KJ18N20C

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

VD-MOSFET technology

Improve switching performance

Applications

Uninterruptible Power Supply (UPS)

Power Factor Correction (PFC)

Quick reference

V_{DS} = 200 V

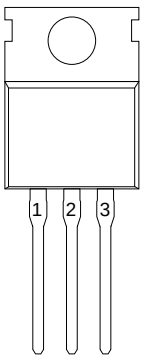
I_D = 18 A

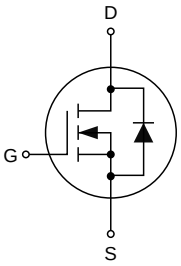
$R_{DS(ON)}$ ≤ 150 mΩ @V_{GS} = 10 V（Type:120 mΩ）

Pin Description

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

Simplified Outline	Symbol





Top View
TO-220

Package Marking and Ordering Information

Product Name	Package	Marking	Reel size	Tape width	Quantity (pcs)
KJ18N20C	TO-220	KJ18N20C XXXYYY	N/A	N/A	1000

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	18	A
I_{DM}	Pulsed Drain Current [1]	72	A
E_{AS}	Single Pulse Avalanche Energy [2]	340	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 to Case	1.2	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_D=250 μA	200	220	-	V
I_{GSS}	Gate-body Leakage current	V_{DS}=0 V, V_{GS}=±20 V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=200 V, V_{GS}=0 V, T_J=25°C	-	-	5	μA
		V_{DS}=160 V, V_{GS}=0 V, T_J=125°C	-	-	100	
$V_{GS(th)}$	Gate-Threshold Voltage	V_{DS}=V_{GS}, I_D=250 μA	2	3	4	V
$R_{DS(on)}$	Drain-Source on-Resistance [3]	V_{GS}=10 V, I_D=9 A	-	120	150	mΩ
C_{iss}	Input Capacitance	V_{GS}=0 V, V_{DS}=25 V, f=1 MHz	-	1318	-	pF
C_{oss}	Output Capacitance		-	180	-	
C_{rss}	Reverse Transfer Capacitance		-	75	-	
Q_g	Total Gate Charge	V_{DS}=160 V, V_{GS}=10 V, I_D=18 A	-	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}=100 V, R_G=25 Ω, I_D=18 A	-	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	A
V_{SD}	Diode Forward Voltage	T_J=25ºC, I_{SD}=18 A, V_{GS}=0 V	-	-	1.4	V
t_{rr}	Body Diode Reverse Recovery Time	V_{GS}=0 V, I_S=18 A, diF/dt=100 A/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 2 OZ copper.
2. The EAS data shows Max. rating. I_{AS}=15 A, V_{DD}=50 V, R_G=25 Ω, Starting T_J=25ºC.
3. The test condition is Pulse Test: Pulse width ≤ 300 μs, 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

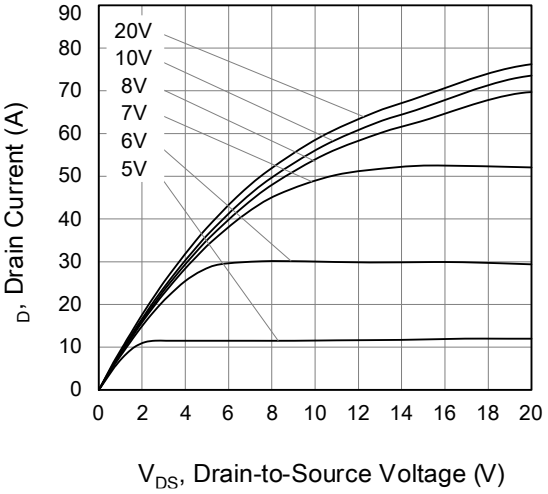


Figure1: Output Characteristics (T_J=25℃)

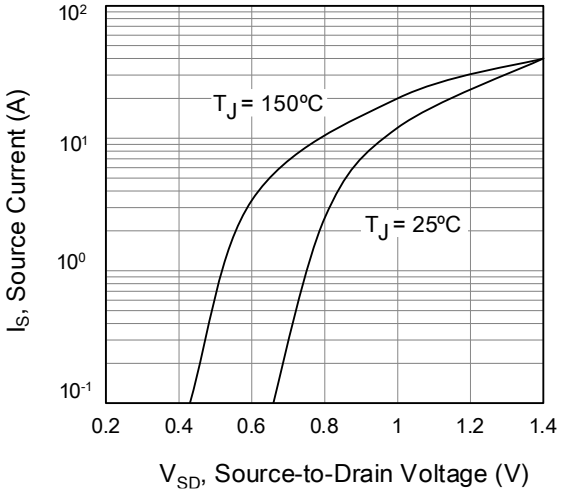


Figure 2: Body Diode Forward Voltage

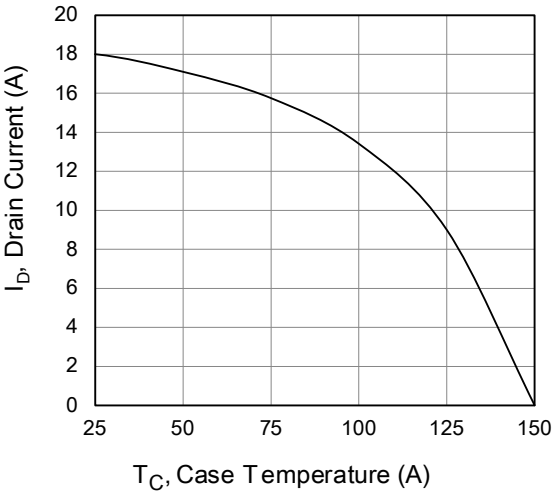


Figure 3: Drain Current vs. Temperature

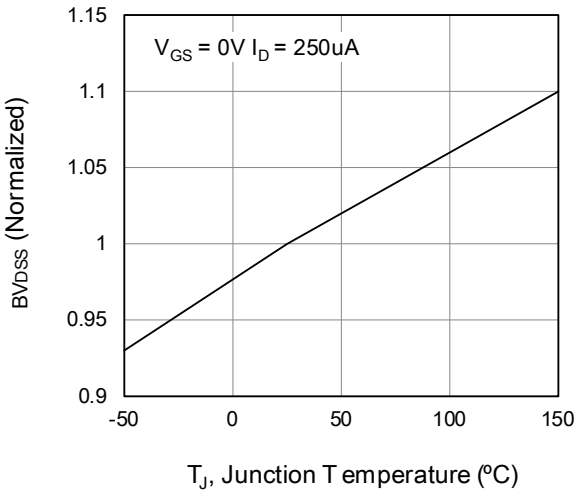


Figure 4: Body Diode Characteristics

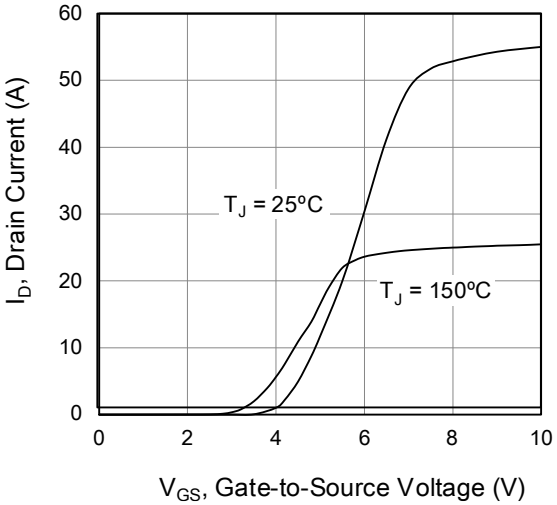


Figure 5: Transfer Characteristics

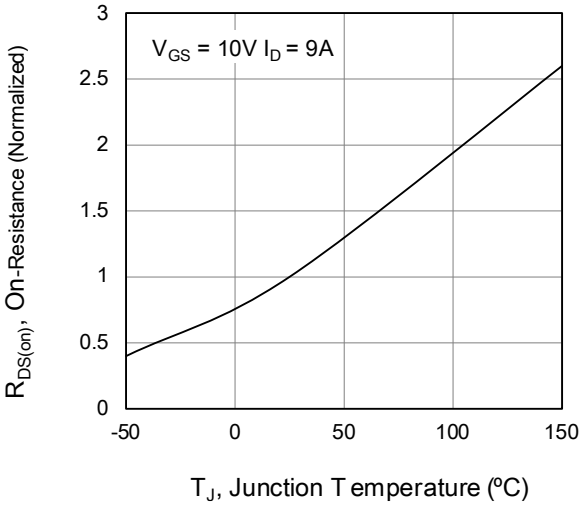


Figure 6: On-resistance vs. Temperature

4. Typical Characteristics (cont.)

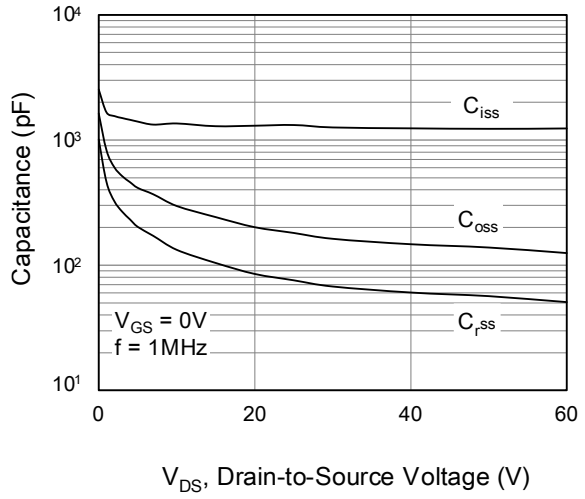


Figure 7: Capacitance

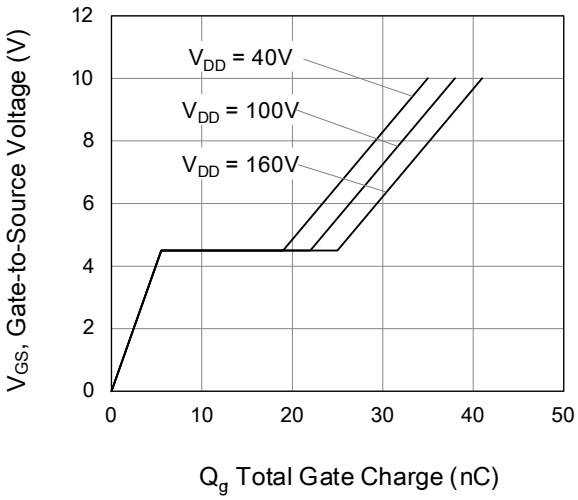


Figure 8: Gate Charge

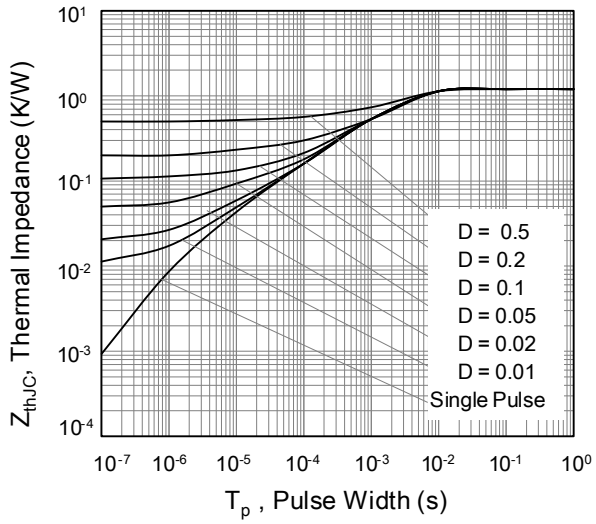
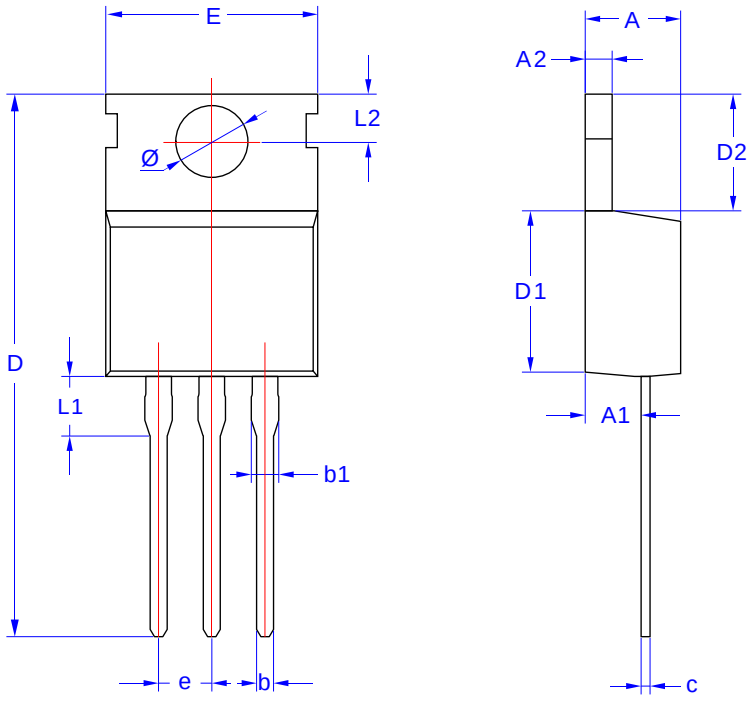


Figure 9: Transient Thermal Impedance

5. Package Mechanical Data

TO-220 Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	4.24	4.70
A1	2.20	3.00
A2	1.15	1.40
b	0.70	0.95
b1	1.14	1.70
c	0.40	0.60
D	28.0	29.8
D1	8.80	9.90
D2	6.25	6.90
E	9.70	10.50
L1	3.80	
L2	2.40	3.00
e	2.54 BSC	
Φ	3.60	