

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design

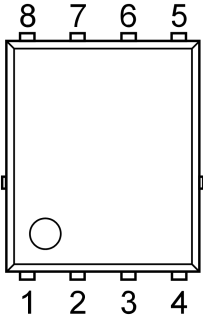
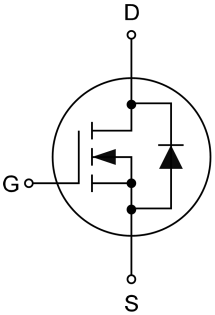
1.2 Applications

- ☒ Motor drivers
- ☒ High power inverter system
- ☒ BMS

1.3 Quick reference

- ☒ $BV \geq 30\text{ V}$
- ☒ $R_{DS(ON)} \leq 0.68\text{ m}\Omega @V_{GS} = 10\text{ V}$
- ☒ $P_D \leq 179\text{ W}$
- ☒ $R_{DS(ON)} \leq 0.95\text{ m}\Omega @V_{GS} = 4.5\text{ V}$
- ☒ $I_D \leq 418\text{ A}$

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	$T_C=25^{\circ}\text{C}$	30	-	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D	Drain Current (DC)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	418	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	265	A
I_{DM}^*	Drain Current (Pulsed)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	1250	A
P_D	Drain Power Dissipation	$T_C=25^{\circ}\text{C}$	-	178	W
I_S	Diode Forward Current	$T_C=25^{\circ}\text{C}$	-	398	A
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=30\text{ V}, L=0.3\text{ mH}$	-	1200	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		-	40	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.7	$^{\circ}\text{C/W}$

Notes:

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- ** Surface mounted on 1 in² pad area, $t \leq 10\text{ sec}$.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ006N03G	KJ006N03G XXXXXX

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ006N03G	PDFN 5×6-8L	13"	12 mm	5000

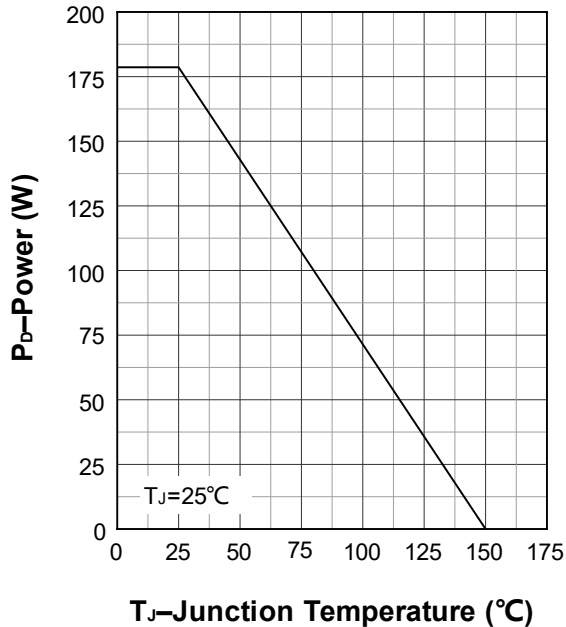
Note: KUAJIEXIN defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C)

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

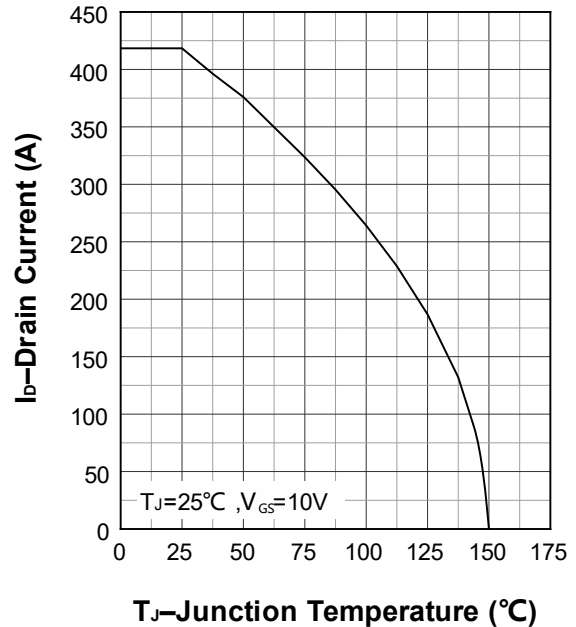
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	30	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	1.2	-	2.5	V
I _{DSS}	Drain Leakage Current	V _{DS} =24 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{DS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10 V, I _{DS} =50 A	-	0.58	0.68	mΩ
		V _{GS} =4.5 V, I _{DS} =30 A	-	0.85	0.95	mΩ
Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0 V, I _{SD} =50 A	-	-	1.3	V
t _{rr}	Reverse Recovery Time	V _{GS} =0 V, I _{SD} =50 A, dI _{SD} /dt=100 A/μs	-	38	-	ns
Q _{rr}	Reverse Recovery Charge		-	30	-	nC
Dynamic Characteristics						
C _{iSS}	Input Capacitance	V _{DS} =15 V, V _{GS} =0 V, Frequency=1 MHz	-	7565	-	pF
C _{oSS}	Output Capacitance		-	4560	-	
C _{rSS}	Reverse Transfer Capacitance		-	430	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =15 V, V _{GEN} =10 V, R _G =3.9 Ω, R _L =0.3 Ω, I _{DS} =50 A	-	28	-	ns
t _r	Turn-on Rise Time		-	211	-	
t _{d(off)}	Turn-off Delay Time		-	201	-	
t _f	Turn-off Fall Time		-	120	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =15 V, V _{GS} =10 V, I _{DS} =50 A	-	240	-	nC
Q _{gs}	Gate-Source Charge		-	50	-	
Q _{gd}	Gate-Drain Charge		-	39	-	

7. Typical Characteristics

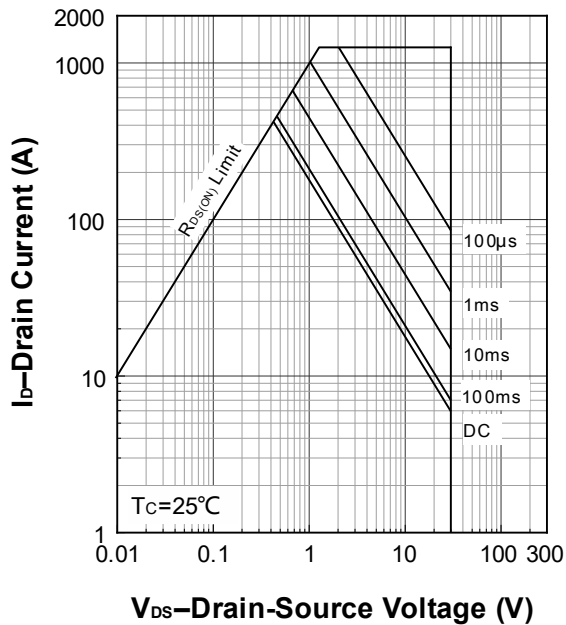
Power Capability



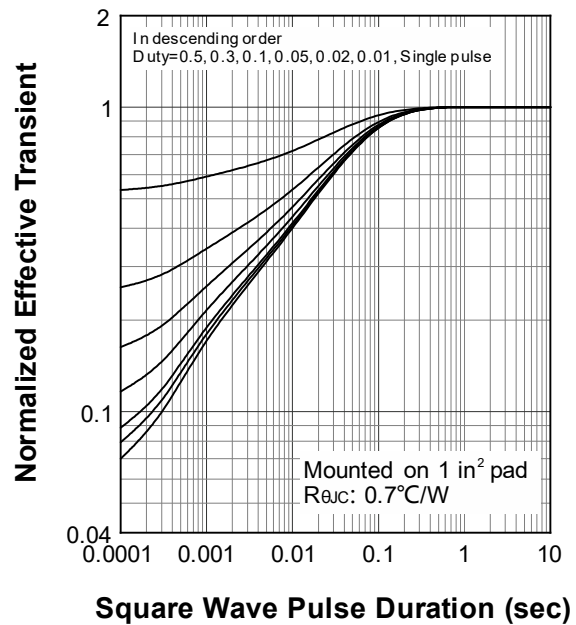
Current Capability



Safe Operating Area

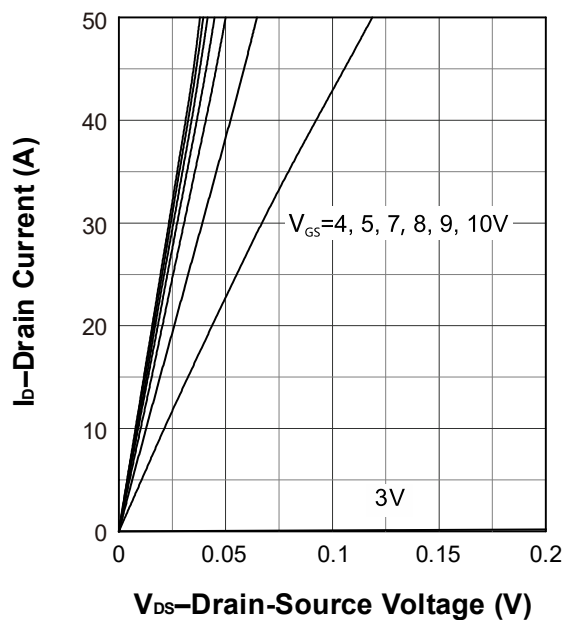


Transient Thermal Impedance

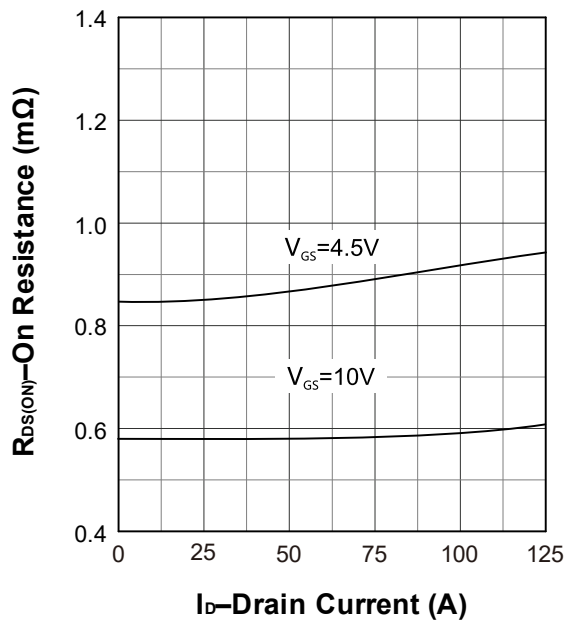


7. Typical Characteristics (cont.)

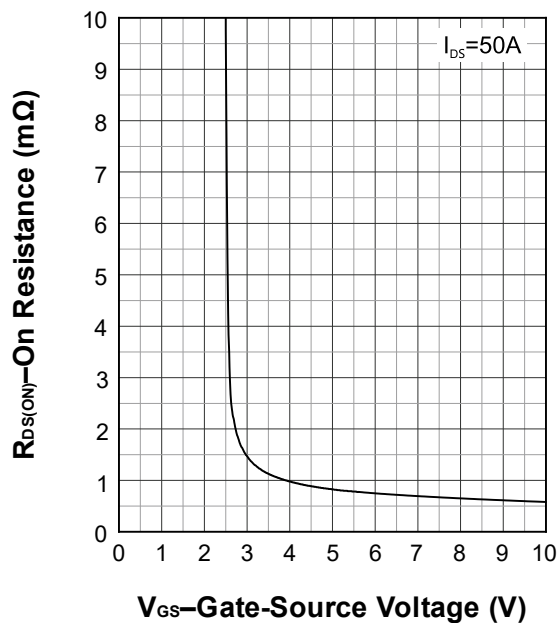
Output Characteristics



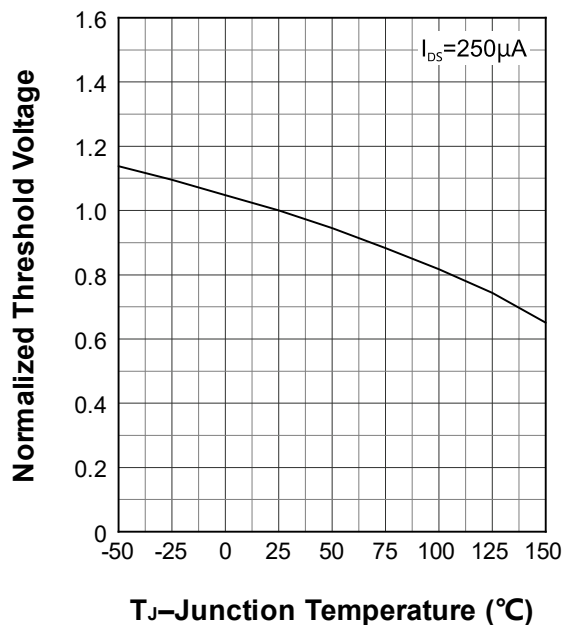
On Resistance



Transfer Characteristics

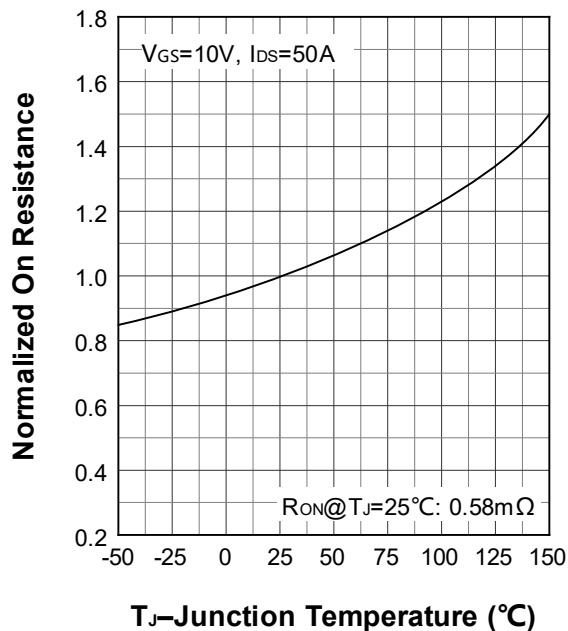


Normalized Threshold Voltage

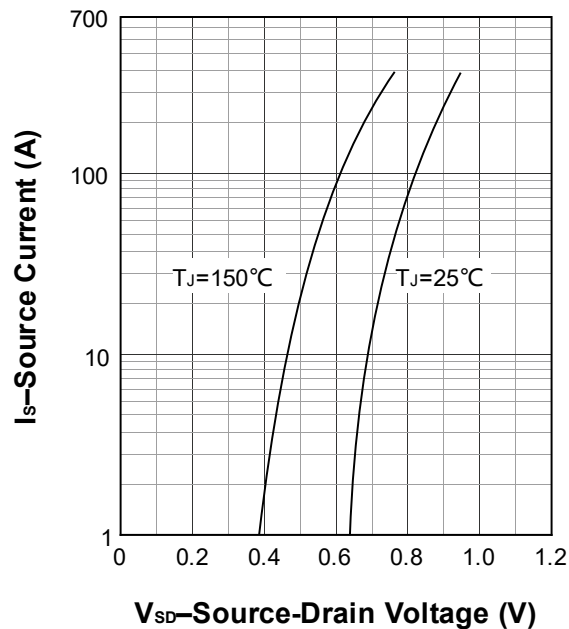


7. Typical Characteristics (cont.)

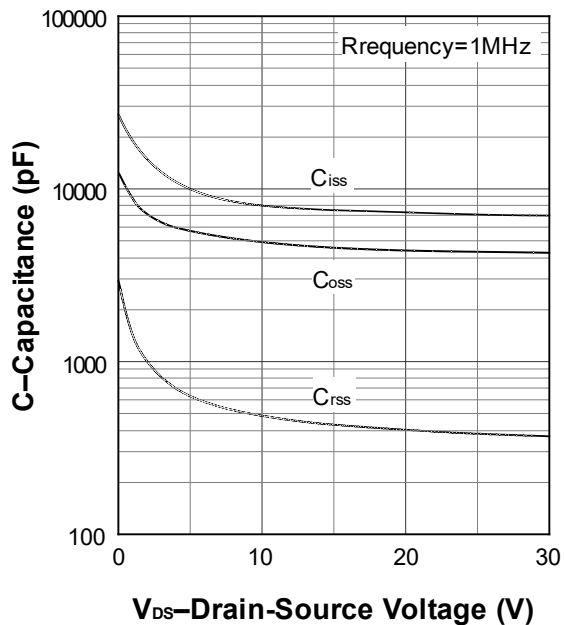
Normalized On Resistance



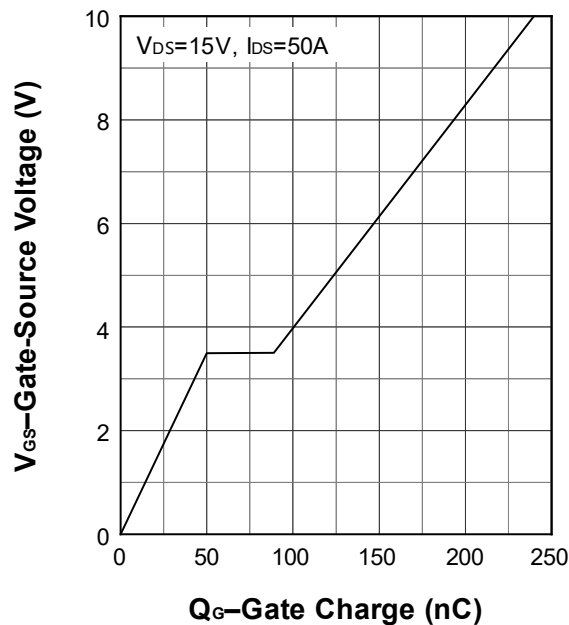
Diode Forward Current



Capacitance

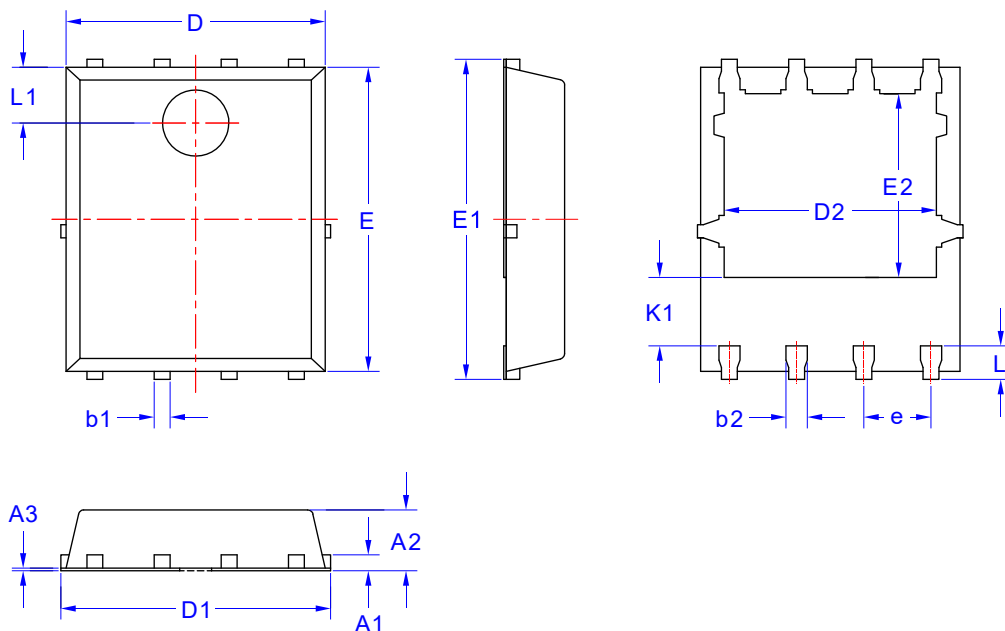


Gate Charge



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	