Power MOSFETS

DATASHEET

LM60065NAQ8A

N-Channel

Enhancement Mode MOSFET

Leadpower-semiconductor Corp., Ltd

sales@leadpower-semi.com

(03) 6577339 FAX：(03) 6577229

www.leadpower-semi.com

Quality Management Systems

ISO 9001:2015 Certificate

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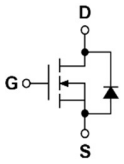
Pin Description

SOP-8L (TOP view)	Symbol
	

Ordering Information

Symbol	N-Channel	Unit
V_{DSS}	**60**	**V**
$R_{DS(ON)-Max}$	**6.5**	**mΩ**
I_D	**16**	**A**

Feature

- Fast switching speed
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested

Applications

- Secondary Side Synchronous Rectification.
- DC-DC Converter.
- Motor Control

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
LM60065NAQ8A	SOP-8L	Tape & Reel	3000 / Tape & Reel	60065 □□□□□□

Note：□□□□□□ = Lot Code

Absolute Maximum Ratings (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter		N-Channel	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_{DM}①	Pulse Drain Current Tested	T_A=25°C	40	A
I_D	Continuous Drain Current	T_A=25°C	16	A
		T_A=70°C	12.8	
P_D	Maximum Power Dissipation	T_A=25°C	1.7	W
		T_A=70°C	1.1	
I_{AS}②	Avalanche Current, Single pulse	L=0.1mH	21	A
		L=0.5mH	13	
E_{AS}②	Avalanche Energy, Single pulse	L=0.1mH	22	mJ
		L=0.5mH	42	

Thermal Characteristics

Symbol	Parameter		Rating	Unit
$R_{\theta JA}$③	Thermal Resistance-Junction to Ambient	t≦10s	40	°C/W
		Steady State	75	°C/W

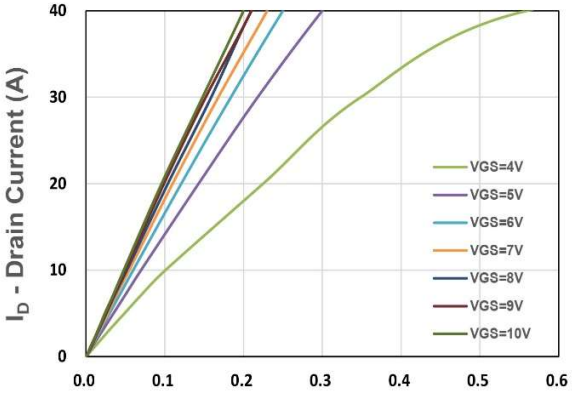
Note ①：Max. current is limited by junction temperature
Note ②：UIS tested and pulse width are limited by maximum junction temperature 150°C
Note ③：Surface Mounted on 1in² FR-4 board with 1oz.

N-Channel Electrical Characteristics (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250uA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=48V, V_{GS}=0V	-	-	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250uA	1	2	3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$④	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=20A	-	5.5	6.5	mΩ
		V_{GS}=4.5V, I_{DS}=10A	-	8.5	11	
gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=20A	-	31	-	S
Dynamic Characteristics ⑤						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V, Freq.=1MHz	-	1.6	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Freq.=1MHz	-	2083	-	pF
C_{oss}	Output Capacitance		-	793	-	
C_{rss}	Reverse Transfer Capacitance		-	16.5	-	
$td_{(ON)}$	Turn-on Delay Time	V_{GS}=10V,V_{DS}=30V, I_D=1A,R_{GEN}=3Ω	-	9.5	-	nS
t_r	Turn-on Rise Time		-	26	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	29	-	
t_f	Turn-off Fall Time		-	19.6	-	
Q_g	Total Gate Charge	V_{GS}=4.5V,V_{DS}=30V I_D=20A	-	19.8	-	nC
Q_g	Total Gate Charge	V_{GS}=10V,V_{DS}=30V, I_D=20A	-	37.4	-	
Qgs	Gate-Source Charge		-	6.5	-	
Qgd	Gate-Drain Charge		-	10	-	
Source-Drain Characteristics						
V_{SD}④	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V	-	0.8	1.1	V
t_{rr}	Reverse Recovery Time	I_F=20A, V_R=30V dI$_F$/dt=100A/μs	-	40	-	nS
Q_{rr}	Reverse Recovery Charge		-	48.	-	nC

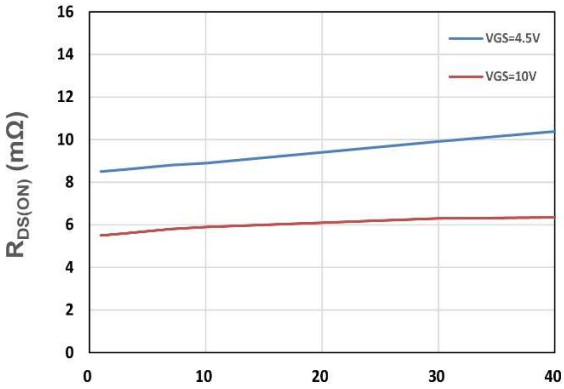
Note ④：Pulse test (pulse width≤300us, duty cycle≤2%).
Note ⑤：Guaranteed by design, not subject to production testing.

N-Channel Typical Characteristics



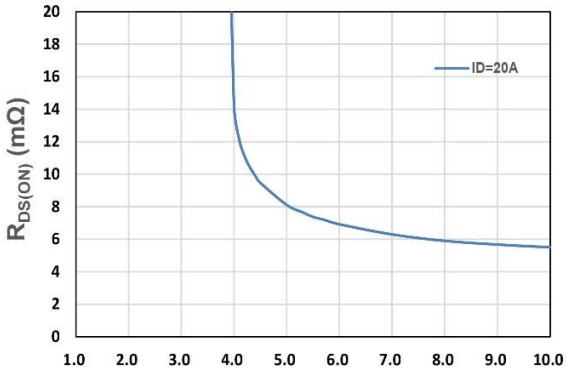
V_{DS} - Drain - Source Voltage (V)

Figure 1. Output Characteristics



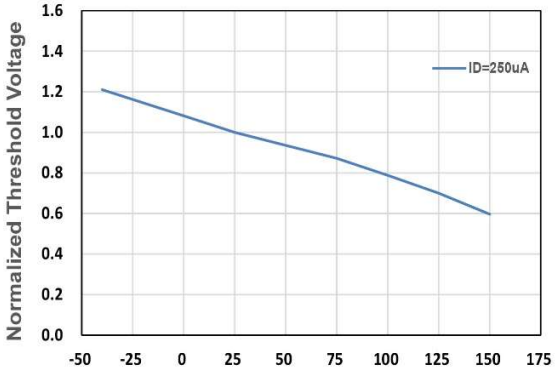
I_D- Drain Current (A)

Figure 2. On-Resistance vs. ID



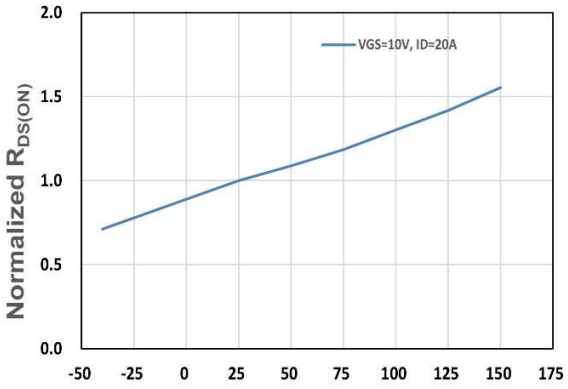
V_{GS} - Gate - Source Voltage (V)

Figure 3. On-Resistance vs. VGS



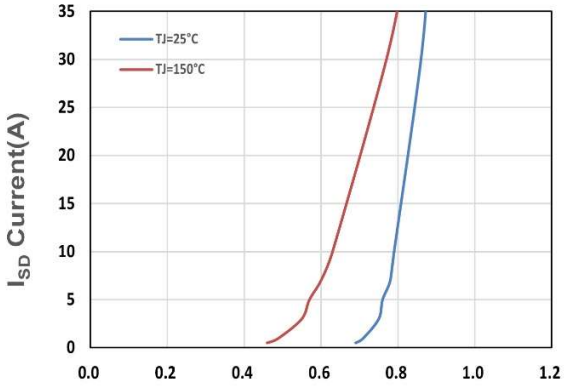
Tj, Junction Temperature(°C)

Figure 4. Gate Threshold Voltage



Tj , Junction Temperature(°C)

Figure 5. Drain-Source On Resistance



V_{SD}, Source-Drain Voltage(V)

Figure 6. Source-Drain Diode Forward

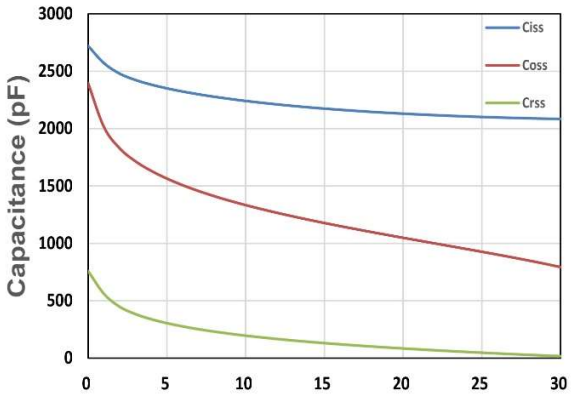


Figure 7. Capacitance

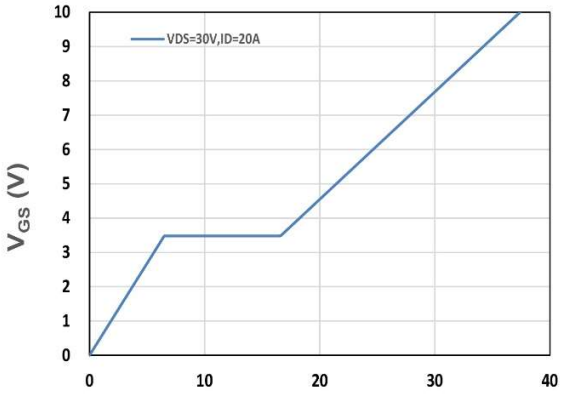


Figure 8. Gate Charge Characteristics

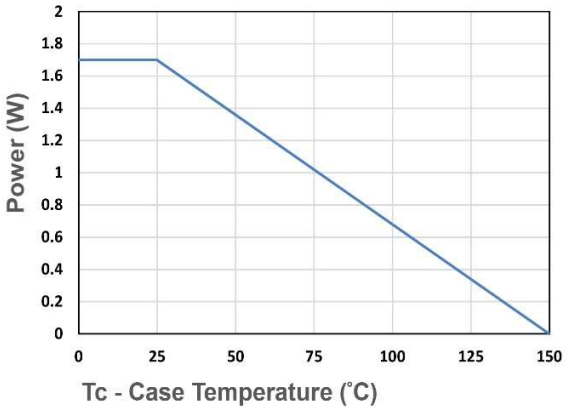


Figure 9. Power Dissipation

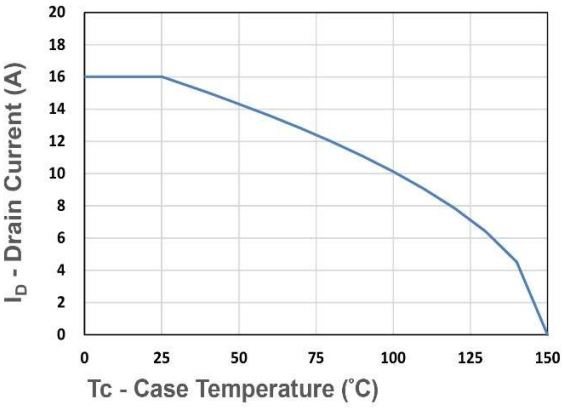


Figure 10. Drain Current

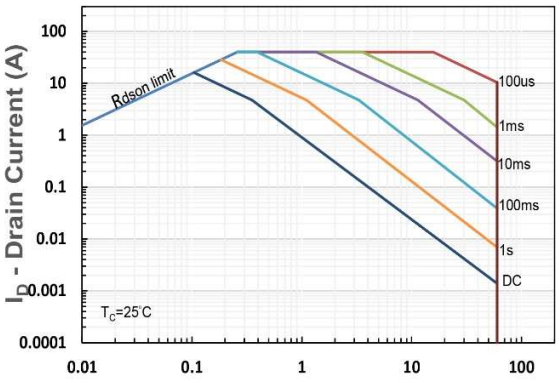


Figure 11. Safe Operating Area

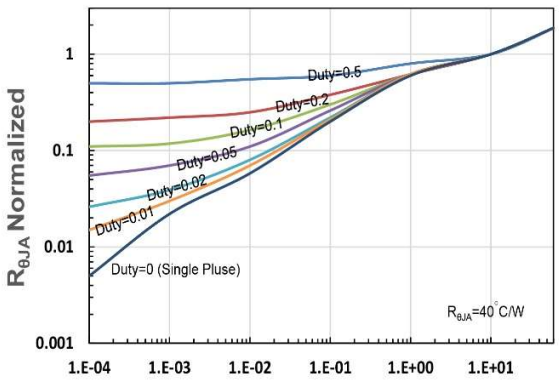


Figure 12. RθJA Transient Thermal Impedance