S8MNM020

100V Dual N-Channel MOSFETs

General Description

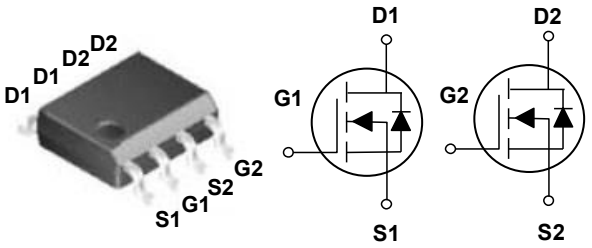
These N-Channel enhancement mode power field effect transistors are using trench MOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

BV_{DSS}	$R_{DS(ON)}$	I_D
100 V	20 mΩ	18 A

Features

- $R_{DS(ON)} \leqq 20m\Omega @ V_{GS}=10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

SOP-8 Pin Configuration



Applications

- Motor Drive
- Power Tools
- LED Lighting

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_C=25°C)	18	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	72	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	16.2	mJ
P_D	Power Dissipation (T_A=25°C)	2.1	W
T_J	Operating Junction Temperature Range	-50 to 150	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C
Marking Code		NM020	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	60	°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}=100V , 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=9A	---	---	20	mΩ
		V_{GS}=4.5V , I_D=6A	---	---	26	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	1.0	---	2.5	V

Dynamic and switching Characteristics (NOTE 4)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=50V , V_{GS}=10V , I_D=18A	---	22.7	---	nC
Q_{gs}	Gate-Source Charge		---	3	---	
Q_{gd}	Gate-Drain Charge		---	5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=3Ω , I_D=18A	---	9.2	---	nS
T_r	Rise Time		---	3.6	---	
$T_{d(off)}$	Turn-Off Delay Time		---	25.6	---	
T_f	Fall Time		---	4.4	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	1208	---	pF
C_{oss}	Output Capacitance		---	144	---	
C_{rss}	Reverse Transfer Capacitance		---	11.3	---	
R_g	Gate Resistance	V_{GS}=0V , V_{DS}=0V , F=1MHz	---	1.8	---	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	---	---	18	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=10A	---	---	1.2	V

NOTES：

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. The EAS data shows Max. rating. V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=9A.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. This value is guaranteed by design hence it is not included in the production test.

Characteristics Curves

FIG. 1-Transfer Characteristics

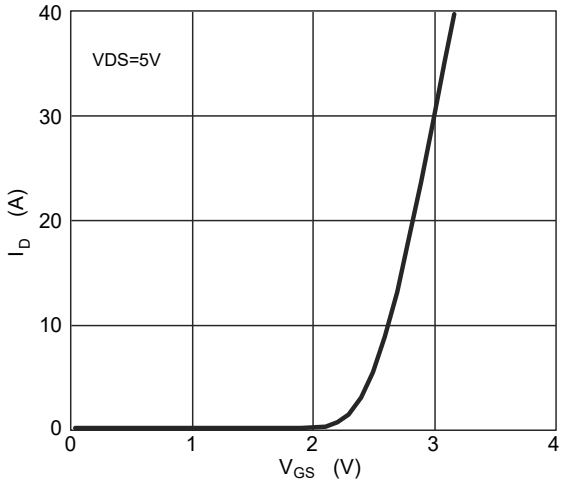


FIG.2-I_S vs. V_{SD}

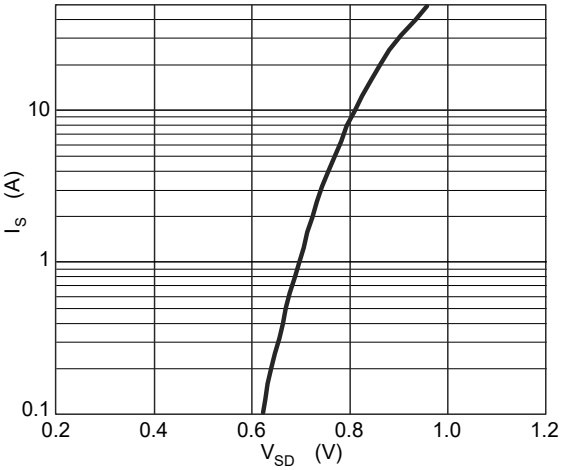


FIG.3-R_{DSON} vs. I_D

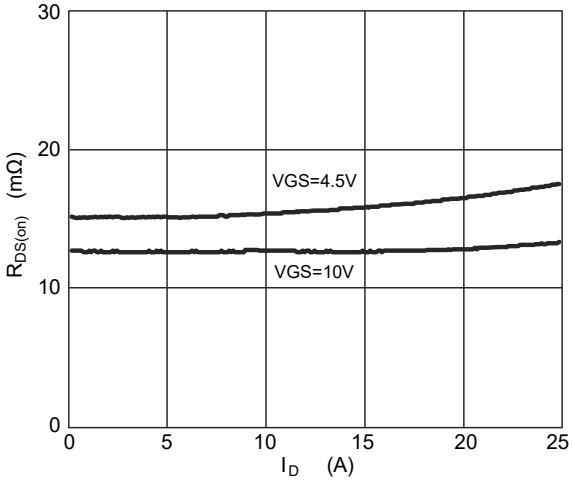


FIG.4-Normalized R_{DSON} vs. T_J

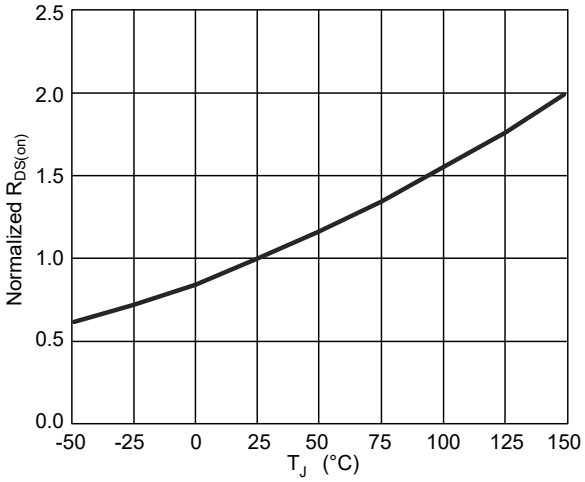


Fig.5 Gate Charge Waveform

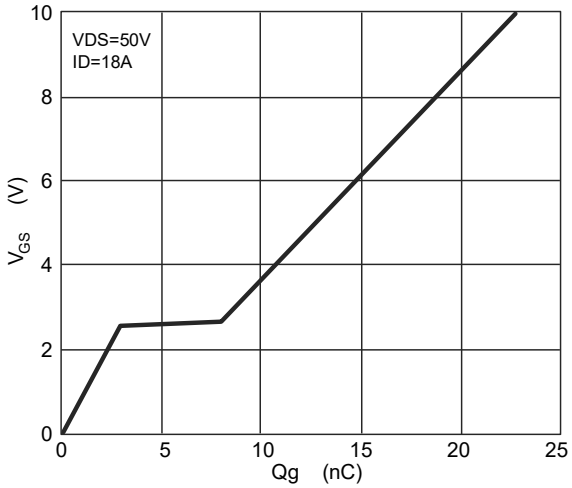
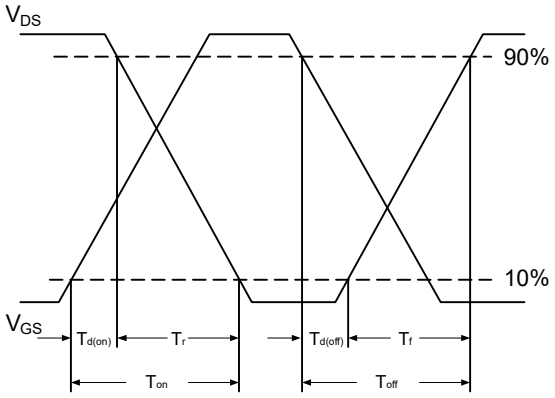
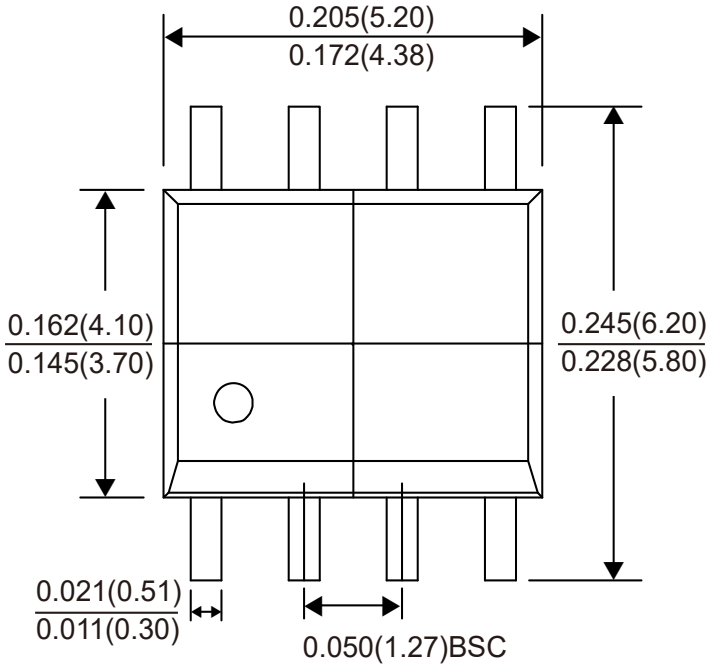
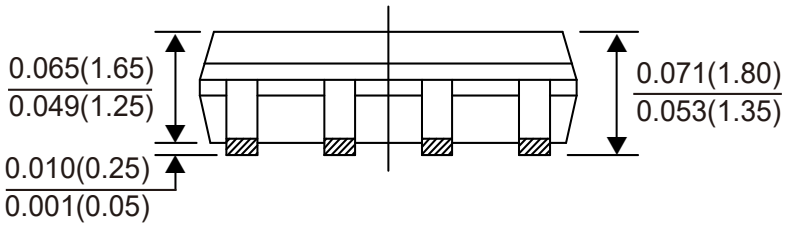


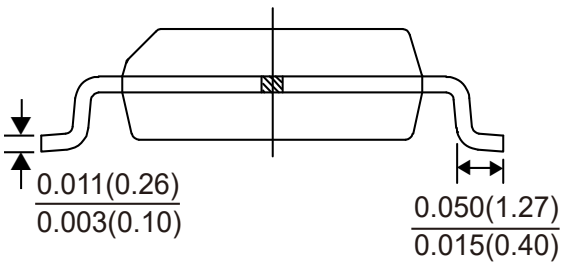
Fig.6 Switching Time Waveform



Package Outline Dimensions







SOP-8

Dimensions in inches and (millimeters)

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