





Power MOSFETS

DATASHEET

LM80034NHK8A

N-Channel
Enhancement Mode MOSFET

 Leadpower-semi CO., LTD.

 sales@leadpower-semi.com

 (03) 6577339 FAX : (03) 6577229

 www.leadpower-semi.com

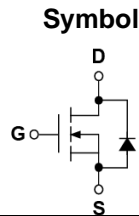
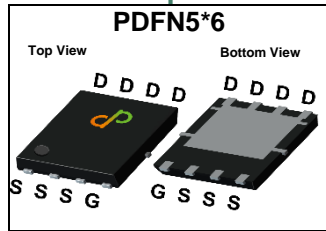


Quality Management Systems

ISO 9001:2015 Certificate

N-Channel Enhancement Mode MOSFET

Pin Description



Product Summary

Symbol	N-Channel	Unit
V_{DSS}	80	V
$R_{DS(ON)-Max}$	3.7	m Ω
ID	140	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
LM80034NHK8A	PDFN5*6	Tape & Reel	5000 / Tape & Reel	80034 □□□□□□

Note: □□□□□□ = Lot code

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

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

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R\theta_{JC}$	Thermal Resistance-Junction to Case	Steady State	1 °C/W
$R\theta_{JA}^{②}$	Thermal Resistance-Junction to Ambient	Steady State	48 °C/W

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.

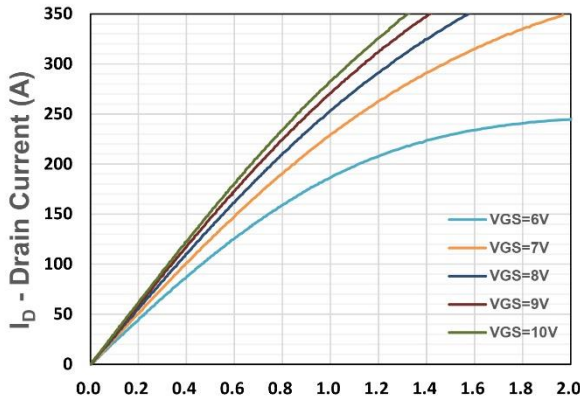
N-Channel Electrical Characteristics (T_J=25°C Unless Otherwise Noted)

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^⑤						
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, I _D =1A, R _{GEN} =1Ω	-	19.3	-	nS
t_r	Turn-on Rise Time		-	12.3	-	
t_{d(OFF)}	Turn-off Delay Time		-	47.5	-	
t_f	Turn-off Fall Time		-	92.8	-	
Q_g	Total Gate Charge	V _{GS} =6V, V _{DS} =40V, I _D =20A	-	53.5	-	nC
Q_g	Total Gate Charge	V _{GS} =10V, V _{DS} =40V, I _D =20A	-	84.2	-	
Q_{gs}	Gate-Source Charge		-	26.5	-	
Q_{gd}	Gate-Drain Charge		-	16	-	
Source-Drain Characteristics						
V_{SD}^④	Diode Forward Voltage	I _{SD} =10A, V _{GS} =0V	-	0.75	1.1	V
t_{rr}	Reverse Recovery Time	I _F =10A, V _R =64V	-	60.5	-	nS
Q_{rr}	Reverse Recovery Charge	dI _F /dt=100A/μs	-	86	-	nC

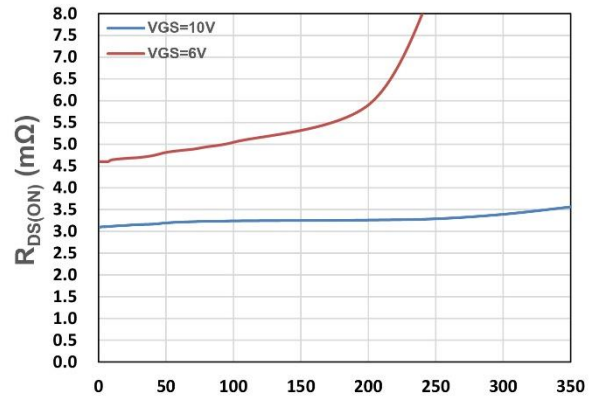
Note ④ : Pulse test (pulse width≤300us, duty cycle≤2%).

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

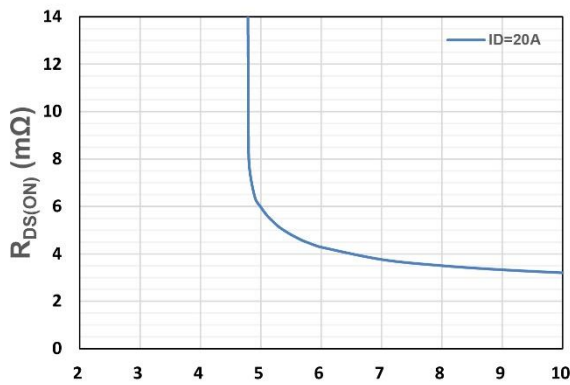
N-Channel Typical Characteristics



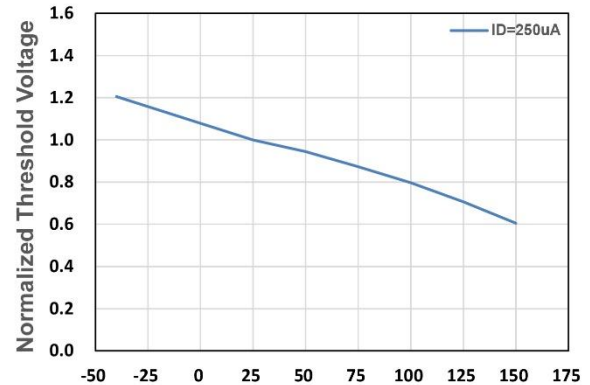
V_{DS} - Drain - Source Voltage (V)
Figure 1. Output Characteristics



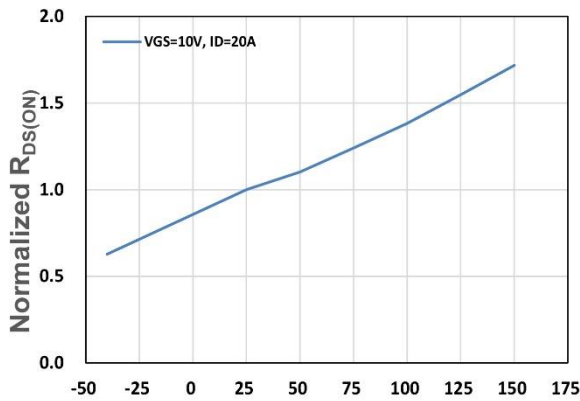
ID - Drain Current (A)
Figure 2. On-Resistance vs. ID



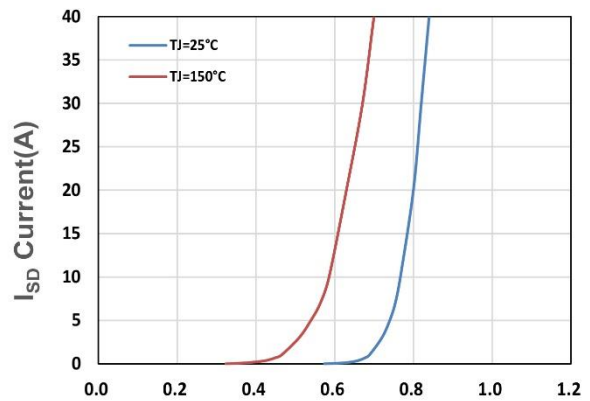
V_{GS} - Gate - Source Voltage (V)
Figure 3. On-Resistance vs. VGS



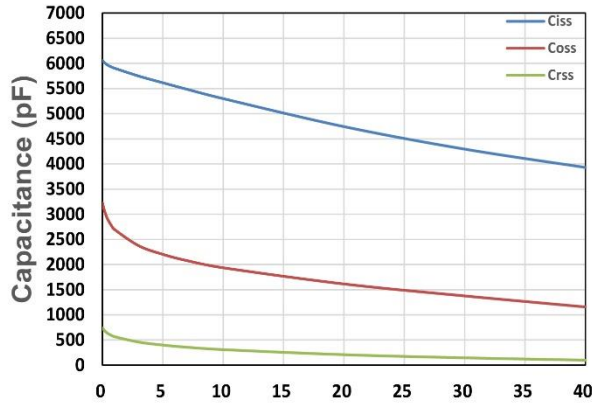
T_j, Junction Temperature(°C)
Figure 4. Gate Threshold Voltage



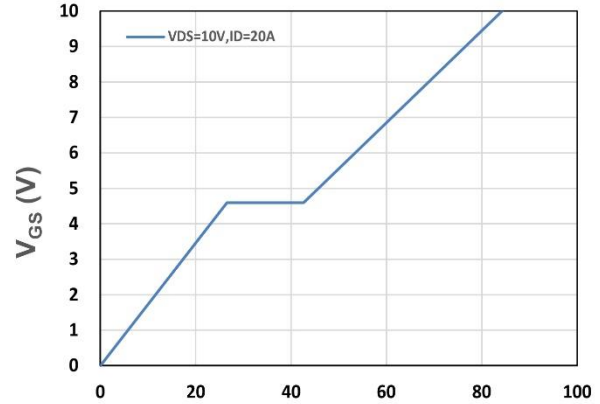
T_j, Junction Temperature(°C)
Figure 5. Drain-Source On Resistance



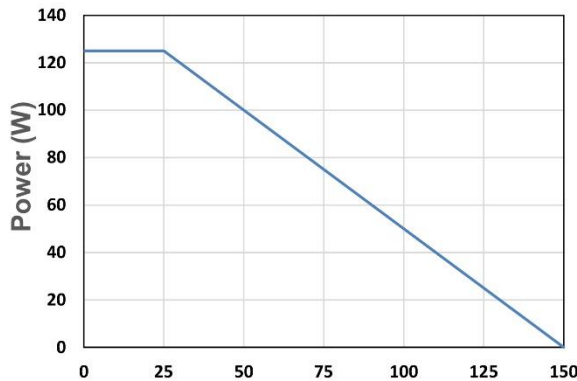
V_{SD}, Source-Drain Voltage(V)
Figure 6. Source-Drain Diode Forward



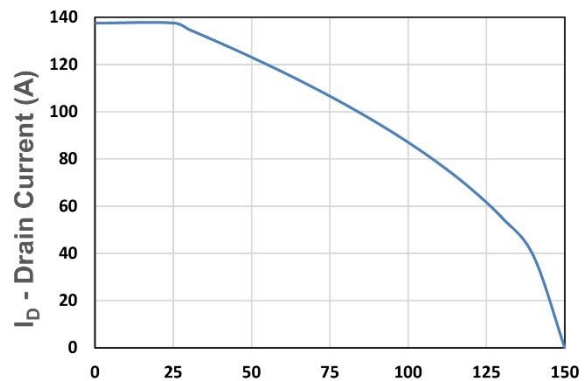
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



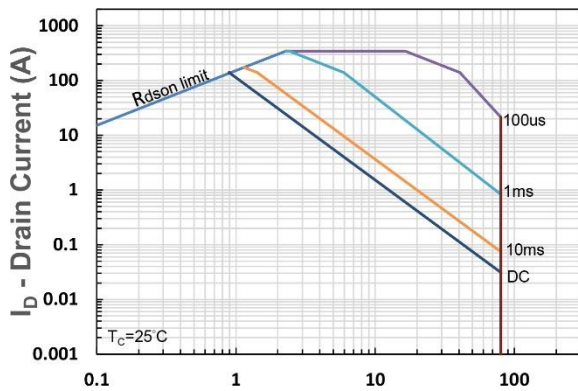
Q_g , Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



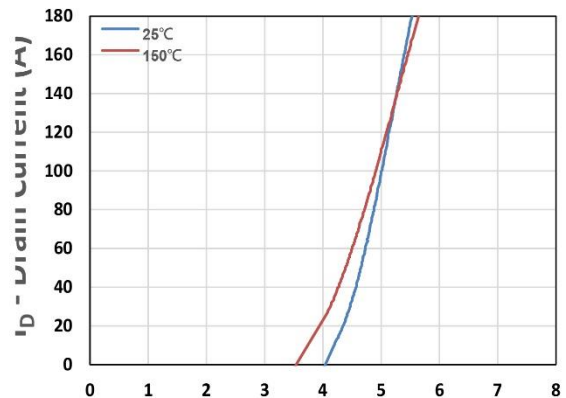
T_c - Case Temperature (°C)
Figure 9. Power Dissipation



T_c - Case Temperature (°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

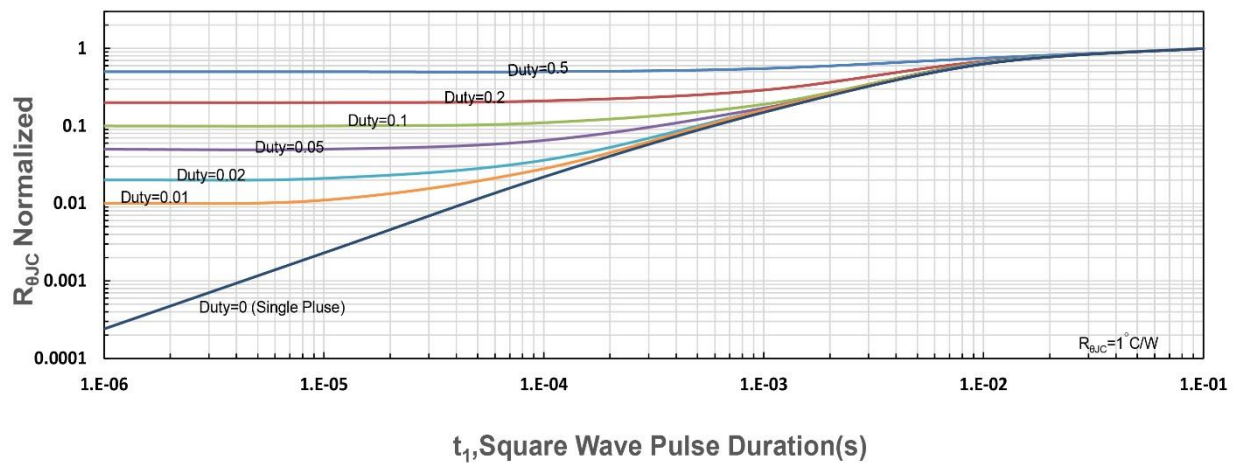


Figure 13. $R_{\theta JC}$ Transient Thermal Impedance