

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

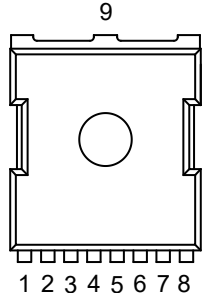
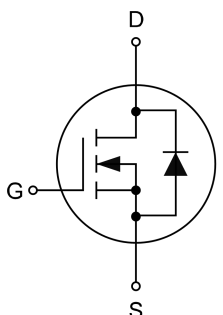
1.2 Applications

- ☑ 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	 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	$T_C=25^{\circ}\text{C}$	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
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
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		-	50	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.4	

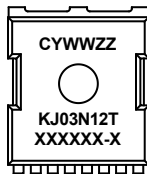
Notes:

* 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

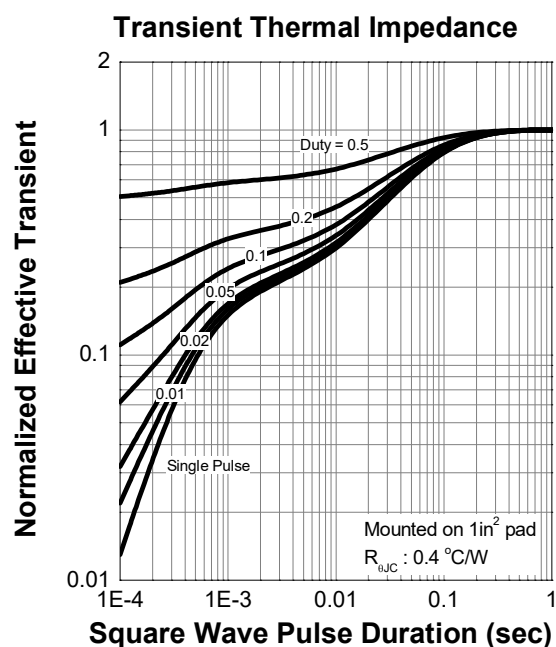
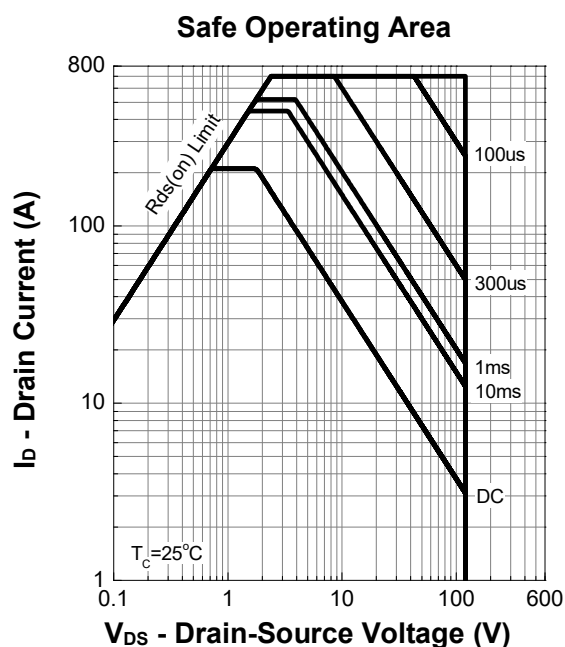
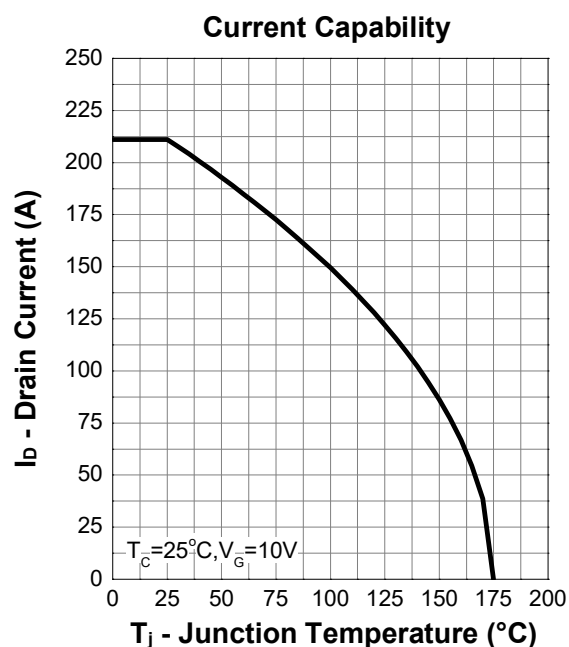
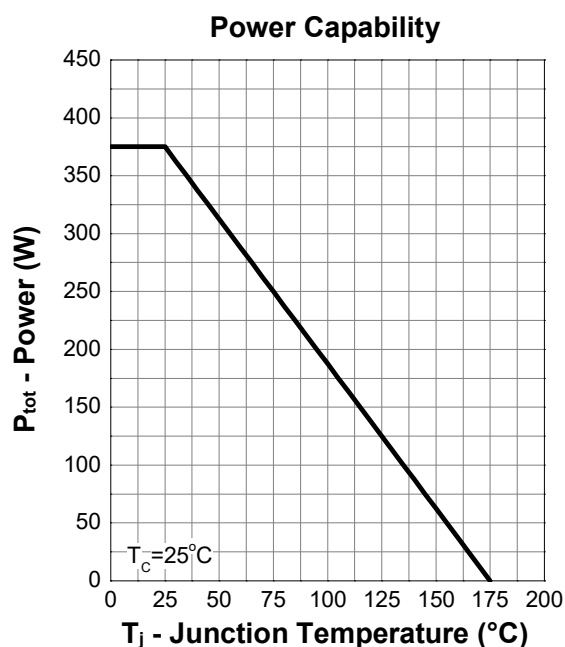
Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ03N12T	TOLL-8L	13"	24 mm	2000

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)

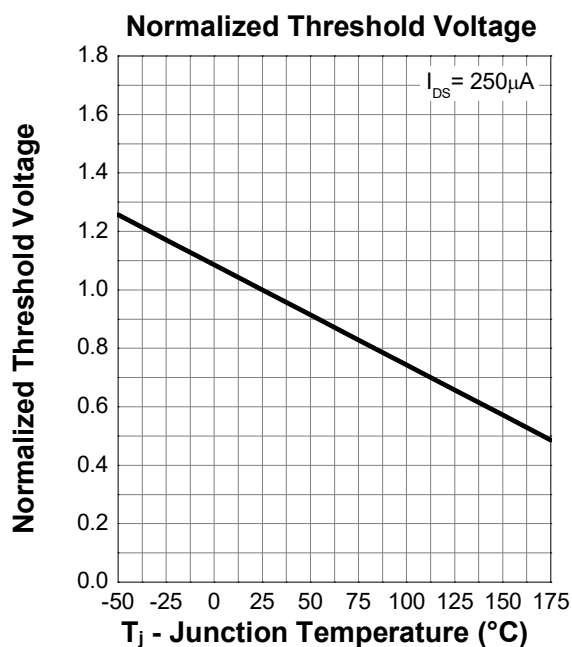
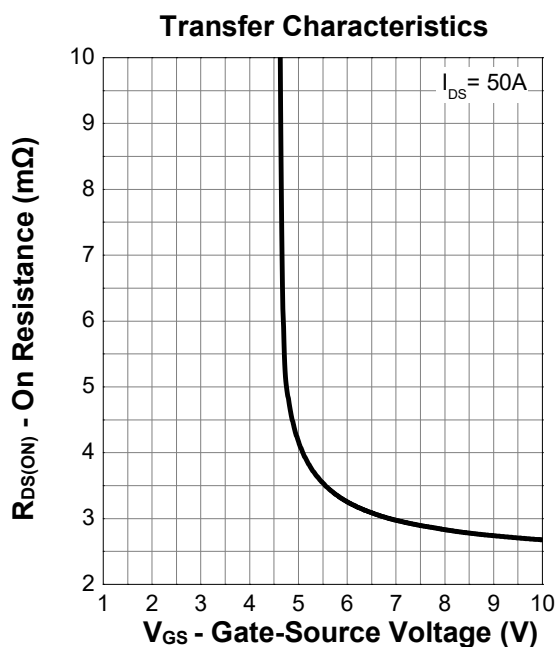
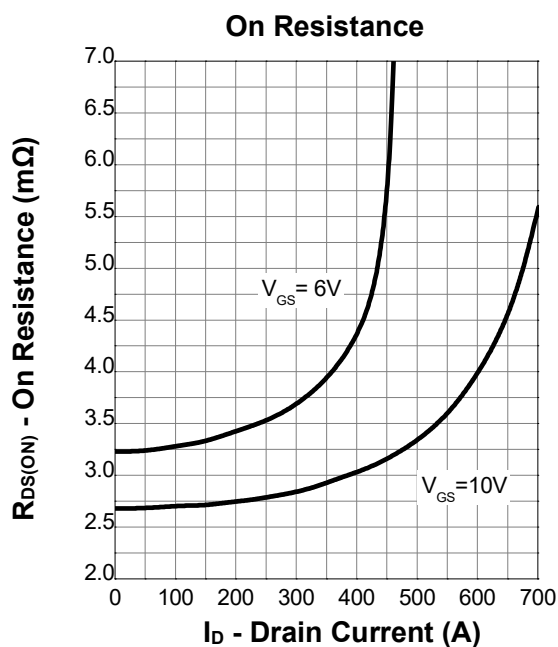
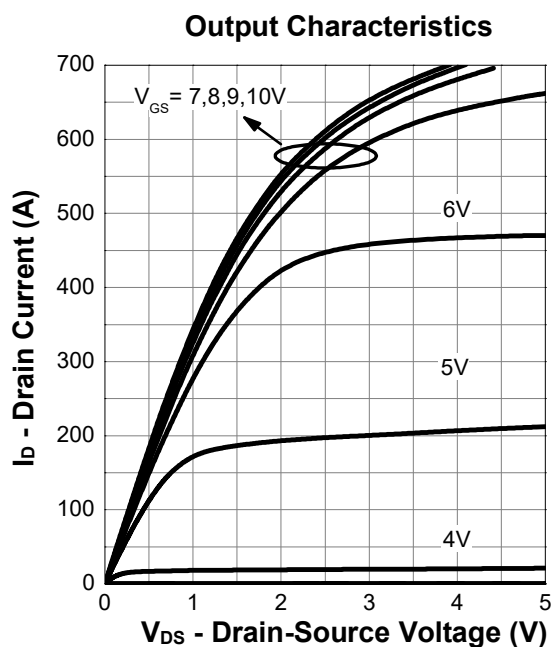
6. Electrical Characteristics (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	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} =96 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate-Body 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	-	2.8	3.2	mΩ
		V _{GS} =6 V, I _{DS} =30 A	-	3.4	3.9	mΩ
Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0 V, I _{SD} =50 A	-	-	1.3	V
t _{rr}	Reverse Recovery Time	V _{GS} =0 V, I _{SD} =50 A, dI _{SD} /dt=100 A/μs	-	124	-	ns
Q _{rr}	Reverse Recovery Charge		-	368	-	nC
Dynamic Characteristics						
C _{iSS}	Input Capacitance	V _{DS} =60 V, V _{GS} =0 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	-	

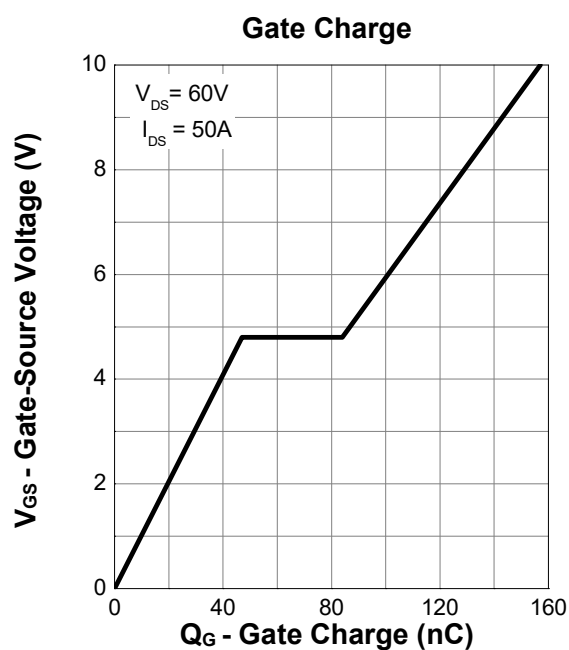
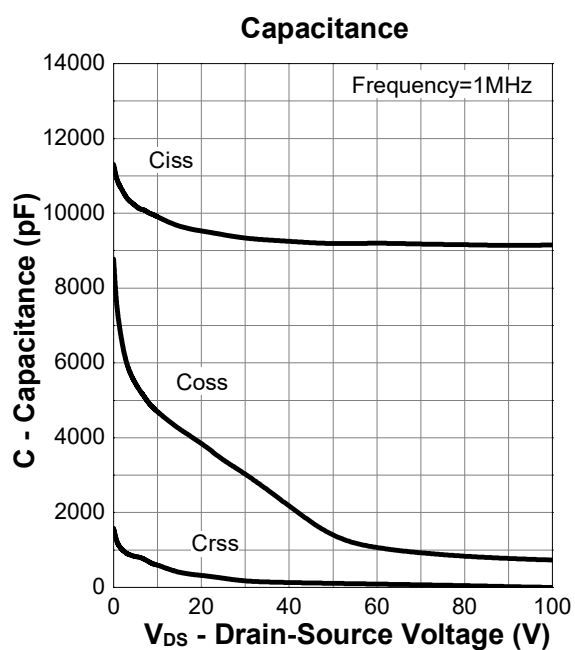
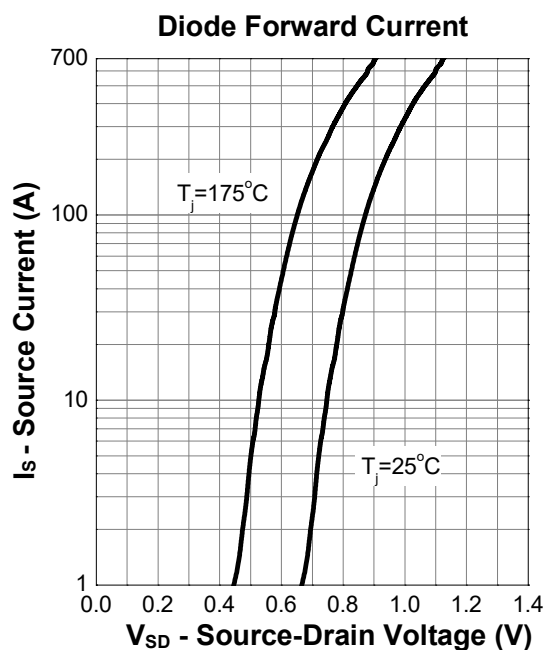
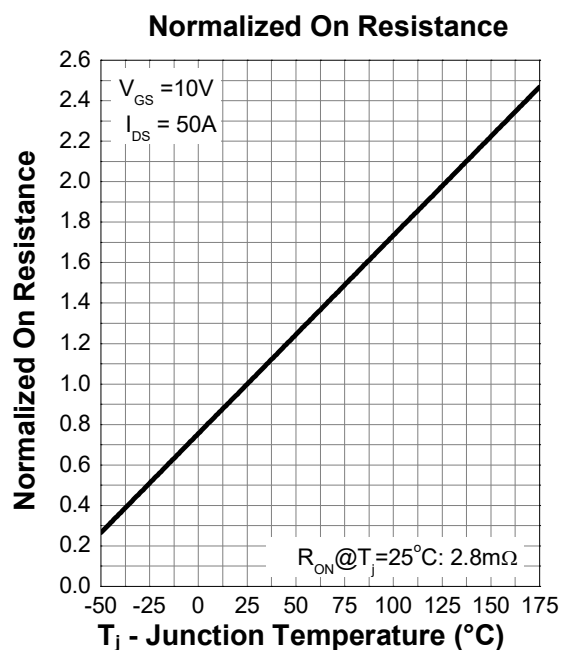
7. Typical Characteristics



7. Typical Characteristics(cont.)

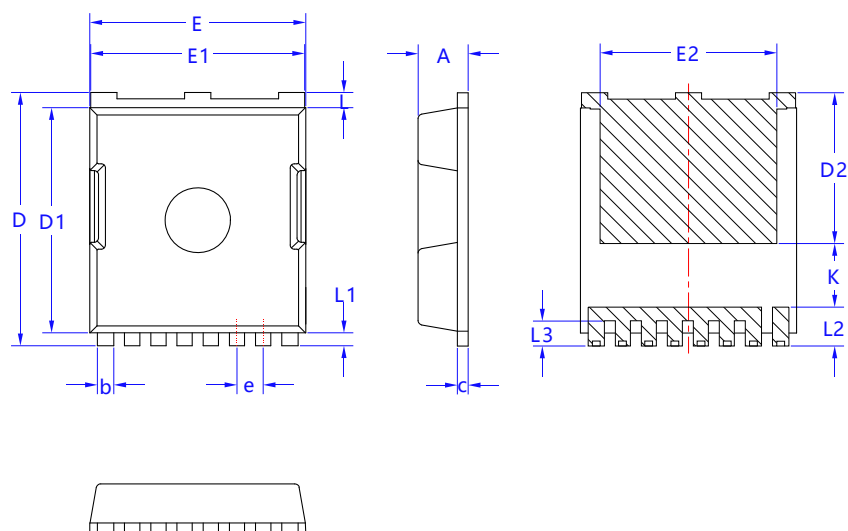


7. Typical Characteristics(cont.)



8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	2.20	2.30	2.40
b	0.60	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		