KJ010N08T

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design
- ☑ T_J max 175℃
- ☑ MSL1

1.2 Applications

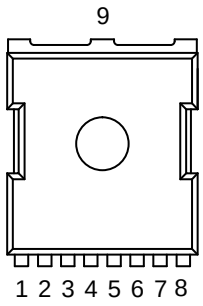
- ☑ Power management switches
- ☑ DC/DC converter
- ☑ LED backlighting

1.3 Quick reference

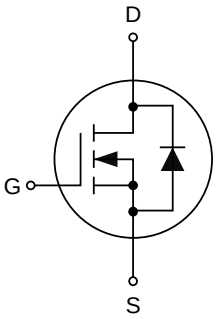
- ☑ BV ≥ 80 V
- ☑ $R_{DS(ON)}$ ≤ 1.2 mΩ @V_{GS} = 10 V
- ☑ P_D ≤ 465 W
- ☑ I_D ≤ 400 A

2. Pin Description

Pin	Description
1	Gate
2,3,4,5,6,7,8	Source
9	Drain



Top View
TOLL-8L



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C=25℃	80	-	V
V_{GS}	Gate-Source Voltage	T_C=25℃	-	±20	V
I_D *, ***	Drain Current	T_C=25℃, V_{GS}=10 V	-	400	A
		T_C=100℃, V_{GS}=10 V	-	283	A
I_{DM} *, **	Drain Current (Pulsed)	T_C=25℃, V_{GS}=10 V	-	1600	A
P_D	Drain Power Dissipation	T_C=25℃	-	465	W
E_{AS}	Single Pulsed Avalanche Energy	V_{DD}=40 V, L=0.5 mH	-	2800	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	℃
$R_{\theta JA}$ **	Thermal Resistance-Junction to Ambient		-	40	℃/W
$R_{\theta JC}$ **	Thermal Resistance-Junction to Case		-	0.32	

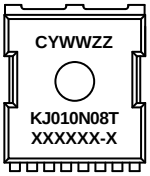
Notes:

* Pulse width ≤ 300 μs, duty cycle ≤ 2%.

** Surface mounted on 1 in^2 pad area, t ≤ 10 sec.

*** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ010N08T	

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity (pcs)
KJ010N08T	TOLL-8L	13"	24 mm	2000

Note: KUAIJIEXIN defines “Green” as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C).

6. Electrical Characteristics (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_{DS}=250 μA	80	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	2	-	4	V
I_{DSS}	Drain Gate Current	V_{DS}=80 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{DS}=0 V, V_{GS}=±20 V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-State Resistance	V_{GS}=10 V, I_{DS}=20 A	-	1.0	1.2	mΩ
g_{fs}	Forward Transconductance	V_{GS}=10 V, I_{DS}=20 A	-	62	-	S
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	V_{GS}=0 V, I_{SD}=20 A	-	-	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS}=0 V, I_{SD}=20 A, dI_{SD}/dt=100 A/μs	-	128	-	ns
Q_{rr}	Reverse Recovery Charge		-	141	-	nC
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{DS}=40 V, V_{GS}=0 V, Frequency=1 MHz	-	13090	-	pF
C_{oss}	Output Capacitance		-	2620	-	
C_{rss}	Reverse Transfer Capacitance		-	120	-	
R_g	Gate Resistance		-	3.1	-	Ω
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=40 V, V_{GEN}=10 V, R_G=3 Ω, I_{DS}=20 A	-	45	-	ns
t_r	Turn-on Rise Time		-	88	-	
$t_{d(off)}$	Turn-off Delay Time		-	164	-	
t_f	Turn-off Fall Time		-	95	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=40 V, V_{GS}=10 V, I_{DS}=20 A	-	245	-	nC
Q_{gs}	Gate-Source Charge		-	64	-	
Q_{gd}	Gate-Drain Charge		-	59	-	

Notes:

a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

b. Guaranteed by design, not subject to production testing.

7. Typical Characteristics

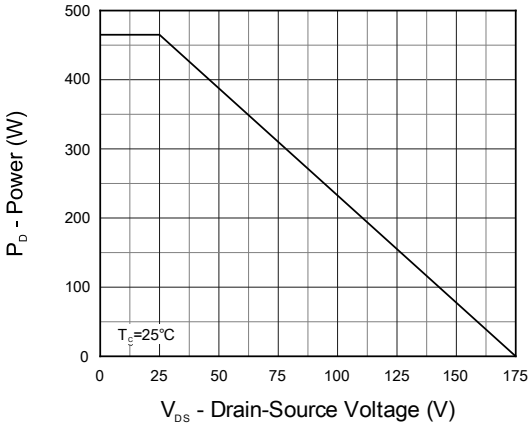


Figure 1. Power Capability

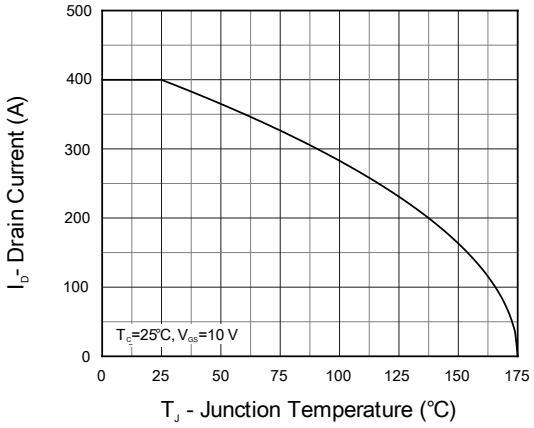


Figure 2. Current Capability

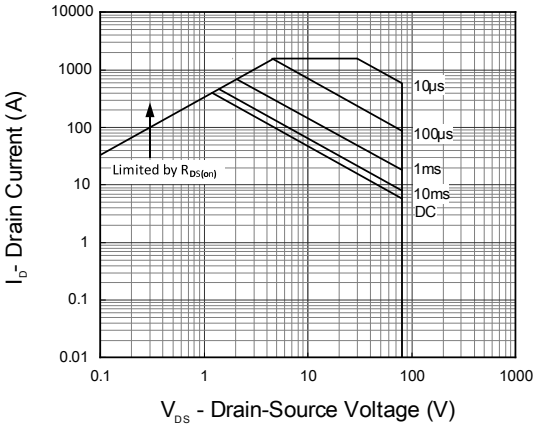


Figure 3. Safe Operation Area

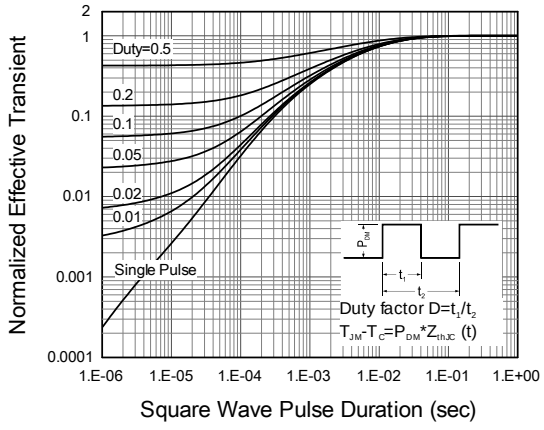


Figure 4. Transient Thermal Impedance

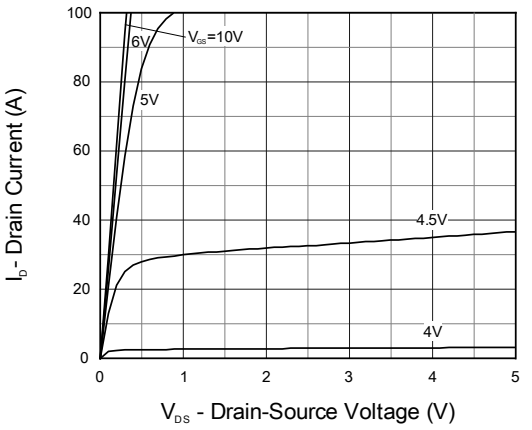


Figure 5. Output Characteristics

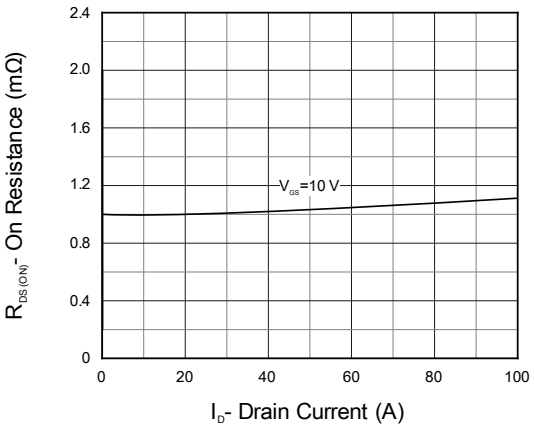


Figure 6. On Resistance

7. Typical Characteristics (cont.)

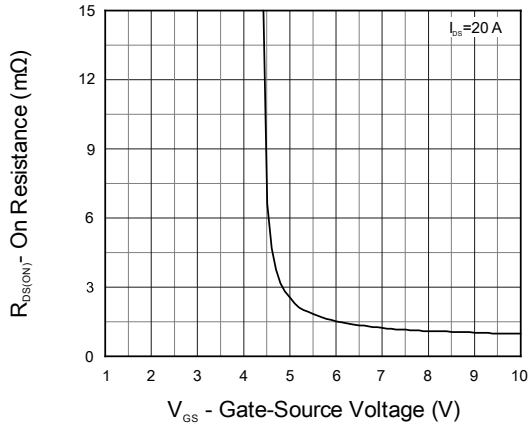


Figure 7. Transfer Characteristics

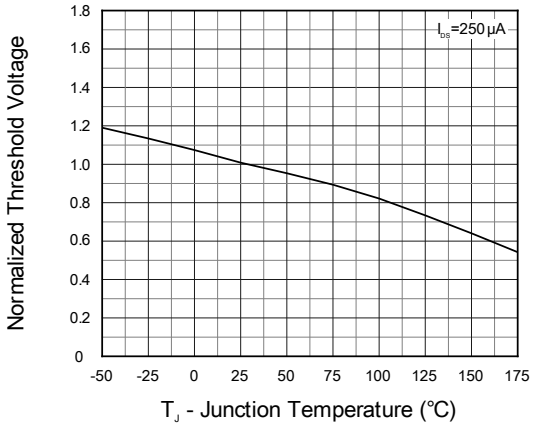


Figure 8. Normalized Threshold Voltage

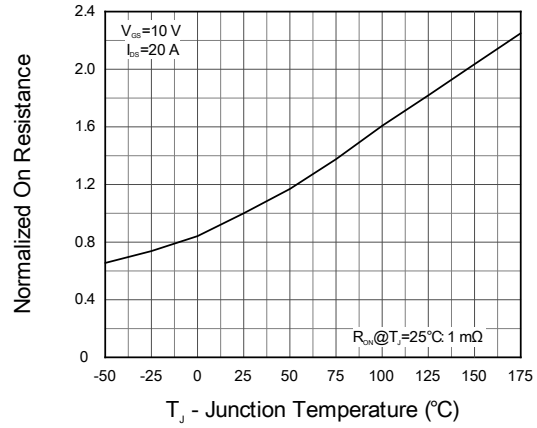


Figure 9. Normalized On Resistance

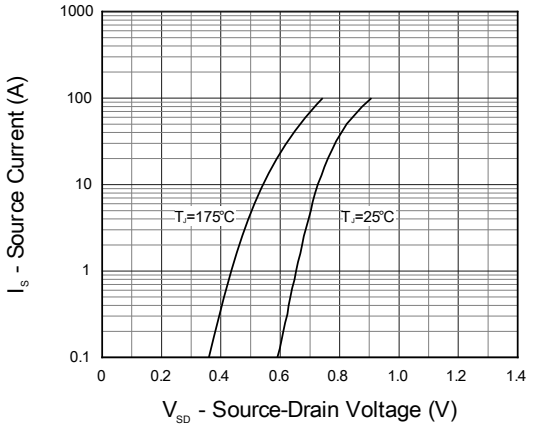


Figure 10. Diode Forward Current

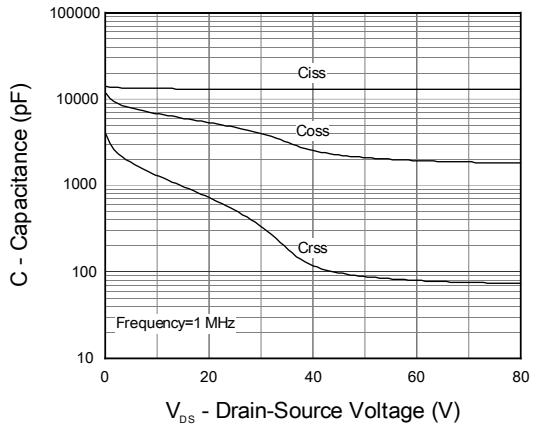


Figure 11. Capacitance

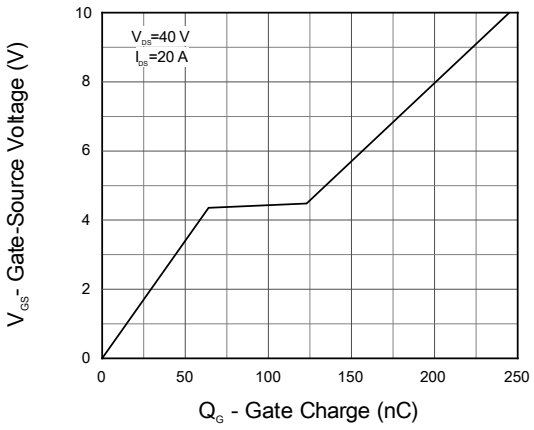


Figure 12. Gate Charge

7. Test Circuit

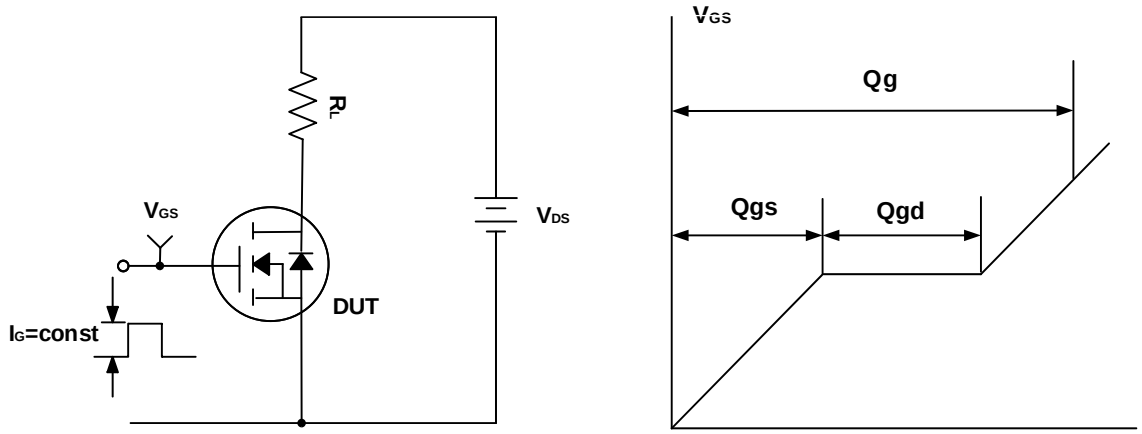


Figure A. Gate Charge Test Circuit & Waveforms

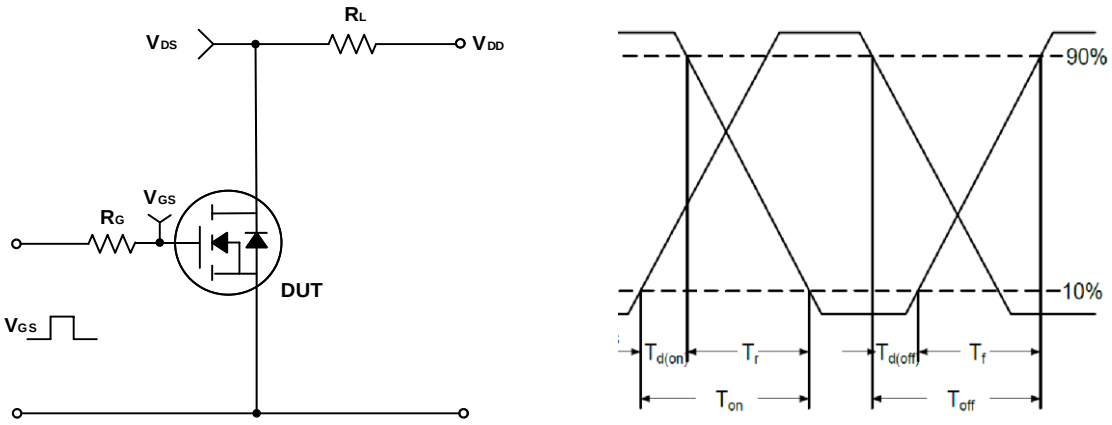


Figure B. Switching Test Circuit & Waveforms

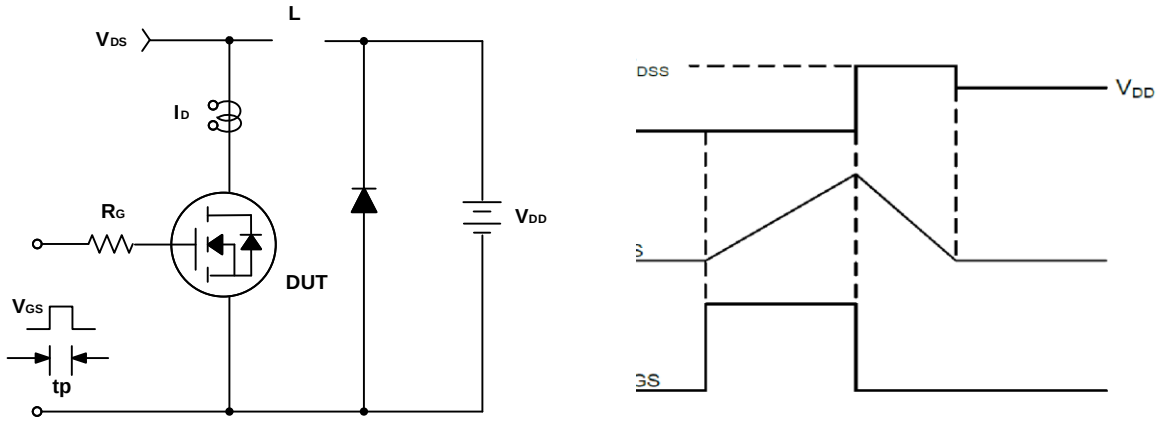
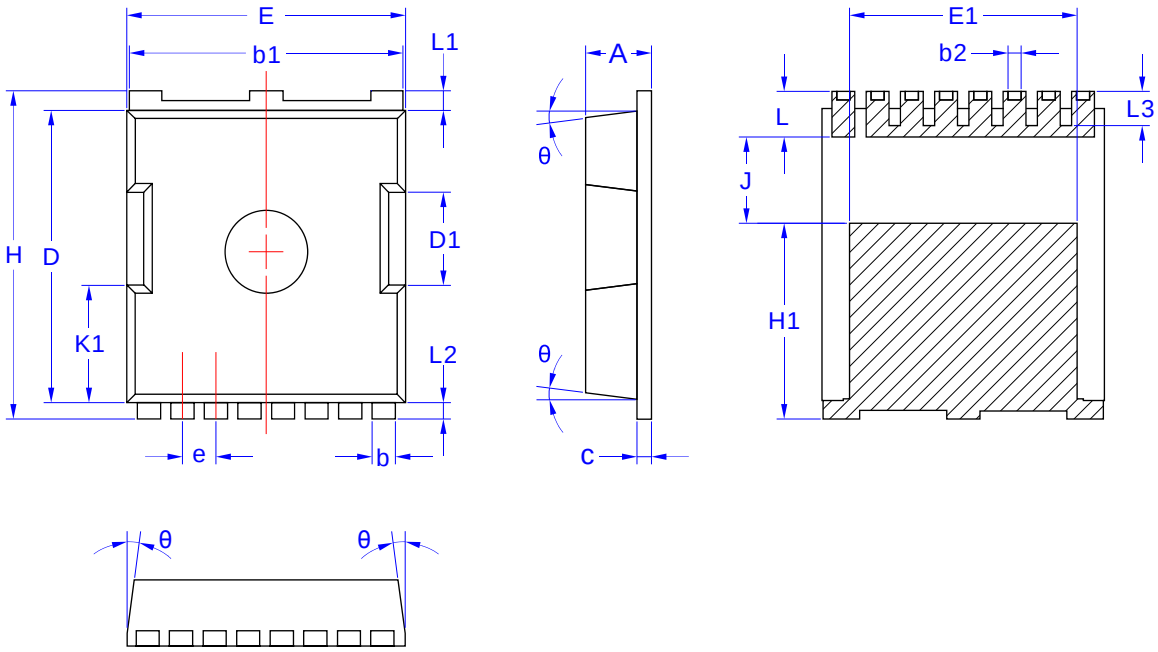


Figure C. Unclamped Inductive Switching Circuit & Waveforms

8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	2.20	2.40
b	0.70	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D1	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20 BSC	

Symbol	Dimensions in Millimeters	
	MIN	MAX
H	11.48	11.88
H1	6.75	7.15
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L3	1.00	1.30
θ	4°	10°