




Power MOSFETS

DATASHEET

LM30026NAK8A

N-Channel
Enhancement Mode MOSFET

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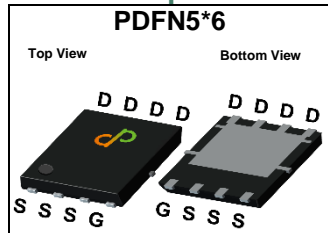


Quality Management Systems

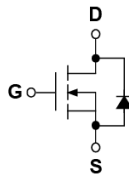
ISO 9001:2015 Certificate

N-Channel Enhancement Mode MOSFET

Pin Description



Symbol



Product Summary

Symbol	N-Channel	Unit
V_{DSS}	30	V
$R_{DS(ON)-Max}$	3.4	m Ω
ID	226	A

Feature

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

Applications

- DC/DC converter

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
LM30026NAK8A	PDFN5*6	Tape & Reel	5000 / Tape & Reel	30026 □□□□□□

Note: □□□□□□ = Lot code

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

Symbol	Parameter	N-Channel	Unit	
V_{DSS}	Drain-Source Voltage	30	V	
V_{GSS}	Gate-Source Voltage	±20		
T_J	Maximum Junction Temperature	150	°C	
T_{STG}	Storage Temperature Range	-55 to 150	°C	
I_S	Diode Continuous Forward Current	$T_C=25^\circ C$	29	A
$I_{DM}^{(1)}$	Pulse Drain Current Tested	$T_C=25^\circ C$	226	A
I_D	Continuous Drain Current	$T_C=25^\circ C$	71	A
		$T_C=100^\circ C$	57	
P_D	Maximum Power Dissipation	$T_C=25^\circ C$	42	W
		$T_C=100^\circ C$	17	
$I_D^{(2)}$	Continuous Drain Current	$T_A=25^\circ C$	22	A
		$T_A=70^\circ C$	18	
$P_D^{(2)}$	Maximum Power Dissipation	$T_A=25^\circ C$	2.5	W
		$T_A=70^\circ C$	1.6	
$I_{AS}^{(3)}$	Avalanche Current, Single pulse	L=0.1mH	19	A
		L=0.5mH	9	
$E_{AS}^{(3)}$	Avalanche Energy, Single pulse	L=0.1mH	18	mJ
		L=0.5mH	20	

Thermal Characteristics

Symbol	Parameter	Rating	Unit	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	3	°C/W
$R_{\theta JA}^{(2)}$	Thermal Resistance-Junction to Ambient	Steady State	50	°C/W

Note ① : Max. current is limited by bonding limit

Note ② : Surface Mounted on 1in² FR-4 board with 1oz.

Note ③ : UIS tested and pulse width are limited by maximum junction temperature 150°C.

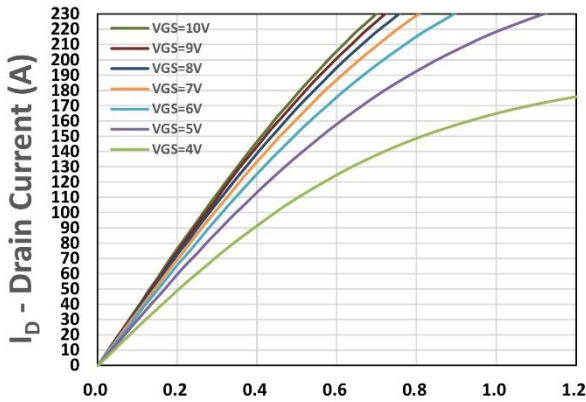
N-Channel Electrical Characteristics (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250uA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V	-	-	1	uA
V_{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250uA	1.1	1.6	2.1	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} =25A	-	2.6	3.4	mΩ
		V _{GS} =4.5V, I _{DS} =15A	-	3.8	5.0	
g_{fs}	Forward Transconductance	V _{DS} =5V, I _{DS} =50A	-	33	-	S
Dynamic Characteristics [®]						
R_G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, Freq.=1MHz	-	1	-	Ω
C_{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Freq.=1MHz	-	1518	-	pF
C_{oss}	Output Capacitance		-	1067	-	
C_{rss}	Reverse Transfer Capacitance		-	59	-	
t_{d(ON)}	Turn-on Delay Time	V _{GS} =10V, V _{DS} =15V, I _D =1A, R _{GEN} =1Ω	-	8	-	nS
t_r	Turn-on Rise Time		-	12	-	
t_{d(OFF)}	Turn-off Delay Time		-	23	-	
t_f	Turn-off Fall Time		-	91	-	
Q_g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =15V, I _D =25A	-	10	-	nC
Q_g	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =25A	-	22	-	
Q_{gs}	Gate-Source Charge		-	4	-	
Q_{gd}	Gate-Drain Charge		-	2	-	
Source-Drain Characteristics						
V_{SD} ^④	Diode Forward Voltage	I _{SD} =10A, V _{GS} =0V	-	0.7	1.1	V
t_{rr}	Reverse Recovery Time	I _F =12.5A, V _R =20V	-	35	-	nS
Q_{rr}	Reverse Recovery Charge	dI _F /dt=100A/μs	-	24	-	nC

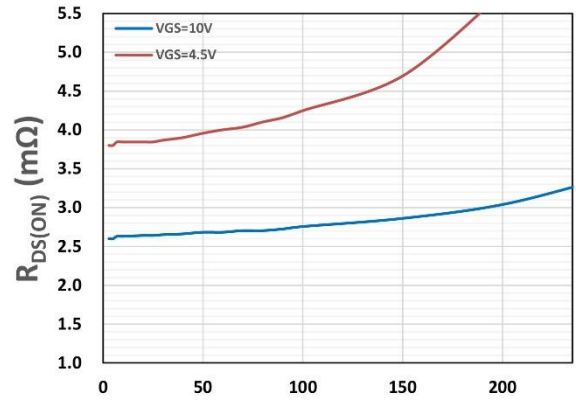
Note ④ : Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤ : Guaranteed by design, not subject to production testing.

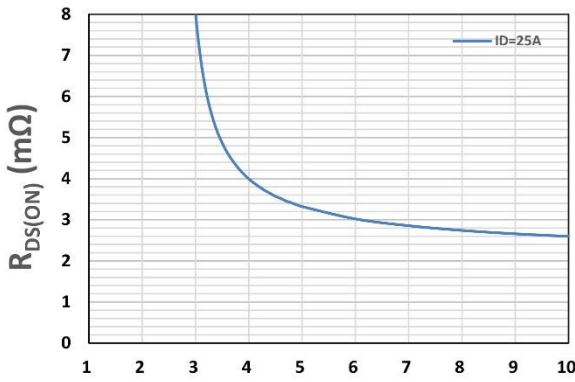
N-Channel Typical Characteristics



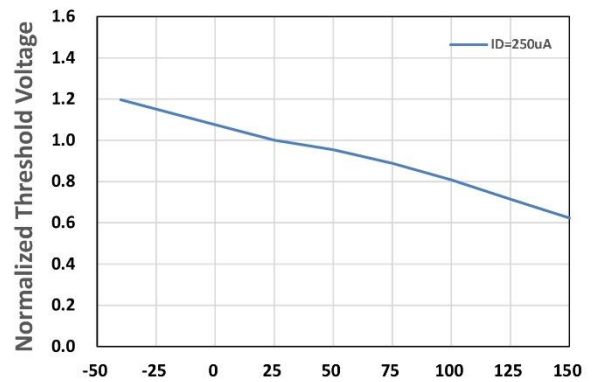
V_{DS} - Drain - Source Voltage (V)
Figure 1. Output Characteristics



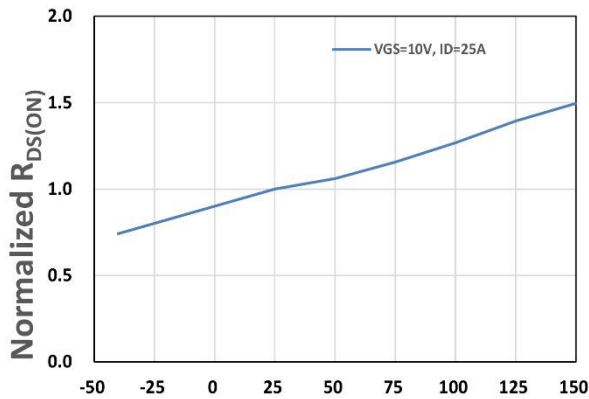
I_D - Drain Current (A)
Figure 2. On-Resistance vs. I_D



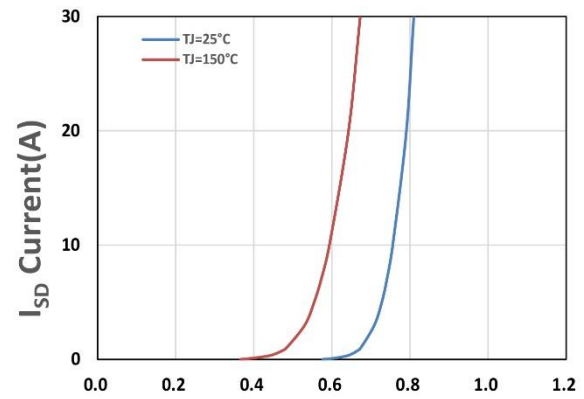
V_{GS} - Gate - Source Voltage (V)
Figure 3. On-Resistance vs. V_{GS}



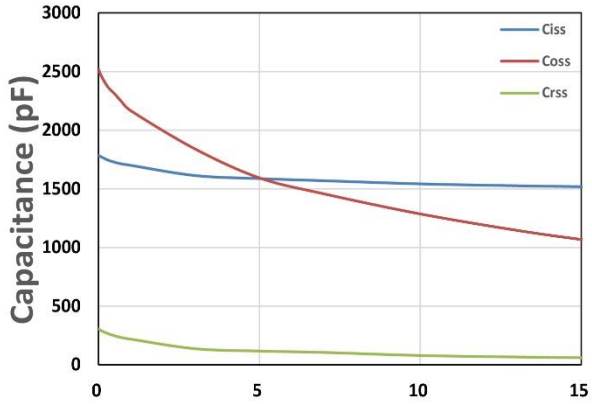
T_j , Junction Temperature ($^{\circ}C$)
Figure 4. Gate Threshold Voltage



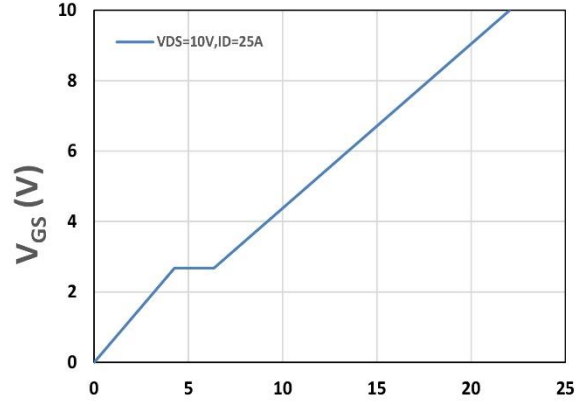
T_j , Junction Temperature ($^{\circ}C$)
Figure 5. Drain-Source On Resistance



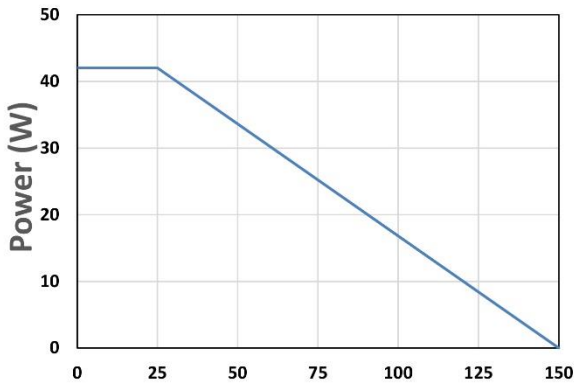
V_{SD} , Source-Drain Voltage (V)
Figure 6. Source-Drain Diode Forward



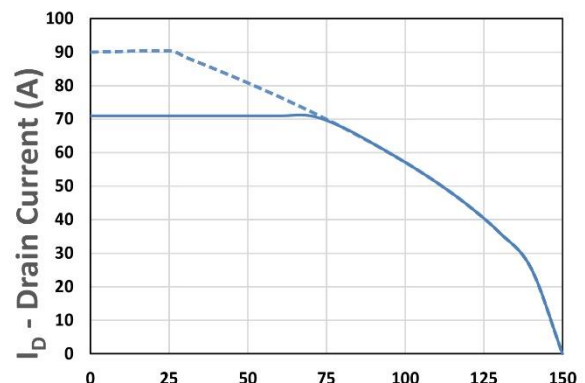
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



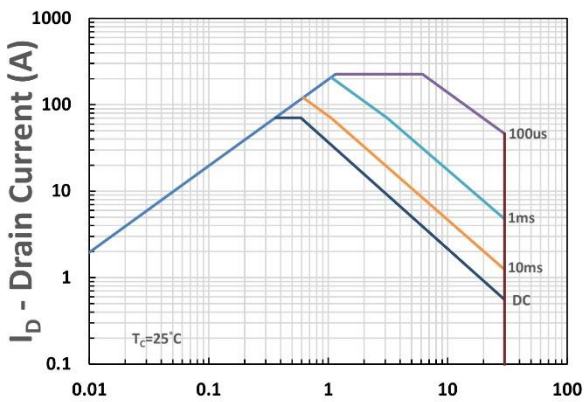
Q_g , Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



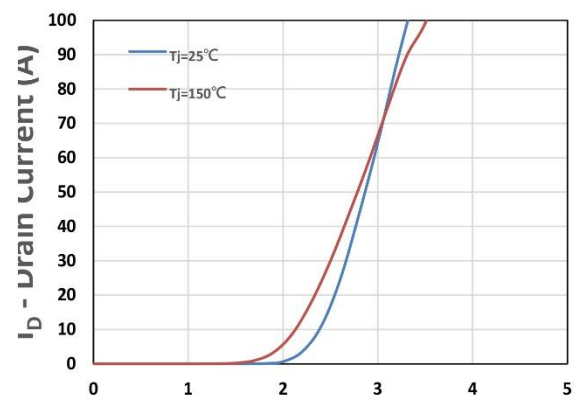
T_c -Case Temperature ($^{\circ}C$)
Figure 9. Power Dissipation



T_c -Case Temperature ($^{\circ}C$)
Figure 10. Drain Current



V_{DS} - Drain-Source Voltage (V)
Figure 11. Safe Operating Area



V_{GS} - Gate - Source Voltage (V)
Figure 12. Transfer Characteristics

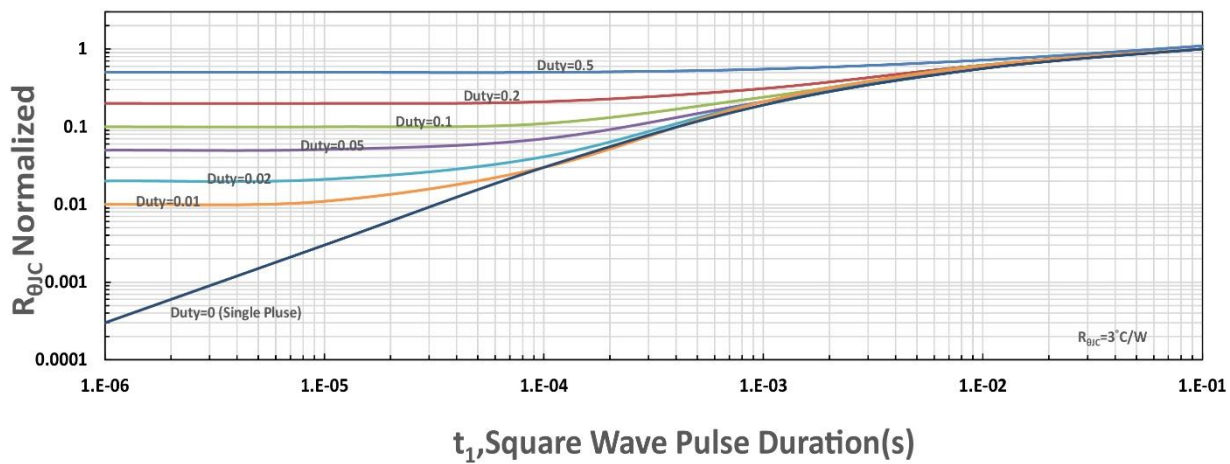


Figure 13. $R_{\theta JC}$ Transient Thermal Impedance