



Power MOSFETS

DATASHEET

LM80034N HK8A

N-Channel
Enhancement Mode MOSFET



Leadpower-semi CO., LTD.



sales@leadpower-semi.com



(03) 6577339 FAX : (03) 6577229



www.leadpower-semi.com

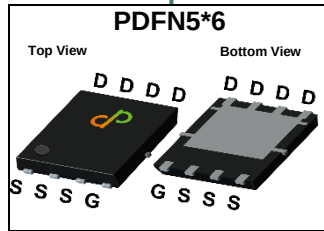


Quality Management Systems

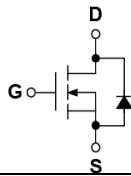
ISO 9001:2015 Certificate

N-Channel Enhancement Mode MOSFET

Pin Description



Symbol



Product Summary

Symbol	N-Channel	Unit
V_{DS}	80	V
$R_{DS(ON)-Max}$	3.7	mΩ
ID	350	A

Feature

- Fast switching speed
- 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
LM80034NHNK8A	PDFN5*6	Tape & Reel	5000 / Tape & Reel	80034 □□□□□□

Note: □□□□□□ = Lot code

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

Symbol	Parameter	N-Channel	Unit
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	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	$T_C=25^{\circ}C$	38
$I_{DM}^{①}$	Pulse Drain Current Tested	$T_C=25^{\circ}C$	350
I_D	Continuous Drain Current	$T_C=25^{\circ}C$	140
		$T_C=100^{\circ}C$	89
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$	125
		$T_C=100^{\circ}C$	50
$I_D^{②}$	Continuous Drain Current	$T_A=25^{\circ}C$	20
		$T_A=70^{\circ}C$	16
$P_D^{②}$	Maximum Power Dissipation	$T_A=25^{\circ}C$	2.6
		$T_A=70^{\circ}C$	1.7
$I_{AS}^{③}$	Avalanche Current, Single pulse	L=0.1mH	55
		L=0.5mH	30
$E_{AS}^{③}$	Avalanche Energy, Single pulse	L=0.1mH	140
		L=0.5mH	210

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	1
$R_{\theta JA}^{②}$	Thermal Resistance-Junction to Ambient	Steady State	48

Note ① : Max. current is limited by junction temperature.

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 ($T_J=25^{\circ}\text{C}$ 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	80	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =64V, V _{GS} =0V	-	-	1	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250uA	2	3	4	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	-	3.1	3.7	mΩ
gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =10A	-	32	-	S
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V, Freq.=1MHz	-	0.8	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =40V, Freq.=1MHz	-	3935	-	pF
C _{oss}	Output Capacitance		-	1160	-	
C _{rss}	Reverse Transfer Capacitance		-	101	-	
td(ON)	Turn-on Delay Time	V _{GS} =10V,V _{DS} =40V, ID=1A,RGEN=1Ω	-	19.3	-	nS
tr	Turn-on Rise Time		-	12.3	-	
td(OFF)	Turn-off Delay Time		-	47.5	-	
tf	Turn-off Fall Time		-	92.8	-	
Qg	Total Gate Charge	V _{GS} =6V,V _{DS} =40V ID=20A	-	53.5	-	nC
Qg	Total Gate Charge	V _{GS} =10V,V _{DS} =40V, ID=20A	-	84.2	-	
Qgs	Gate-Source Charge		-	26.5	-	
Qgd	Gate-Drain Charge		-	16	-	
Source-Drain Characteristics						
VSD④	Diode Forward Voltage	ISD=10A, VGS=0V	-	0.75	1.1	V
trr	Reverse Recovery Time	IF=10A, VR=64V	-	60.5	-	nS
Qrr	Reverse Recovery Charge	dIF/dt=100A/μs	-	86	-	nC

Note ④ : Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

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

N-Channel Typical Characteristics

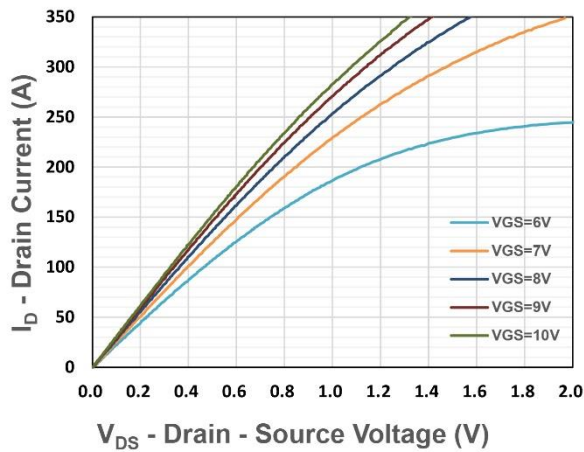


Figure 1. Output Characteristics

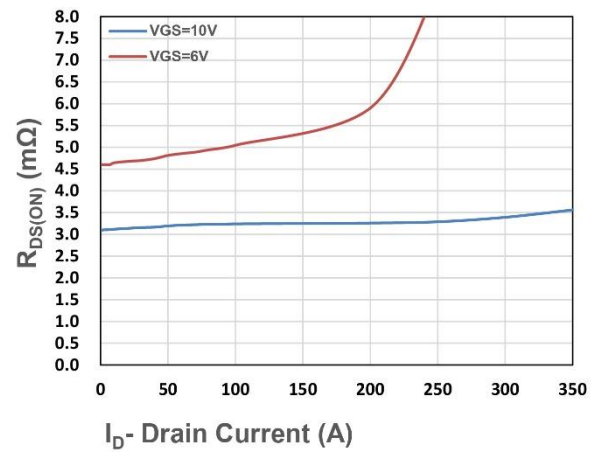


Figure 2. On-Resistance vs. I_D

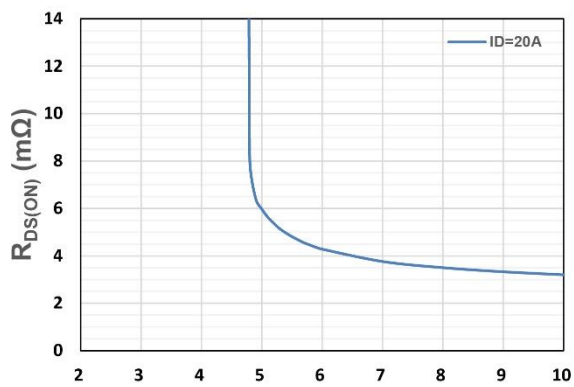


Figure 3. On-Resistance vs. V_{GS}

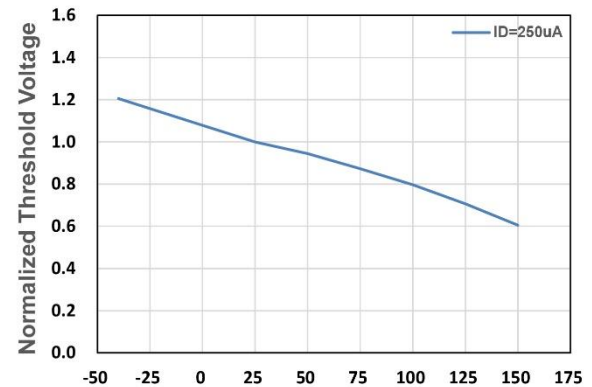


Figure 4. Gate Threshold Voltage

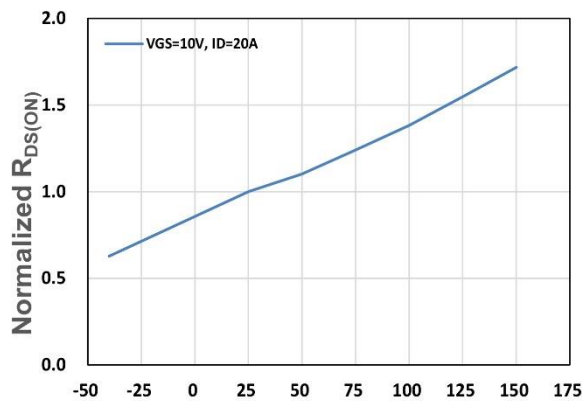


Figure 5. Drain-Source On Resistance

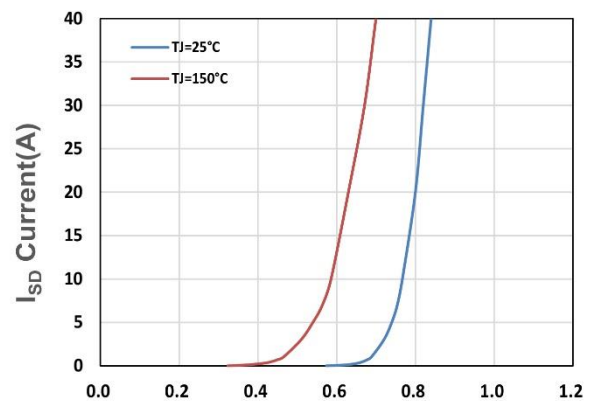
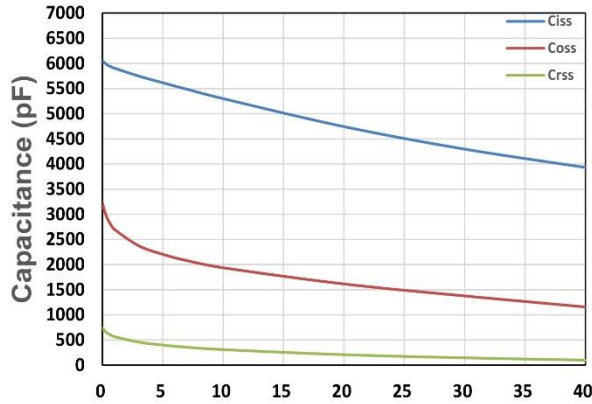
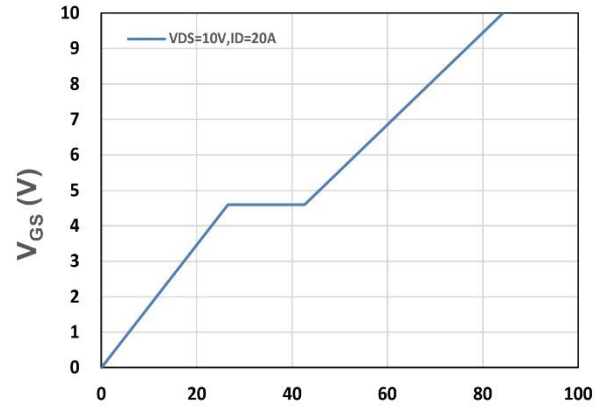


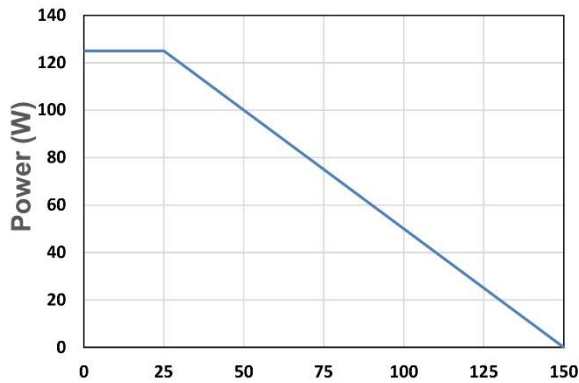
Figure 6. Source-Drain Diode Forward



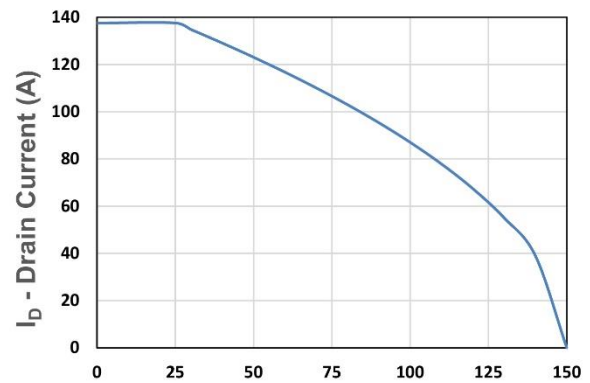
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



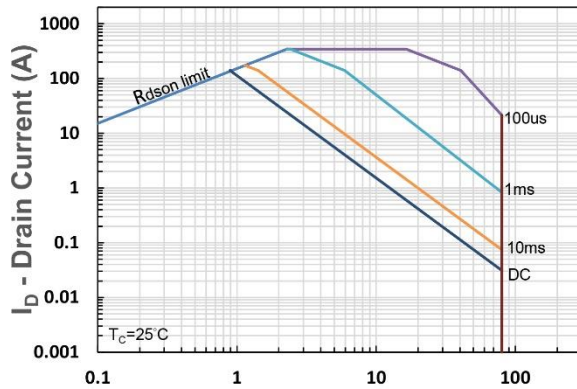
Q_g , Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



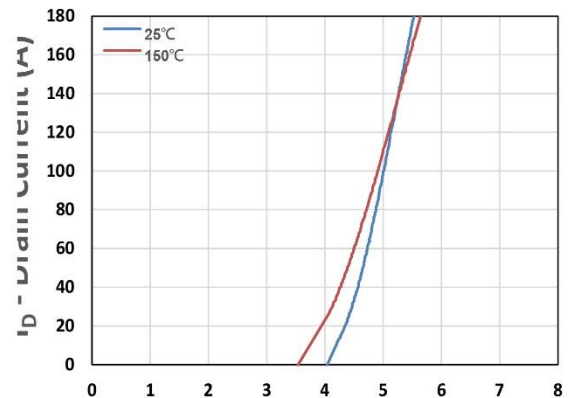
T_c - Case Temperature ($^{\circ}\text{C}$)
Figure 9. Power Dissipation



T_c - Case Temperature ($^{\circ}\text{C}$)
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

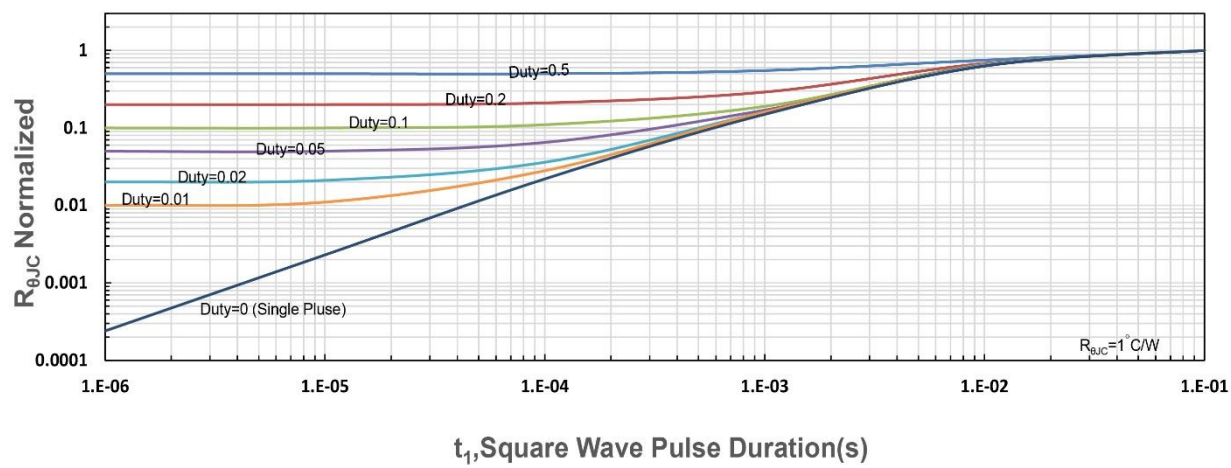


Figure 13. $R_{\theta JC}$ Transient Thermal Impedance