KJ16N25T

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Super Trench technology
- ☑ T_J 175℃
- ☑ Extremely Low $R_{DS(ON)}$ and Q_g
- ☑ MSL1

1.2 Applications

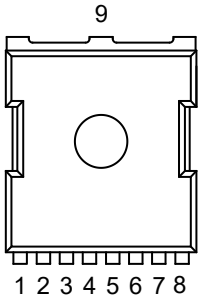
- ☑ Motor control and drive
- ☑ BMS
- ☑ High power inverter system
- ☑ UPS

1.3 Quick reference

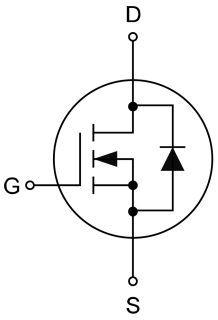
- ☑ BV ≥ 250 V
- ☑ P_D ≤ 375 W
- ☑ I_D ≤ 100 A
- ☑ $R_{DS(ON)}$ ≤ 18 mΩ @V_{GS} = 10 V

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℃	250	-	V
V_{GS}	Gate-Source Voltage	T_C=25℃	-	±20	V
I_D	Drain Current (DC)	T_C=25℃, V_{GS}=10 V	-	100	A
		T_C=100℃, V_{GS}=10 V	-	70	A
I_{DM}*	Drain Current (Pulsed)	T_C=25℃, V_{GS}=10 V	-	400	A
P_D	Drain Power Dissipation	T_C=25℃	-	375	W
I_S	Continuous-Source Current	T_C=25℃	-	100	A
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	℃
E_{AS}	Single Pulsed Avalanche Energy	V_{DD}=50 V, L=0.3 mH	-	396	mJ
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient		-	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		-	0.4	℃/W

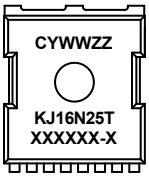
Notes:

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

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

*** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ16N25T	

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ16N25T	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	250	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	2.0	-	4.0	V
I_{DSS}	Drain Leakage Current	V_{DS}=250 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{DS}=0 V, V_{GS}=±20 V	-	-	±100	nA
$R_{DS(ON)}$	On-State Resistance	V_{GS}=10 V, I_{DS}=50 A	-	16	18	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5 V, I_{DS}=50 A	-	90	-	S
R_G	Gate resistance	V_{GS}=V_{DS}=0 V, Frequency=1 MHz	-	3.5	-	Ω
Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0 V, I_{SD}=50 A	-	-	1.4	V
t_{rr}	Reverse Recovery Time	V_{GS}=0 V, I_{SD}=50 A, dI_{SD}/dt=100 A/μs	-	165	-	ns
Q_{rr}	Reverse Recovery Charge		-	1060	-	nC
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=125 V, V_{GS}=0 V, Frequency=1 MHz	-	4310	-	pF
C_{oss}	Output Capacitance		-	364	-	
C_{rss}	Reverse Transfer Capacitance		-	50	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=125 V, V_{GEN}=10 V, R_G=2.7 Ω, I_{DS}=50 A	-	15	-	ns
t_r	Turn-on Rise Time		-	46	-	
$t_{d(off)}$	Turn-off Delay Time		-	50	-	
t_f	Turn-off Fall Time		-	30	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS}=125 V, V_{GS}=10 V, I_{DS}=50 A	-	65	-	nC
Q_{gs}	Gate-Source Charge		-	29	-	
Q_{gd}	Gate-Drain Charge		-	9	-	

7. Typical Characteristics

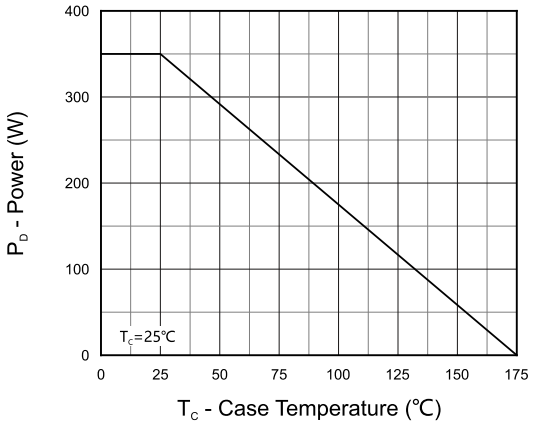


Figure 1. Power Capability

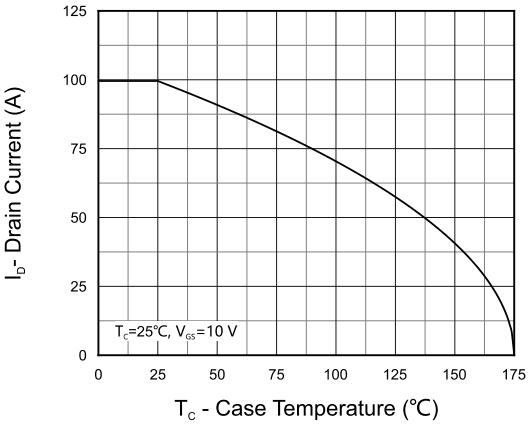


Figure 2. Current Capability

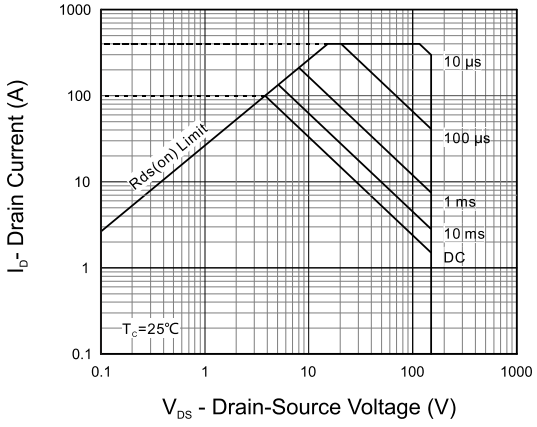


Figure 3. Safe Operation Area

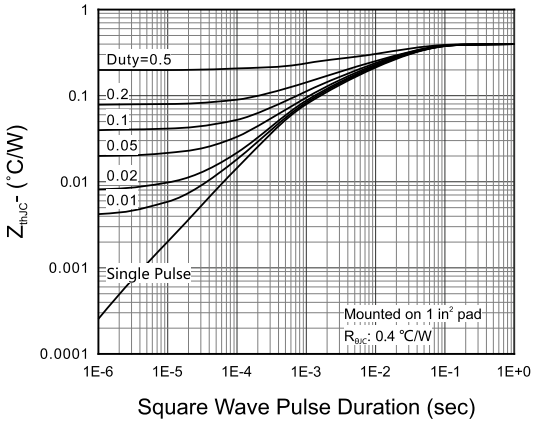


Figure 4. Transient Thermal Impedance

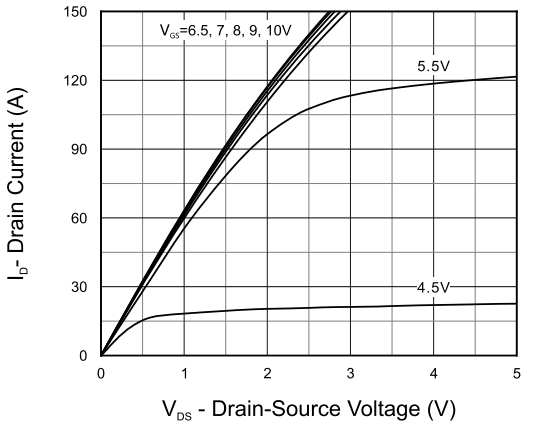


Figure 5. Output Characteristics

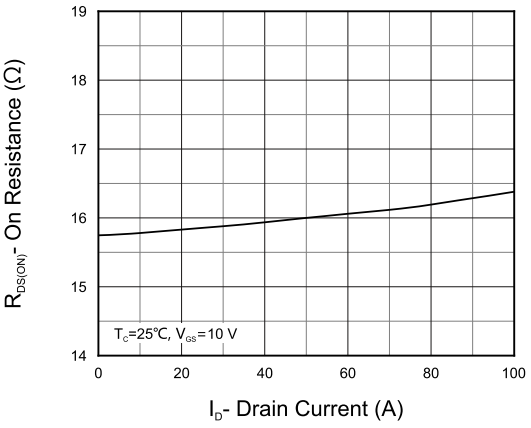


Figure 6. $R_{DS(ON)}$ vs. I_D

7. Typical Characteristics (cont.)

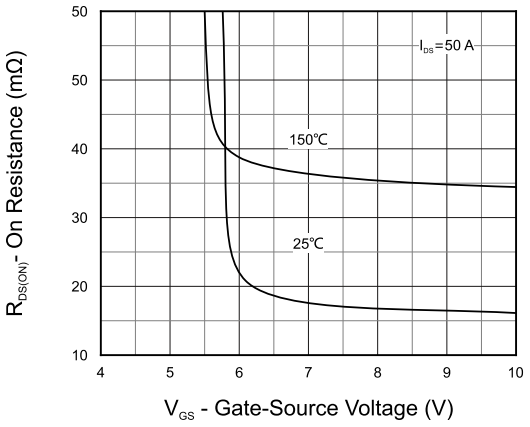


Figure 7. Transfer Characteristics

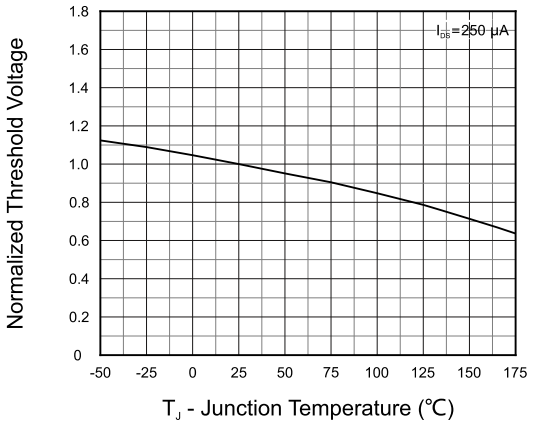


Figure 8. Normalized Threshold Voltage

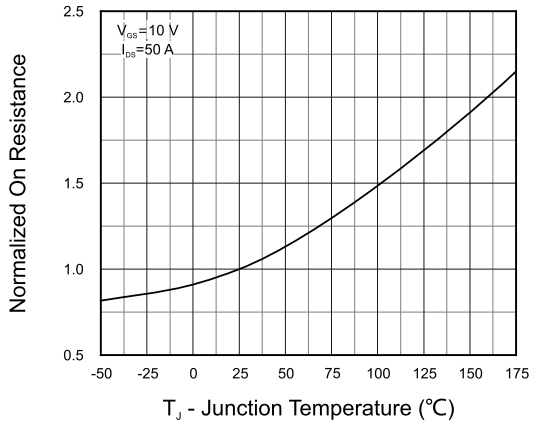


Figure 9. Normalized On Resistance

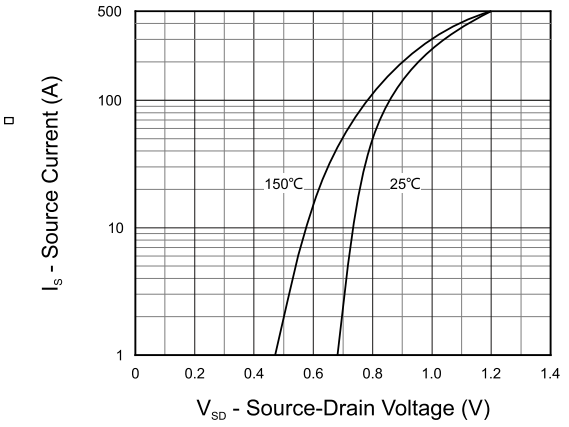


Figure 10. Diode Forward Current

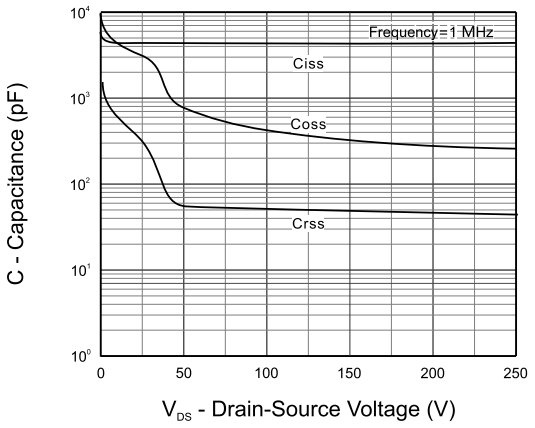


Figure 11. Capacitance

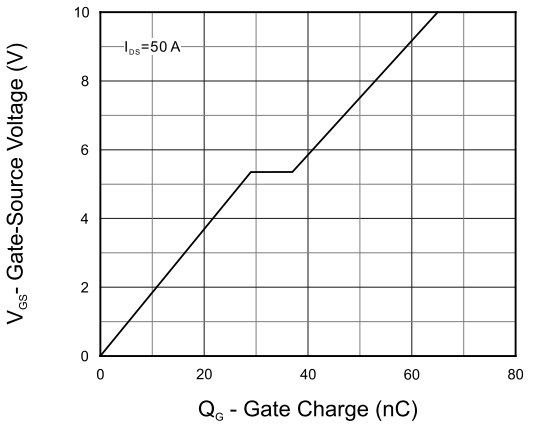
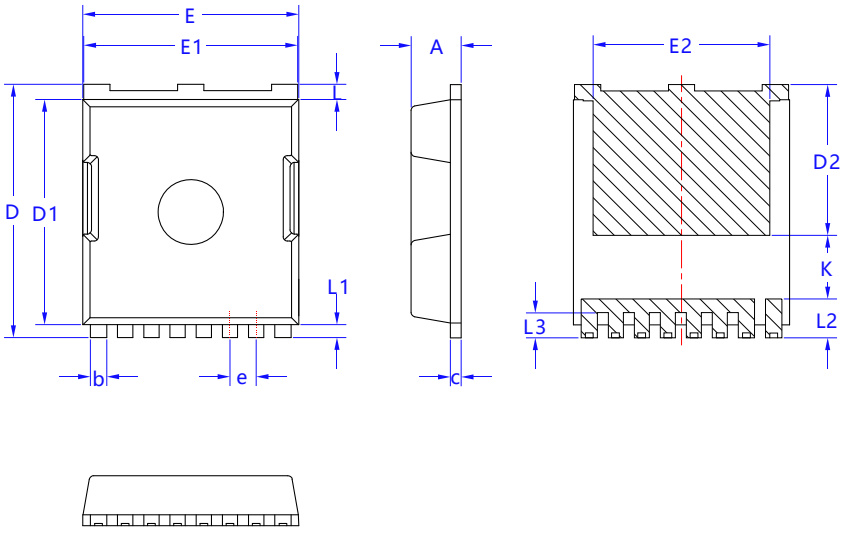


Figure 12. Gate Charge

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		