KJ100N03C

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

Advanced Trench Technology
Excellent $R_{DS(ON)}$
Low gate charge

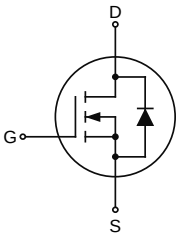
Applications

PWM applications
Load Switch
Power management

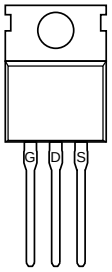
Quick reference

BV ≧ 30 V
I_D ≦ 100 A
$R_{DS(ON)}$ ≦ 3.8 mΩ @V_{GS} = 10 V（Type: 3.0 mΩ）
$R_{DS(ON)}$ ≦ 6.0 mΩ @V_{GS} = 4.5 V（Type: 4.9 mΩ）

Schematic Diagram



Pin Assignment



Top View
TO-220

Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ100N03C	TO-220	KJ100N03C	-	-	50

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current, V_{GS} @10 V, T_A=25℃	100	A
	Continuous Drain Current, V_{GS} @10 V, T_A=100℃	60	A
I_{DM}	Pulsed Drain Current [1]	400	A
E_{AS}	Single Pulse Avalanche Energy [2]	119	mJ
P_D	Power Dissipation	106	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to 150	℃
$R_{\theta JC}$	Thermal Resistance Junction-Case	1.4	℃/W

3. Electrical Characteristics (T_A=25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_D=250 μA	30	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage [3]	V_{DS}=V_{GS}, I_{DS}=250 μA	1.0	1.5	2.5	V
I_{DSS}	Zero Gate Voltage Source Current	V_{DS}=30 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20 V, V_{DS}=0 V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-State Resistance [3]	V_{GS}=10 V, I_D=30 A	-	3.0	3.8	mΩ
		V_{GS}=4.5 V, I_D=20 A	-	4.9	6.0	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0 V, V_{DS}=15 V Frequency=1 MHz	-	2678	-	pF
C_{oss}	Output Capacitance		-	396	-	
C_{rss}	Reverse Transfer Capacitance		-	337	-	
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15 V, R_L=1 Ω, V_{GS}=10 V, R_G=3 Ω, I_D=30 A	-	23	-	ns
t_r	Turn-on Rise Time		-	27	-	
$t_{d(off)}$	Turn-off Delay Time		-	75	-	
t_f	Turn-off Fall Time		-	37	-	
Q_g	Total Gate Charge	V_{DS}=15 V, I_{DS}=30 A V_{GS}=10 V	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	7.5	-	
Q_{gd}	Gate-Drain Charge		-	10.5	-	
Source-Drain Diode Characteristics						
V_{DS}	Diode Forward Voltage [3]	V_{GS}=0 V, I_S=30 A	-	-	1.2	V
I_S	Diode Forward Current [4]		-	-	120	A
t_{rr}	Reverse Recovery Time	I_S=20 A, V_{GS}=0 V dI_F/dt=100 A/μs	-	29	-	ns
Q_{rr}	Reverse Recovery Charge		-	23	-	nC

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature.
2. E_{AS} condition: T_J=25℃, V_{DD}=20 V, R_G=25 Ω, L=0.5 mH, I_{AS}=22 A.
3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
4. Surface Mounted on FR-4 Board, t ≤ 10 sec.

4. Typical Characteristics

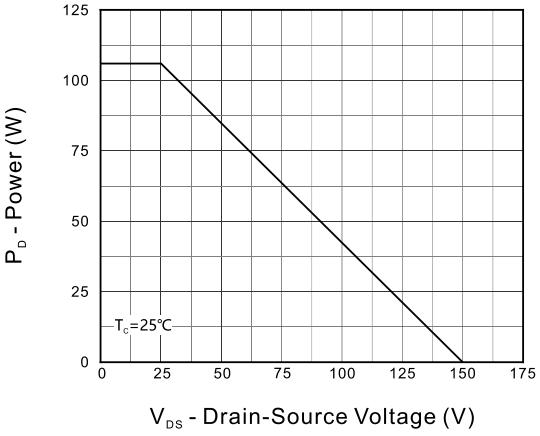


Fig 1. Output Characteristics

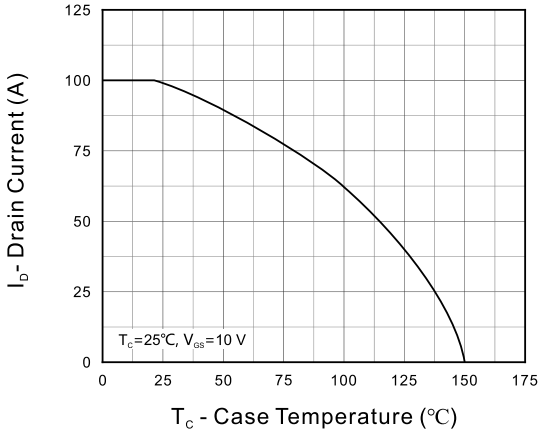


Fig 2. Current Capability

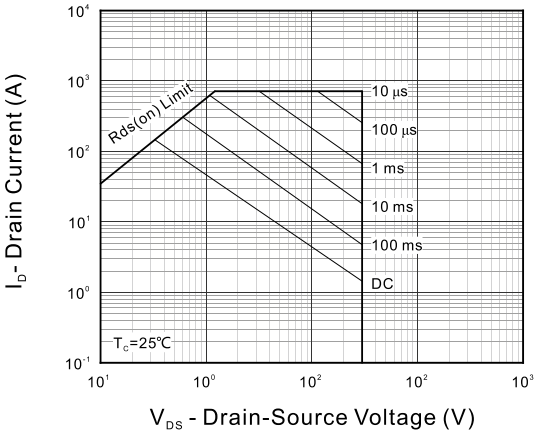


Fig 3. Safe Operation Area

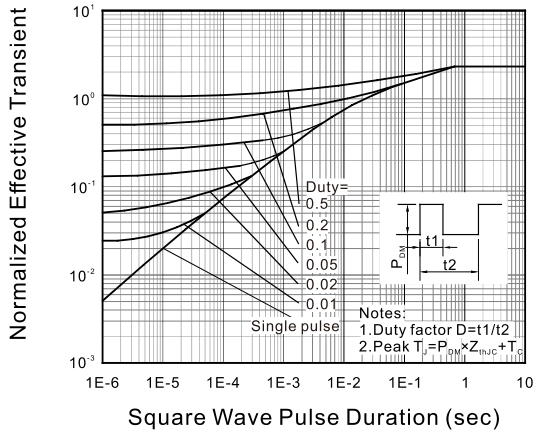


Fig 4. Transient Thermal Impedance

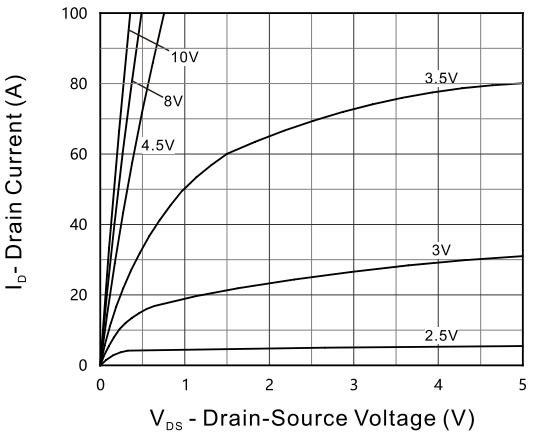


Fig 5. Output Characteristics

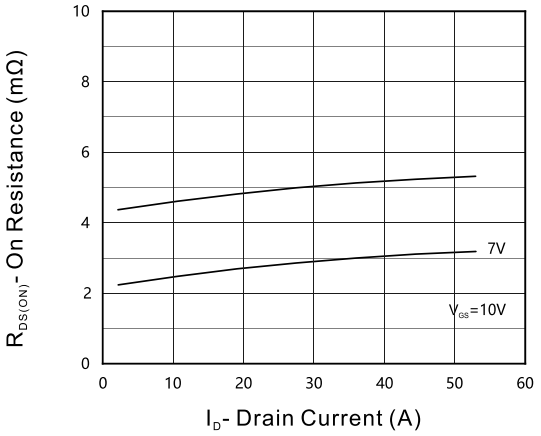


Fig 6. On Resistance

4. Typical Characteristics (cont.)

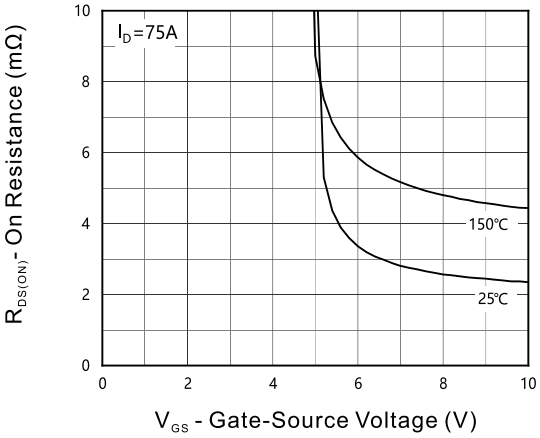


Fig 7. Transfer Characteristics

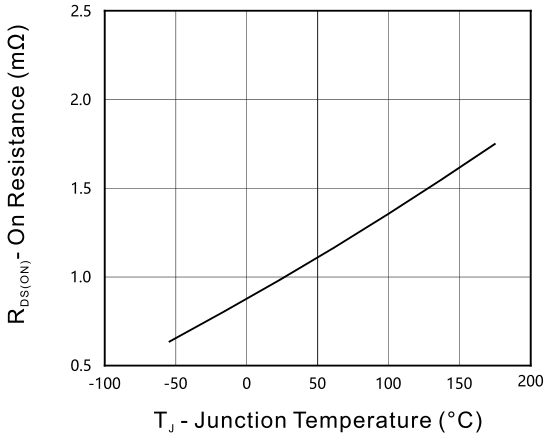


Fig 8. $R_{DS(ON)}$vs. T_J

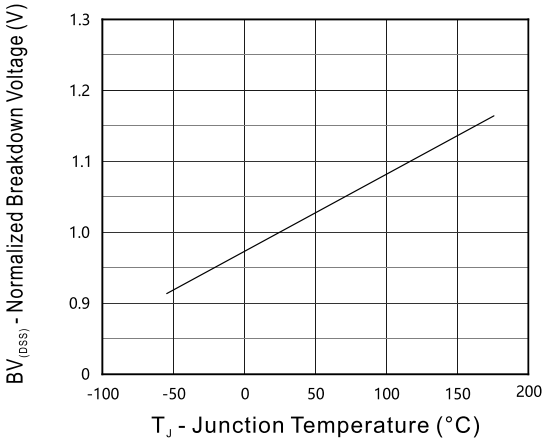


Fig 9. Normalized Breakdown Voltage

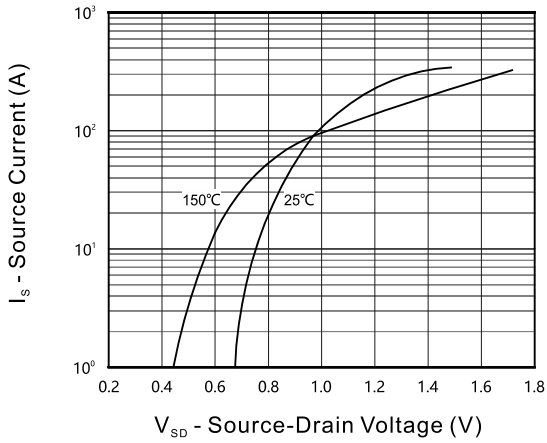


Fig 10. Diode Forward Current

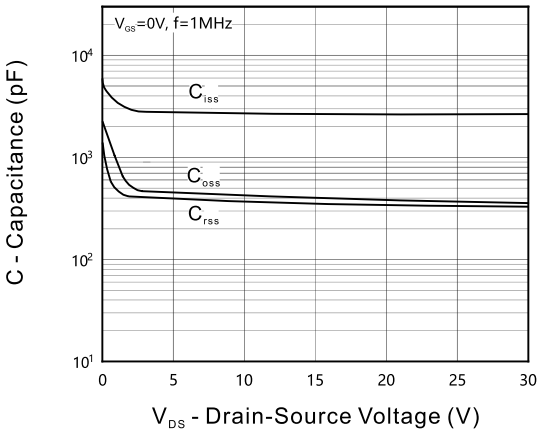


Fig 11. Capacitance

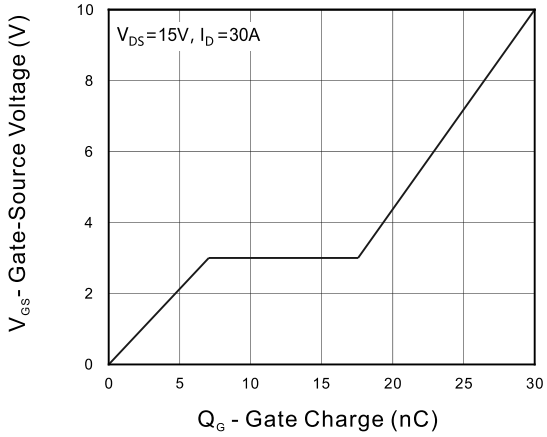
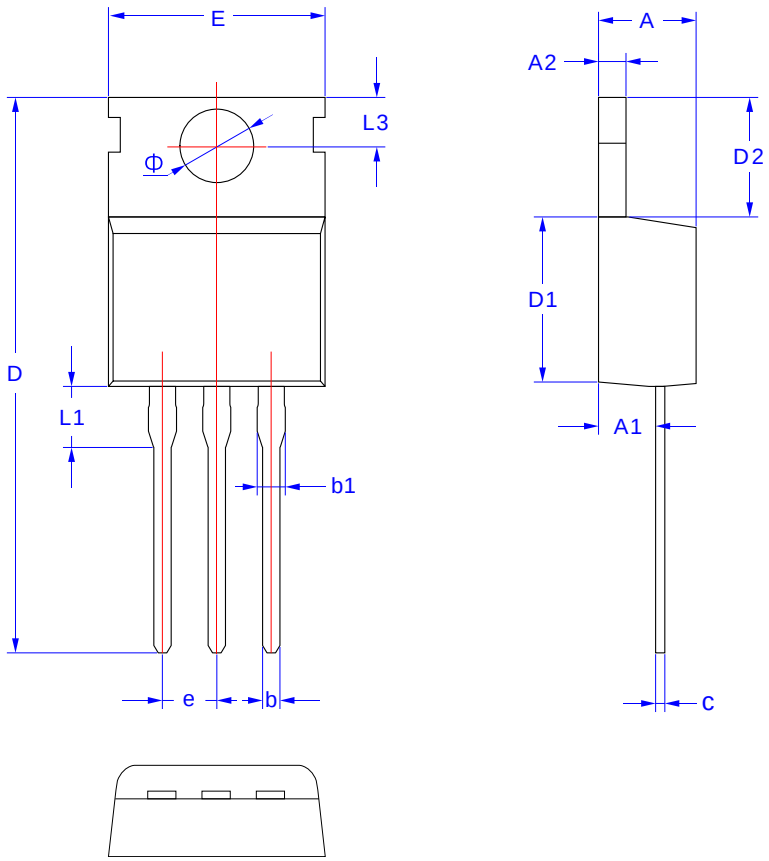


Fig 12. Gate Charge

5. Package Dimensions

TO-220 Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	4.24	4.70
A1	2.20	3.00
b	0.70	0.95
b1	1.14	1.70
c	0.40	0.60
c1	1.15	1.40
D	28.0	29.8
D1	8.80	9.90
E	9.70	10.50
L1	3.80	
L2	6.25	6.90
L3	2.40	3.00
e	2.54 BSC	
⌀	3.60	