



S8MNM025



100V N-Channel MOSFETs

General Description

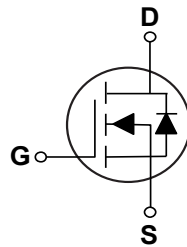
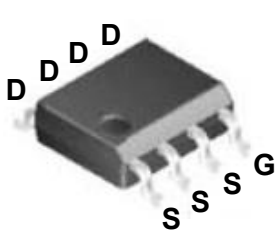
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV_{DSS}	$R_{DS(ON)}$	I_D
100 V	25 m Ω	30 A

Features

- $R_{DS(ON)} \leq 25m\Omega @ V_{GS}=10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

SOP-8 Pin Configuration



Applications

- Consumer Electronic Power Supply
- Motor Control
- Synchronous-Rectification
- Isolated DC

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous ($T_C=25^\circ\text{C}$)	30	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	90	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	57	mJ
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	71	W
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
Marking Code		NM025	

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.76	$^\circ\text{C/W}$

**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 =10A	---	---	25	mΩ
		V _{GS} =4.5V, I _D =7A	---	---	30	
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} =50V, V _{GS} =10V, I _D =5A	---	16.2	---	nC
Q _{gs}	Gate-Source Charge		---	2.8	---	
Q _{gd}	Gate-Drain Charge		---	4.1	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =50V, V _{GS} =10V, R _G =10Ω, I _D =5A	---	16.6	---	nS
T _r	Rise Time		---	3.8	---	
T _{d(off)}	Turn-Off Delay Time		---	75.5	---	
T _f	Fall Time		---	46	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, F=100kHz	---	1003.9	---	pF
C _{oss}	Output Capacitance		---	185.4	---	
C _{riss}	Reverse Transfer Capacitance		---	9.8	---	

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	---	30	---	A

NOTES :

1. Repetitive rating : pulsed width limited by maximum junction temperature.
2. V_{DD}=50V, L=0.3mH, R_G=25Ω, Starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.



Characteristics Curves

FIG. 1-Drain Current

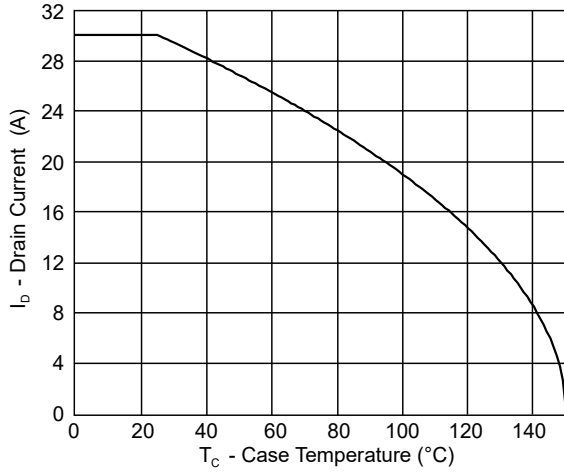


FIG. 2-Drain-Source Breakdown Voltage

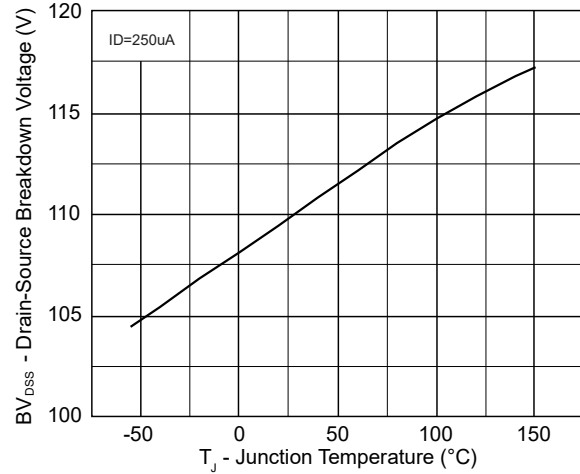


FIG. 3-Drain-Source On-State Resistance

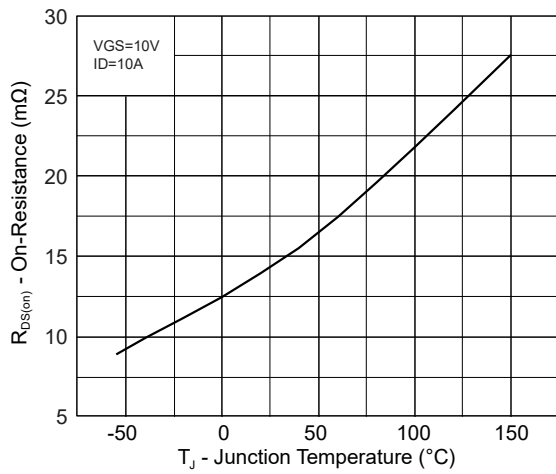


FIG. 4-Gate Charge

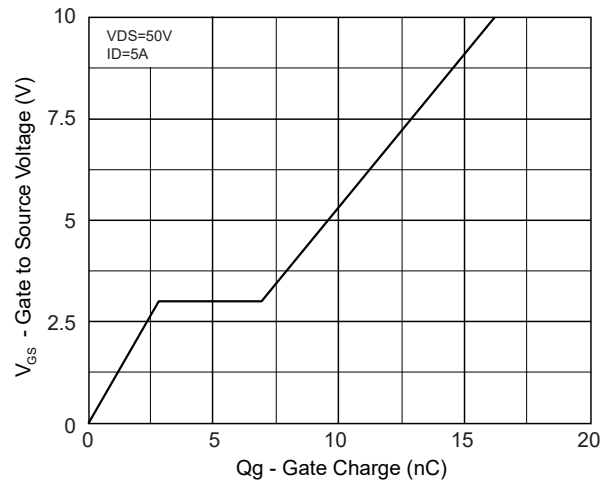
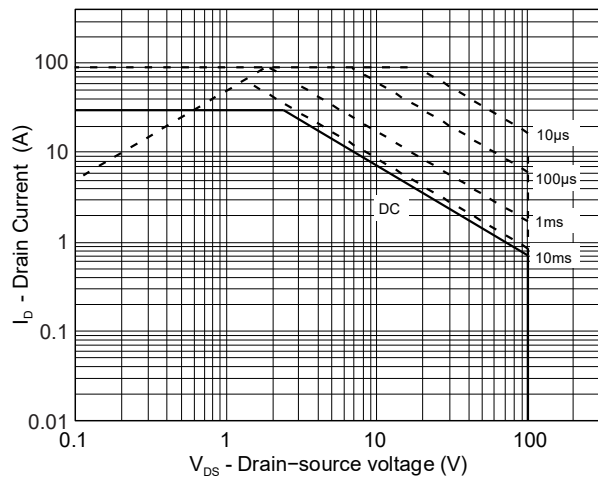


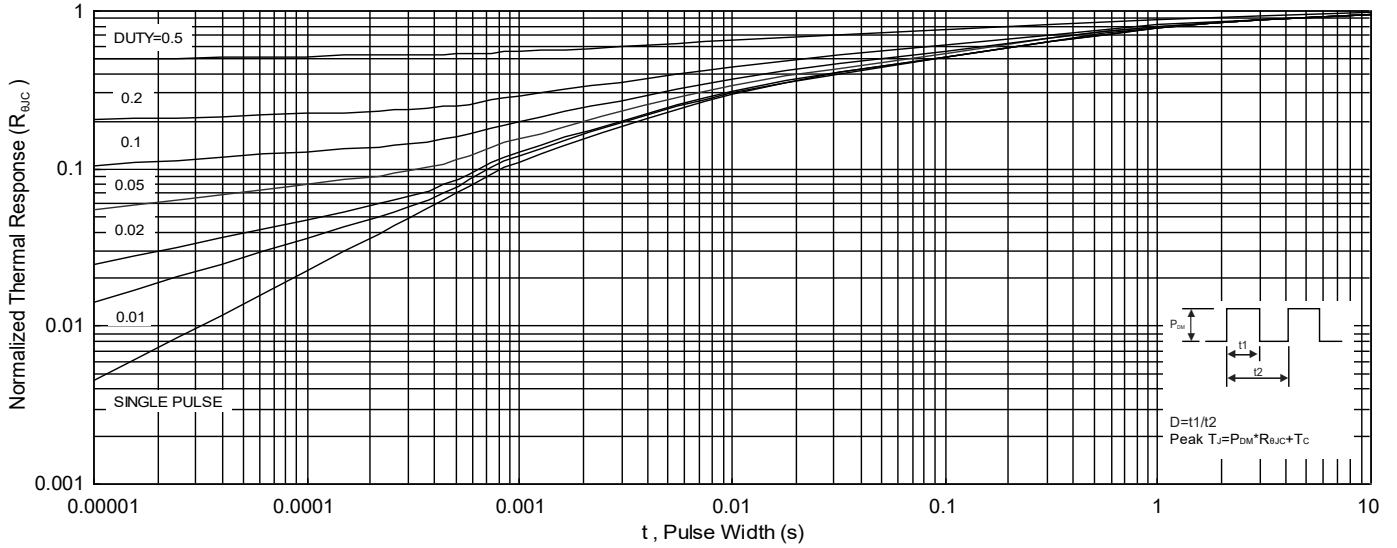
FIG. 5-Safe Operation Area



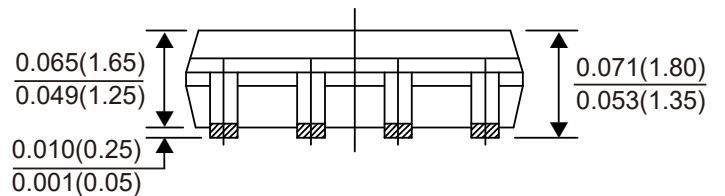
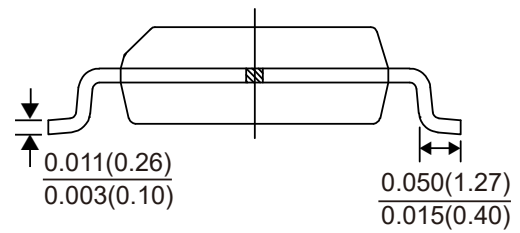
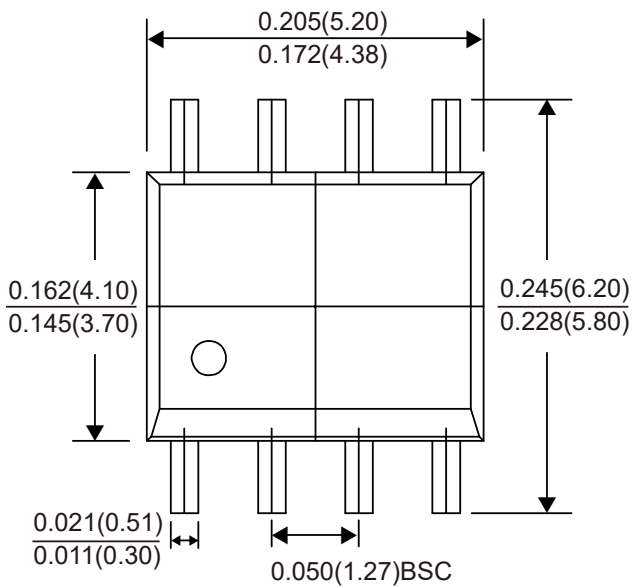


Characteristics Curves

FIG. 6-Normalized Maximum Transient Thermal Impedance



Package Outline Dimensions



SOP-8

Dimensions in inches and (millimeters)



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