KJ018N045D

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Trench Power SGT technology
- ☑ Low Gate Charge
- ☑ Very low on-resistance $R_{DS(ON)}$

1.2 Applications

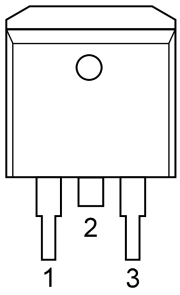
- ☑ Power Tool appliances
- ☑ High power inverter system
- ☑ BMS appliances

1.3 Quick reference

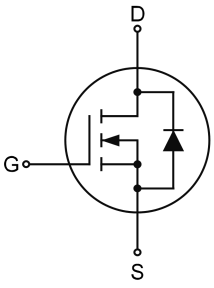
- ☑ BV ≥ 45 V
- ☑ $R_{DS(ON)}$ ≤ 1.8 mΩ @V_{GS} = 10 V
- ☑ P_D ≤ 329 W
- ☑ I_D ≤ 350 A

2. Pin Description

Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)



Top View
TO-263



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_A=25℃	45	-	V
V_{GS}	Gate-Source Voltage	T_A=25℃	-	±20	V
I_D	Continuous Drain Current	T_C=25℃, V_{GS}=10 V	-	350	A
		T_C=100℃, V_{GS}=10 V	-	221	A
I_{DM}	Pulsed Drain Current	T_A=25℃, V_{GS}=10 V	-	1400	A
I_{AS}	Avalanche Current		-	65	A
E_{AS}	Single Pulsed Avalanche Energy	L=0.3 mH	-	634	mJ
P_D	Drain Power Dissipation	T_C=25℃	-	147	W
	-Derating Factor		-	2	W/℃
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient, Steady-State		-	50	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case, Steady-State		-	0.38	℃/W

Notes:

* Single pulse width limited by maximum junction temperature.

** T_J=25℃,V_{DD}=32 V, V_{GS}=10 V, L=0.3 mH, R_g=2 Ω

*** P_D is based on T_J(MAX) =150℃.

4. Marking Information

Product Name	Marking
KJ018N045D	KJ018N045D XXXXXX-X

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ018N045D	TO-263	13"	24 mm	800

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	45	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	1.2	-	2.0	V
I_{DSS}	Zero Gate Voltage Source Current	V_{DS}=45 V, V_{GS}=0 V,T_J=25℃	-	-	1	μA
		V_{DS}=45 V, V_{GS}=0 V,T_J=100℃	-	-	100	
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0 V, V_{GS}=±20 V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=10 V, I_{DS}=50 A	-	1.5	1.8	mΩ
		V_{GS}=4.5 V, I_{DS}=50 A	-	1.8	2.3	mΩ
g_{FS}	Forward Transconductance	V_{DS}=10 V, I_D=10 A	-	60	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20 V, V_{GS}=0 V, Frequency=1 MHz	-	7542	-	pF
C_{oss}	Output Capacitance		-	1176	-	
C_{rss}	Reverse Transfer Capacitance		-	146	-	
Switching Parameters						
Q_g	Total Gate Charge	V_{DS}=20 V, V_{GS}=10 V, I_{DS}=20 A	-	84	-	nC
Q_{gs}	Gate-Source Charge		-	30	-	
Q_{gd}	Gate-Drain Charge		-	17	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=20 V, V_{GS}=10 V, R_G=1.6 Ω, I_D=20 A	-	12	-	ns
t_r	Turn-on Rise Time		-	48	-	
$t_{d(off)}$	Turn-off Delay Time		-	24	-	
t_f	Turn-off Fall Time		-	9.2	-	
Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=20 A, V_{GS}=0 V	-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	V_{GS}=0 V, I_F=20 A, dI_{SD}/dt=100 A/μs	-	24	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	44	-	nC

7. Typical Characteristics

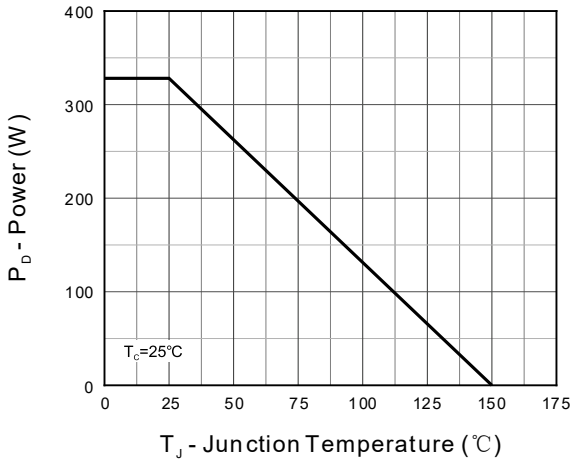


Figure 1. Power Capability

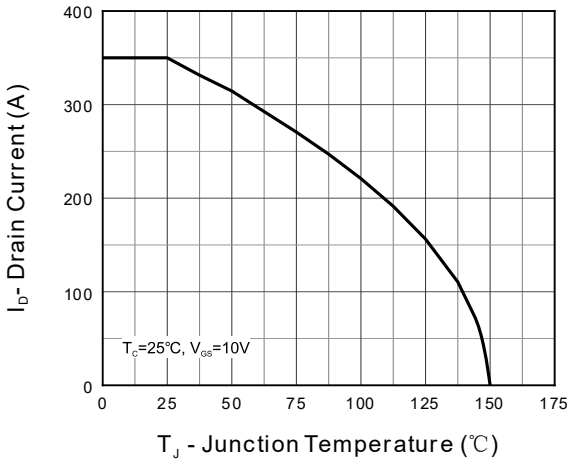


Figure 2. Current Capability

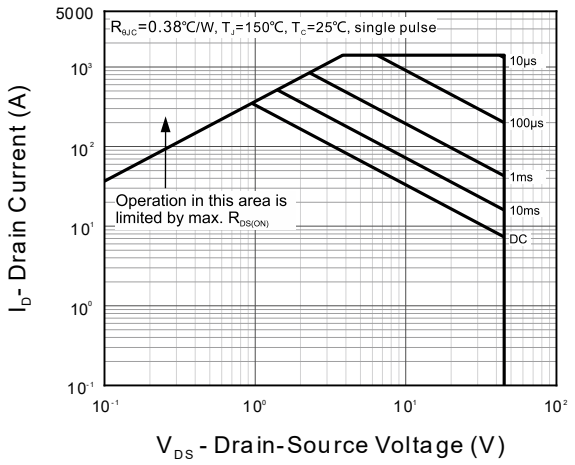


Figure 3. Safe Operation Area

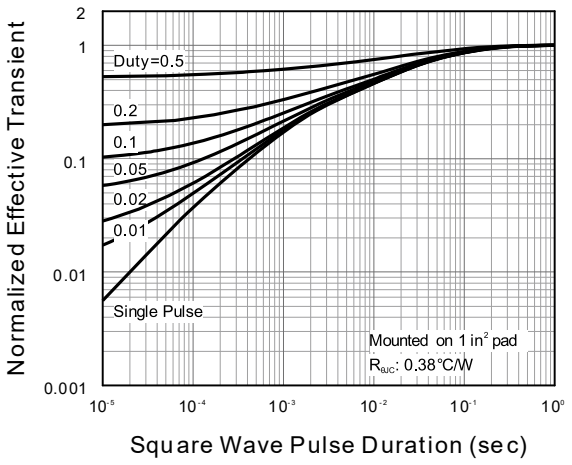


Figure 4. Transient Thermal Impedance

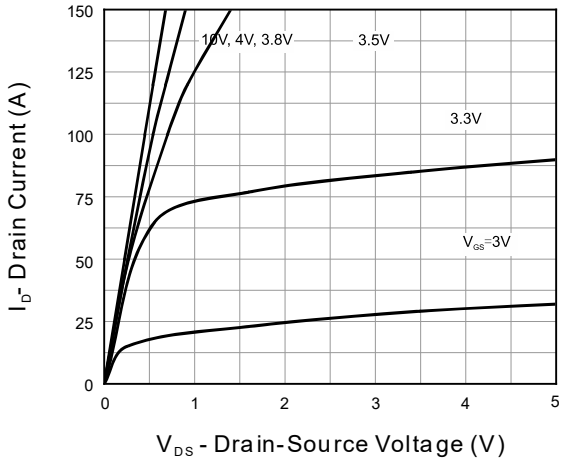


Figure 5. Output Characteristics

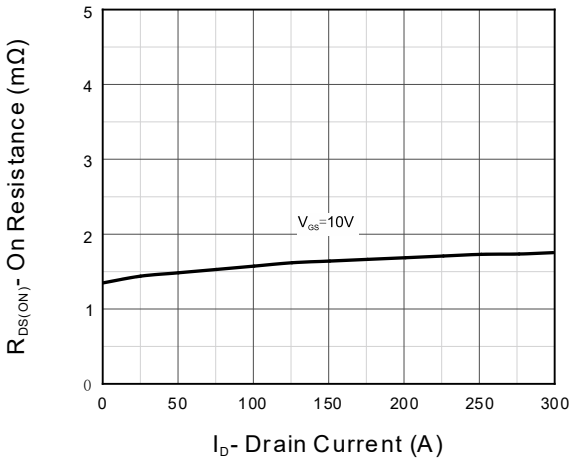


Figure 6. On Resistance

7. Typical Characteristics(cont.)

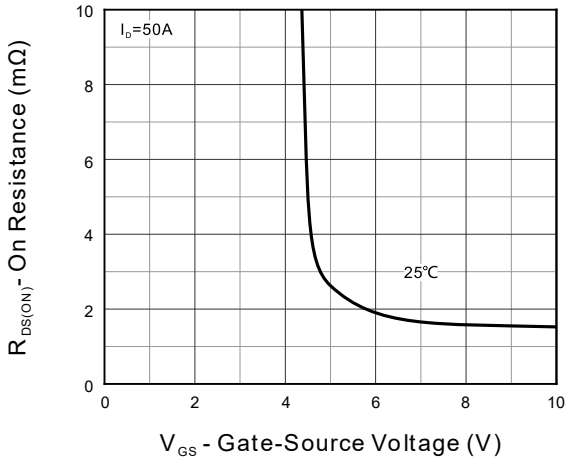


Figure 7. Transfer Characteristics

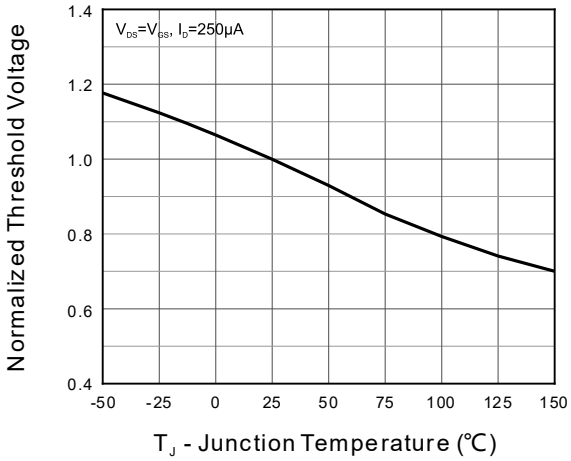


Figure 8. Normalized $V_{GS(th)}$

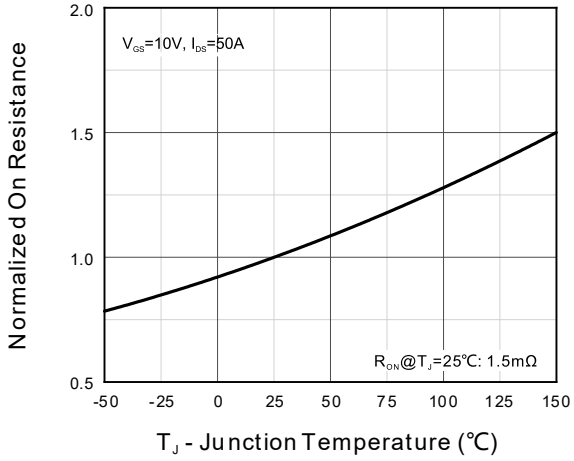


Figure 9. Normalized On Resistance

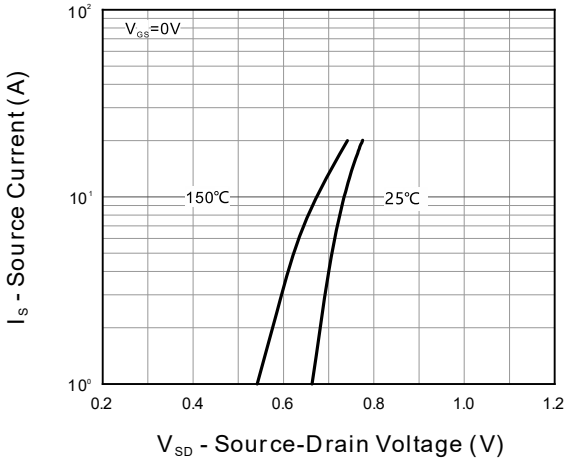


Figure 10. Diode Forward Current

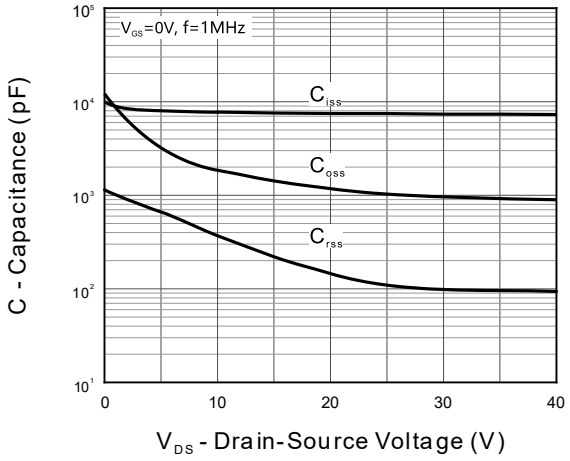


Figure 11. Capacitance

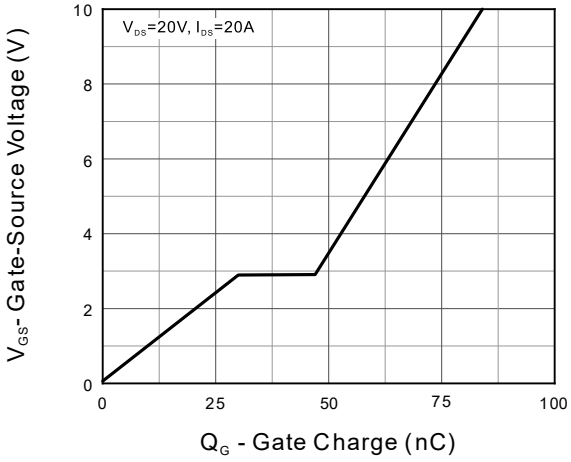
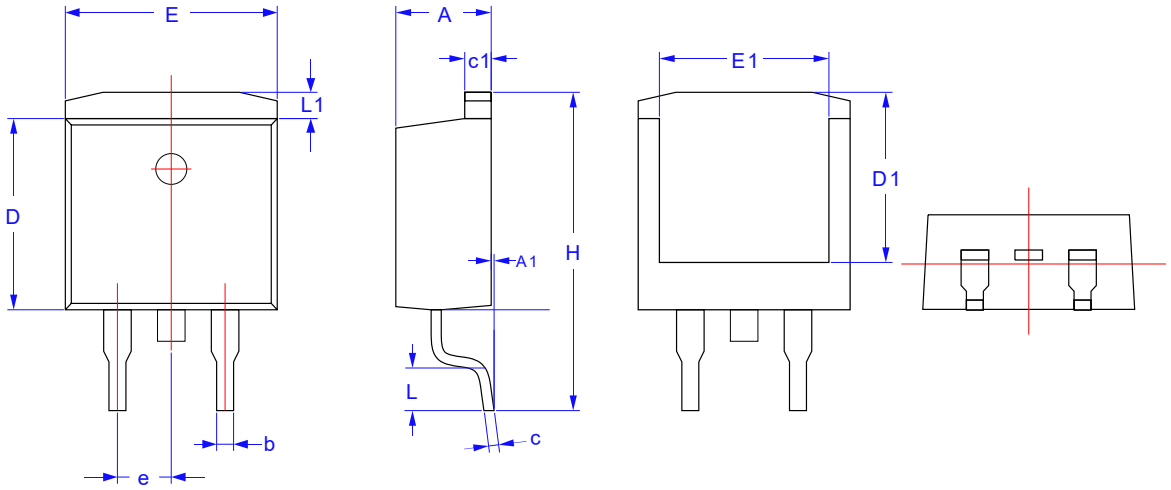


Figure 12. Gate Charge

8. Package Dimensions

TO-263 Package



TOP VIEW **SIDE VIEW** **BOTTOM VIEW** **SIDE VIEW**

Symbol	Dimensions in Millimeters	
	MIN	MAX
A	4.40	4.70
A1	0.00	0.25
b	0.70	0.90
c1	0.40	0.55
c2	1.25	1.35
D	9.00	9.30
D1	7.40	8.40

Symbol	Dimensions in Millimeters	
	MIN	MAX
E	9.80	10.40
E1	7.20	8.40
e	2.54 BSC	
H	14.90	15.25
L	2.00	2.50
L1	1.00	1.40