

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Advanced trench cell design
- ☒ Low thermal impedance
- ☒ Fast switching speed
- ☒ 100% avalanche tested

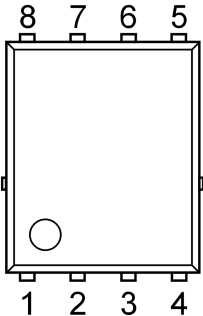
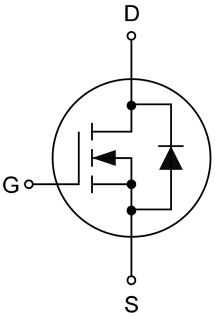
1.2 Applications

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

1.3 Quick reference

- ☒ $BV \geq 60\text{ V}$
- ☒ $R_{DS(ON)} \leq 1.4\text{ m}\Omega @V_{GS} = 10\text{ V}$
- ☒ $P_{tot} \leq 147\text{ W}$
- ☒ $R_{DS(ON)} \leq 3.5\text{ m}\Omega @V_{GS} = 4.5\text{ V}$
- ☒ $I_D \leq 265\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,2,3	Source	 Top View PDFN5x6-8L	
4	Gate		
5,6,7,8	Drain		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}\text{C}$	60	-	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D	Continuous Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	265	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	167	A
I_{DM}	Pulsed Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	1060	A
P_D	Power Dissipation	$T_C=25^{\circ}\text{C}$	-	147	W
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=30\text{ V}, L=0.3\text{ mH}$	-	900	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		-	58	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.85	

Notes:

- Package limited.
- Pulse width limited by maximum junction temperature.
- $R_{\theta JA}$ 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	
KJ013N06G		KJ013N06G XXXXXX

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ013N06G	PDFN 5×6-8L	13"	12 mm	5000

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	1.3	-	2.5	V
I _{DSS}	Drain Leakage Current	V _{DS} =60 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)}	On-State Resistance	V _{GS} =10 V, I _{DS} =50 A	-	1.1	1.4	mΩ
R _{DS(ON)}	On-State Resistance	V _{GS} =4.5 V, I _{DS} =30 A	-	2.5	3.5	mΩ
g _{FS}	Forward Transconductance	V _{GS} =5 V, I _{DS} =50 A	-	200	-	S
R _g	Gate Resistance	Frequency=1 MHz	-	2	-	Ω
Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} =50 A, V _{GS} =0 V	-	0.8	1.3	V
t _{rr}	Reverse Recovery Time	V _{DS} =30 V, I _{DS} =50 A, dI _{SD} /dt=100 A/μs	-	76	-	ns
Q _{rr}	Reverse Recovery Charge		-	109	-	nC
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =30 V, Frequency=1 MHz	-	6360	-	pF
C _{oss}	Output Capacitance		-	1235	-	
C _{rss}	Reverse Transfer Capacitance		-	101	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =30 V, V _{GEN} =10 V, R _G =2.5 Ω, I _{DS} =50 A	-	22	-	ns
t _r	Turn-on Rise Time		-	59	-	
t _{d(off)}	Turn-off Delay Time		-	84	-	
t _f	Turn-off Fall Time		-	53	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =30 V, V _{GS} =10 V, I _{DS} =50 A	-	114	-	nC
Q _{gs}	Gate-Source Charge		-	26	-	
Q _{gd}	Gate-Drain Charge		-	22	-	

7. Typical Characteristics

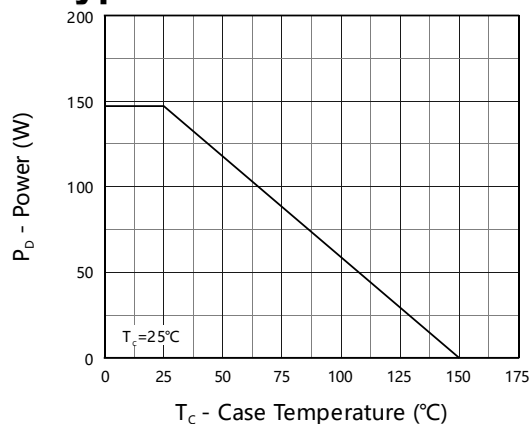


Fig 1. Power Capability

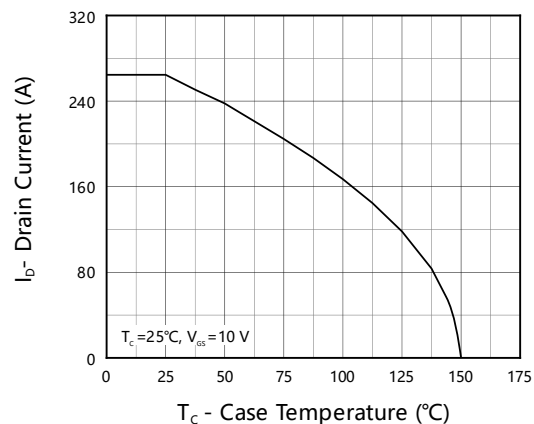


Fig 2. Current Capability

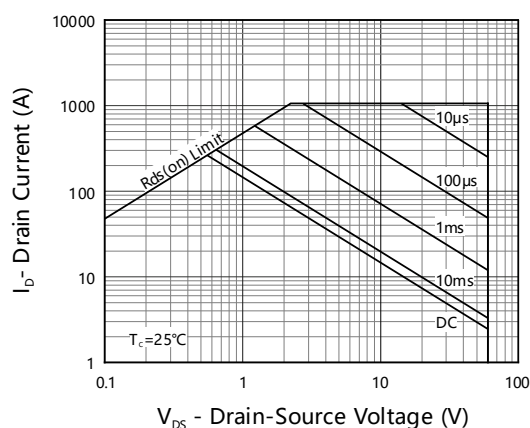


Fig 3. Safe Operation Area

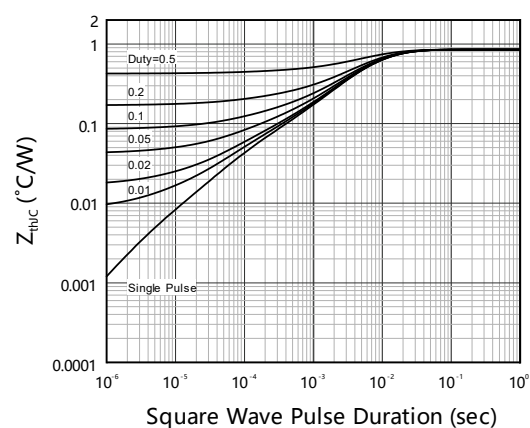


Fig 4. Transient Thermal Impedance

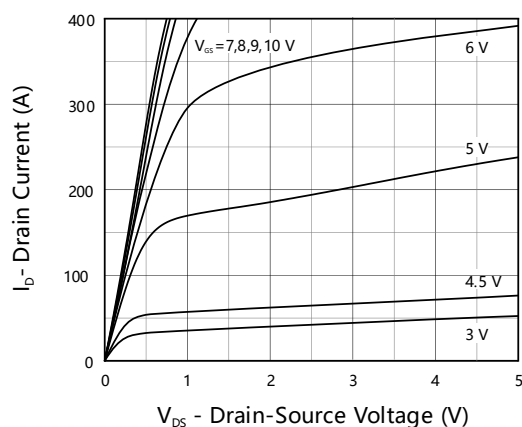


Fig 5. Output Characteristics

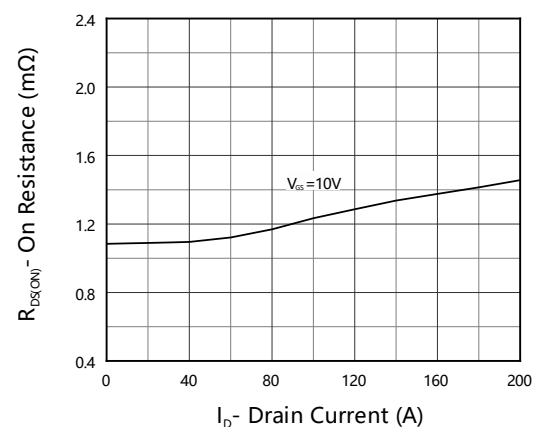
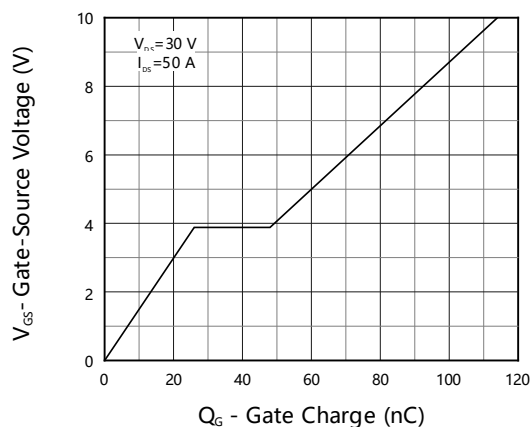
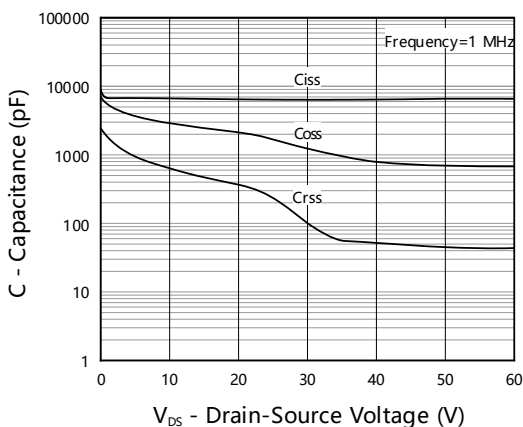
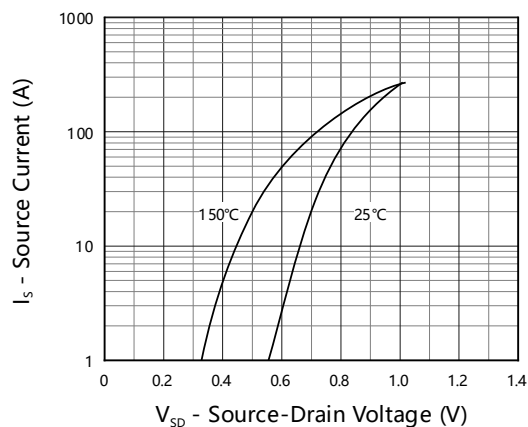
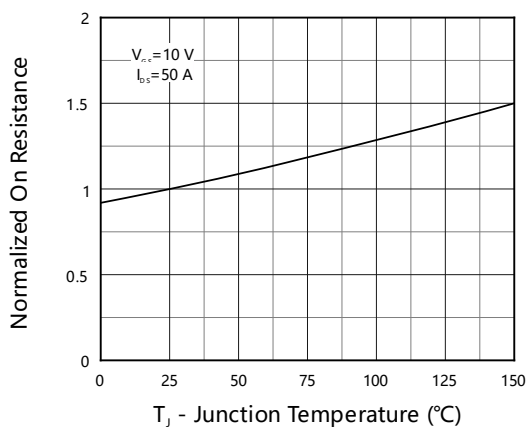
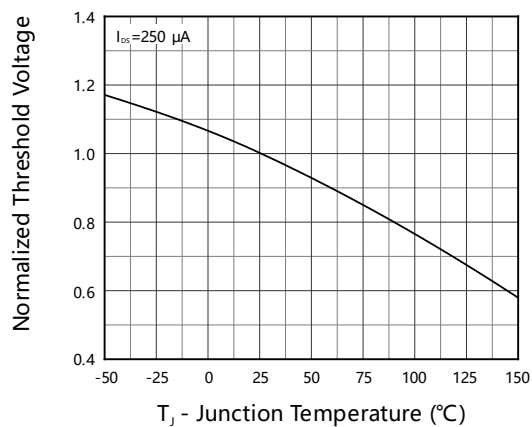
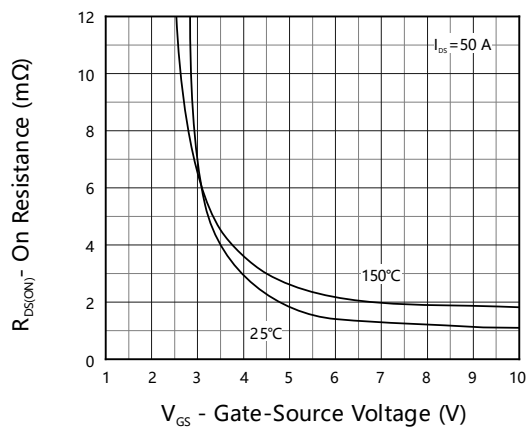


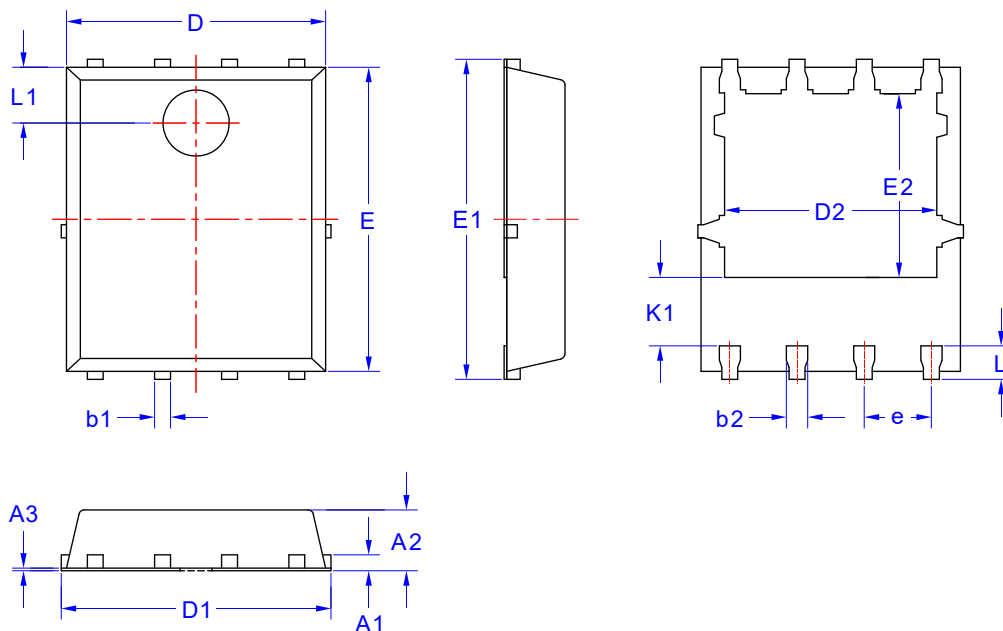
Fig 6. On Resistance

7. Typical Characteristics (cont.)



8. Package Dimensions

PDFN 5×6-8L Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A1		0.254 BSC	
A2	1.000	1.100	1.200
A3	0.005		0.020
b1	0.250	0.300	0.350
b2	0.350	0.400	0.450
D	4.800	4.900	5.000
D1	5.000	5.100	5.200
D2	3.910	4.010	4.110
E	5.650	5.750	5.850
E1	5.950	6.050	6.150
E2	3.375	3.475	3.575
e		1.270 TYPE	
K		0.600 REF	
K1		1.235 REF	
L	0.530	0.630	0.730
L1		1.000 REF	