LFMND0P7

40V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
40 V	0.7 mΩ	455 A

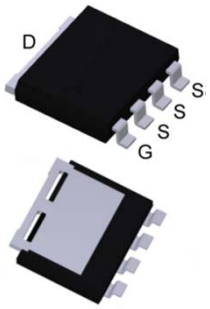
General Description

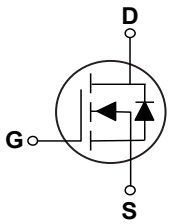
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

Features

- $R_{DS(ON)} \leqq 0.7m\Omega @ V_{GS}=10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

LFPAK8080 Pin Configuration





Applications

- DC-DC Converters
- Body Control Electronics
- LED Lighting

Ordering Information

Part No.	Remark	Package
LFMND0P7	Halogen Free	LFPAK8080
LFMND0P7-A	AEC-Q101 qualified (NOTE 1)	

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous (T_C=25°C)	455	A
I_{DM}	Drain Current - Pulsed (NOTE 2)	1835	A
E_{AS}	Single Pulse Avalanche Energy (L=0.1mH)	500	mJ
I_{AS}	Single Pulse Avalanche Current (L=0.1mH)	100	A
P_D	Power Dissipation (T_C=25°C)	417	W
T_J	Operating Junction Temperature Range	-55 to 175	°C
T_{STG}	Storage Temperature Range	-55 to 175	°C
Marking Code		ND0P7	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	28	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	0.36	°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	40	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=32V , 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	---	0.54	0.7	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}=20V , V_{GS}=10V , I_D=25A	---	116	---	nC
Q_{gs}	Gate-Source Charge		---	36.5	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=20V , V_{GS}=10V , R_G=5Ω , I_D=25A	---	28.6	---	nS
T_r	Rise Time		---	39.1	---	
$T_{d(off)}$	Turn-Off Delay Time		---	98.2	---	
T_f	Fall Time		---	48	---	
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , f=1MHz	---	9985	---	pF
C_{oss}	Output Capacitance		---	5746	---	
C_{rss}	Reverse Transfer Capacitance		---	109	---	
R_g	Gate Resistance	V_{GS}=0V , V_{DS}=0V , f=1MHz	---	1.9	---	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	---	---	1.2	V
T_{rr}	Body Diode Reverse Recovery Time	I_F=25A , di/dt=100A/us	---	116	---	nS
Q_{rr}	Body Diode Reverse Recovery Charge		---	338.1	---	nC

NOTES：

1. Qualified to AEC-Q101 standards for high reliability, but do not have all the necessary attributes of automotive grade products.
2. Repetitive Rating：Pulsed width limited by maximum junction temperature.
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

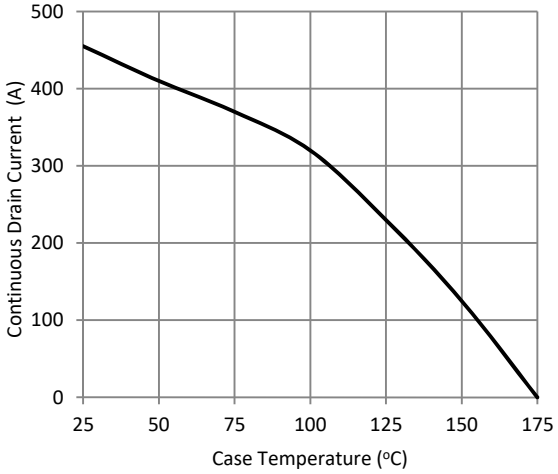


FIG. 2-Normalized $R_{DS(ON)}$ vs. T_J

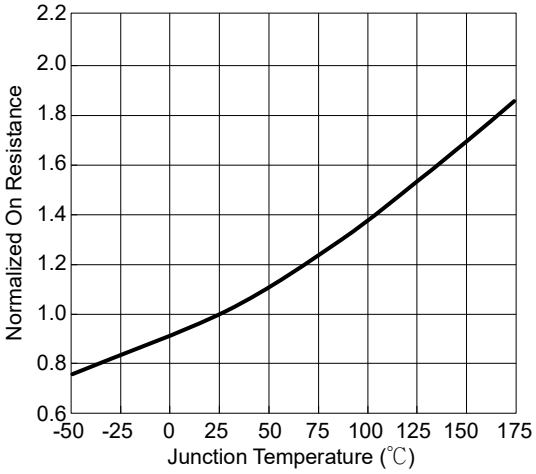


FIG. 3-V_{th} vs. T_J

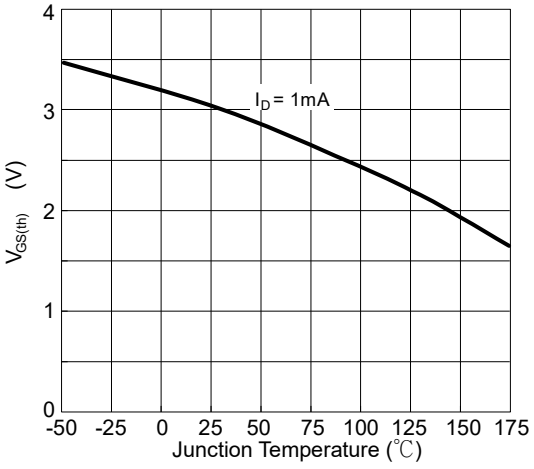


FIG. 4-Gate Charge Characteristics

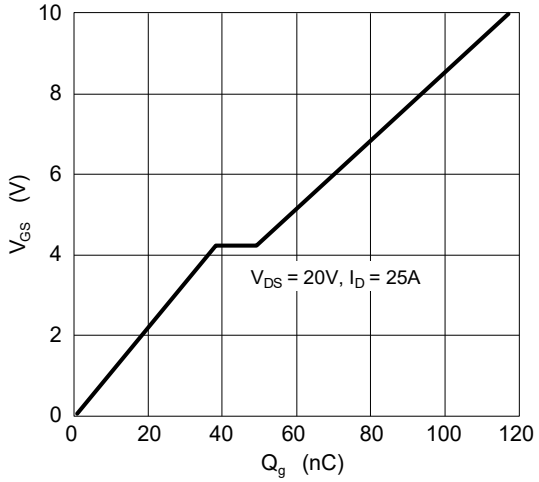


FIG. 5-Transient Thermal Resistance

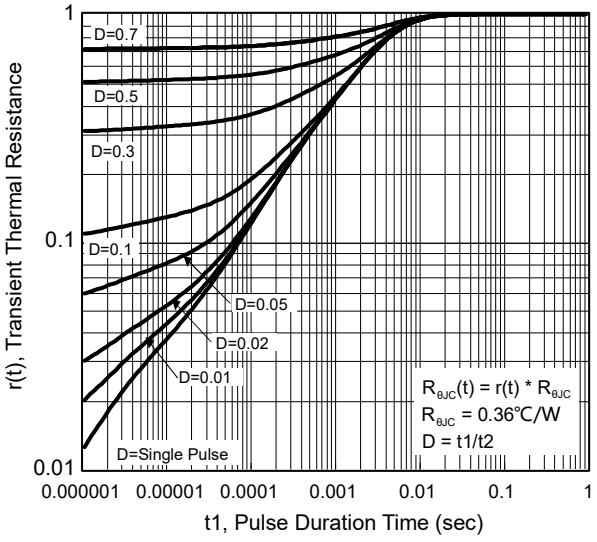
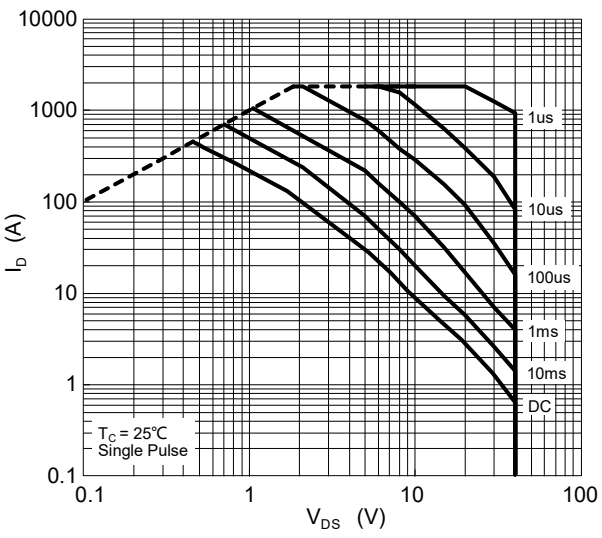
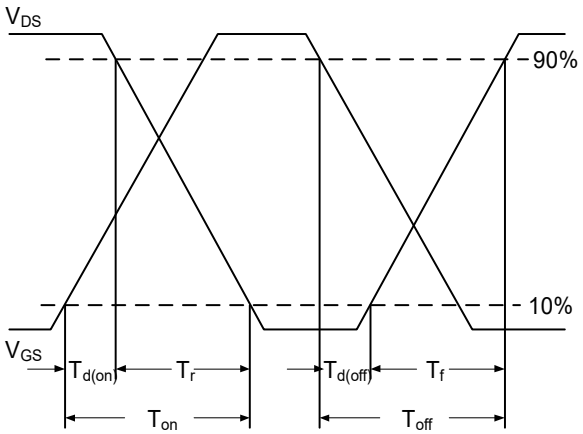


FIG. 6-Safe Operating Area

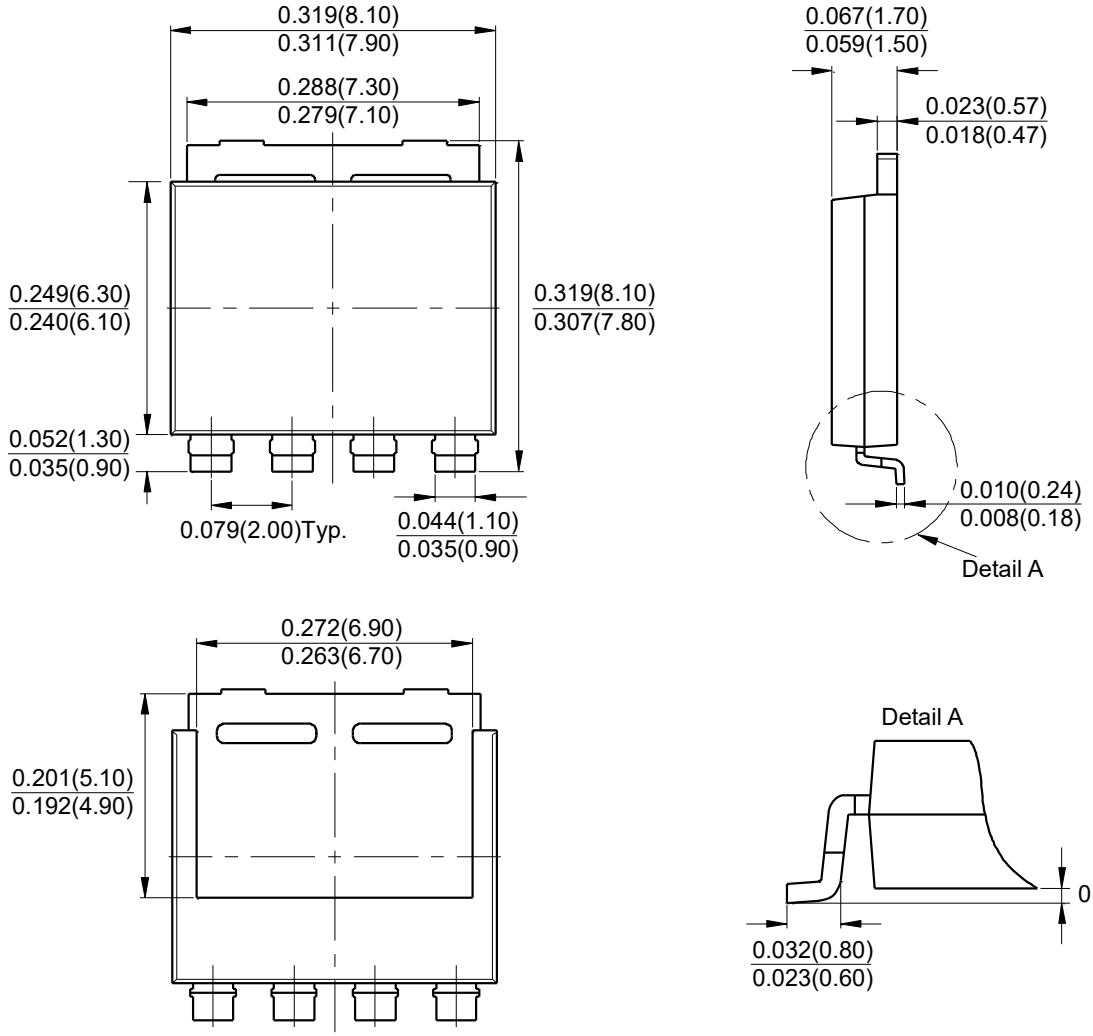


Characteristics Curves

FIG. 7-Switching Time Waveform



Package Outline Dimensions



LFPAK8080

Dimensions in inches and (millimeters)

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