LFMNM2P3

100V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
100 V	2.3 mΩ (typ.)	282 A

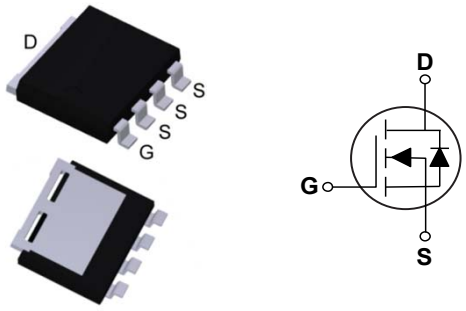
General Description

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.

Features

- $R_{DS(ON)}$=2.3mΩ (typ.)@V_{GS}=10V
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

LFPAK8080 Pin Configuration



Applications

- DC-DC Converters
- Body Control Electronics
- Engine Management Systems

Ordering Information

Part No.	Remark	Package
LFMNM2P3	Halogen Free	LFPAK8080
LFMNM2P3-A	Qualified to AEC-Q101 Standards for High Reliability	

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)	282	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	1128	A
E_{AS}	Single Pulse Avalanche Energy (NOTE 2)	1104.5	mJ
I_{AS}	Single Pulse Avalanche Current	47	A
P_D	Power Dissipation (T_C=25°C)	300	W
T_J	Operating Junction Temperature Range	-55 to 175	°C
T_{STG}	Storage Temperature Range	-55 to 175	°C
Marking Code		NM2P3	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	40	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	0.5	°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=1mA	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	V_{GS}=10V , I_D=25A	---	2.3	---	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	2.0	---	4.0	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DD}=50V , V_{GS}=10V , I_D=25A	---	117.12	---	nC
Q_{gs}	Gate-Source Charge		---	36	---	
Q_{gd}	Gate-Drain Charge		---	29.76	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=5Ω , I_D=25A	---	31.4	---	nS
T_r	Rise Time		---	58.4	---	
$T_{d(off)}$	Turn-Off Delay Time		---	77.8	---	
T_f	Fall Time		---	60.2	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , f=1MHz	---	7028	---	pF
C_{oss}	Output Capacitance		---	1105	---	
C_{rss}	Reverse Transfer Capacitance		---	42.91	---	
R_g	Gate Resistance	V_{GS}=0V , V_{DS}=0V , f=1MHz	---	0.92	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A	---	---	1.1	V

NOTES：

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. V_{DD}=80V, V_{GS}=10V, L=1mH, I_{AS}=47A.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

Characteristics Curves

FIG. 1-Continuous Drain Current vs. T_C

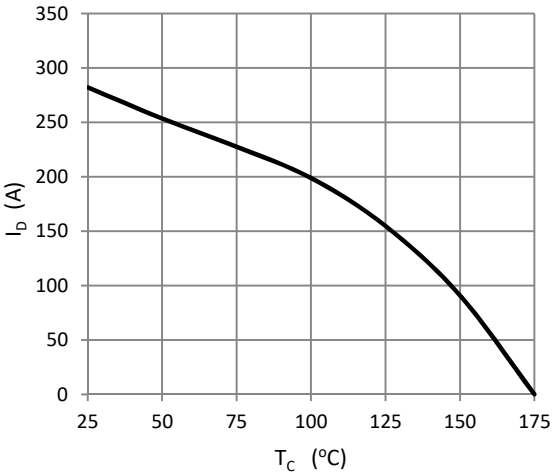


FIG. 2-Normalized $R_{DS(ON)}$ vs. T_J

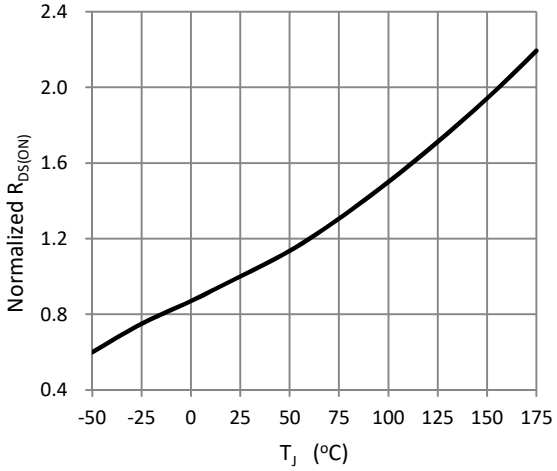


FIG. 3-V_{th} vs. T_J

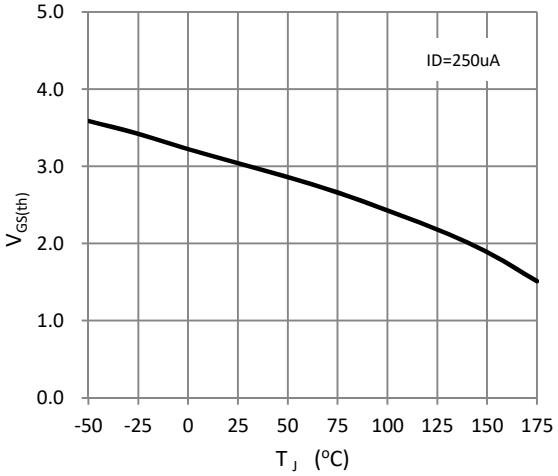


FIG. 4-Normalized $V_{GS(th)}$ vs. T_J

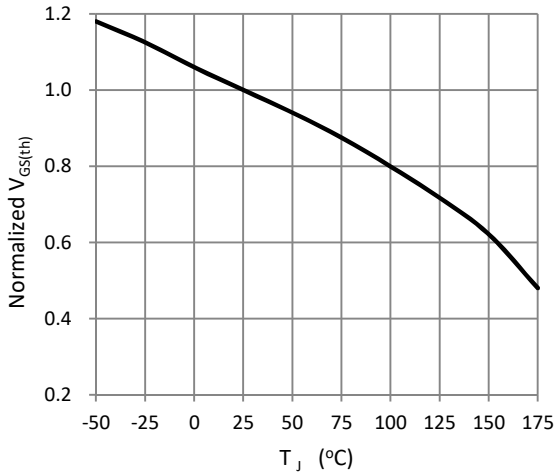


FIG. 5-$R_{DS(ON)}$ vs. V_{GS}

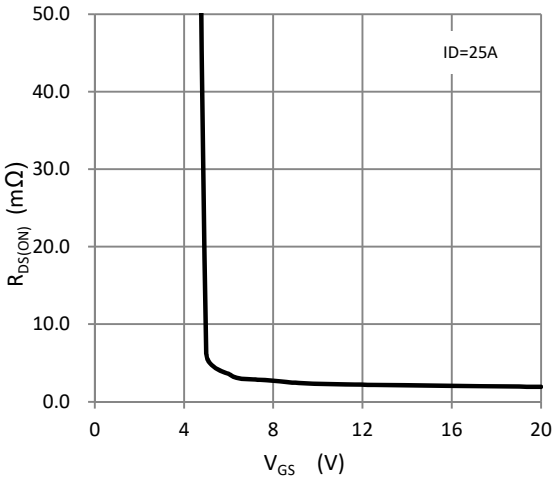
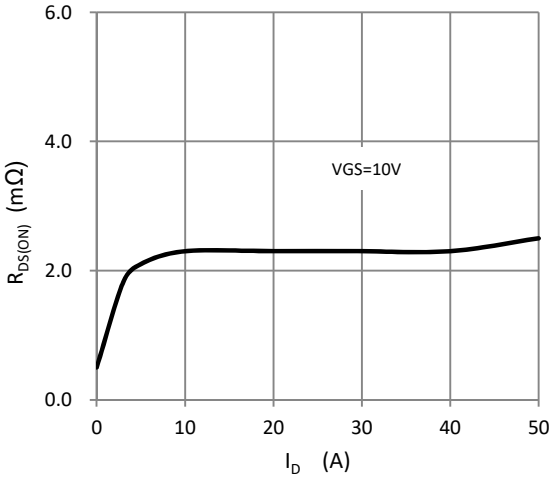


FIG. 6-$R_{DS(ON)}$ vs. I_D



Characteristics Curves

FIG. 7-Gate Charge Characteristics

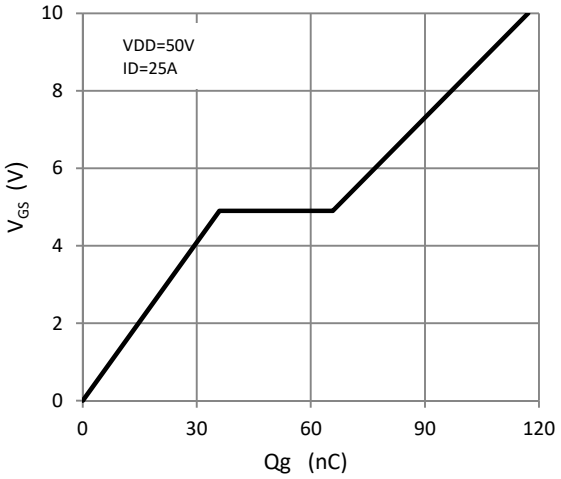


FIG. 8-I_S vs. V_{SD}

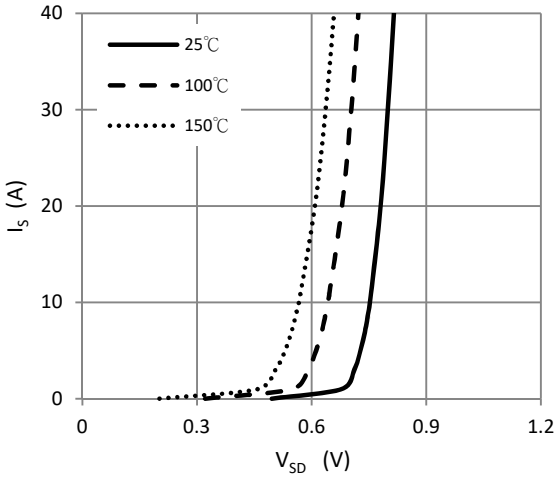


FIG. 9-Junction Capacitance

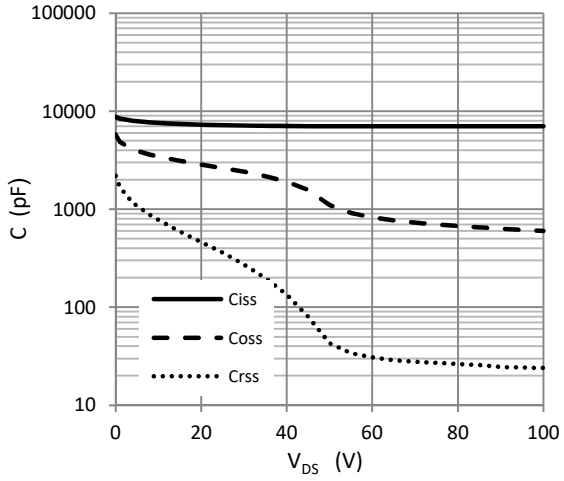
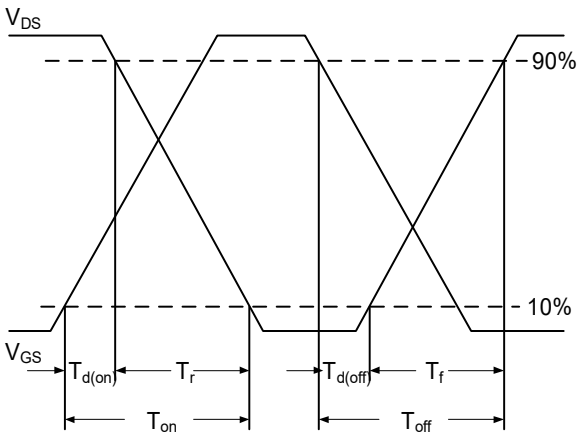
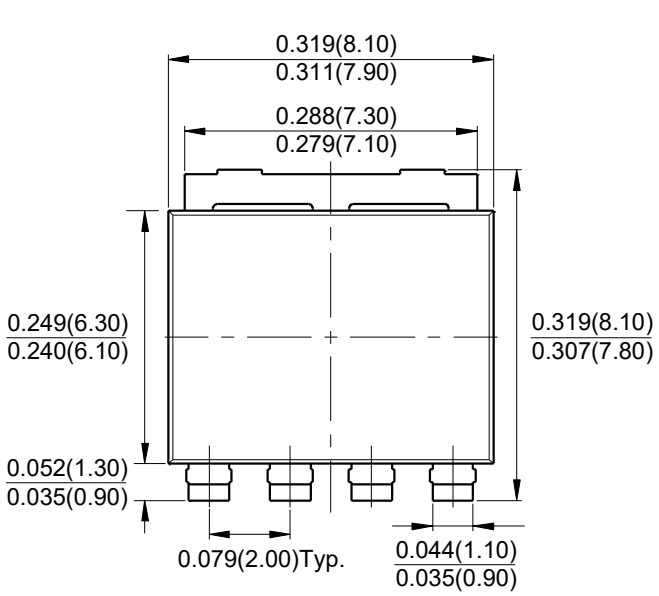
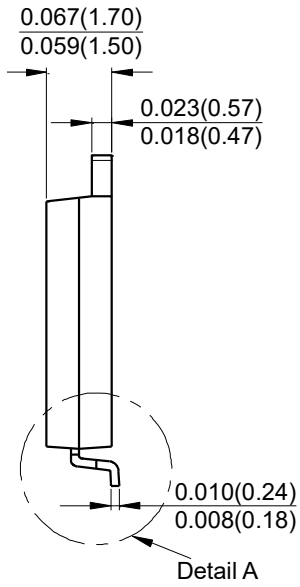


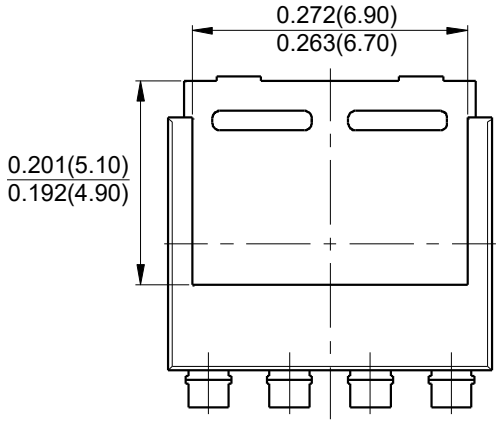
FIG. 10-Switching Time Waveform

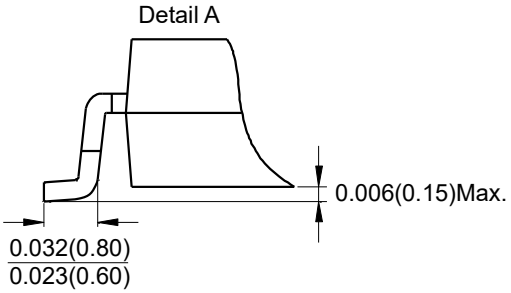


Package Outline Dimensions









LFPAK8080

Dimensions in inches and (millimeters)

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