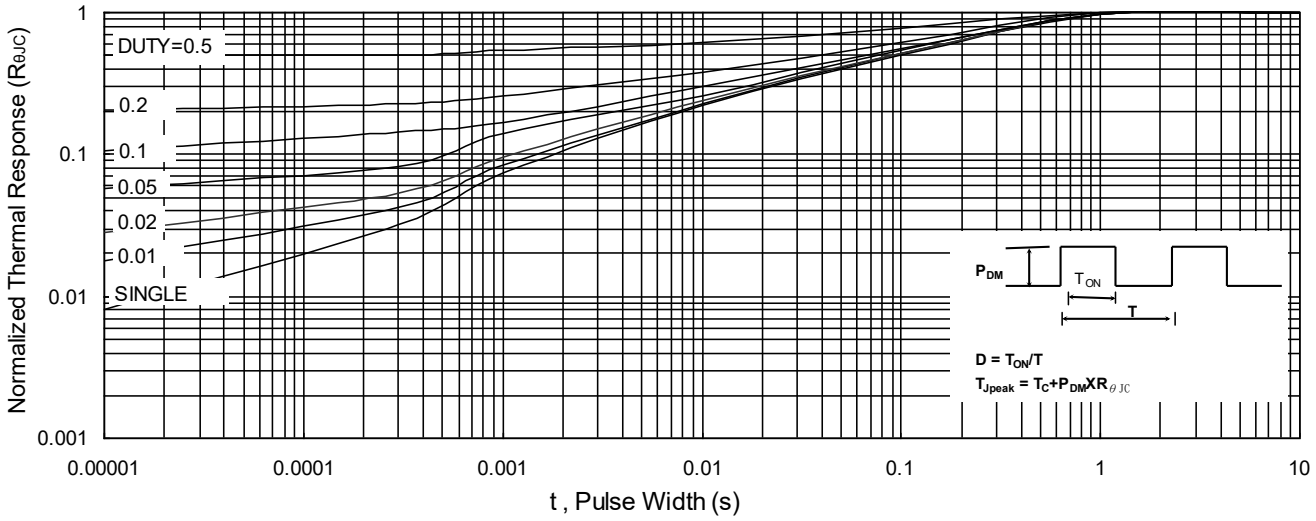


Fig.9 Normalized Maximum Transient Thermal Impedance

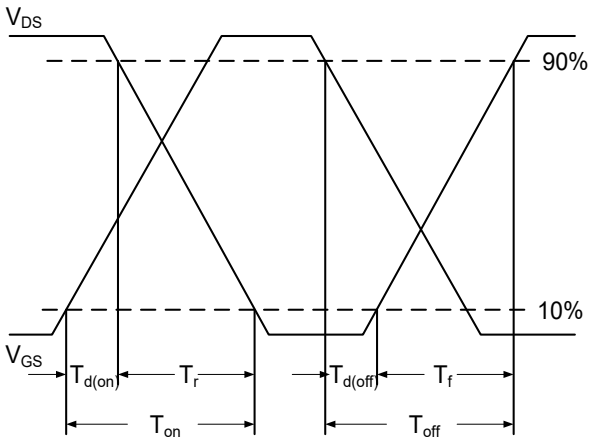
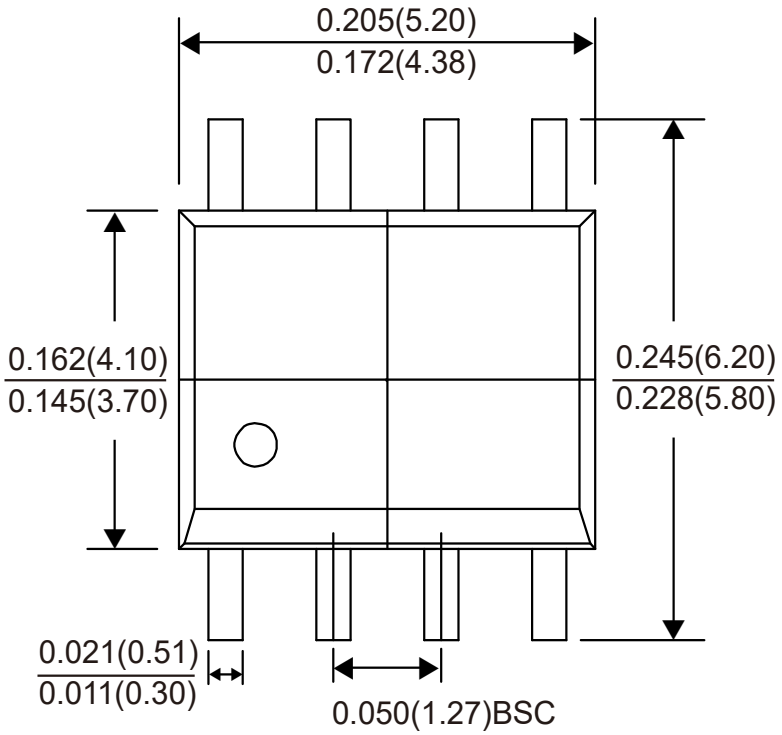
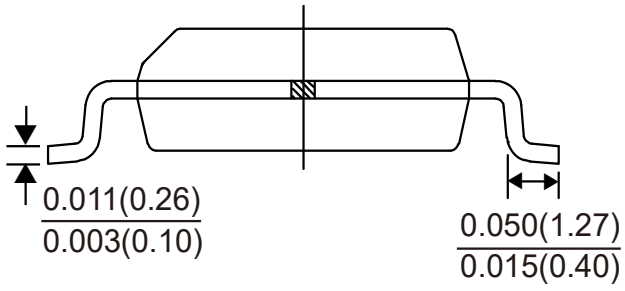
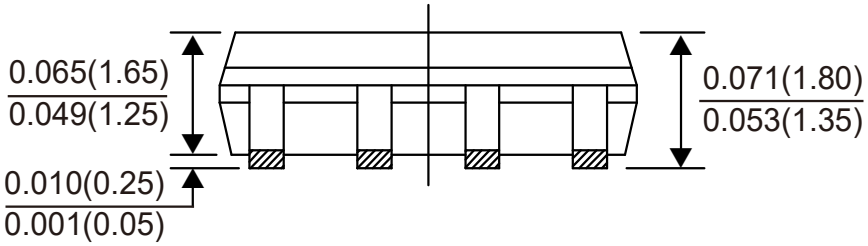


Fig.10 Switching Time Waveform

Package Outline Dimensions







SOP-8

Dimensions in inches and (millimeters)

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