KJ005N04ST

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

1.2 Applications

- ☑ Motor drivers
- ☑ DC/DC converter

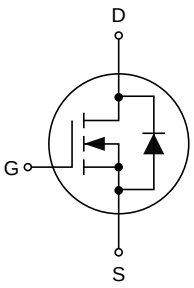
1.3 Quick reference

- ☑ BV ≥ 40 V
- ☑ $R_{DS(ON)}$ ≤ 0.55 mΩ @V_{GS} = 10 V
- ☑ P_D ≤ 187 W
- ☑ $R_{DS(ON)}$ ≤ 1.05 mΩ @V_{GS} = 6 V
- ☑ I_D ≤ 350 A

2. Pin Description

Pin	Description
1,2,3,4	Source
5	Gate
6	Drain

Top View
sTOLL



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C=25℃	-	40	V
V_{GS}	Gate-Source Voltage	T_C=25℃	-	±20	V
I_D *	Drain Current	T_C=25℃, V_{GS}=10 V	-	350	A
		T_C=100℃, V_{GS}=10 V	-	266	A
I_{DM} *, **	Pulsed Source Current	T_C=25℃, V_{GS}=10 V	-	1400	A
P_D *	Drain Power Dissipation	T_C=25℃	-	187	W
I_S	Diode Forward Current	T_C=25℃	-	50	A
E_{AS} *	Single Pulsed Avalanche Energy	V_{DD}=40 V, L=1.0 mH	-	1512	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	℃
$R_{\theta JA}$ *	Thermal Resistance-Junction to Ambient		-	48	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.8	

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
KJ005N04ST	 **YWWXXX: Date Code**

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ005N04ST	**sTOLL**	**13"**	**16 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	40	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	2	2.5	3	V
I_{DSS}	Zero Gate Voltage Source Current	V_{DS}=32 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{GS}=±20 V, V_{DS}=0 V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-State Resistance	V_{GS}=10 V, I_{DS}=50 A	-	0.5	0.55	mΩ
		V_{GS}=6 V, I_{DS}=30 A	-	0.9	1.05	
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, dI_{SD}/dt=100 A/μs	-	53	-	ns
Q_{rr}	Reverse Recovery Charge		-	51	-	nC
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{GS}=0 V, V_{DS}=20 V, f=1 MHz	-	8525	-	pF
C_{oss}	Output Capacitance		-	3753	-	
C_{rss}	Reverse Transfer Capacitance		-	75	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=20 V, V_{GEN}=10 V, R_G=3.9 Ω, R_L=0.4 Ω, I_{DS}=50 A	-	19	-	ns
t_r	Turn-on Rise Time		-	107	-	
$t_{d(off)}$	Turn-off Delay Time		-	99	-	
t_f	Turn-off Fall Time		-	86	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=20 V, V_{GS}=10 V, I_{DS}=50 A	-	142	-	nC
Q_{gs}	Gate-Source Charge		-	40	-	
Q_{gd}	Gate-Drain Charge		-	34	-	

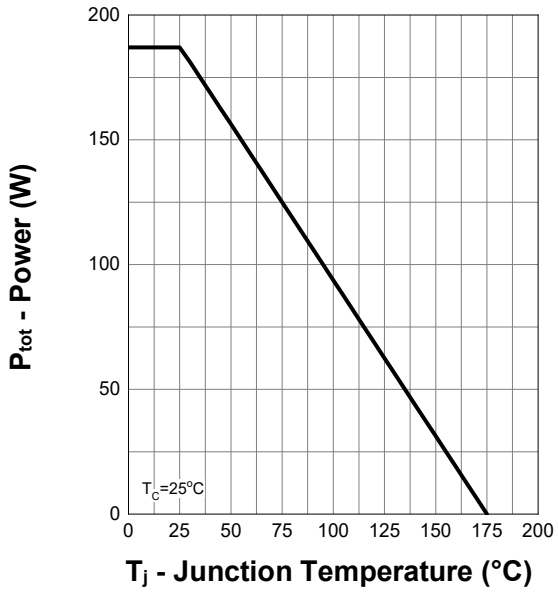
Notes:

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

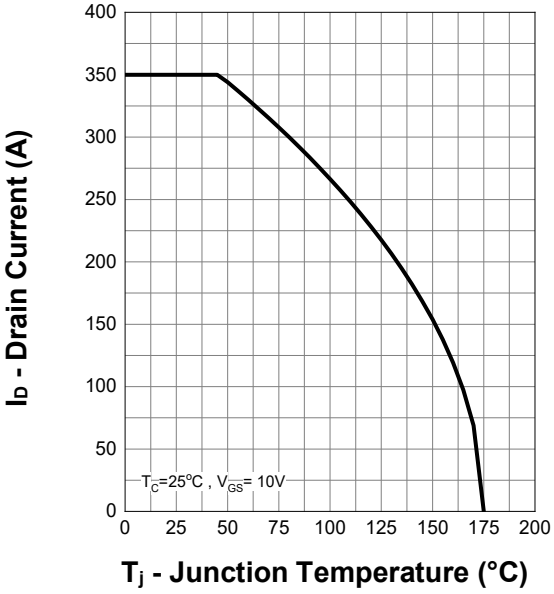
b. Guaranteed by design, not subject to production testing.

7. Typical Characteristics

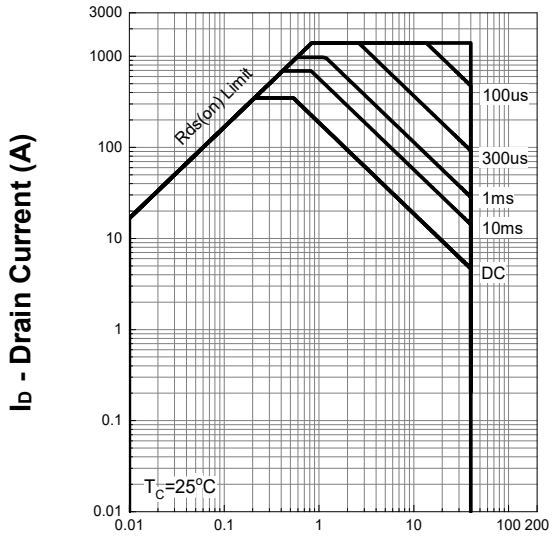
Power Capability



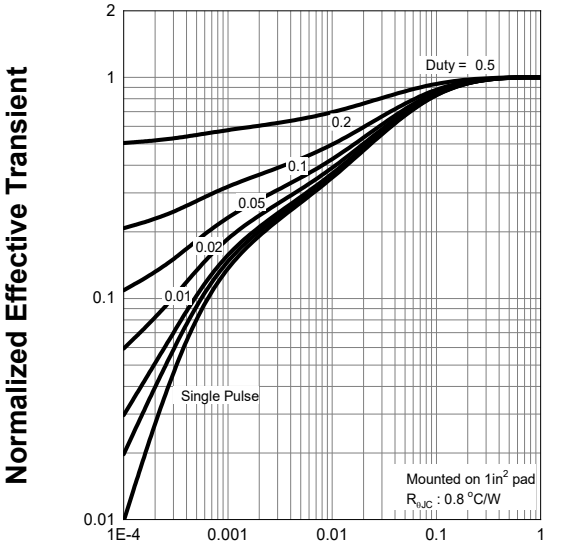
Current Capability



Safe Operating Area

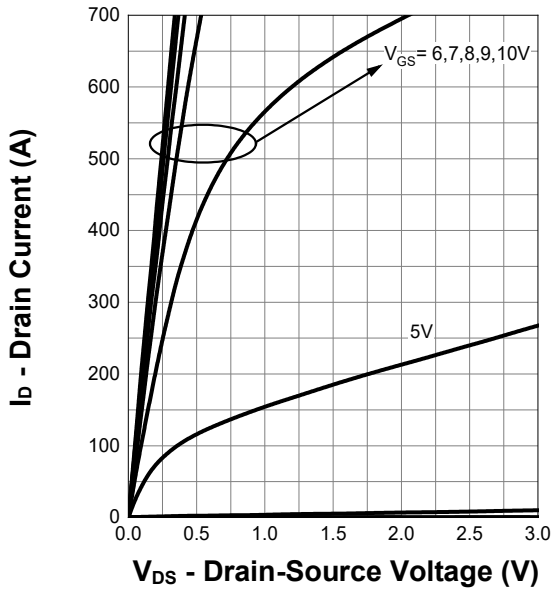


Transient Thermal Impedance

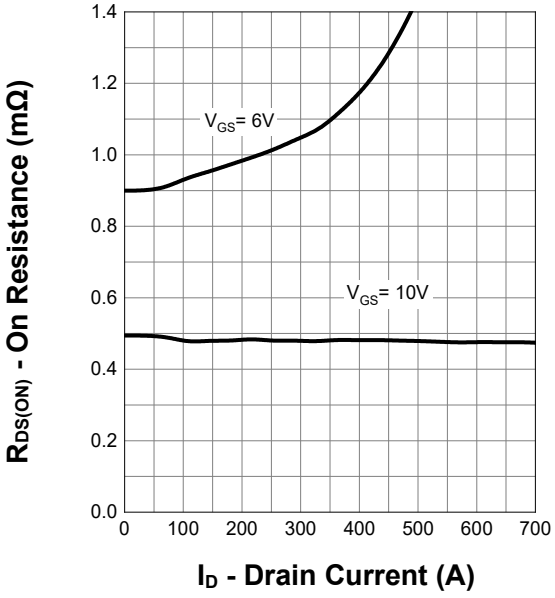


7. Typical Characteristics (cont.)

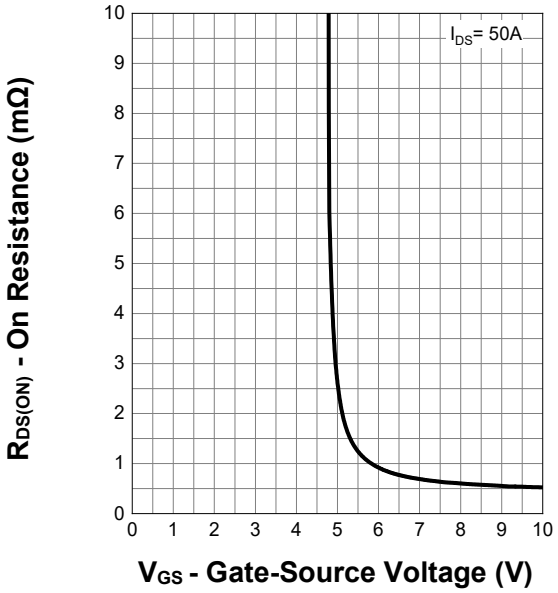
Output Characteristics



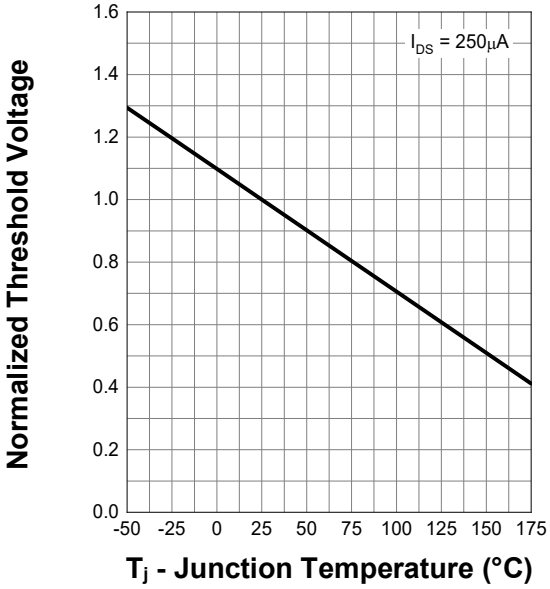
On Resistance



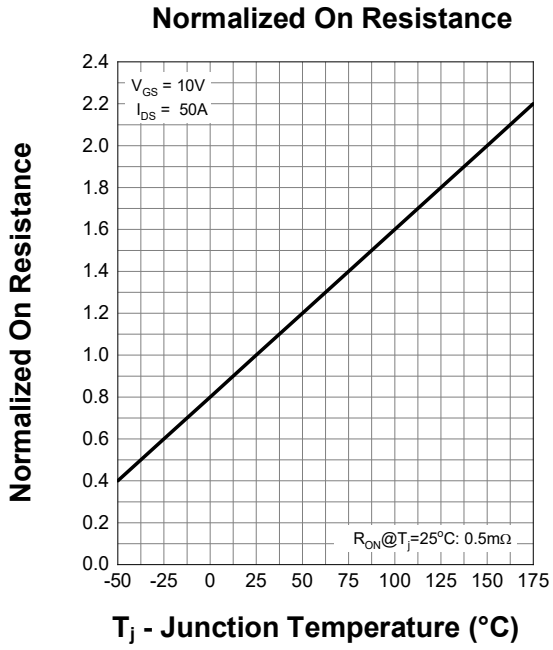
Transfer Characteristics

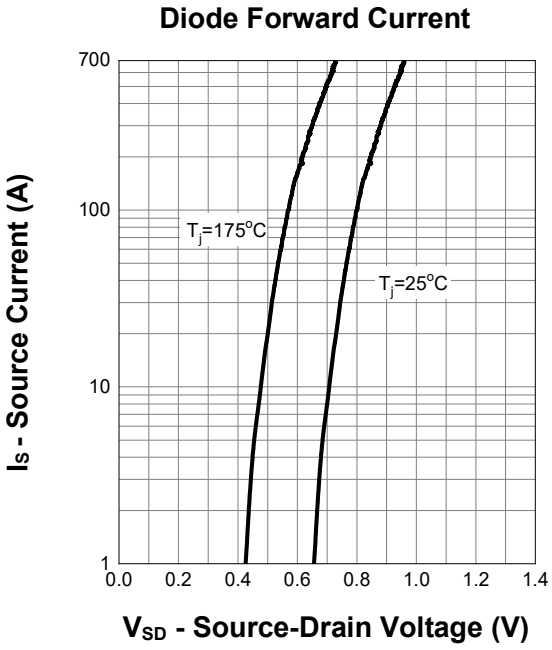


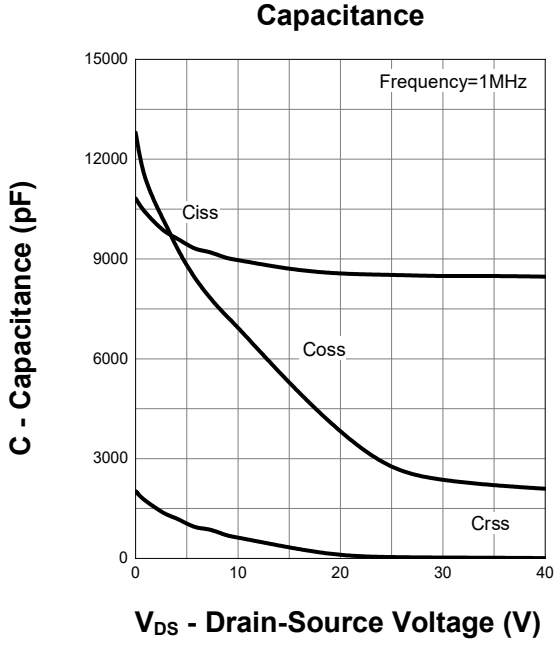
Normalized Threshold Voltage

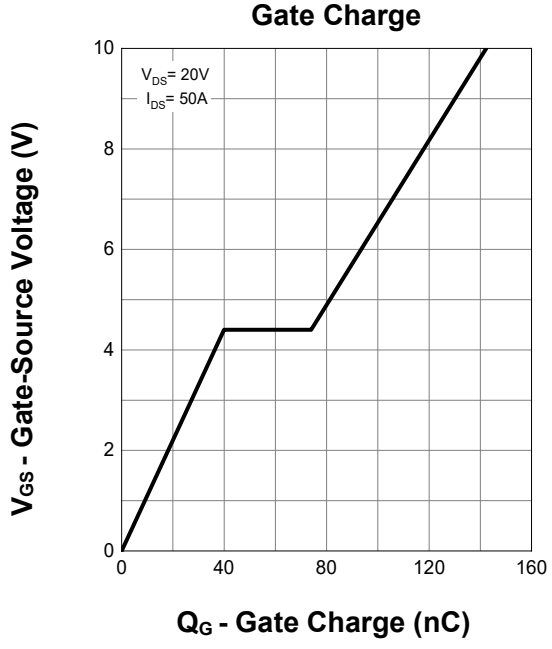


7. Typical Characteristics (cont.)



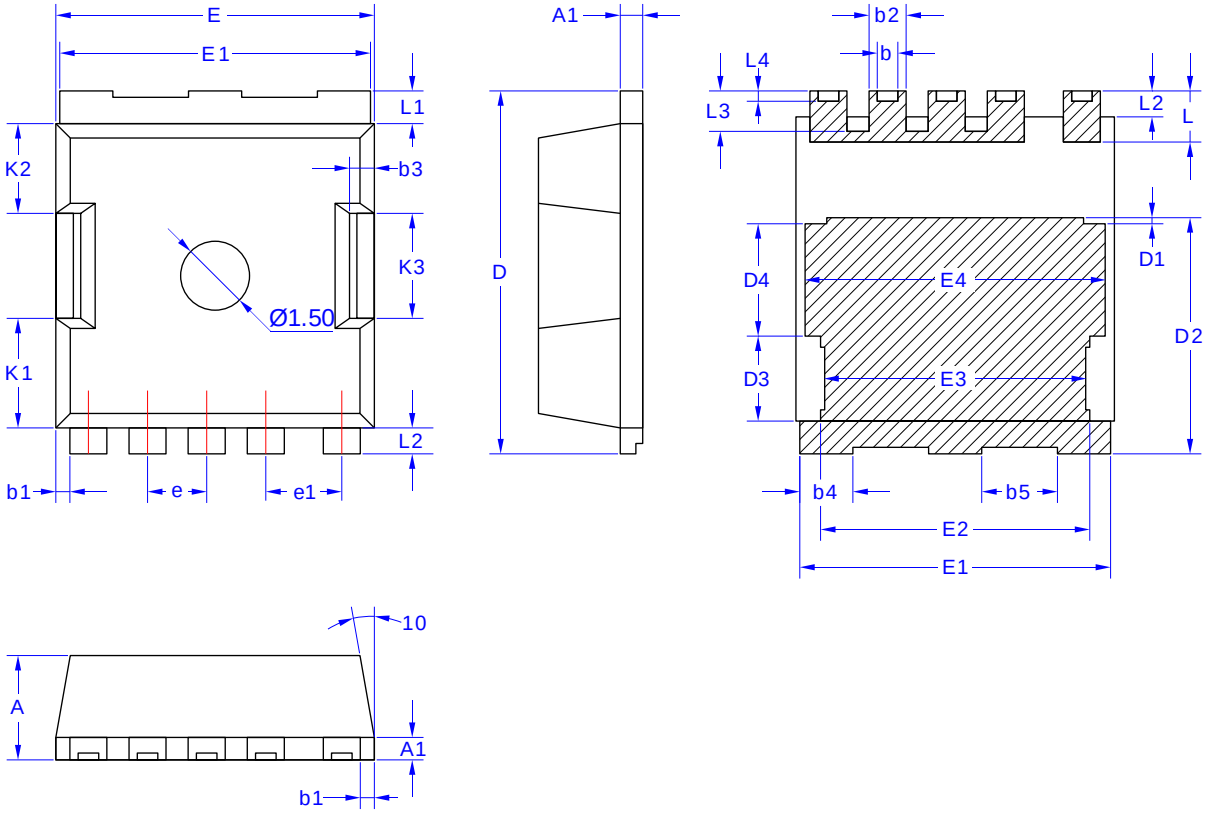






8. Package Dimensions

sTOLL Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	2.200	2.300	2.400
A1	0.490	0.500	0.508
b	0.750	0.800	0.850
b1		0.350 ref	
b2	0.350	0.450	0.550
b3		0.425 ref	
b4	1.100	1.200	1.300
b5	1.550	1.650	1.750
D	7.900	8.000	8.100
D1		0.130 ref	
D2	5.100	5.200	5.300
D3	2.470	2.570	2.670
D4	2.400	2.500	2.600
E	6.900	7.000	7.100

Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
E1	6.800	6.900	7.000
E2	5.860	5.960	6.060
E3	5.560	5.660	5.760
E4	6.460	6.560	6.660
e		1.30 BSC	
e1		1.60 BSC	
K1		2.430 ref	
K2		1.970 ref	
K3		2.300 ref	
L	1.050	1.150	1.250
L1	0.600	0.700	0.800
L2	0.500	0.600	0.700
L3	0.800	0.900	1.000
L4	0.135	0.235	0.335