S8MNM085

100V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
100 V	85 mΩ	4 A

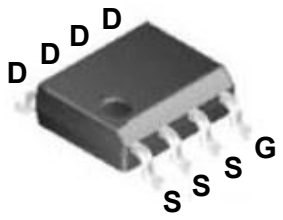
General Description

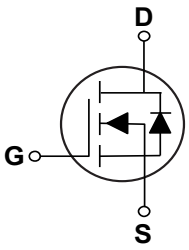
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

Features

- $R_{DS(ON)} \leqq 85m\Omega @ V_{GS}=10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

SOP-8 Pin Configuration





Applications

- Power Management Switches
- DC/DC Converters

Absolute Maximum Ratings T_C=25°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°C)	4	A
	Drain Current - Continuous (T_C=100°C)	2.5	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	16	A
P_D	Power Dissipation (T_C=25°C)	3.1	W
EAS	Single Pulse Avalanche Energy (NOTE 2)	3.2	mJ
T_J	Operating Junction Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		NM085	

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	40.3	°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	100	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=100V , V_{GS}=0V	---	---	10	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=4A	---	---	85	mΩ
		V_{GS}=4.5V , I_D=2A	---	---	110	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	1.0	2.0	3.0	V
gfs	Forward Transconductance	V_{DS}=5V , I_D=5A	---	15	---	S

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	---	12	---	nC
Q_{gs}	Gate-Source Charge		---	2.9	---	
Q_{gd}	Gate-Drain Charge		---	1.8	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=3Ω , I_D=5A	---	3.9	---	nS
T_r	Rise Time		---	26	---	
$T_{d(off)}$	Turn-Off Delay Time		---	16.2	---	
T_f	Fall Time		---	8.9	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	1233	---	pF
C_{oss}	Output Capacitance		---	32	---	
C_{rss}	Reverse Transfer Capacitance		---	26	---	
Rg	Gate resistance	V_{GS}=0V , V_{DS}=0V , F=1MHz	---	1.4	---	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	---	---	4	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A	---	---	1.2	V
t_{rr}	Reverse Recovery Time	V_R=50V , I_F=5A , dI/dt=100A/us	---	40	---	nS
Q_{rr}	Reverse Recovery Charge		---	43	---	nC

NOTES：

1. Repetitive rating：pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=8A.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Characteristics Curves

FIG. 1-Output Characteristics

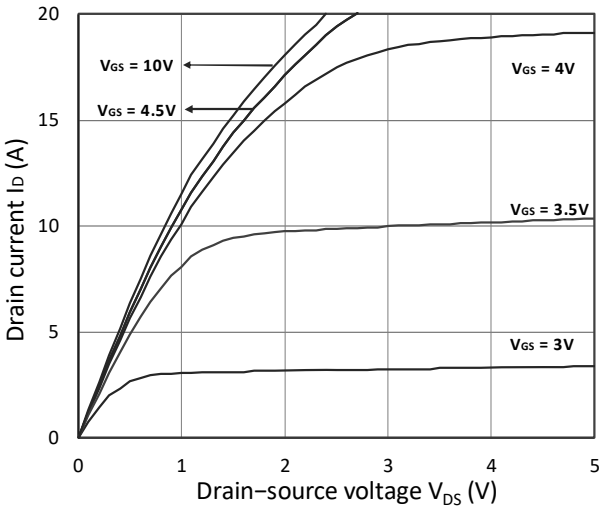


FIG. 2-$R_{DS(ON)}$ vs. I_D

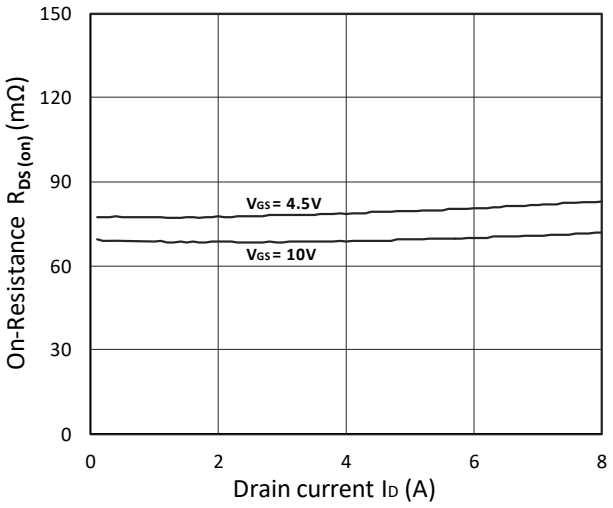


FIG. 3-Normalized $R_{DS(on)}$ vs. T_J

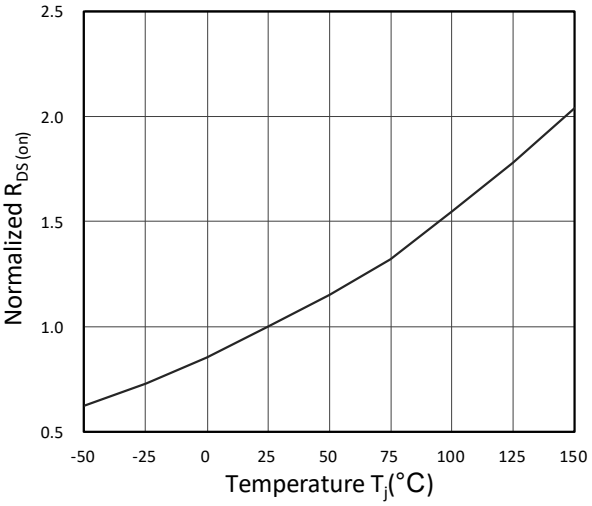


FIG. 4-Safe Operating Area

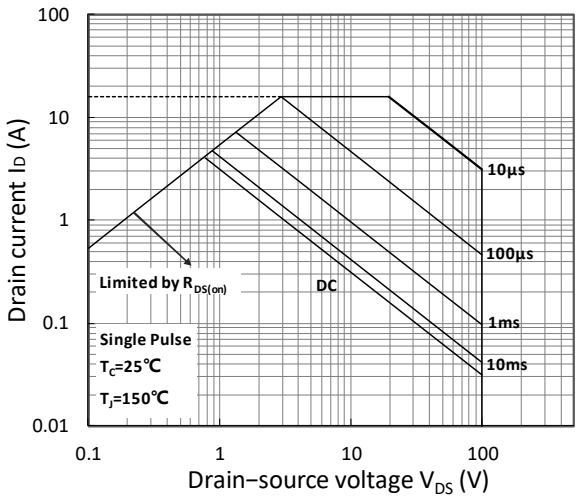
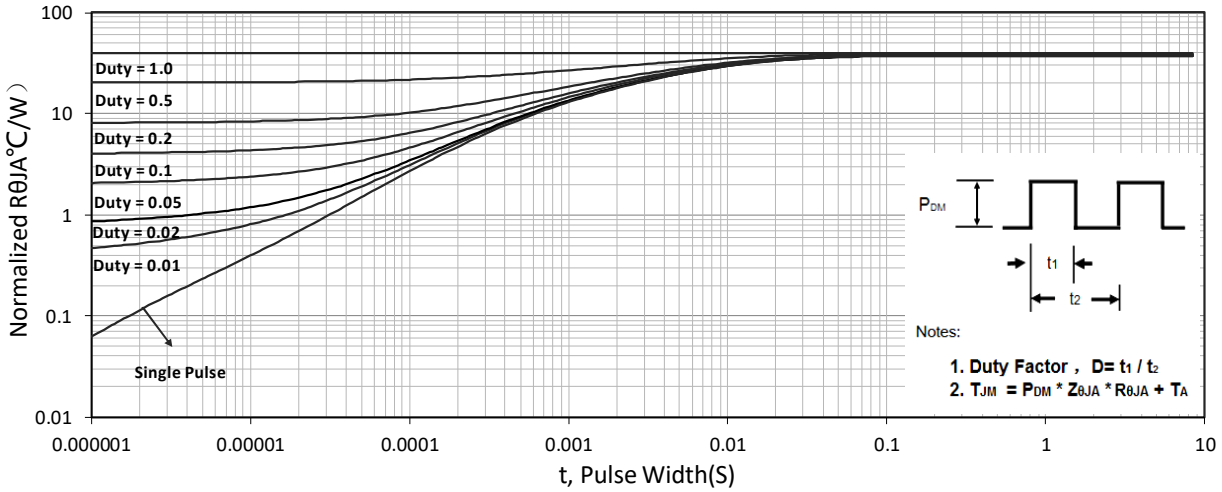
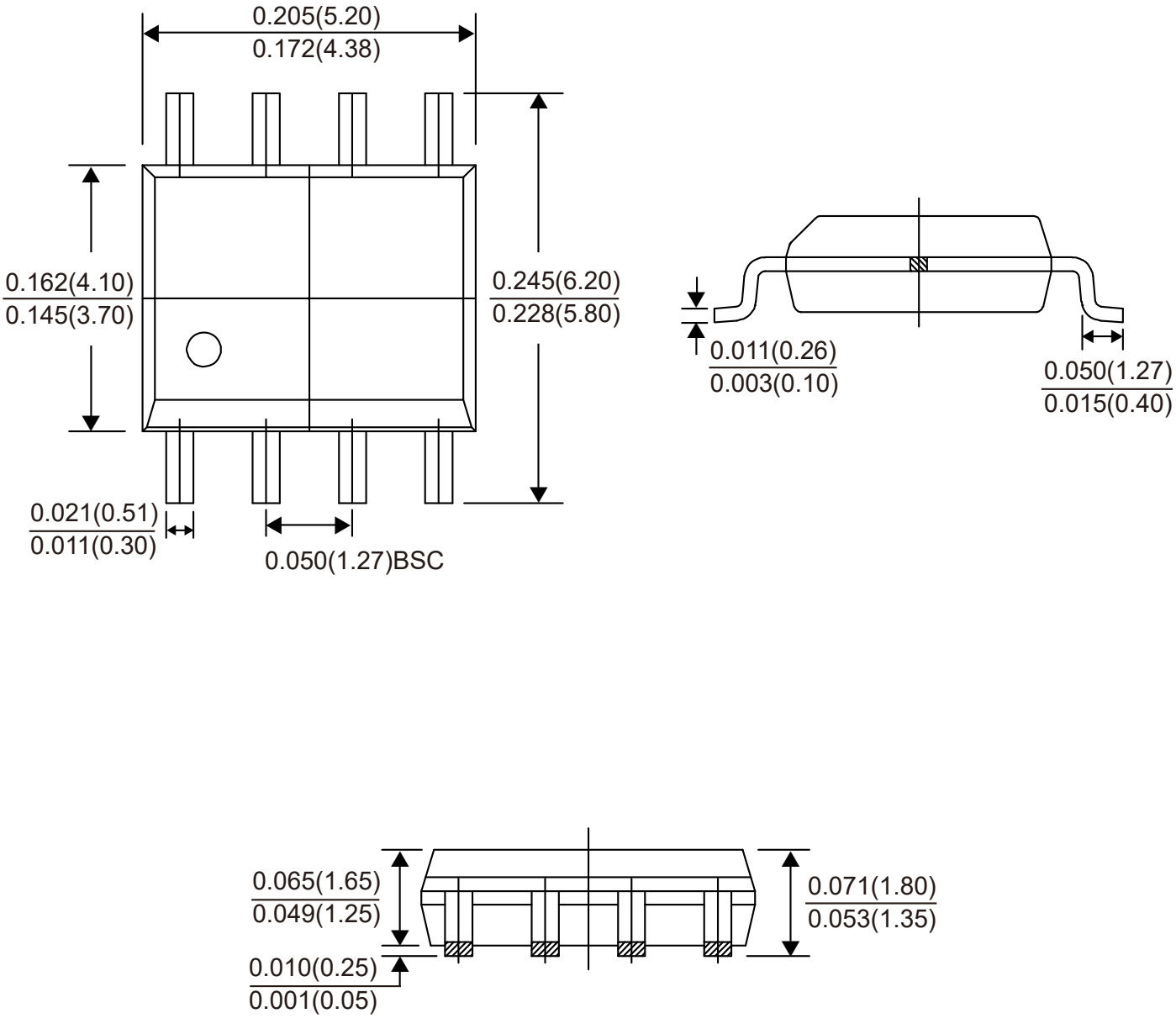


FIG. 5-Transient Thermal Impedance



Package Outline Dimensions



SOP-8

Dimensions in inches and (millimeters)

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