KJ032N12T

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Advanced trench cell design
- ☑ Low thermal resistance
- ☑ T_J max 175℃
- ☑ MSL1

1.2 Applications

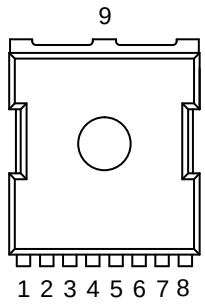
- ☑ Motor drivers
- ☑ DC/DC converter
- ☑ BMS

1.3 Quick reference

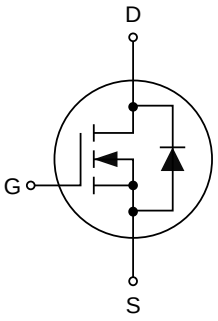
- ☑ BV ≥ 120 V
- ☑ $R_{DS(ON)}$ ≤ 3.2 mΩ @V_{GS} = 10 V
- ☑ P_D ≤ 357 W
- ☑ I_D ≤ 216 A

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℃	-	120	V
V_{GS}	Gate-Source Voltage	T_C=25℃	-	±20	V
I_D *, ***	Drain Current (DC)	T_C=25℃, V_{GS}=10 V	-	216	A
		T_C=100℃, V_{GS}=10 V	-	135	A
I_{DM} *	Drain Current (Pulsed)	T_C=25℃, V_{GS}=10 V	-	840	A
P_D *	Drain Power Dissipation	T_C=25℃	-	357	W
I_S	Continuous-Source Current	T_C=25℃	-	216	A
E_{AS}	Single Pulsed Avalanche Energy	V_{DD}=50 V, L=0.4 mH	-	890	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	℃
$R_{\theta JA}$ **	Thermal Resistance-Junction to Ambient		-	56	℃/W
$R_{\theta JC}$ **	Thermal Resistance-Junction to Case		-	0.42	

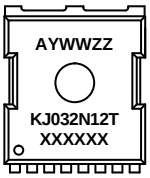
Notes:

* Surface mounted on 1 in^2 pad area, $t \leq 10$ sec.

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

*** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ032N12T	

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ032N12T	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	120	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	2	-	4	V
I_{DSS}	Drain Leakage Current	V_{DS}=120 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	-	2.6	3.2	mΩ
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	-	100	-	ns
Q_{rr}	Reverse Recovery Charge		-	190	-	nC
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{DS}=60 V, V_{GS}=0 V, Frequency=1 MHz	-	11496	-	pF
C_{oss}	Output Capacitance		-	1604	-	
C_{rss}	Reverse Transfer Capacitance		-	45	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=60 V, V_{GEN}=10 V, R_G=3 Ω, I_{DS}=20 A	-	32	-	ns
t_r	Turn-on Rise Time		-	86	-	
$t_{d(off)}$	Turn-off Delay Time		-	88	-	
t_f	Turn-off Fall Time		-	55	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=60 V, V_{GS}=10 V, I_{DS}=20 A	-	169	-	nC
Q_{gs}	Gate-Source Charge		-	43	-	
Q_{gd}	Gate-Drain Charge		-	39	-	

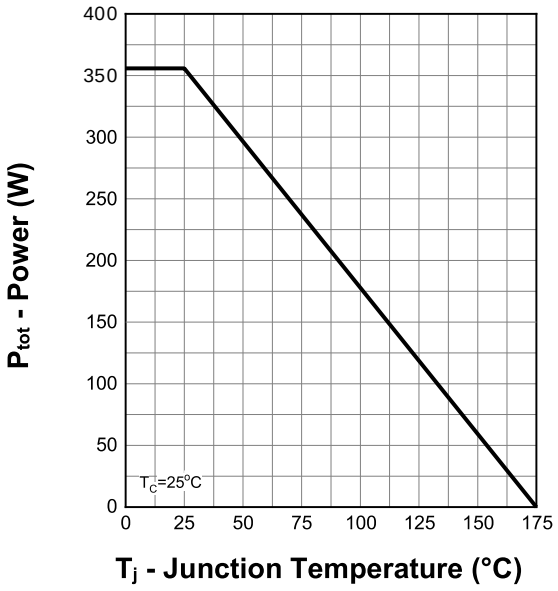
Notes:

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

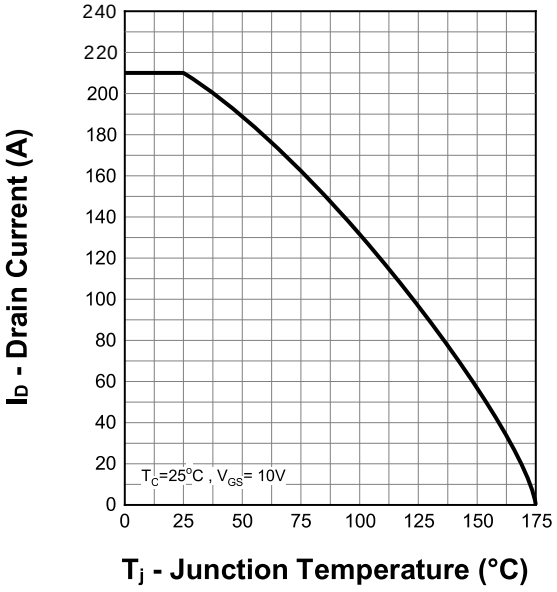
b. Guaranteed by design, not subject to production testing.

7. Typical Characteristics

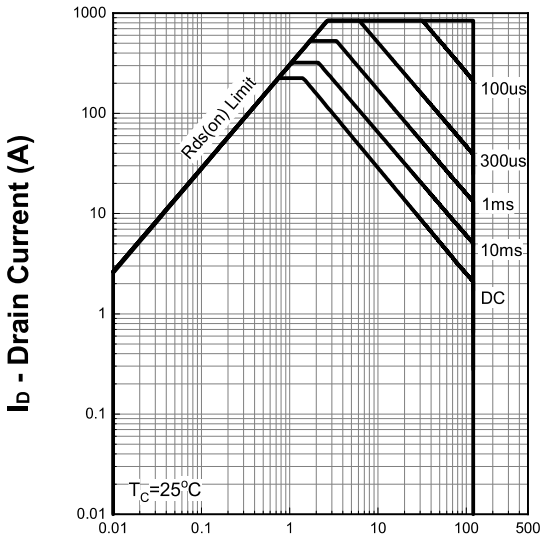
Power Capability



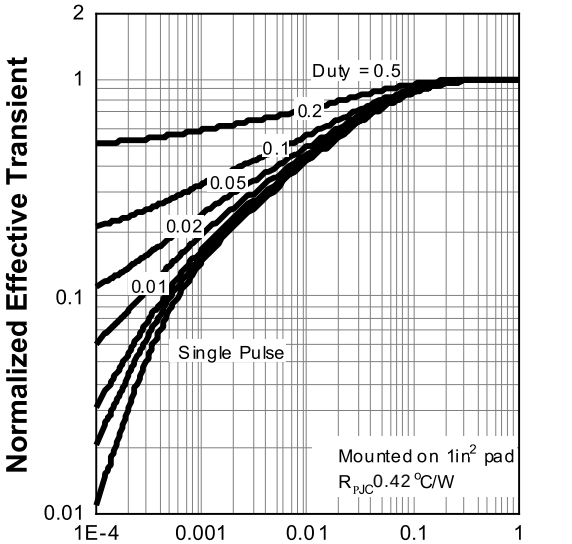
Current Capability



Safe Operating Area

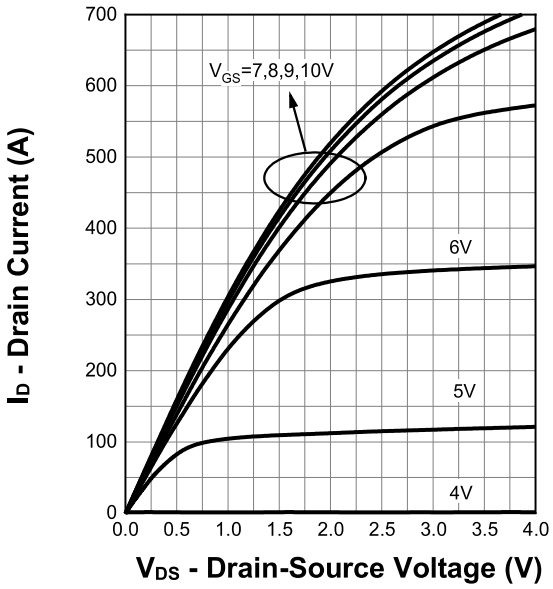


Transient Thermal Impedance

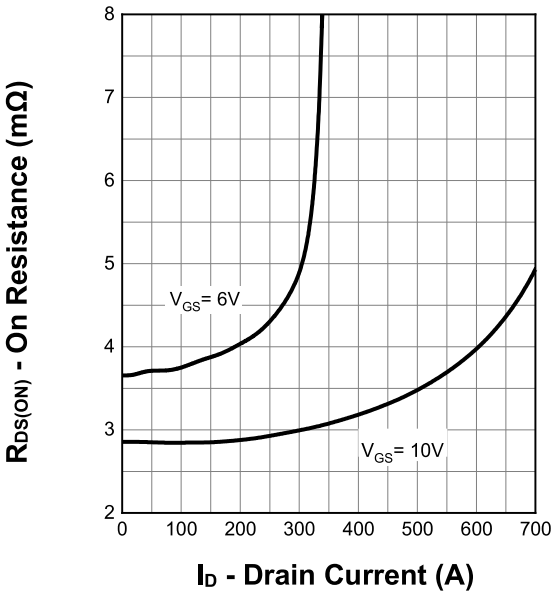


7. Typical Characteristics (cont.)

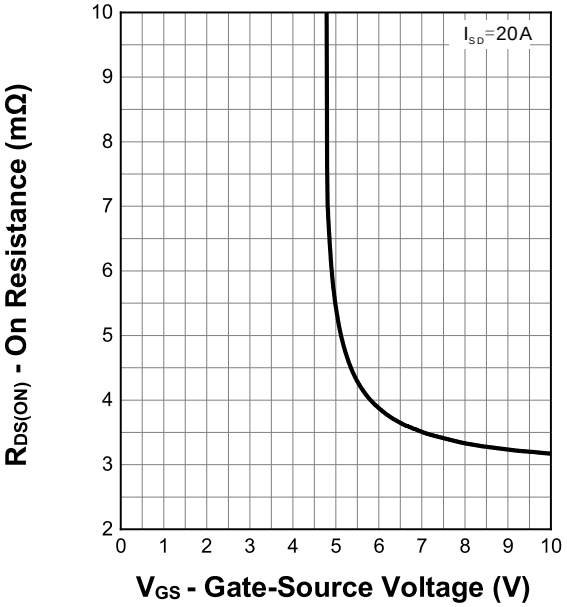
Output Characteristics



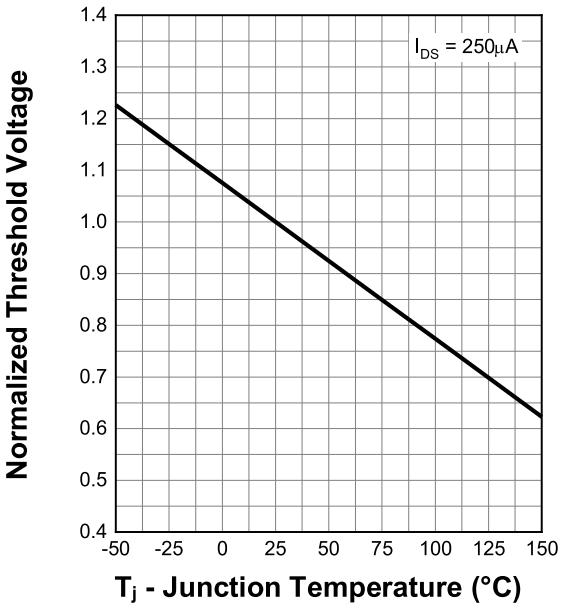
On Resistance



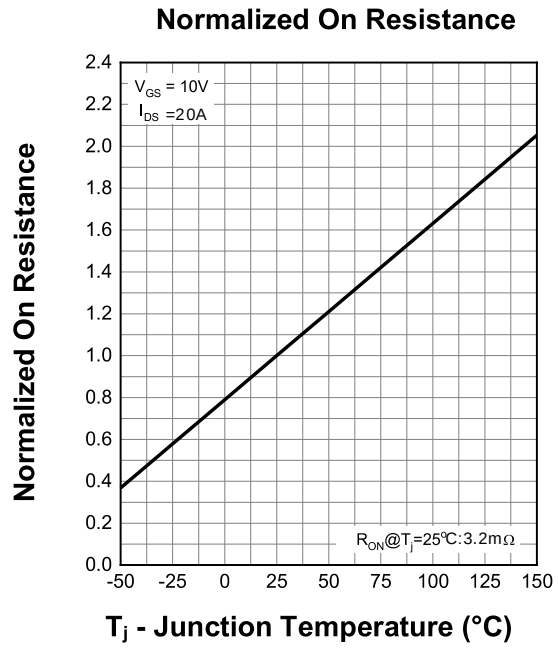
Transfer Characteristics

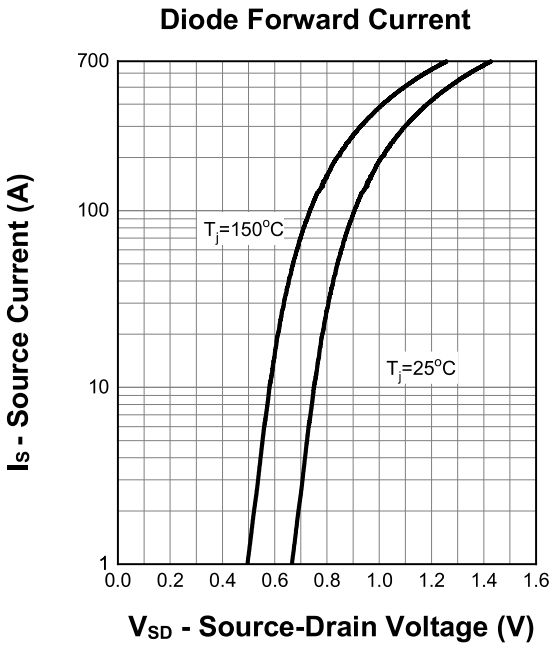


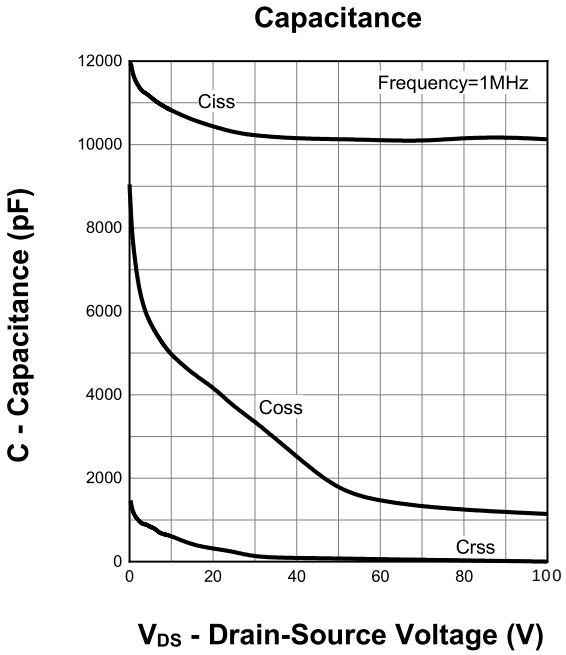
Normalized Threshold Voltage

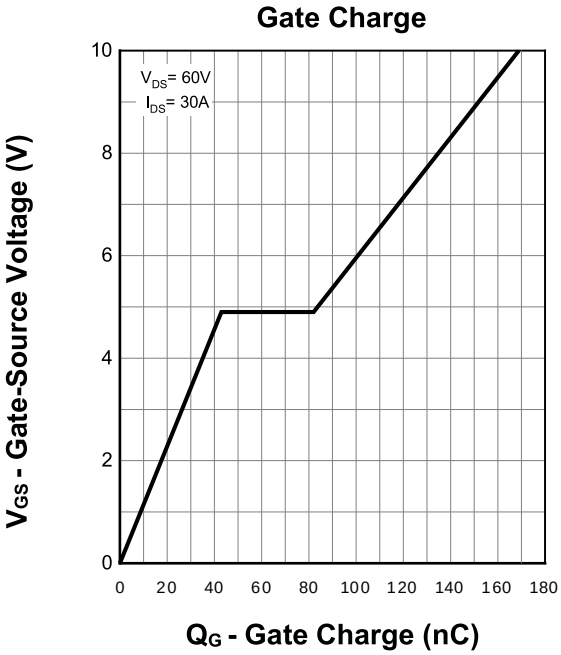


7. Typical Characteristics (cont.)



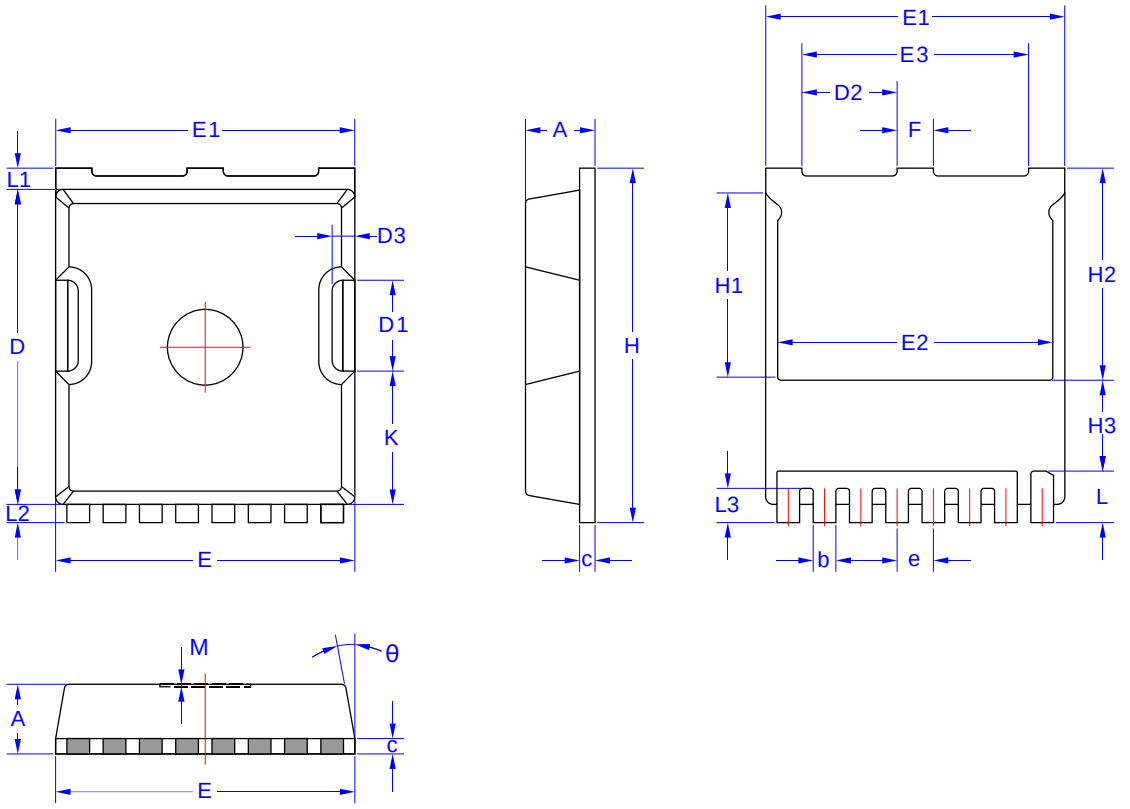






8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
c		0.508 REF	
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
D2	2.95	3.10	3.25
D3		0.75 REF	
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e		1.20 BSC	

Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3		3.00 BSC	
K	4.25	4.40	4.55
L	1.55	1.70	1.85
L1	0.55	0.70	0.85
L2	0.45	0.60	0.75
L3	1.00	1.15	1.30
M		0.08 REF	
θ	8°	10°	12°