

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design

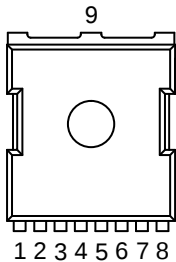
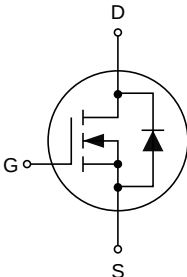
1.2 Applications

- ☒ LCD TV appliances
☒ LCDM appliances
- ☒ High power inverter system

1.3 Quick reference

- ☒ $BV \geq 120\text{ V}$
☒ $P_D \leq 375\text{ W}$
☒ $I_D \leq 211\text{ A}$
- ☒ $R_{DS(ON)} \leq 3.2\text{ m}\Omega @V_{GS} = 10\text{ V}$
☒ $R_{DS(ON)} \leq 3.9\text{ m}\Omega @V_{GS} = 6\text{ V}$

2. Pin Description

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

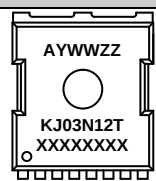
3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}\text{C}$	-	120	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D^*	Continuous Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	211	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	149	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	700	A
P_{tot}	Drain Power Dissipation	$T_C=25^{\circ}\text{C}$	-	375	W
T_{stg}	Storage Temperature		-55	175	$^{\circ}\text{C}$
T_J	Junction Temperature		-	175	$^{\circ}\text{C}$
I_S^*	Continuous-Source Current	$T_C=25^{\circ}\text{C}$	-	211	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD}=50\text{ V}, L=0.5\text{ mH}$	-	1800	mJ
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient		-	50	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance-Junction to Case		-	0.4	

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$
- ** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
- *** Limited by bonding wire

4. Marking Information

Product Name	Marking
KJ03N12T	

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ03N12T	TOLL-8L	-	-	2000	

Note: KUIJIEXIN 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)

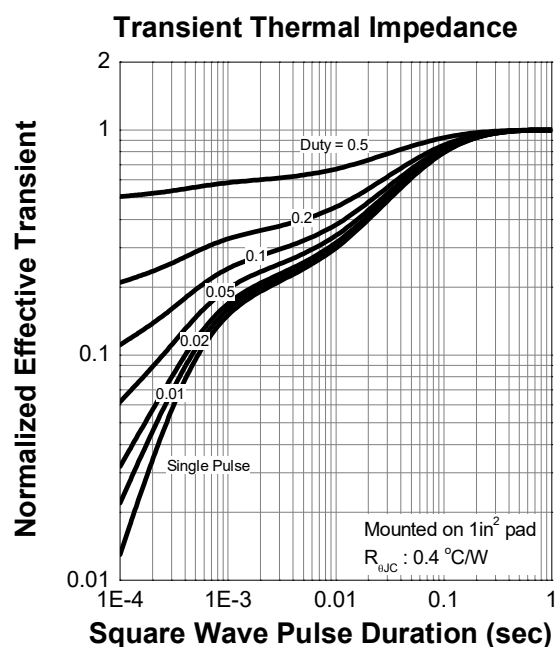
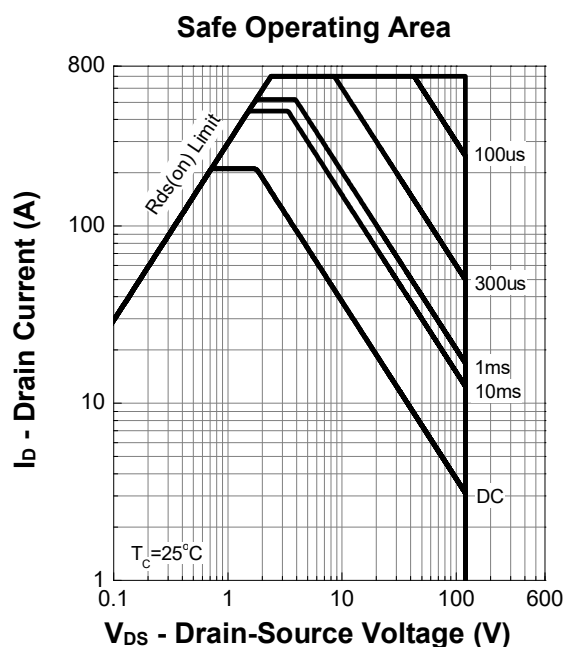
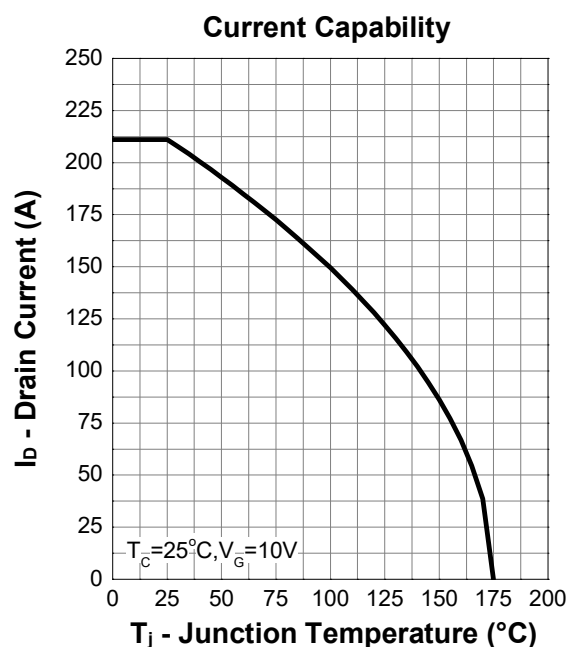
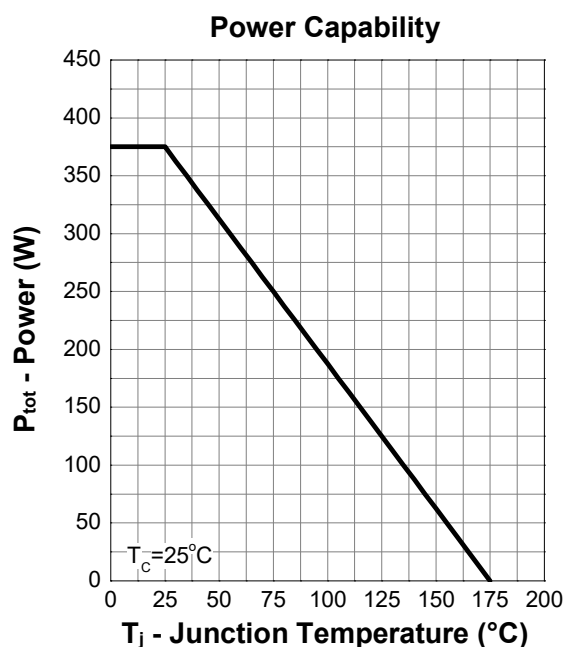
6. Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	120	-	-	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} =96 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)}	On-State Resistance	V _{GS} =10 V, I _{DS} =50 A	-	2.8	3.2	mΩ
		V _{GS} =6 V, I _{DS} =30 A	-	3.4	3.9	mΩ
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =50 A, V _{GS} =0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =50 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	124	-	ns
Q _{rr}	Reverse Recovery Charge		-	368	-	nC
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =60 V, Frequency=1 MHz	-	9116	-	pF
C _{oss}	Output Capacitance		-	1041	-	
C _{rss}	Reverse Transfer Capacitance		-	69	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =60 V, V _{GS} =10 V, R _G =3.9 Ω, R _L =1.2 Ω, I _{DS} =50 A	-	26	-	ns
t _r	Turn-on Rise Time		-	87	-	
t _{d(off)}	Turn-off Delay Time		-	105	-	
t _f	Turn-off Fall Time		-	87	-	
Switching Parameters						
Q _g	Total Gate Charge	V _{DS} =60 V, V _{GS} =10 V, I _{DS} =50 A	-	157	-	nC
Q _{gs}	Gate-Source Charge		-	47	-	
Q _{gd}	Gate-Drain Charge		-	37	-	

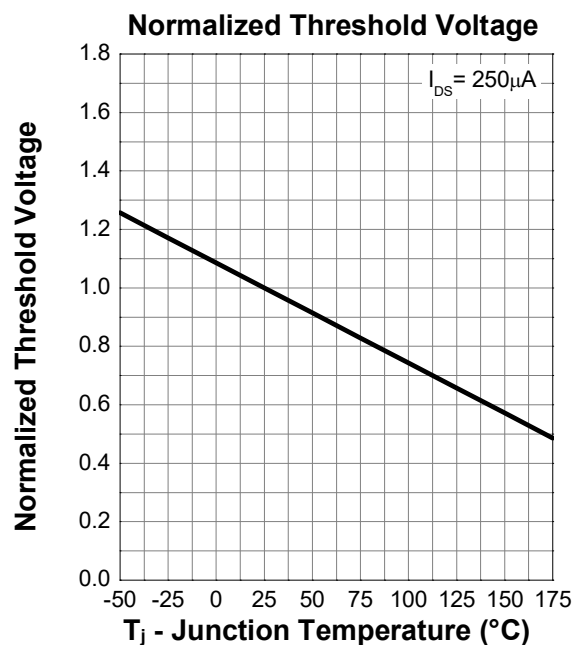
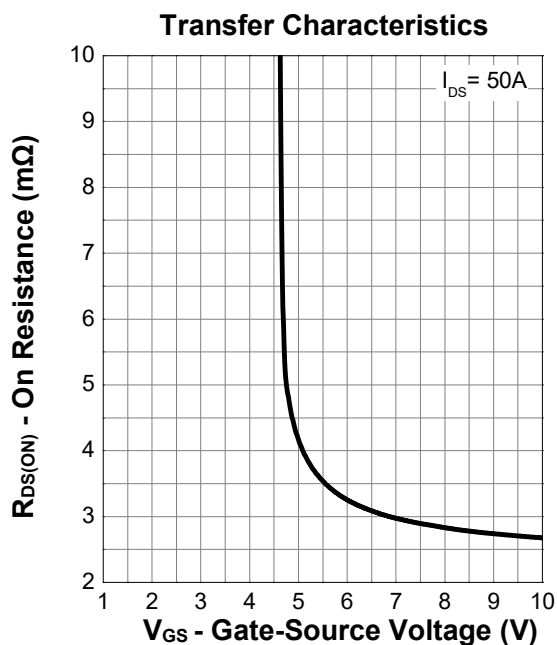
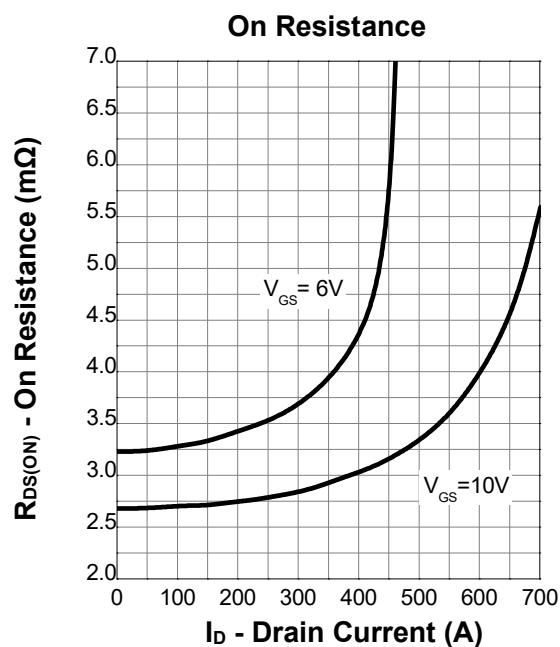
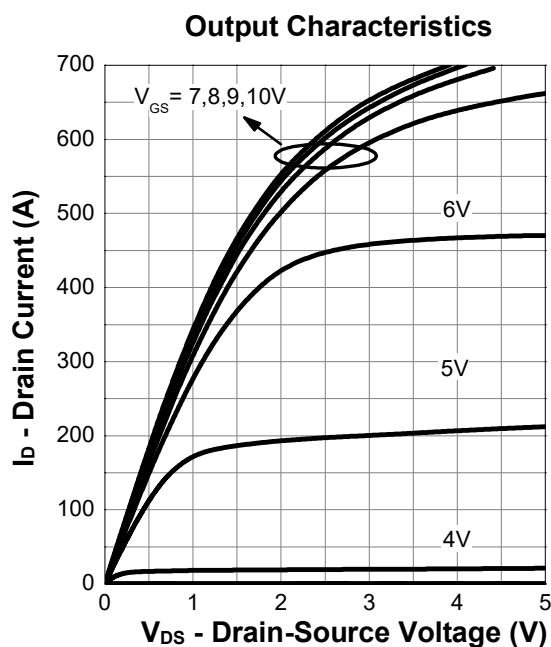
Notes:

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%
- Guaranteed by design, not subject to production testing

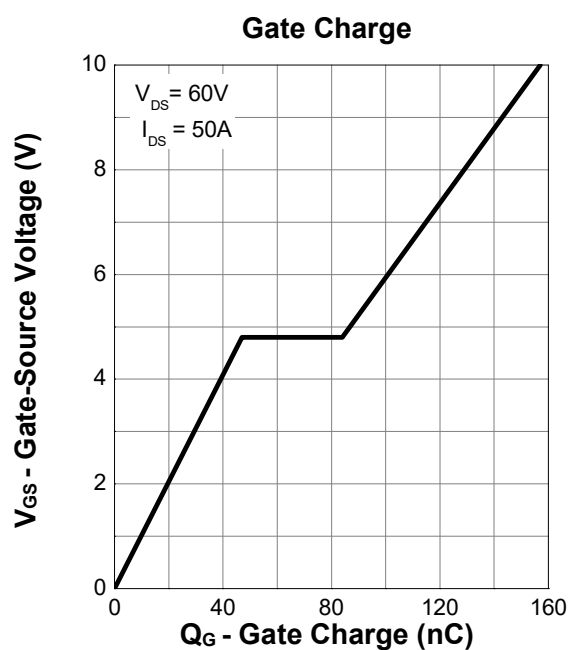
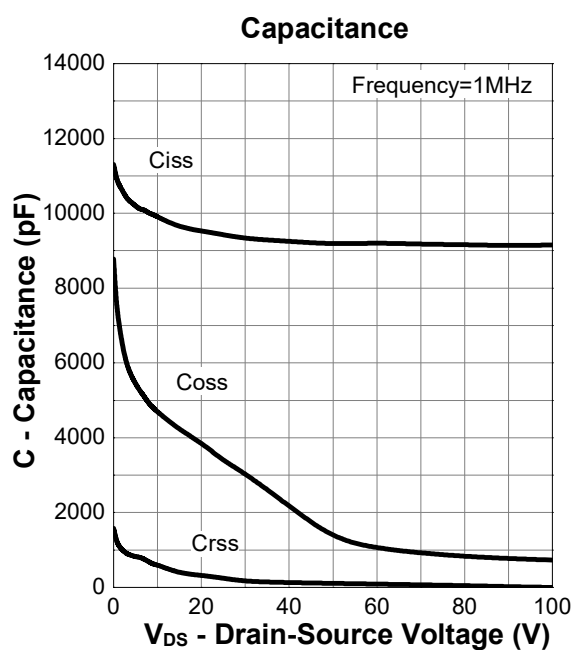
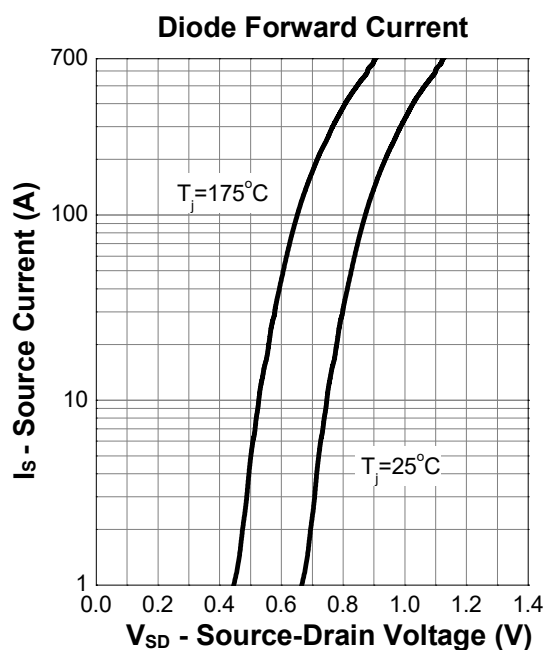
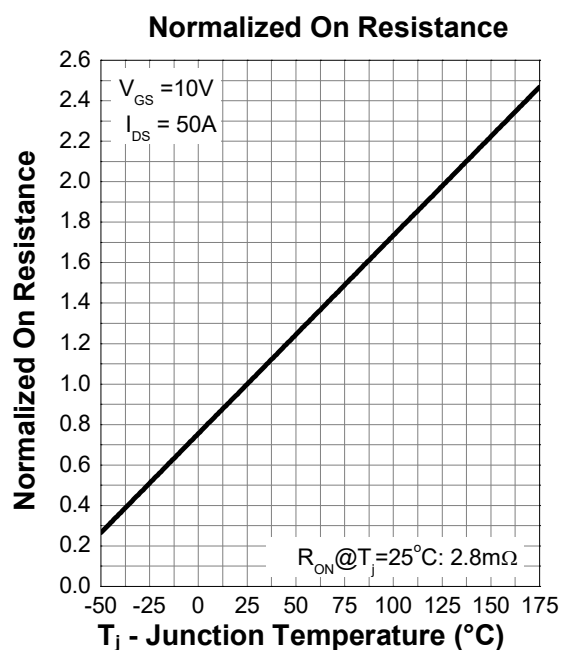
7. Typical Characteristics



7. Typical Characteristics(cont.)

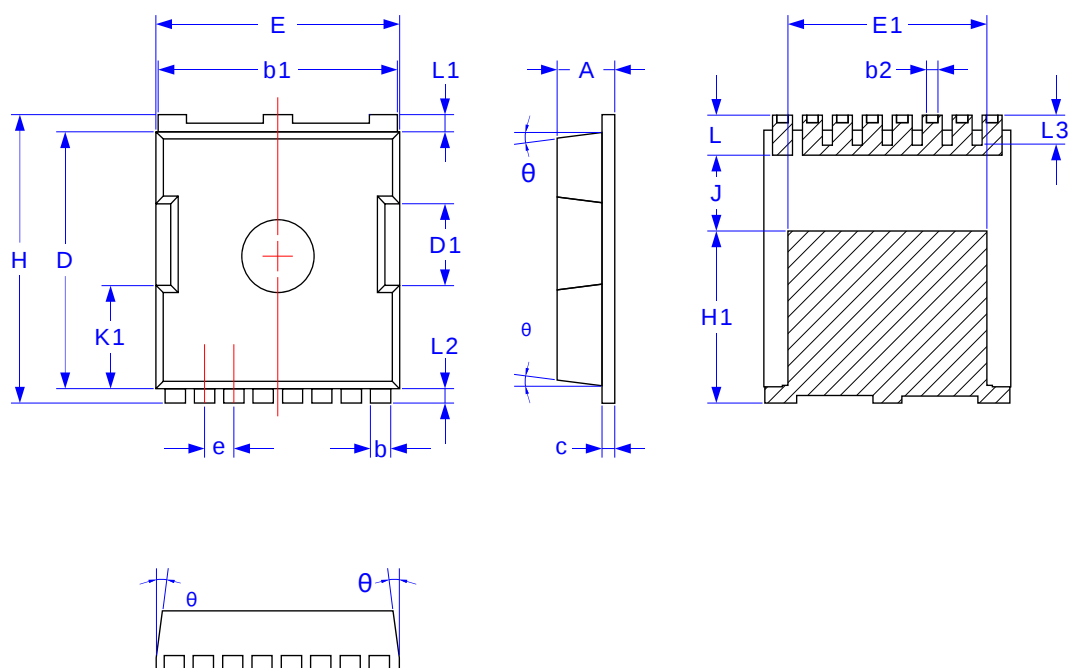


7. Typical Characteristics(cont.)



8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	MIN.	MAX.	MIN.	MAX.
A	2.20	2.40	0.0866	0.0945
b	0.70	0.90	0.0276	0.0354
b1	9.70	9.90	0.3819	0.3898
b2	0.42	0.50	0.0165	0.0197
c	0.40	0.60	0.0157	0.0236
D	10.28	10.58	0.4047	0.4165
D1	3.10	3.50	0.1220	0.1378
E	9.70	10.10	0.3819	0.3976
E1	7.90	8.30	0.3110	0.3268
e	1.20 BSC		0.0472 BSC	
H	11.48	11.88	0.4520	0.4677
H1	6.75	7.15	0.2657	0.2815
N	8.00		0.3150	
J	3.00	3.30	0.1181	0.1299
K1	3.98	4.38	0.1567	0.1724
L	1.40	1.80	0.0551	0.0709
L1	0.60	0.80	0.0236	0.0315
L2	0.50	0.70	0.0197	0.0276
L3	1.00	1.30	0.0394	0.0512
θ	4°	10°	4°	10°