KJ053N10T

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Spilt Gate Trench Technology
- ☑ Excellent $R_{DS(ON)}$
- ☑ Low gate charge

1.2 Applications

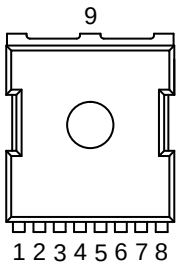
- ☑ Load Switch for Portable Device
- ☑ DC/DC Converter
- ☑ Battery Switch

1.3 Quick reference

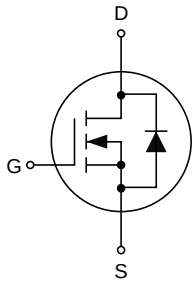
- ☑ BV ≧100V
- ☑ $R_{DS(ON)}$ ≦ 5.4mΩ@V_{GS} = 10V
- ☑ P_{tot} ≦192W
- ☑ I_D ≦120A

2. Pin Description

Pin	Description
1	Gate(G)
2,3,4,5,6,7,8	Source(S)
9	Drain(D)



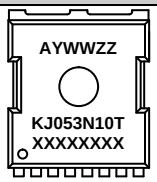
Top View
TOLL-8L



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C=25℃	100	-	V
V_{GS}	Gate-Source Voltage	T_C=25℃	-	±20	V
I_D	Drain Current (DC)	T_C=25℃, V_{GS}=10V	-	120	A
		T_C=100℃, V_{GS}=10V	-	84	A
I_{DM} [1]	Drain Current (Pulsed)	T_C=25℃, V_{GS}=10V	-	440	A
P_{tot}	Drain power dissipation	T_C=25℃	-	192	W
T_{stg}	Storage Temperature		-55	150	℃
T_J	Junction Temperature		-	150	℃
I_S	Continuous-Source Current	T_C=25℃	-	120	A
E_{AS} [2]	Single Pulsed Avalanche Energy		-	225	mJ
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.65	℃/W

4. Marking Information

Product Name	Marking
KJ053N10T	

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ053N10T	**TOLL-8L**	**-**	**-**	**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}=0V, I_{DS}=250μA	100	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage [3]	V_{DS}=V_{GS}, I_{DS}=250μA	2	3	4	V
I_{DSS}	Zero Gate Voltage Source Current	V_{DS}=100V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-State Resistance [3]	V_{GS}=10V, I_{DS}=20A	-	4.5	5.4	mΩ
R_G	Gate Resistance	Frequency=1.0MHz	-	3.5	-	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=50V Frequency=1MHz	-	3244	-	pF
C_{oss}	Output Capacitance		-	1075	-	
C_{rss}	Reverse Transfer Capacitance		-	52	-	
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=50V, R_L=2.5Ω V_{GS}=10V, R_G=6Ω	-	22	-	ns
t_r	Turn-on Rise Time		-	36	-	
$t_{d(off)}$	Turn-off Delay Time		-	49	-	
t_f	Turn-off Fall Time		-	31	-	
Q_g	Total Gate Charge	V_{DS}=50V, I_{DS}=20A V_{GS}=10V	-	51	-	nC
Q_{gs}	Gate-Source Charge		-	15	-	
Q_{gd}	Gate-Drain Charge		-	13	-	
Source-Drain Diode Characteristics						
V_{DS}	Diode Forward Voltage [3]	V_{GS}=0V, I_{DS}=20A	-	-	1.2	V
I_S	Diode Forward Current [4]		-	-	120	A
t_{rr}	Reverse Recovery Time	I_{DS}=15A, V_{GS}=0V dI_F/dt=100A/μs	-	58	-	ns
Q_{rr}	Reverse Recovery Charge		-	90	-	nC

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. E_{AS} condition: T_J=25℃, V_{DD}=50V, R_G=25Ω, L=0.5mH
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
4. Surface Mounted on FR-4 Board, t ≤ 10 sec

7. Typical Characteristics

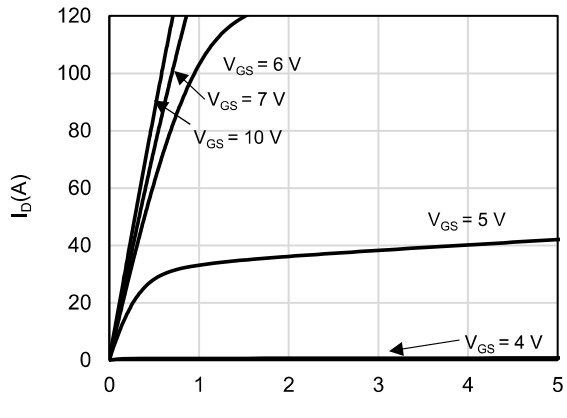


Figure 1: On-Region Characteristics

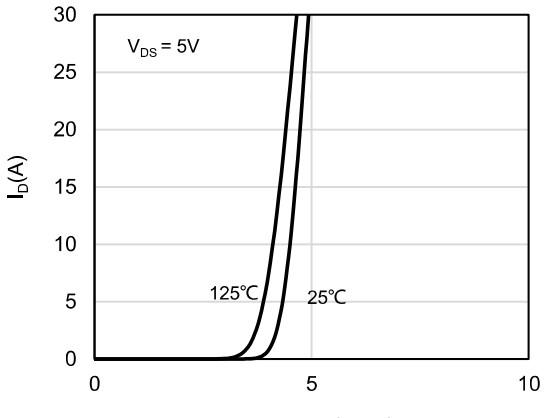


Figure 2: Transfer Characteristics

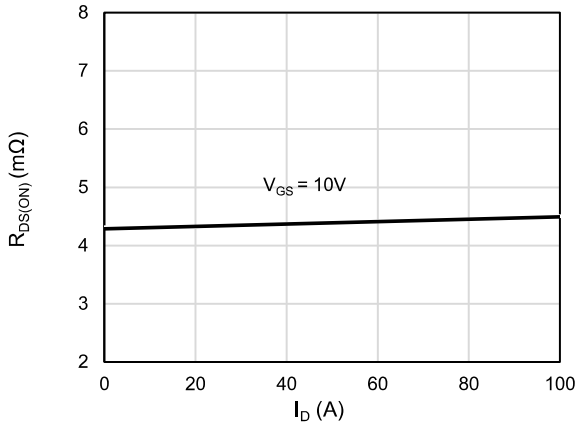


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

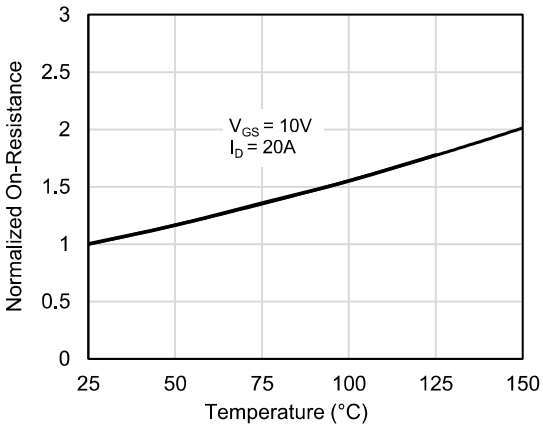


Figure 4: On-Resistance vs. Junction Temperature

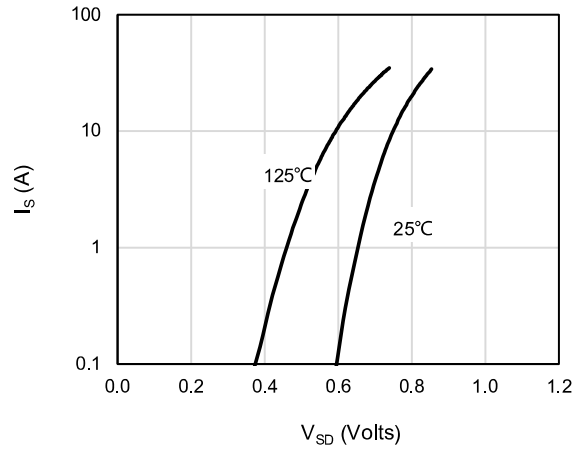


Figure 5: Body-Diode Characteristics

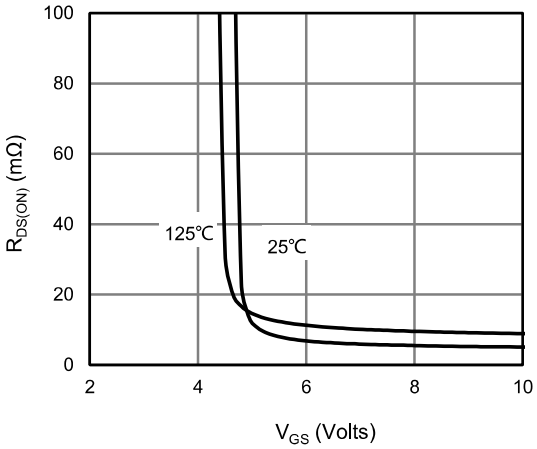


Figure 6: On-Resistance vs. Gate-Source Voltage

7. Typical Characteristics (Cont.)

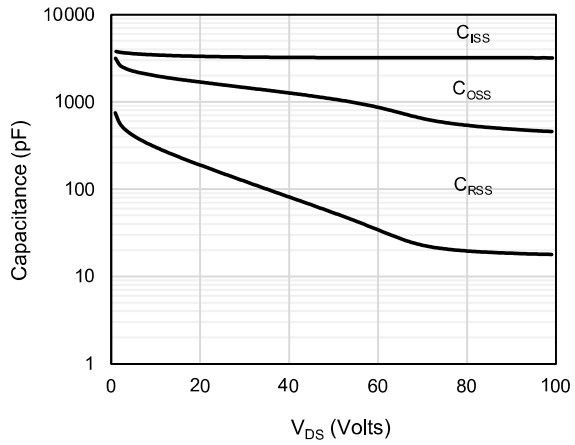


Figure 7: Capacitance Characteristics

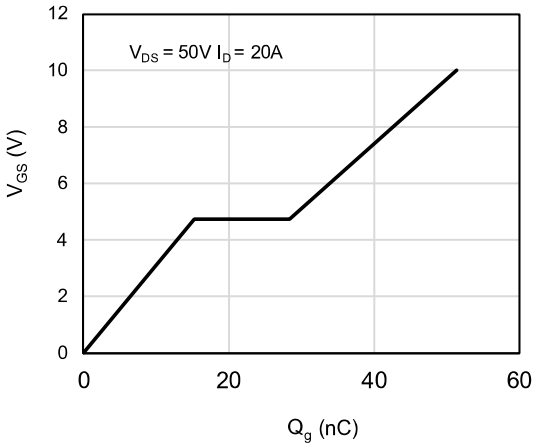


Figure 8: Gate-Charge Characteristics

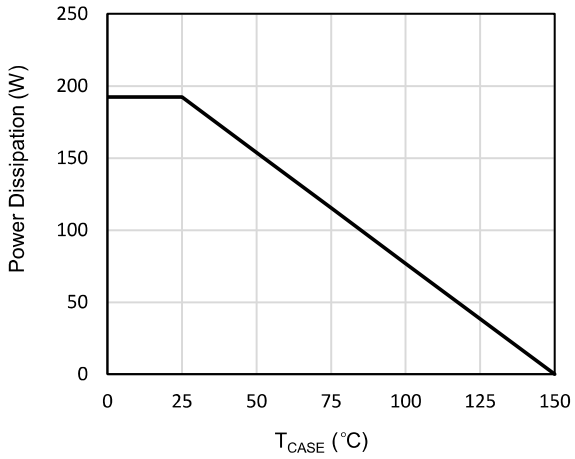


Figure 9: Power De-rating

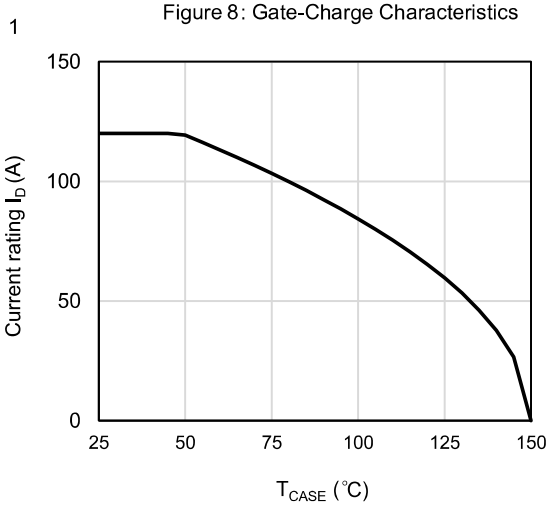


Figure 10: Current De-rating

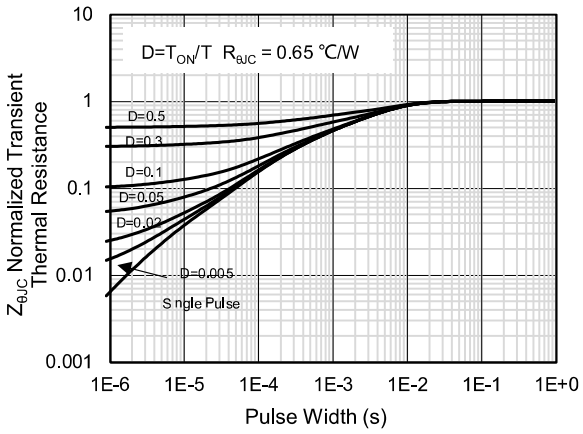


Figure 11: Normalized Maximum Transient Thermal Impedance

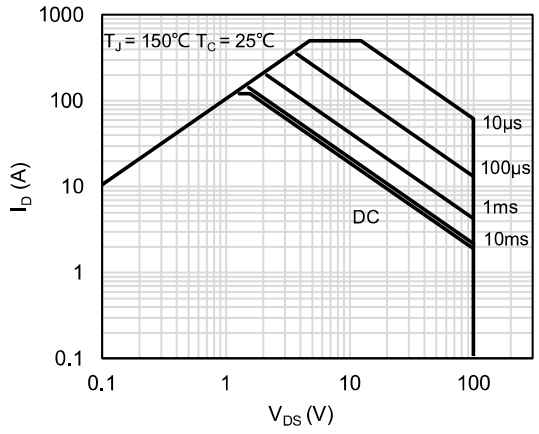
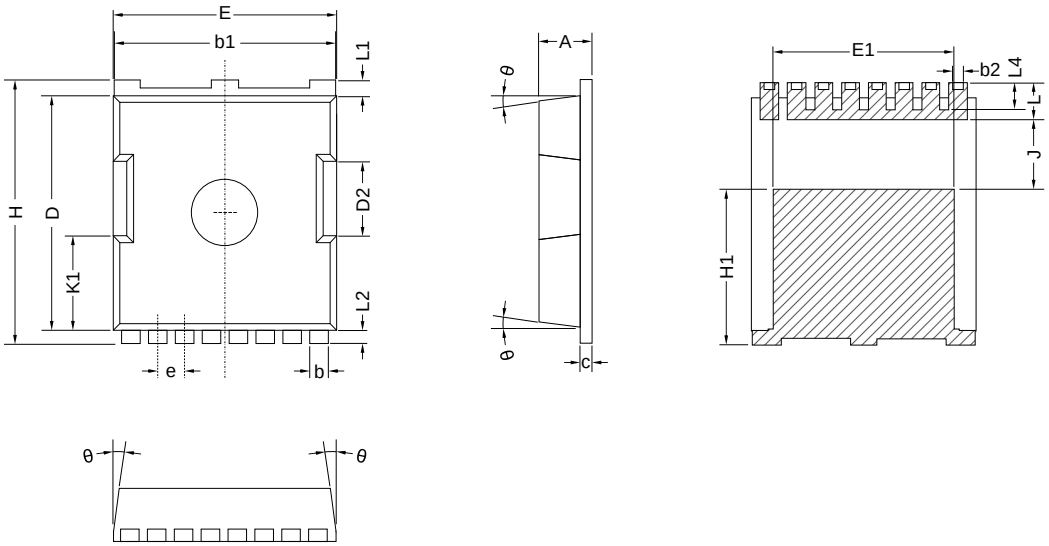


Figure 12: Maximum Forward Biased Safe Operating Area

8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	2.20	2.40
b	0.70	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20BSC	
H	11.48	11.88
H1	6.75	7.15
N	8.00	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L4	1.00	1.30
θ	4°	10°