



Power MOSFETS

DATASHEET

LM1A029NAM8A

N-Channel
Enhancement Mode MOSFET



Leadpower-semi CO., LTD.



sales@leadpower-semi.com



(03) 6577339 FAX : (03) 6577229



www.leadpower-semi.com

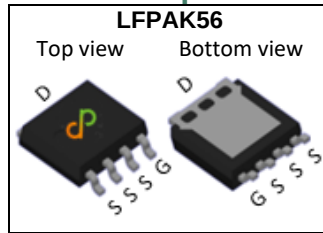


Quality Management Systems

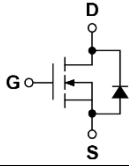
ISO 9001:2015 Certificate

N-Channel Enhancement Mode MOSFET

Pin Description



Symbol



Product Summary

Symbol	N-Channel	Unit
V_{DS}	100	V
$R_{DS(ON)-Max}$	2.9	mΩ
I_D	182	A

Feature

- Fast switching speed
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested
- Moisture Sensitivity Level MSL1

Applications

- DC-to-DC converters
- Switch mode power supply
- Brushless DC motor control

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
LM1A029NAM8A	LPAK56	Tape & Reel	4000 / Tape & Reel	1A029 □□□□□□

Note : □□□□□□ = Lot Code

Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 51	A
I_{SP}	Diode Pulse Current	$T_C=25^\circ\text{C}$ 127	A
$I_{DM}^{①}$	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 454	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$ 182 $T_C=100^\circ\text{C}$ 128	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 188 $T_C=100^\circ\text{C}$ 94	W
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$ 27 $T_A=70^\circ\text{C}$ 23	A
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 4.3 $T_A=70^\circ\text{C}$ 3.0	W
$I_{AS}^{②}$	Avalanche Current, Single pulse	$L=0.1\text{mH}$ 65 $L=0.5\text{mH}$ 35	A
$E_{AS}^{②}$	Avalanche Energy, Single pulse	$L=0.1\text{mH}$ 213 $L=0.5\text{mH}$ 302	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	0.8
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	Steady State	35

Note ① : Max. current is limited by junction temperature

Note ② : UIS tested and pulse width are limited by maximum junction temperature 175°C

Note ③ : Surface Mounted on 1in^2 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	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =80V, V _{GS} =0V	-	-	1	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250uA	1.3	2	2.7	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} =50A	-	2.4	2.9	mΩ
		V _{GS} =4.5V, I _{DS} =30A	-	3.7	5.8	
gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =10A	-	42	-	S
Dynamic Characteristics [®]						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, Freq.=1MHz	-	0.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Freq.=1MHz	-	6171	-	pF
C _{oss}	Output Capacitance		-	1673	-	
C _{rss}	Reverse Transfer Capacitance		-	56	-	
td(ON)	Turn-on Delay Time	V _{GS} =10V, V _{DS} =50V, I _D =1A, R _{GEN} =1Ω	-	19	-	nS
t _r	Turn-on Rise Time		-	11	-	
t _{d(OFF)}	Turn-off Delay Time		-	70	-	
t _f	Turn-off Fall Time		-	242	-	
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =50V, I _D =50A	-	57	-	nC
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =50A	-	110	-	
Q _{gs}	Gate-Source Charge		-	24	-	
Q _{gd}	Gate-Drain Charge		-	25	-	
Source-Drain Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =10A, V _{GS} =0V	-	0.73	1.1	V
t _{rr}	Reverse Recovery Time	I _F =25A, V _R =50V	-	68	-	nS
Q _{rr}	Reverse Recovery Charge	dl _F /dt=100A/μs	-	126	-	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

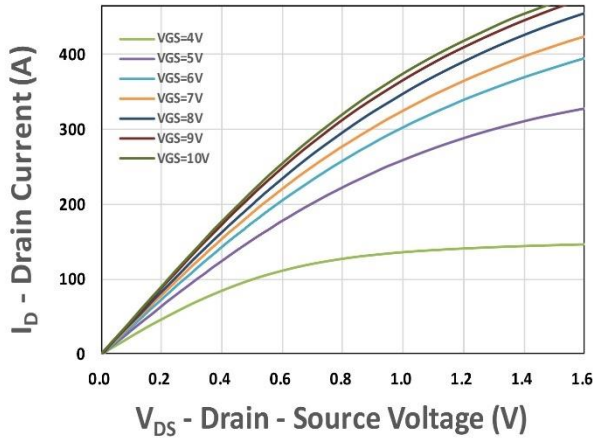


Figure 1. Output Characteristics

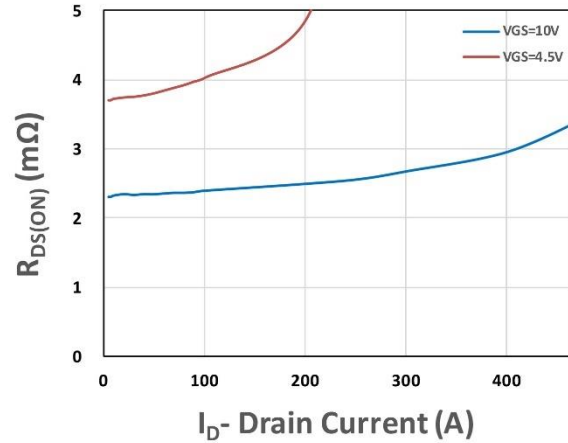


Figure 2. On-Resistance vs. ID

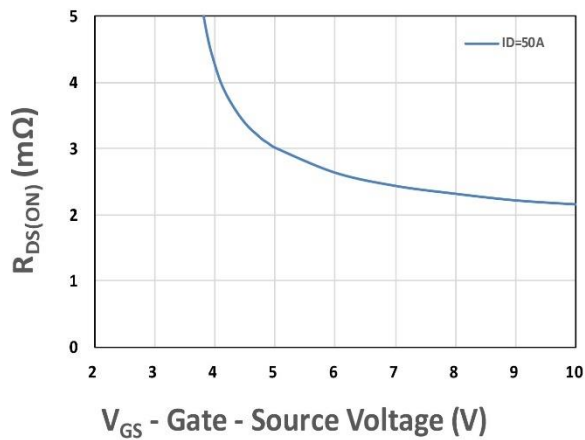


Figure 3. On-Resistance vs. VGS

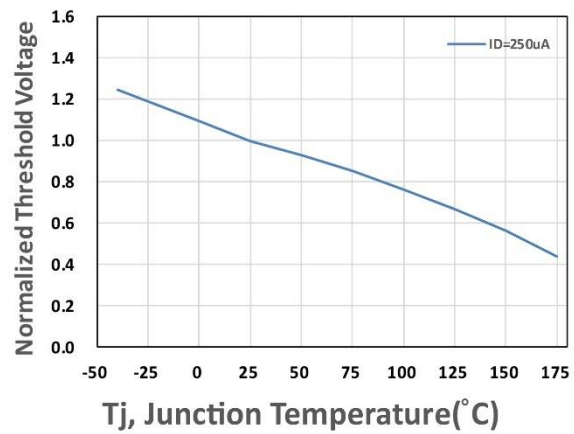


Figure 4. Gate Threshold Voltage

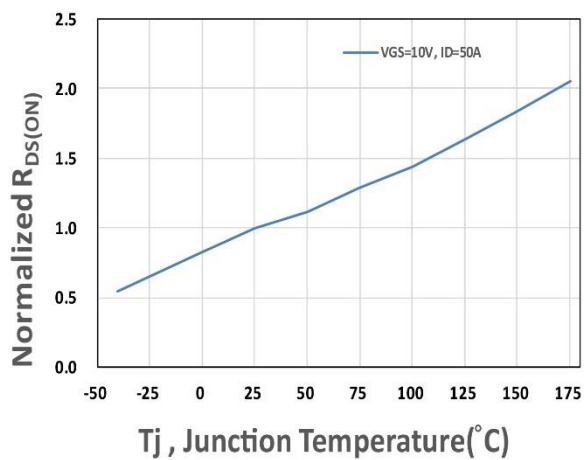


Figure 5. Drain-Source On Resistance

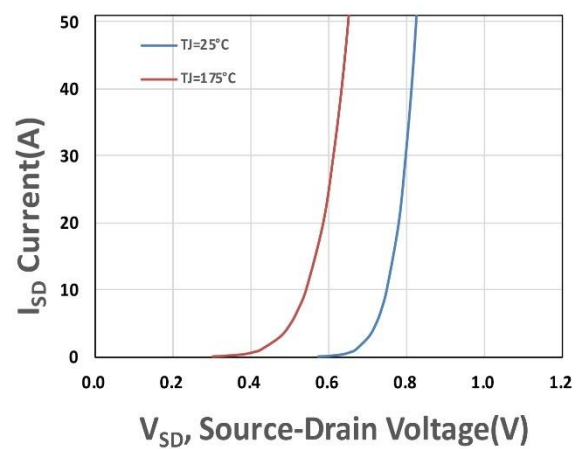


Figure 6. Source-Drain Diode Forward

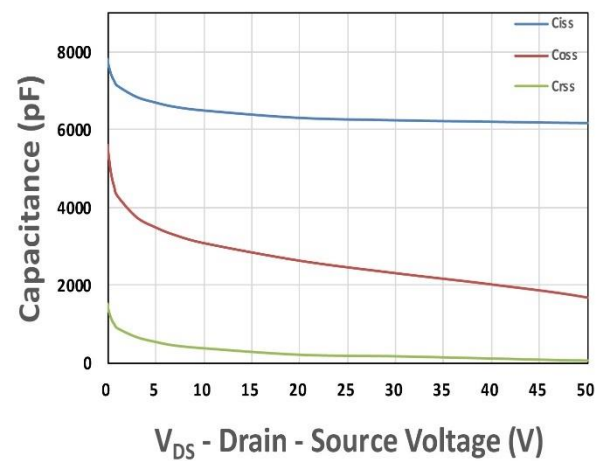


Figure 7. Capacitance

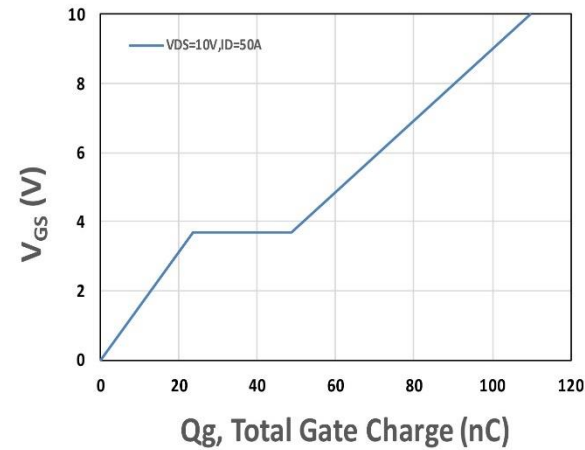


Figure 8. Gate Charge Characteristics

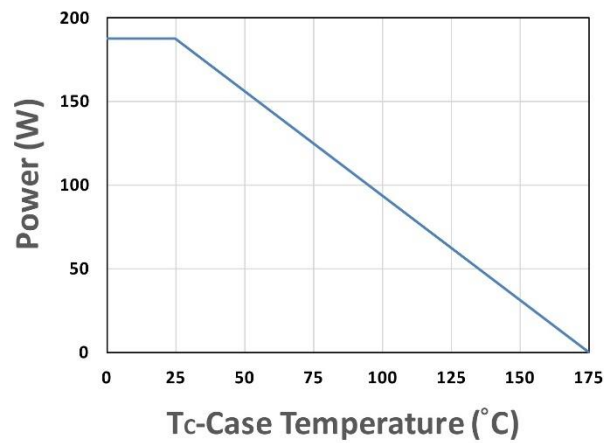


Figure 9. Power Dissipation

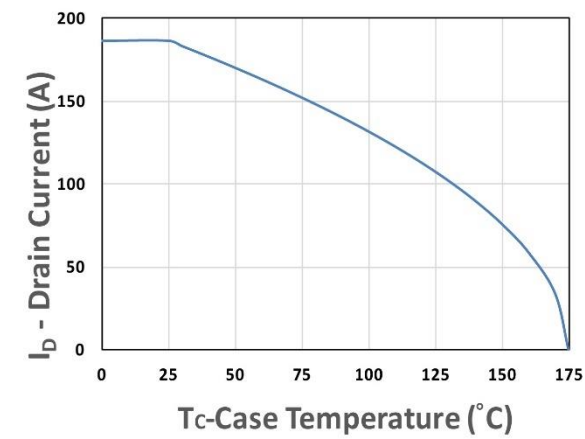


Figure 10. Drain Current

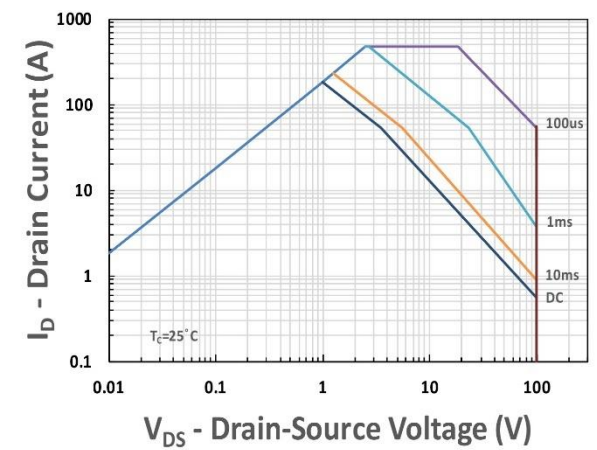


Figure 11. Safe Operating Area

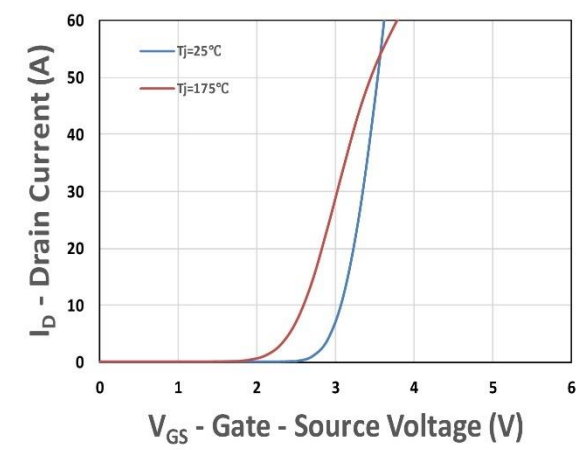


Figure 12. Transfer Characteristics

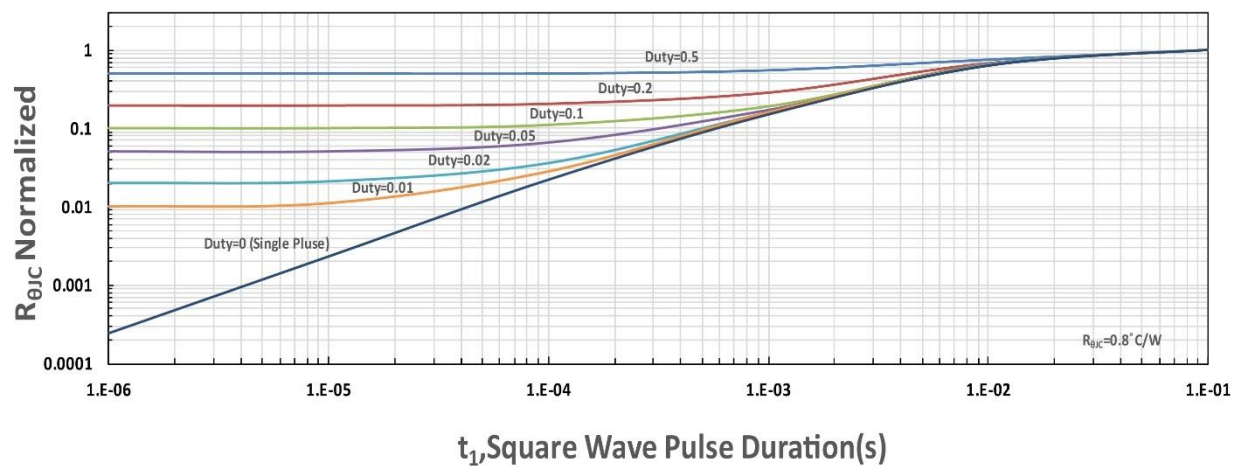


Figure 13. $R_{\theta JC}$ Transient Thermal Impedance