

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Advanced trench cell design
- ☒ Low thermal resistance

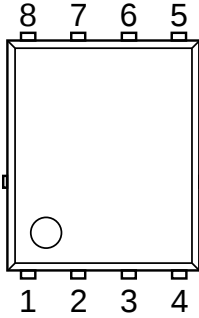
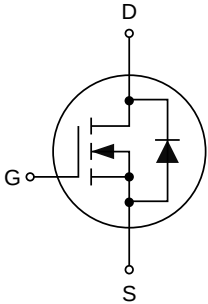
1.2 Applications

- ☒ Motor drivers
- ☒ DC/DC converter

1.3 Quick reference

- ☒ $BV \geq 20\text{ V}$
- ☒ $P_D \leq 35\text{ W}$
- ☒ $I_D \leq 150\text{ A}$
- ☒ $R_{DS(ON)} \leq 2.0\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- ☒ $R_{DS(ON)} \leq 3.0\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$

2. Pin Description

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

3. Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C =25°C	20	-	V
V _{GS}	Gate-Source Voltage	T _C =25°C	-	±20	V
I _D *	Drain Current	T _C =25°C, V _{GS} =4.5 V	-	150	A
		T _C =100°C, V _{GS} =4.5 V	-	56	A
I _{DM} *, **	Pulsed Drain Current	T _C =25°C, V _{GS} =4.5 V	-	240	A
P _D *	Drain Power Dissipation	T _C =25°C	-	35	W
I _S	Diode Forward Current	T _C =25°C	-	150	A
E _{AS} *	Single Pulsed Avalanche Energy	V _{DD} =20 V, L=1.0 mH	-	760	mJ
T _J , T _{stg}	Operating Junction and Storage Temperature Range		-55	150	°C
R _{θJA} *	Thermal Resistance-Junction to Ambient		-	43	°C/W
R _{θJC} *	Thermal Resistance-Junction to Case		-	2.2	

Notes:

- * Surface mounted on 1 in² pad area, t ≤ 10 sec.
- ** Pulse width ≤ 300 μs, duty cycle ≤ 2%.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ1R5N02G	1R5N02 YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ90N02G	PDFN5x6-8L	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).

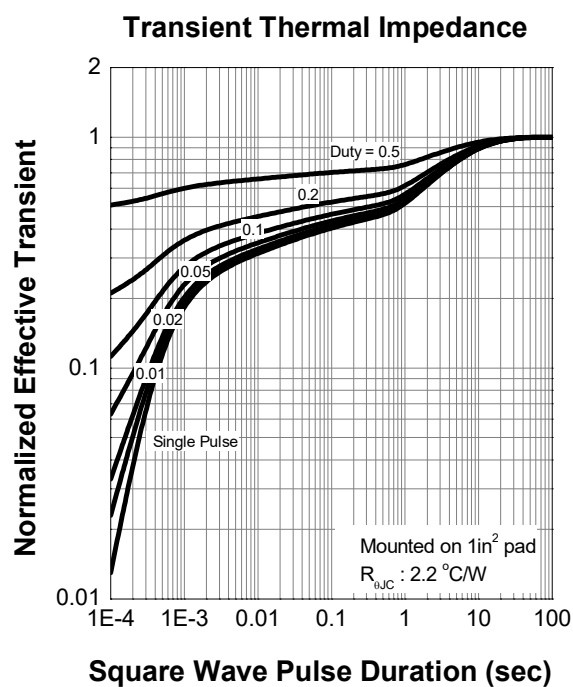
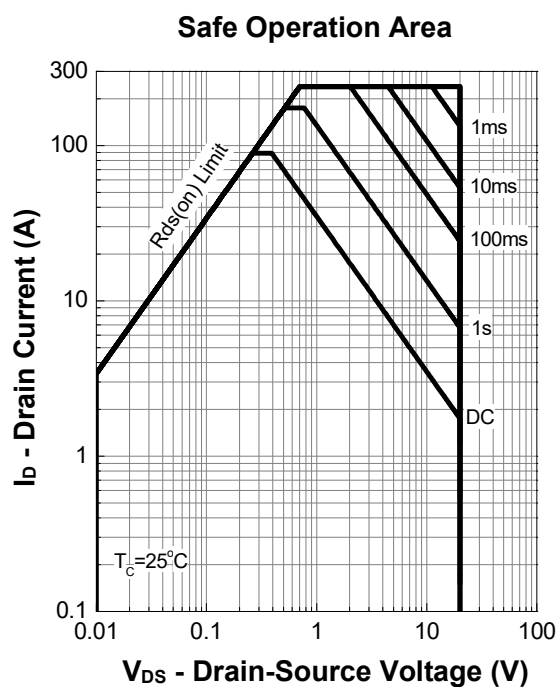
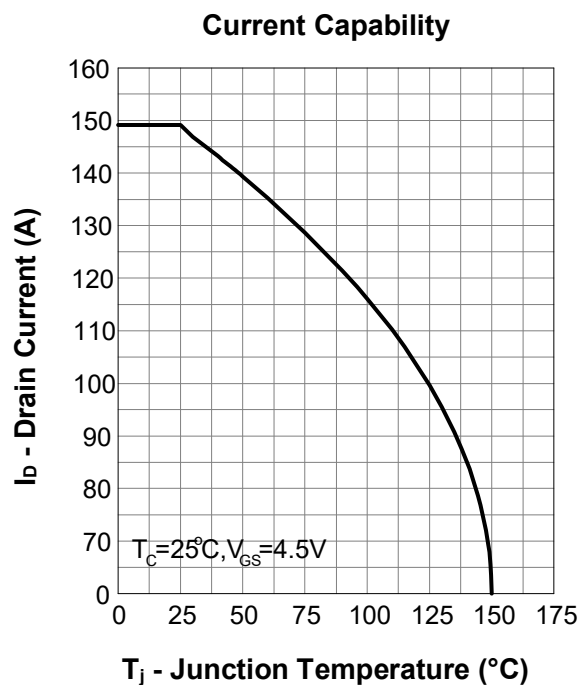
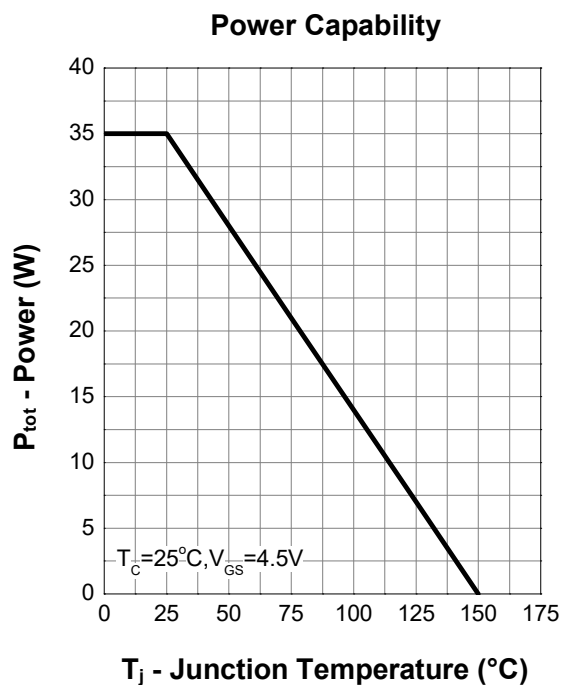
6. Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	20	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	0.5	-	1	V
I _{DSS}	Drain Source Current	V _{DS} =16 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =±10 V, V _{DS} =0 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =4.5 V, I _{DS} =20 A	-	1.5	2.0	mΩ
		V _{GS} =2.5 V, I _{DS} =10 A	-	2.5	3.0	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =20 A, V _{GS} =0 V	-	-	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =20 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	65	-	ns
Q _{rr}	Reverse Recovery Charge		-	83	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =10 V, Frequency=1 MHz	-	4035	-	pF
C _{oss}	Output Capacitance		-	620	-	
C _{rss}	Reverse Transfer Capacitance		-	389	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =10 V, V _{GEN} =4.5 V, R _G =3.9 Ω, R _L =1 Ω, I _{DS} =20 A	-	455	-	ns
t _r	Turn-on Rise Time		-	86	-	
t _{d(off)}	Turn-off Delay Time		-	159	-	
t _f	Turn-off Fall Time		-	111	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =10 V, V _{GS} =4.5 V, I _{DS} =20 A	-	75	-	nC
Q _{gs}	Gate-Source Charge		-	14	-	
Q _{gd}	Gate-Drain Charge		-	24	-	

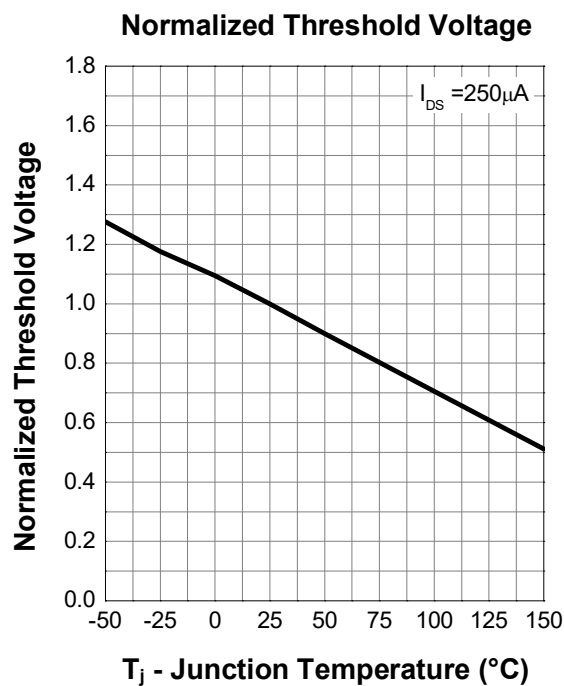
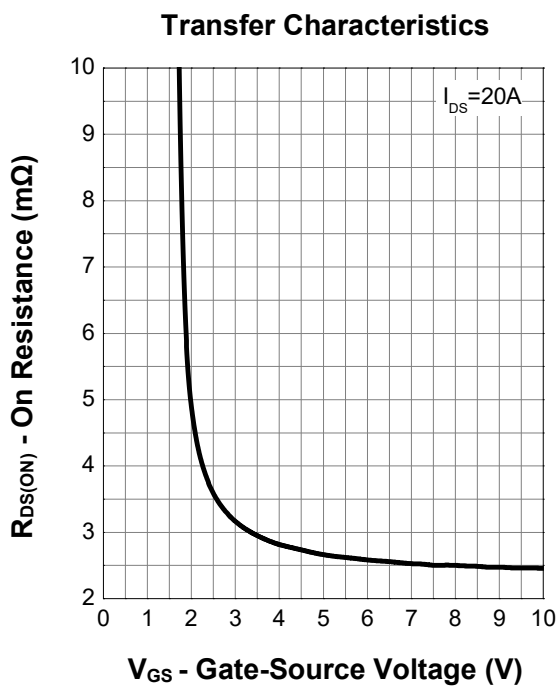
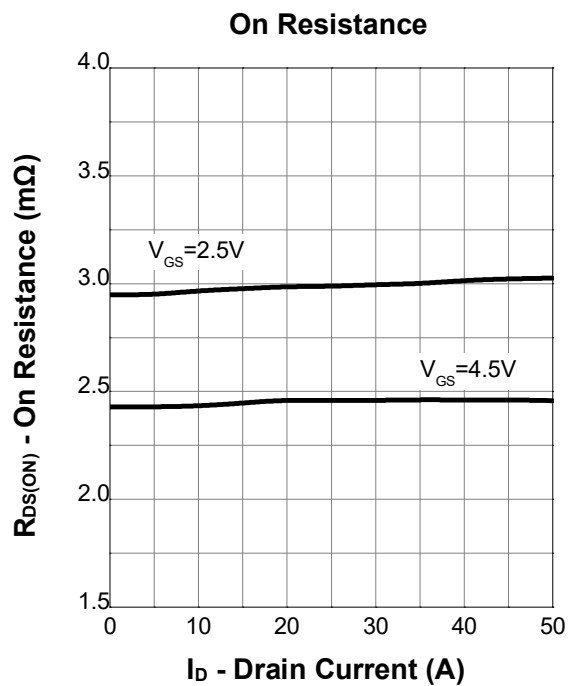
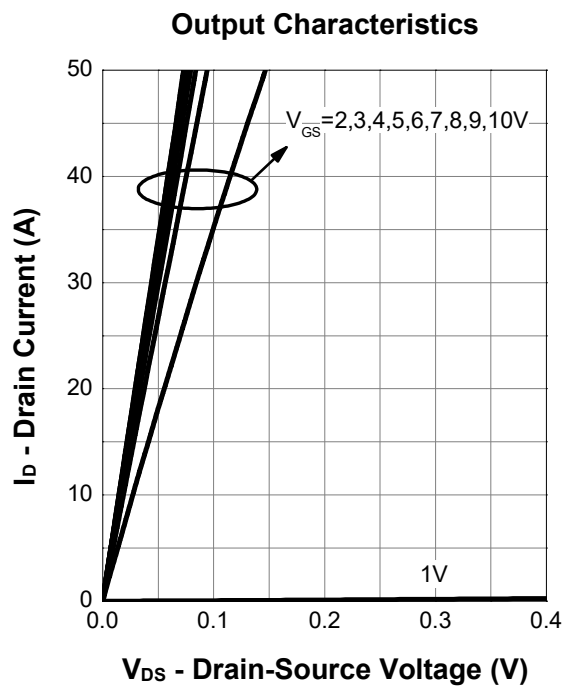
Notes:

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%
- Guaranteed by design, not subject to production testing

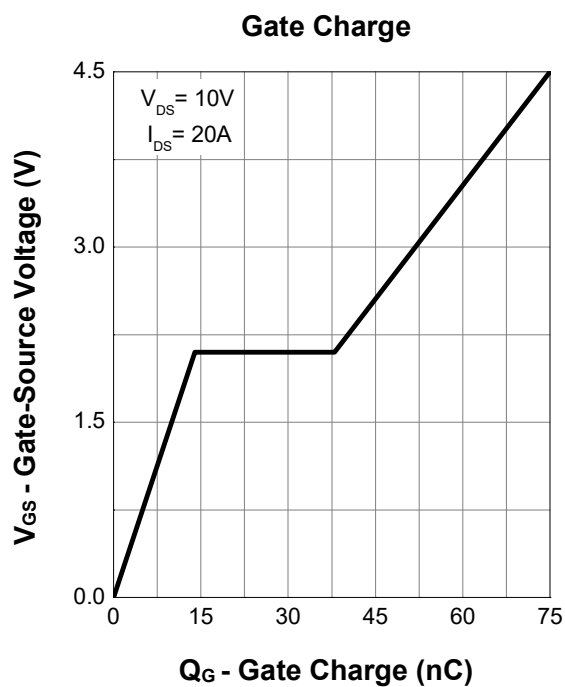
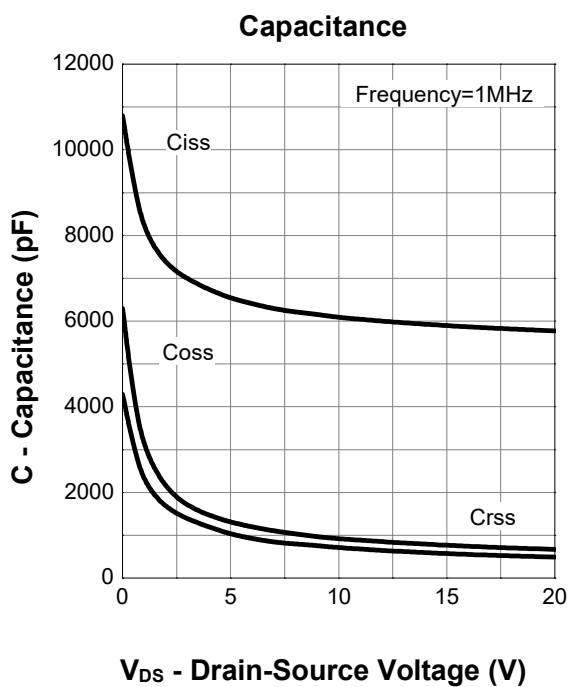
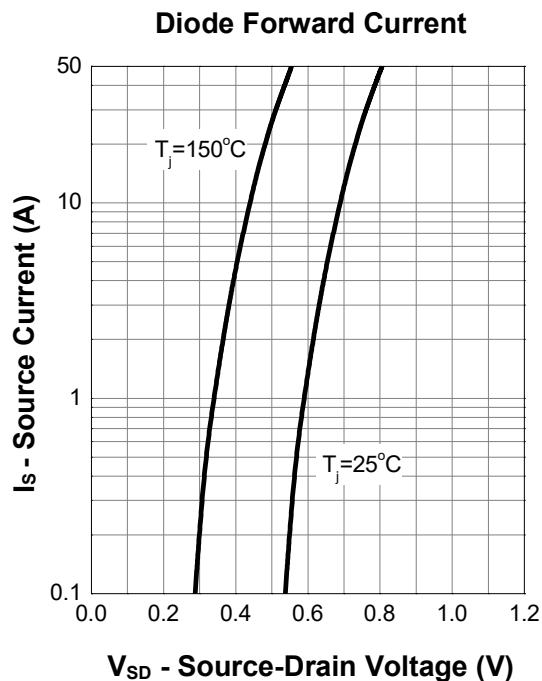
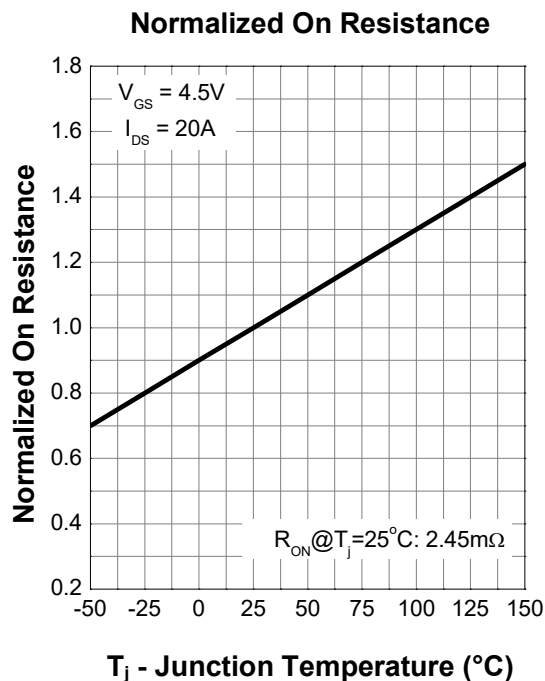
7. Typical Characteristics



7. Typical Characteristics (cont.)

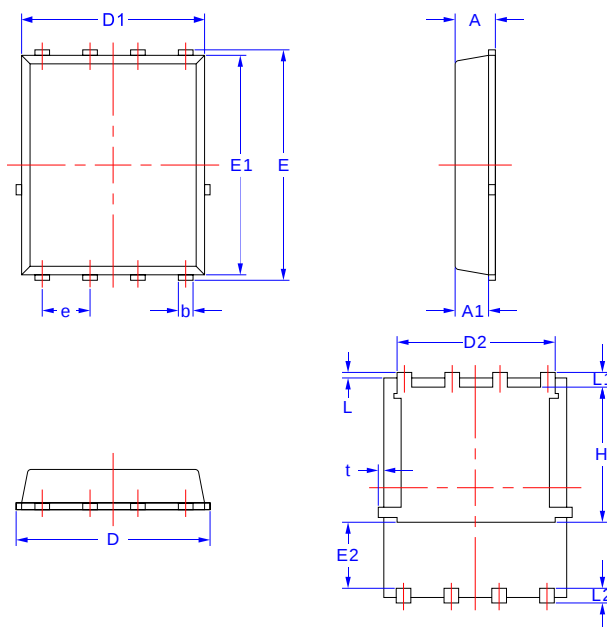


7. Typical Characteristics (cont.)



8. Package Mechanical Data

PDFN 5x6-8L Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	1.03	1.17
A1	0.824	0.97
b	0.34	0.48
D	4.80	5.40
D1	4.80	5.00
D2	4.11	4.31
E	5.95	6.15
E1	5.65	5.85
E2	1.40	-
e	1.27 BSC	
L	0.05	0.25
L1	0.38	0.50
L2	0.38	0.71
H	3.30	3.50
t	-	0.18