

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

- Self-aligned planar Technology
- Improve switching performance

Applications

- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

Quick reference

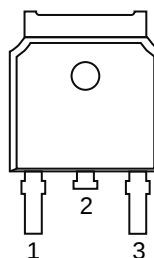
- $V_{DS} = 200V$
- $I_D = 18A$
- $R_{DS(ON)} < 150m\Omega @ V_{GS} = 10V$ (Type:120m Ω)

Pin Description

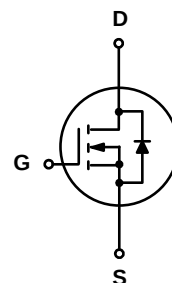
Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)

Simplified Outline

Symbol



Top View
TO-252



Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ18N20KH	TO-252	18N20 XXXXYY XXXXYY: Date Code	-	-	2500

2. Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	200	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	18	A
I_{DM}	Pulsed Drain Current ¹	72	A
E_{AS}	Single Pulse Avalanche Energy ²	340	mJ
I_{AS}	Avalanche Current ¹	15	A
E_{AR}	Repetitive Avalanche Energy ¹	8.3	mJ
P_D	Power Dissipation @T _C =25°C	104	W
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55~150	°C
R _{θJA}	Thermal Resistance, Junction-to-Ambient	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-to-Case	1.2	°C/W

3. Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	200	220	-	V
I _{GSS}	Gate-body Leakage current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
I _{DSS}	Zero Gate Voltage Drain Current, T _J =25°C	V _{DS} =200V, V _{GS} =0V	-	-	5	μA
I _{DSS}	Zero Gate Voltage Drain Current, T _J =125°C	V _{DS} =160V, V _{GS} =0V	-	-	100	
V _{GS(th)}	Gate-Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	3.5	4.0	V
R _{DS(on)}	Drain-Source on-Resistance ³	V _{GS} =10V, I _D =9A	-	120	150	mΩ
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1MHz	-	1318	-	pF
C _{oss}	Output Capacitance		-	180	-	
C _{rss}	Reverse Transfer Capacitance		-	75	-	
Q _g	Total Gate Charge	V _{GS} =10V V _{DS} =160V I _D =18A	-	41	-	nC
Q _{gs}	Gate-Source Charge		-	5.5	-	
Q _{gd}	Gate-Drain Charge		-	19.5	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =100V R _G =25Ω I _D =18A	-	24	-	ns
t _r	Turn-on Rise Time		-	45	-	
t _{d(off)}	Turn-off Delay Time		-	101	-	
t _f	Turn-off Fall Time		-	95	-	
I _S	Continuous Source Current	T _C =25°C	-	-	18	A
I _{SM}	Pulsed Diode Forward Current		-	-	72	
V _{SD}	Diode Forward Voltage	T _J =25°C, I _{SD} =18A, V _{GS} =0V	-	-	1.4	V
t _{rr}	Body Diode Reverse Recovery Time	V _{GS} =0V, I _S =18A, diF/dt=100A/μs	-	230	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	1.8	-	μC

Notes:

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2、The EAS data shows Max. rating. I_{AS}=15A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C
- 3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

4. Typical Characteristics

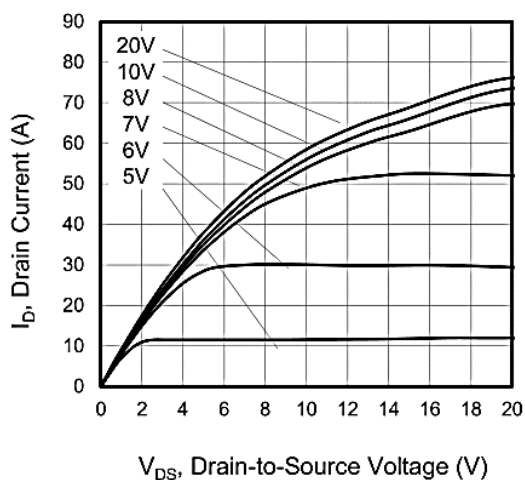


Figure1: Output Characteristics ($T_J=25^\circ\text{C}$)

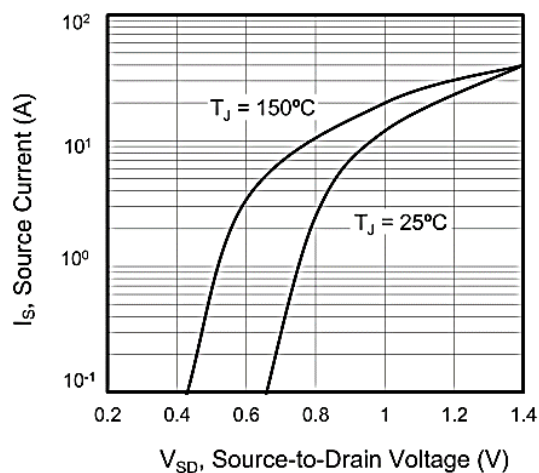


Figure 2: Body Diode Forward Voltage

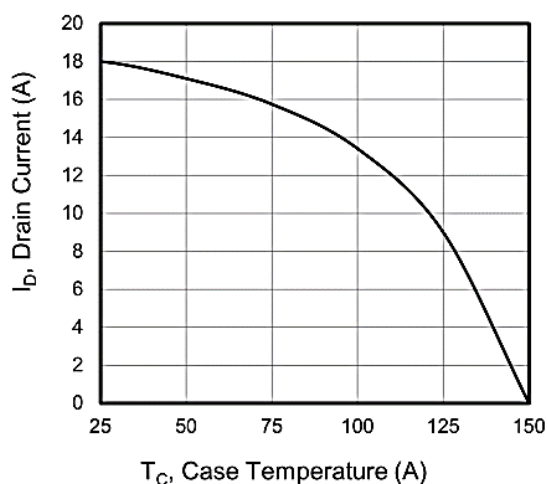


Figure 3: Drain Current vs. Temperature

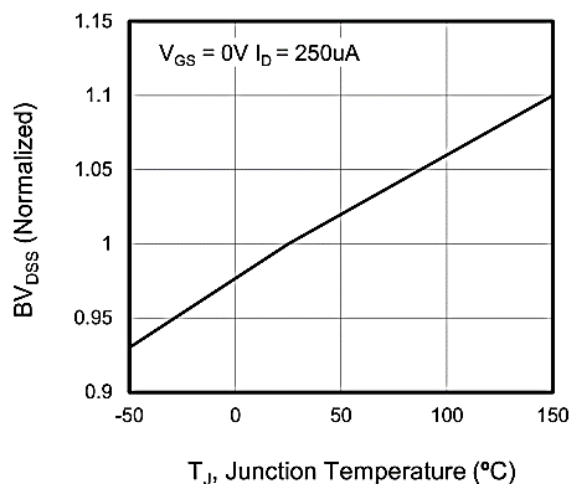


Figure 4: Body Diode Characteristics

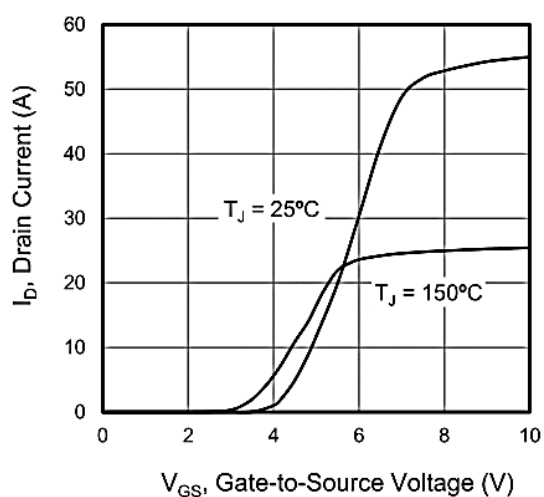


Figure 5: Transfer Characteristics

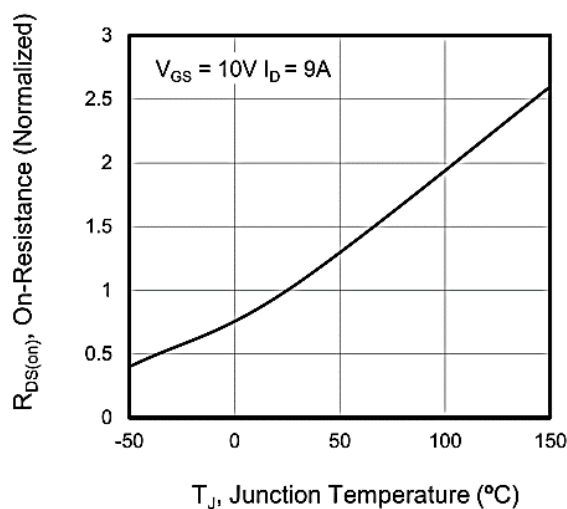


Figure 6: On-resistance vs. Temperature

4. Typical Characteristics (cont.)

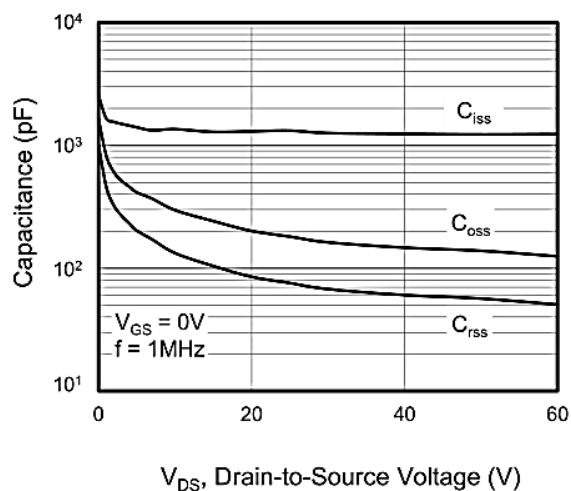


Figure 7: Capacitance

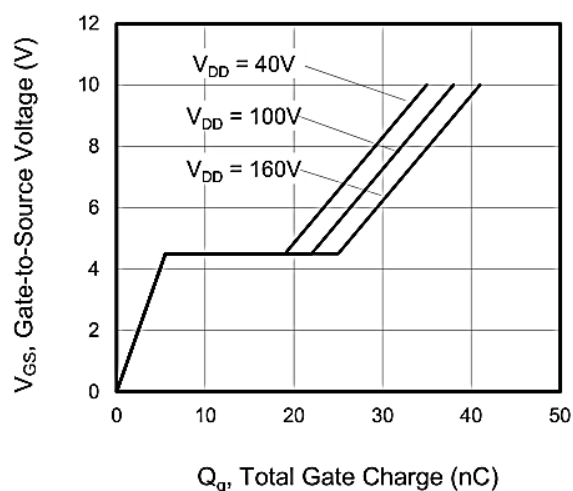


Figure 8: Gate Charge

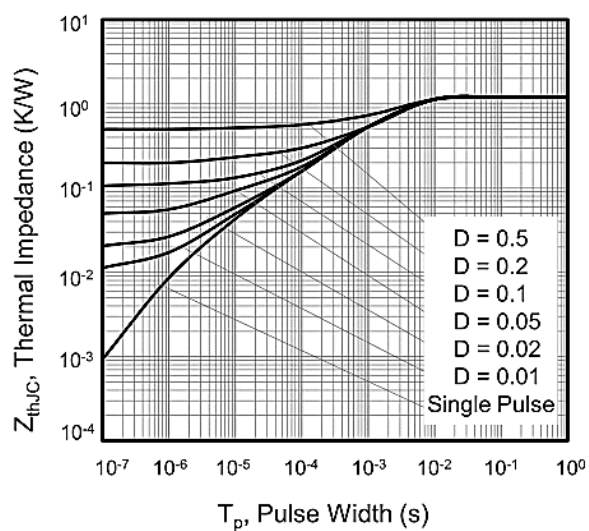
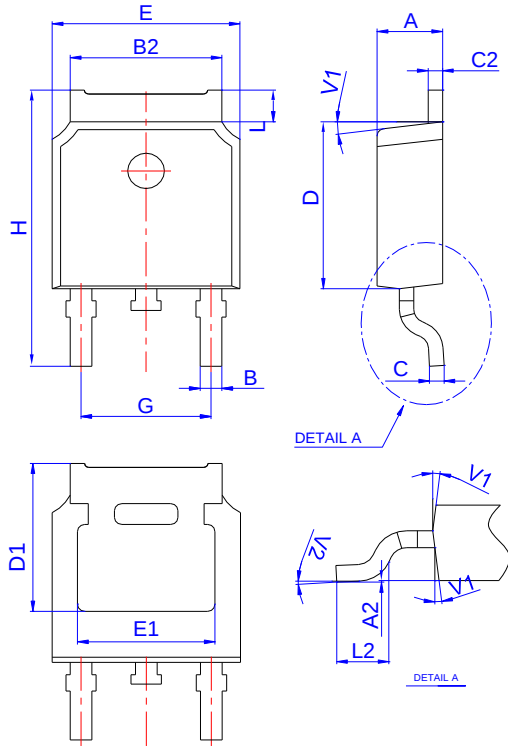


Figure 9: Transient Thermal Impedance

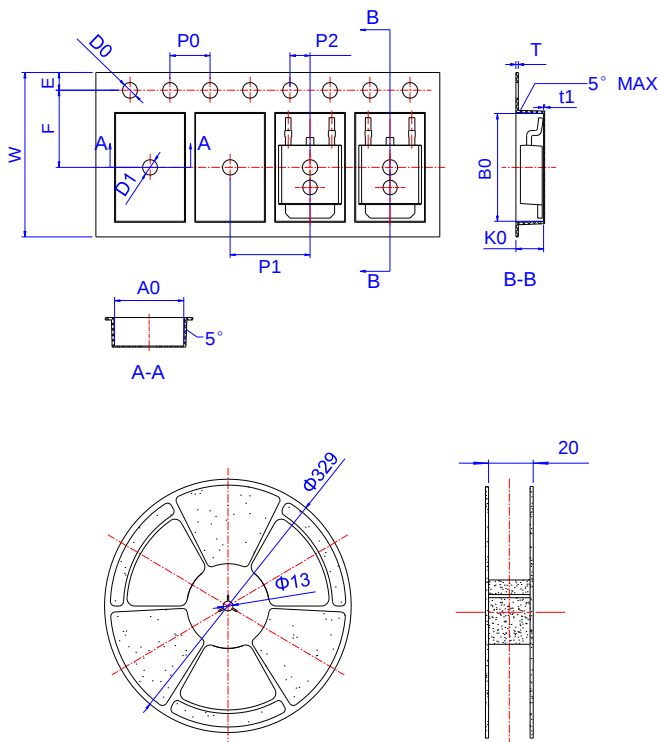
5. Package Mechanical Data

TO-252 Package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.1		2.5	0.083		0.098
A2	0		0.1	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.4		0.6	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.9		6.3	0.232		0.248
D1	5.30REF			0.209REF		
E	6.4		6.8	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.5		10.7	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.9	16	16.1	0.626	0.63	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.4	7.5	7.6	0.291	0.295	0.299
D0	1.4	1.5	1.6	0.055	0.059	0.063
D1	1.4	1.5	1.6	0.055	0.059	0.063
P0	3.9	4	4.1	0.154	0.157	0.161
P1	7.9	8	8.1	0.311	0.315	0.319
P2	1.9	2	2.1	0.075	0.079	0.083
A0	6.85	6.9	7	0.27	0.271	0.276
B0	10.45	10.5	10.6	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.1			0.004		
10P0	39.8	40	40.2	1.567	1.575	1.583