KJ18N20K

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

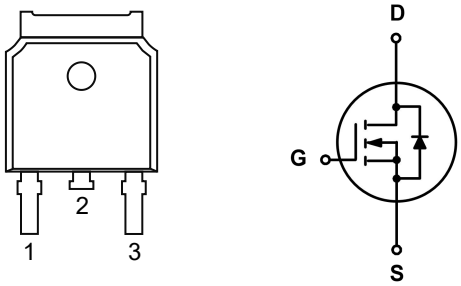
I_D = 18A

$R_{DS(ON)}$ < 150mΩ @ V_{GS} = 10 V （Type:120mΩ）

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
KJ18N20K	TO-252	18N20 XXXYYY　XXXYYY: Date Code	-	-	2500

2. Absolute Maximum Ratings (T_C=25℃ 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, V_{GS}@10V	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℃	104	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~150	℃
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	℃/ W
$R_{\theta JC}$	Thermal Resistance Junction-Case	1.2	℃/ W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{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	1.0	1.6	3.0	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℃	-	-	18	A
I_{SM}	Pulsed Diode Forward Current		-	-	72	
V_{SD}	Diode Forward Voltage	T_J=25ºC, 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 inch^2 FR-4 board with 2OZ copper.

2、The EAS data shows Max. rating. I_{AS}=15A, V_{DD}=50V, R_G=25Ω, Starting T_J=25ºC

3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

4、The power dissipation is limited by 150℃ 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

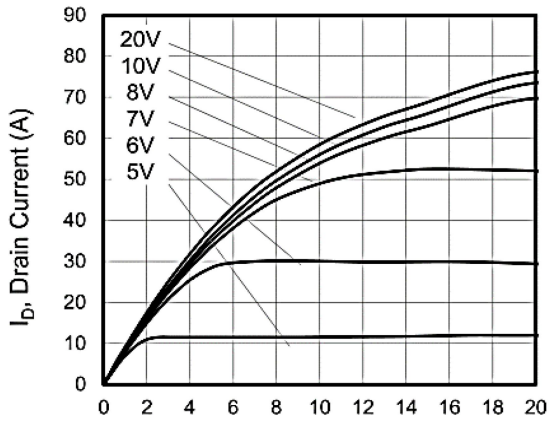


Figure 1. Output Characteristics (T_J = 25°C)

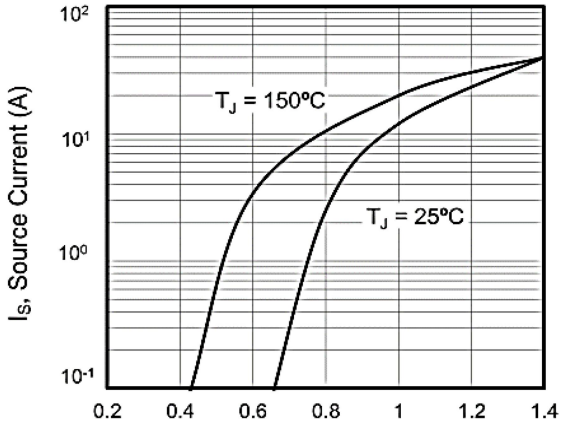


Figure 2. Body Diode Forward Voltage

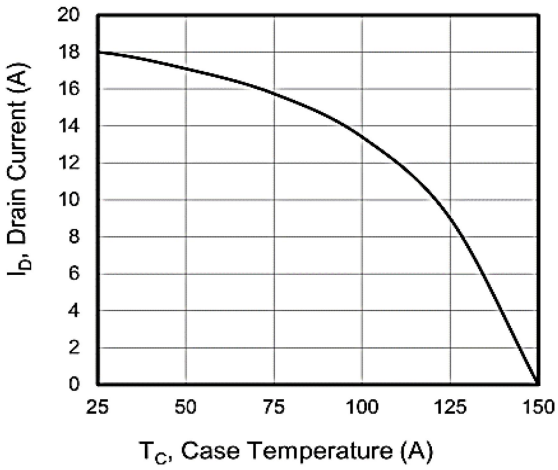


Figure 3. Drain Current vs. Temperature

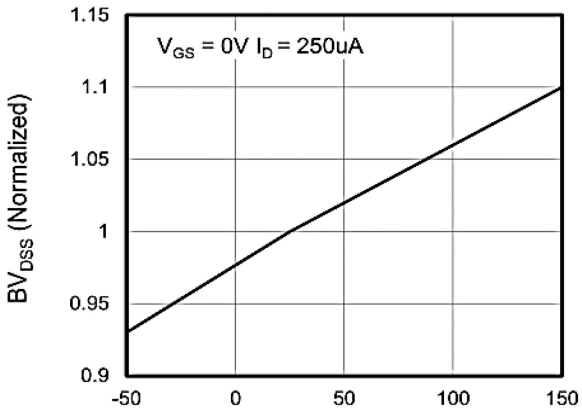


Figure 4. BV_{DSS} Variation vs. Temperature

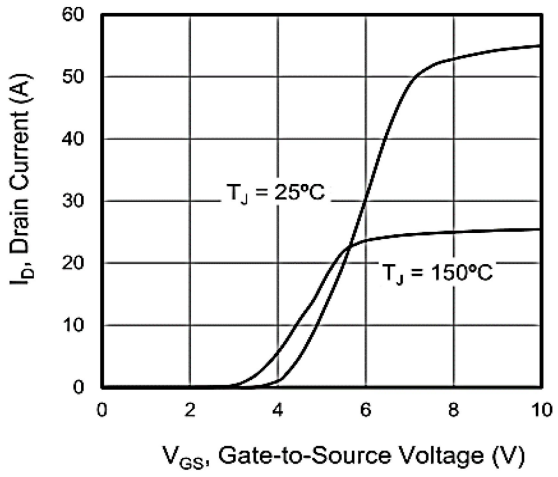


Figure 5. Transfer Characteristics

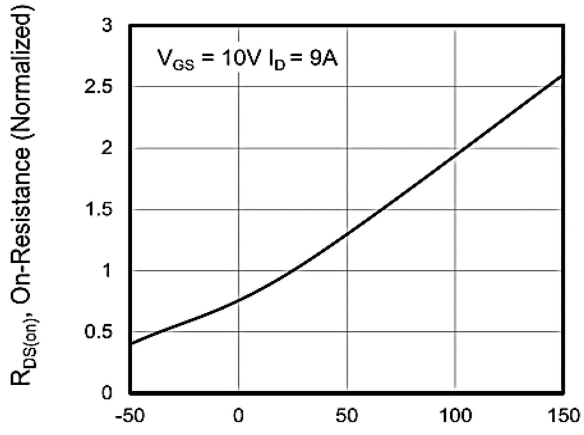


Figure 6. On-Resistance vs. Temperature

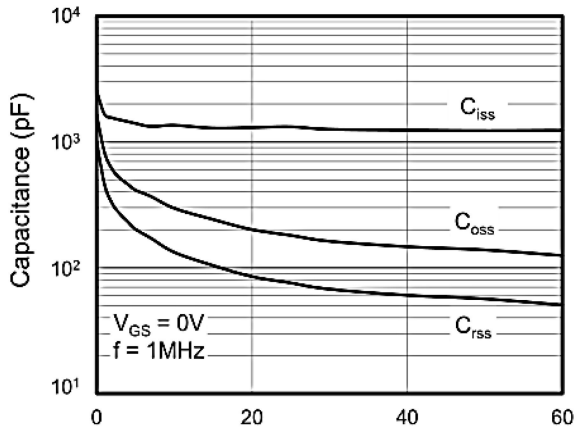


Figure 7. Capacitance

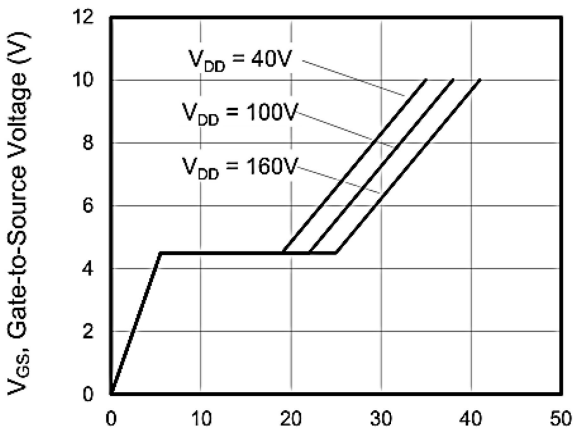


Figure 8. Gate Charge

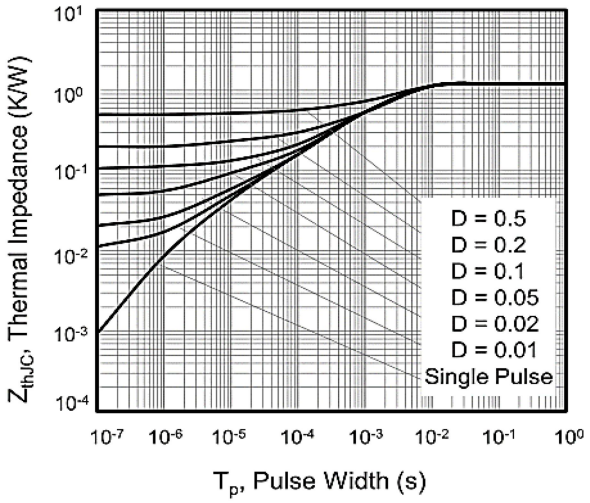
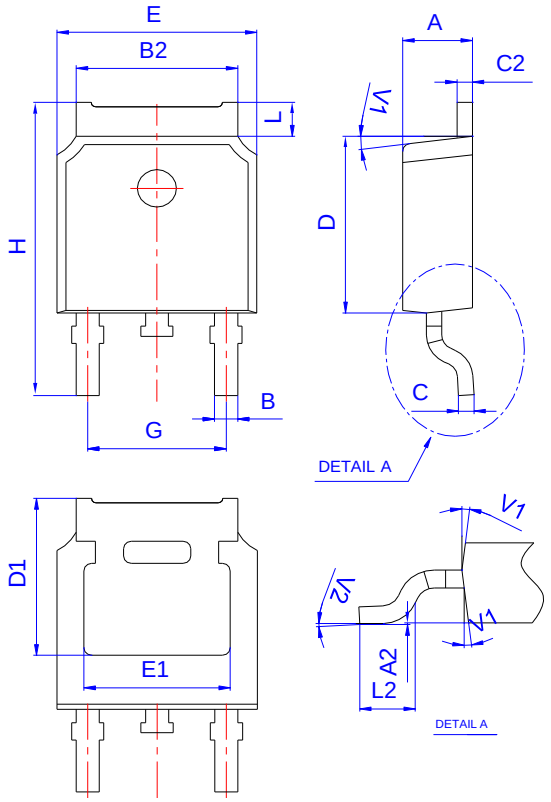


Figure 10. Transient Thermal Impedance

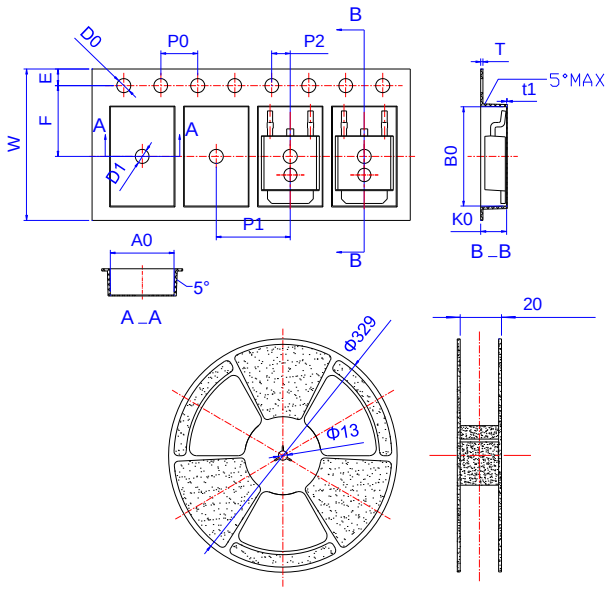
4.Package Mechanical Data

TO-252 Package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0.00		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	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 Spectification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.9	16	16.1	0.626	0.630	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	0.270	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	0.10			0.004		
10P0	39.8	40	40.2	1.567	1.575	1.583