

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ T_J max 175°C
- ☒ Advanced trench cell design
- ☒ MSL1

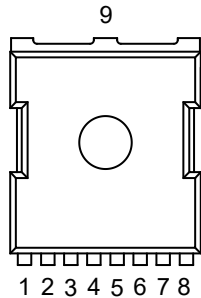
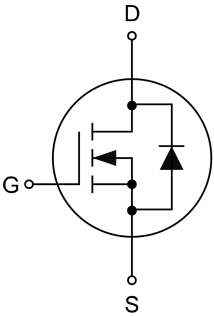
1.2 Applications

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

1.3 Quick reference

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

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate	 Top View TOLL-8L	
2,3,4,5,6,7,8	Source		
9	Drain		

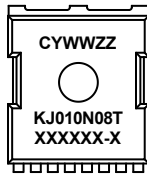
3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C =25°C	80	-	V
V _{GS}	Gate-Source Voltage	T _C =25°C	-	±20	V
I _D	Drain Current	T _C =25°C, V _{GS} =10 V	-	400	A
		T _C =100°C, V _{GS} =10 V	-	283	A
I _{DM} *	Drain Current (Pulsed)	T _C =25°C, V _{GS} =10 V	-	1600	A
P _D	Drain Power Dissipation	T _C =25°C	-	465	W
E _{AS}	Single Pulsed Avalanche Energy	V _{DD} =40 V, L=0.5 mH	-	1600	mJ
T _J , T _{stg}	Operating Junction and Storage Temperature Range		-55	175	°C
R _{θJA}	Thermal Resistance, Junction to Ambient		-	40	°C/W
R _{θJC}	Thermal Resistance, Junction to Case		-	0.32	

Notes:

- * Pulse width ≤ 300 μs, duty cycle ≤ 2%.
- ** Surface mounted on 1 in² 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: KUAJIEXIN 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°C 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)}	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}	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						
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	-	
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						
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	-	

7. Typical Characteristics

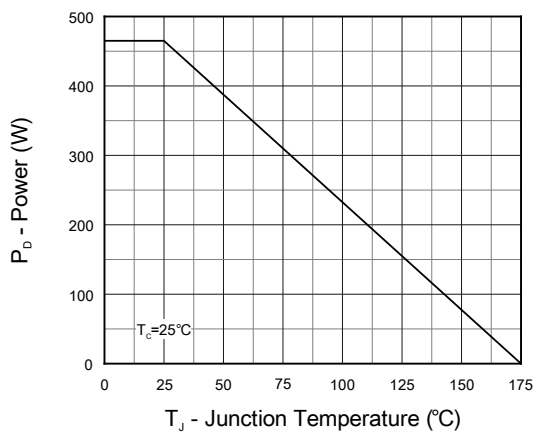


Figure 1. Power Capability

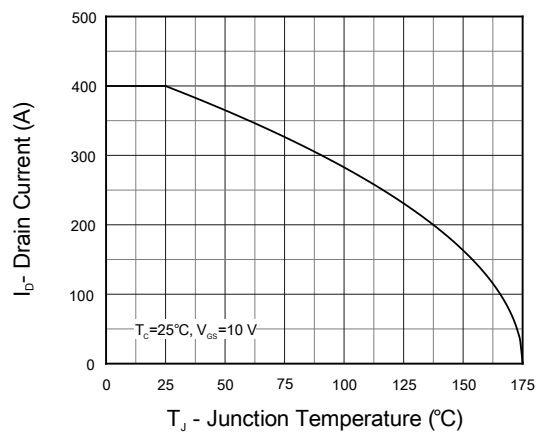


Figure 2. Current Capability

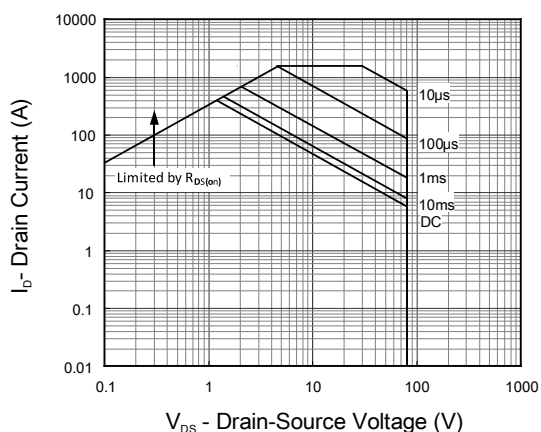


Figure 3. Safe Operation Area

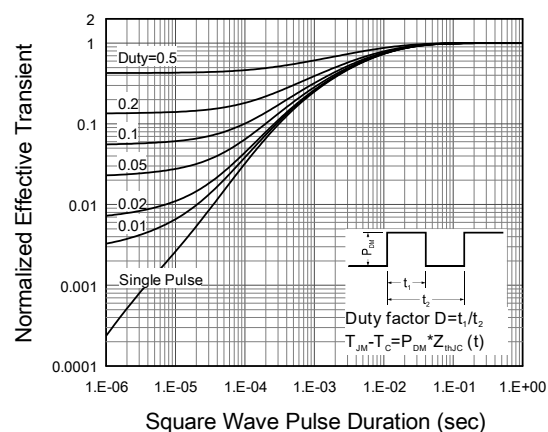


Figure 4. Transient Thermal Impedance

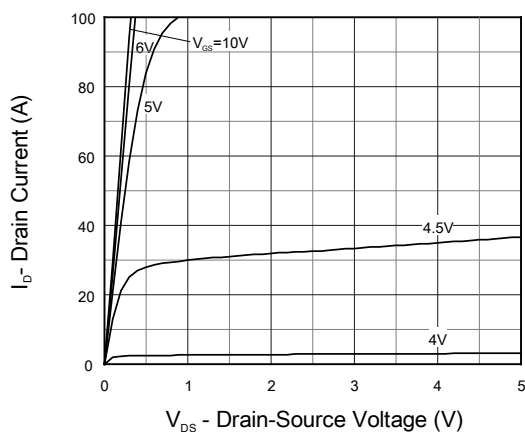


Figure 5. Output Characteristics

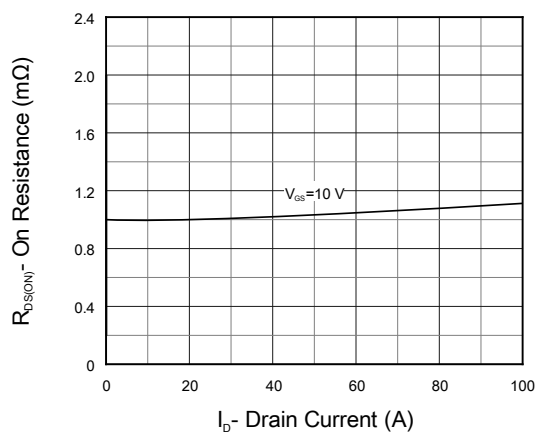


Figure 6. On Resistance

7. Typical Characteristics (cont.)

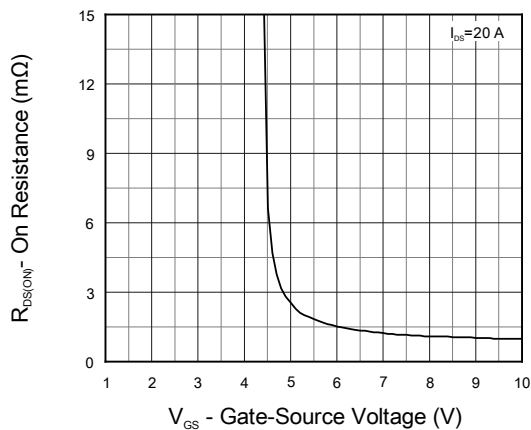


Figure 7. Transfer Characteristics

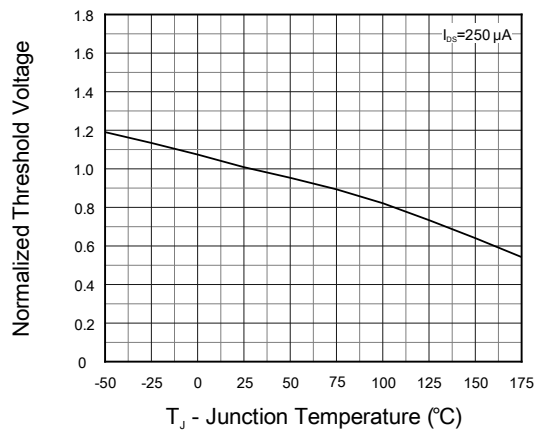


Figure 8. Normalized Threshold Voltage

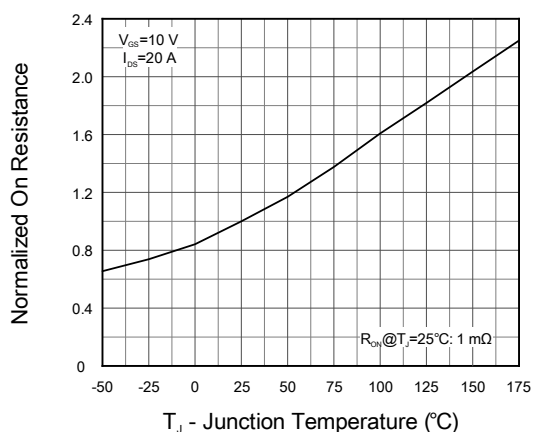


Figure 9. Normalized On Resistance

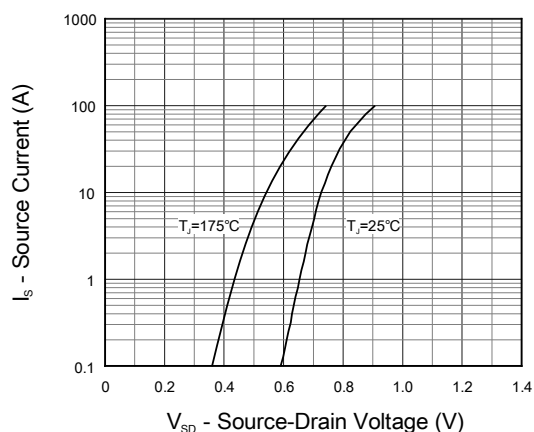


Figure 10. Diode Forward Current

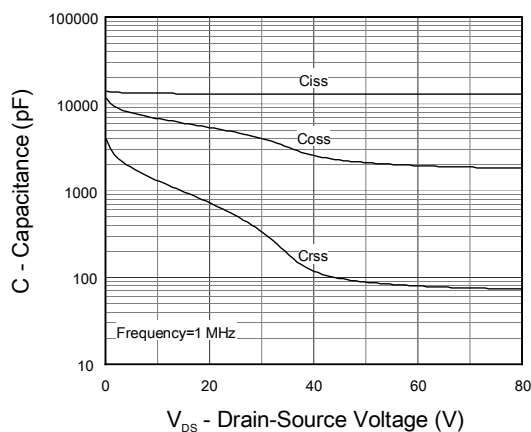


Figure 11. Capacitance

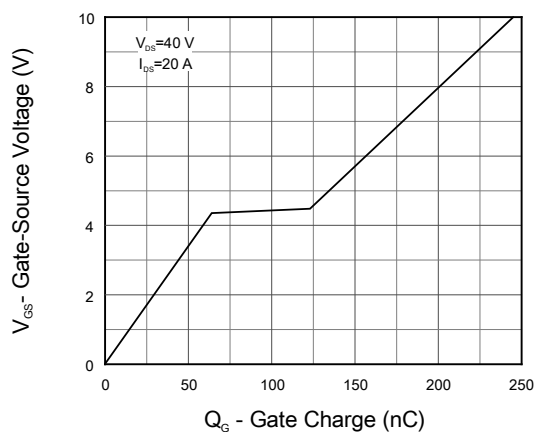


Figure 12. Gate Charge

7. Test Circuit

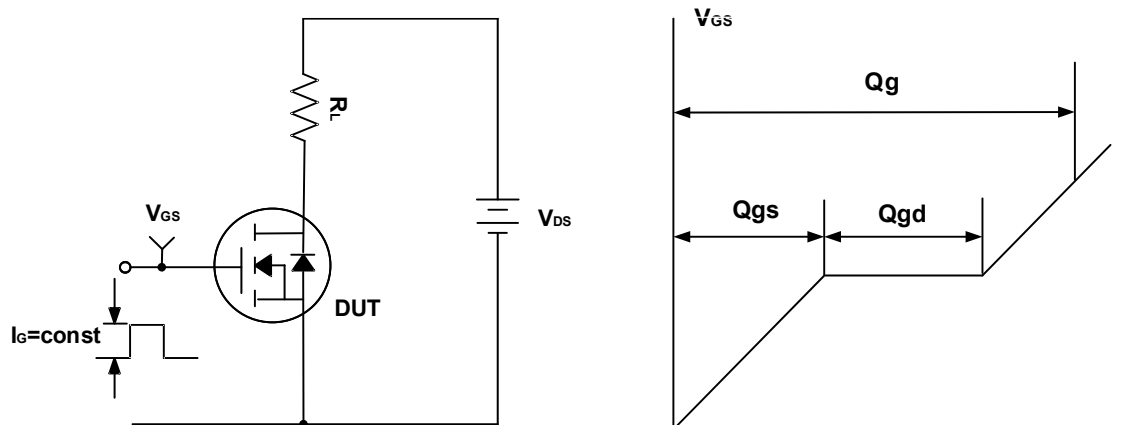


Figure A. Gate Charge Test Circuit & Waveforms

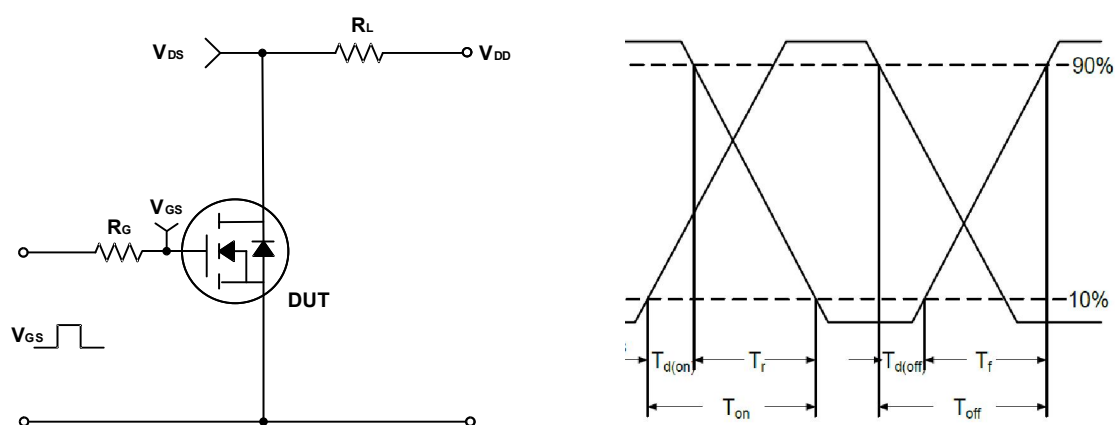


Figure B. Switching Test Circuit & Waveforms

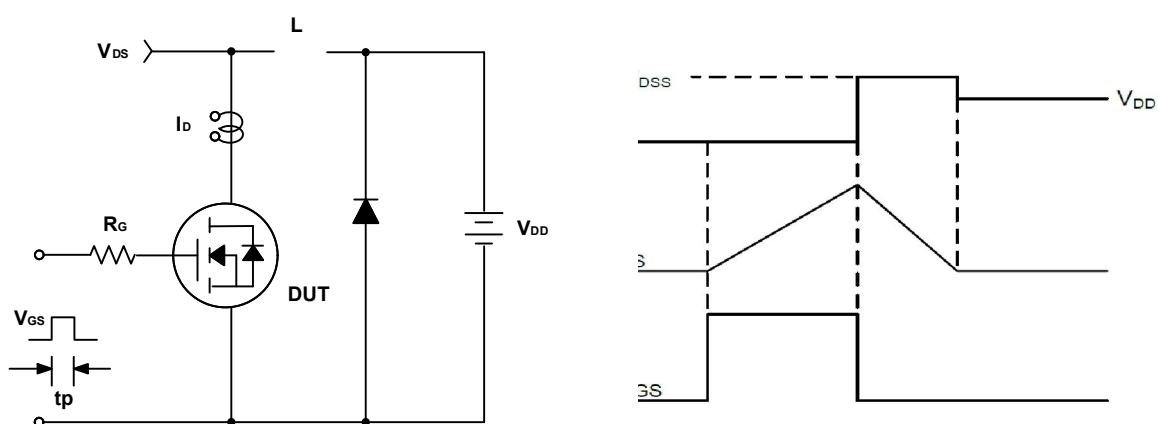
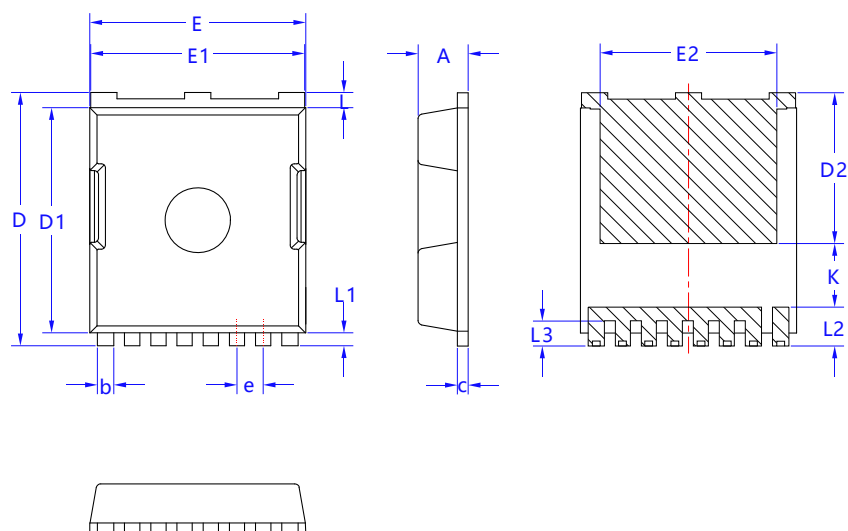


Figure C. Unclamped Inductive Switching Circuit & Waveforms

8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	2.20	2.30	2.40
b	0.60	0.70	0.90
c	0.40	0.50	0.60
D	11.48	11.68	11.88
D1	10.28	10.38	10.55
D2	6.85	6.95	7.05
E	9.80	9.90	10.0
E1	9.70	9.80	9.90
E2	8.00	8.10	8.20
e	1.20 BSC		
L	0.60 TYPE		
L1	0.60 TYPE		
L2	1.60	1.80	2.10
L3	1.00	1.15	1.30
K	2.90 TYPE		