

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- | | |
|---|---|
| ☒ Surface-mounted package | ☒ SGT technology |
| ☒ Fast switching speed | ☒ 100% avalanche tested |

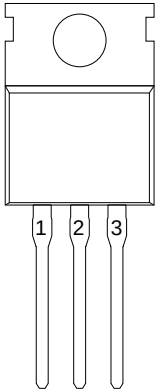
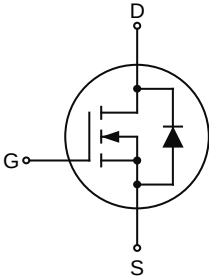
1.2 Applications

- | | |
|---|--|
| ☒ DC/DC converter | ☒ Power switch |
| ☒ Motor drives | ☒ BMS |

1.3 Quick reference

- | | |
|---|---|
| ☒ $BV \geq 60\text{ V}$ | ☒ $R_{DS(ON)} \leq 1.8\text{ m}\Omega @ V_{GS}=10\text{ V}$ |
| ☒ $P_D \leq 250\text{ W}$ | |
| ☒ $I_D \leq 286\text{ A}$ | |

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate (G)	 Top View TO-220	
2	Drain (D)		
3	Source (S)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C =25℃	60	-	V
V _{GS}	Gate-Source Voltage	T _C =25℃	-	±20	V
I _D	Continuous Drain Current	T _C =25℃, V _{GS} =10 V ^[1]	-	286	A
		T _C =100℃, V _{GS} =10 V	-	181	A
I _{DM}	Pulsed Drain Current ^[2]	T _C =25℃, V _{GS} =10 V	-	1144	A
P _D	Power Dissipation	T _C =25℃	-	250	W
E _{AS}	Single Pulsed Avalanche Energy	V _{DD} =30 V, L=0.3 mH	-	920	mJ
T _J , T _{stg}	Operating Junction and Storage Temperature Range		-55	175	℃
R _{θJA}	Thermal Resistance-Junction to Ambient ^[3]		-	50	℃/W
R _{θJC}	Thermal Resistance-Junction to Case		-	0.5	

Notes:

1. Package limited.
2. Pulse width limited by maximum junction temperature.
3. R_{θJA} is determined with the device mounted on a 1 in² pad 2 oz copper pad on a 1.5"x1.5" board of FR-4 material.

4. Marking Information

Product Name	Marking
KJ018N06C	KJ018N06C XXXXXX-X

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity(pcs)
KJ018N06C	TO-220	N/A	N/A	1000

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_J=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	60	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	2	3	4	V
I _{DSS}	Drain Leakage Current	V _{DS} =60 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{DS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =10 V, I _{DS} =50 A	-	1.5	1.8	mΩ
R _G	Gate resistance	f=1 MHz		2		Ω
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	V _{GS} =0 V, I _{SD} =50 A	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	V _{DS} =30 V, I _{DS} =50 A, dI _{SD} /dt=100 A/μs	-	60	-	ns
Q _{rr}	Reverse Recovery Charge		-	75	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{DS} =30 V, V _{GS} =0 V, f=1 MHz	-	7880	-	pF
C _{oss}	Output Capacitance		-	1440	-	
C _{rss}	Reverse Transfer Capacitance		-	125	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =30 V, V _{GEN} =10 V, R _G =1.6 Ω, I _{DS} =50 A	-	65	-	ns
t _r	Turn-on Rise Time		-	45	-	
t _{d(off)}	Turn-off Delay Time		-	60	-	
t _f	Turn-off Fall Time		-	33	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =30 V, V _{GS} =10 V, I _{DS} =50 A	-	95	-	nC
Q _{gs}	Gate-Source Charge		-	31	-	
Q _{gd}	Gate-Drain Charge		-	18	-	

Notes:

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

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

7. Typical Characteristics

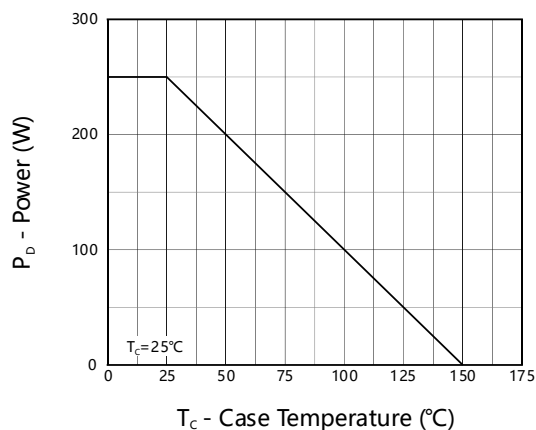


Fig 1. Power Capability

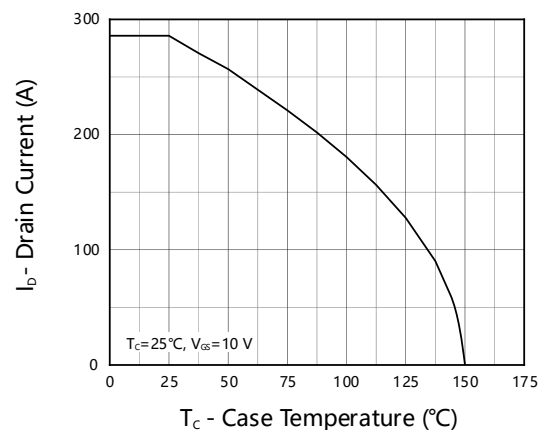


Fig 2. Current Capability

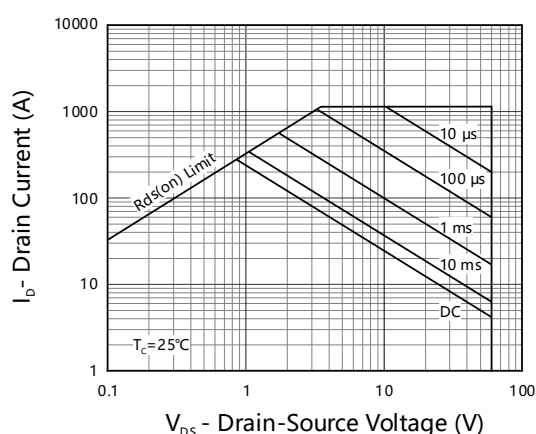


Fig 3. Safe Operation Area

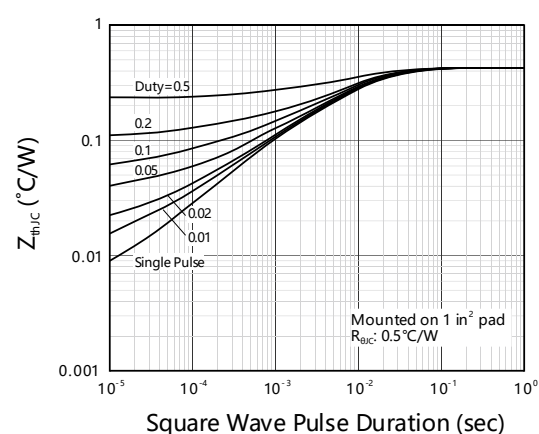


Fig 4. Transient Thermal Impedance

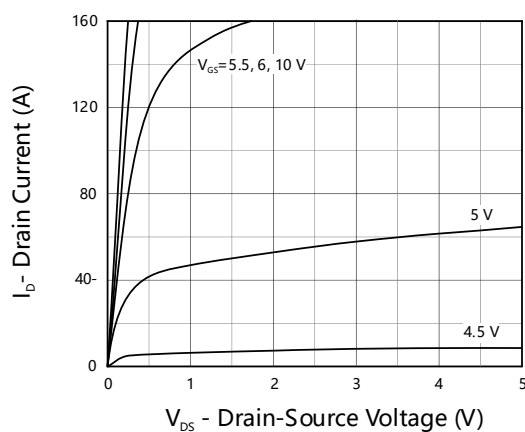


Fig 5. Output Characteristics

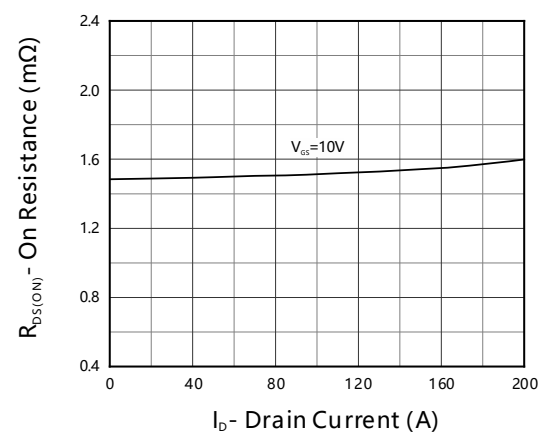


Fig 6. On Resistance

7. Typical Characteristics (cont.)

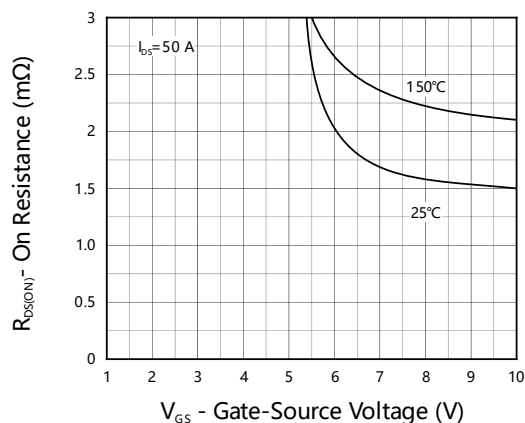


Fig 7. Transfer Characteristics

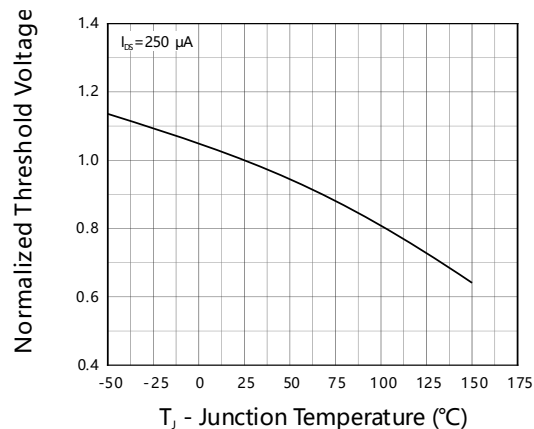


Fig 8. Normalized Threshold Voltage

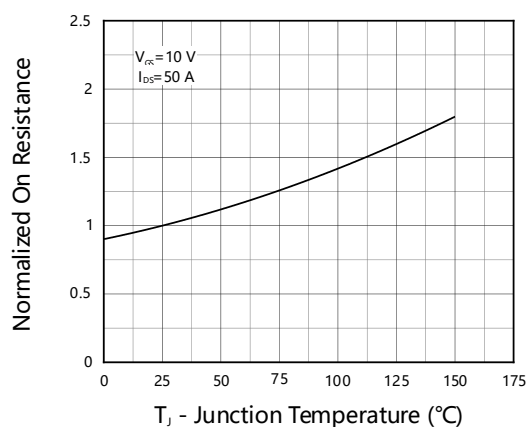


Fig 9. Normalized On Resistance

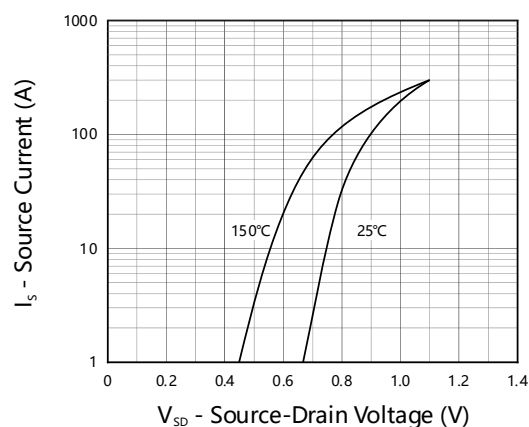


Fig 10. Diode Forward Current

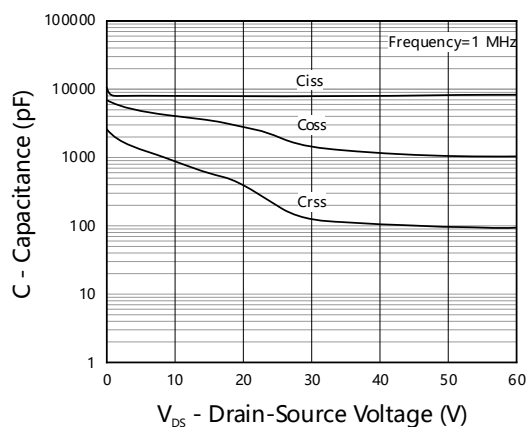


Fig 11. Capacitance

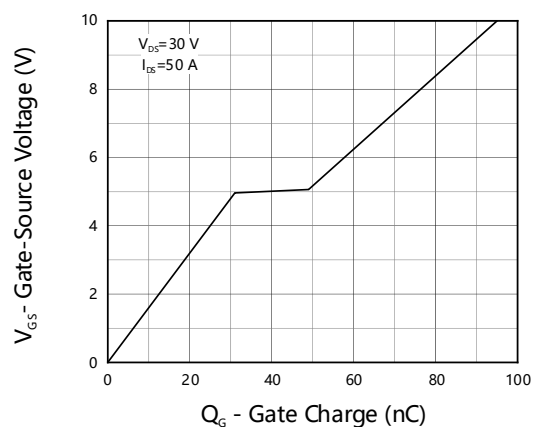
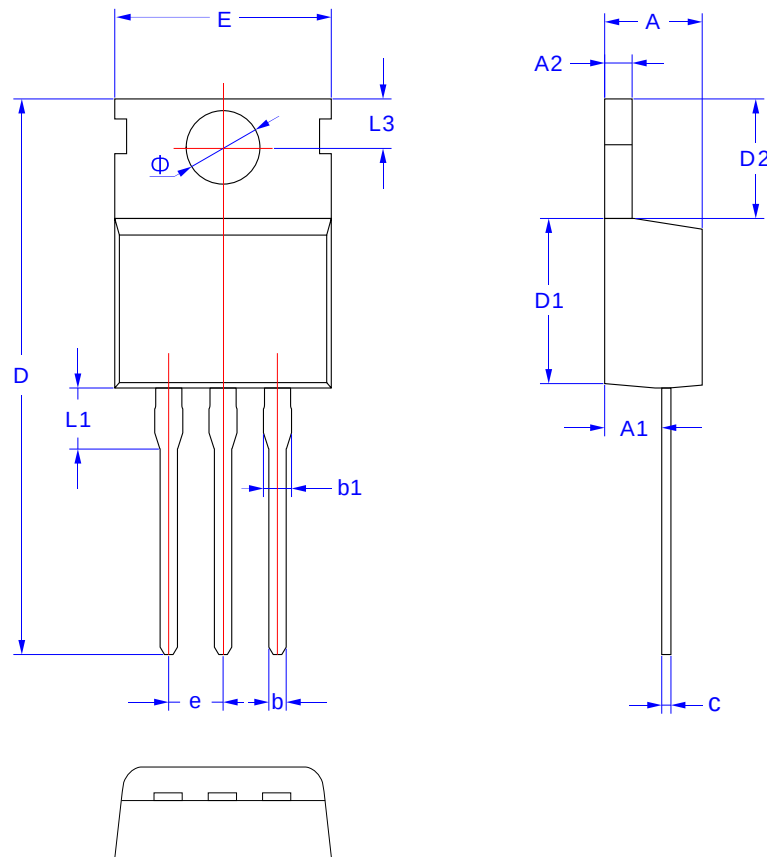


Fig 12. Gate Charge

8. Package Dimensions

TO-220 Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	4.24	4.70
A1	2.20	3.00
b	0.70	0.95
b1	1.14	1.70
c	0.40	0.60
c1	1.15	1.40
D	28.0	29.8
D1	8.80	9.90
E	9.70	10.50
L1	3.80	
L2	6.25	6.90
L3	2.40	3.00
e	2.54 BSC	