快捷芯
KUAIJIEXIN

KJ4602QD

N+P Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design
- ☑ Excellent $R_{DS(ON)}$
- ☑ Low gate charge

1.2 Applications

- ☑ PWM applications
- ☑ Load switch

1.3 Quick reference

• N-Channel

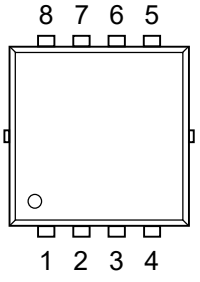
- ☑ BV ≥ 20 V
- ☑ $R_{DS(ON)}$ ≤ 10 mΩ @V_{GS} = 4.5 V
- ☑ I_D ≤ 10 A
- ☑ $R_{DS(ON)}$ ≤ 16 mΩ @V_{GS} = 2.5 V

• P-Channel

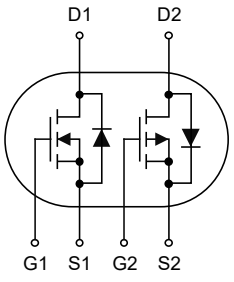
- ☑ BV ≤ -20 V
- ☑ $R_{DS(ON)}$ ≤ 26 mΩ @V_{GS} = -4.5 V
- ☑ I_D ≥ -8 A
- ☑ $R_{DS(ON)}$ ≤ 37 mΩ @V_{GS} = -2.5 V

2. Pin Description

Pin	Description
1	Source (S2)
2	Gate (G2)
3	Source (S1)
4	Gate (G1)
5,6	Drain (D1)
7,8	Drain (D2)



Top View
PDFN3.3x3.3-8L



Symbol

3. Limiting Values

Symbol	Parameter	Conditions	Limit	Unit
• N-Channel				
V_{DS}	Drain-Source Voltage	T_A=25℃	20	V
V_{GS}	Gate-Source Voltage	T_A=25℃	±12	V
I_D *	Drain Current	T_A=25℃	10	A
		T_A=70℃	8	A
I_{DM} *, **	Pulsed Drain Current	T_A=25℃	40	A
• P-Channel				
V_{DS}	Drain-Source Voltage	T_A=25℃	-20	V
V_{GS}	Gate-Source Voltage	T_A=25℃	±12	V
I_D *	Drain Current	T_A=25℃	-8	A
		T_A=70℃	-6.4	A
I_{DM} *, **	Pulsed Drain Current	T_A=25℃	-32	A
P_{tot}	Total Power Dissipation	T_A=25℃	4	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55~150	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		31.3	℃/W

Notes:

* Surface mounted on 1 in^2 pad area, t ≤ 10 sec.

** Pulse width ≤ 300 μs, duty cycle ≤ 1%.

4. Marking Information

Product Name	Marking
KJ4602QD	**4602QD XXXX**

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ4602QD	**PDFN 3.3x3.3-8L**	**13"**	**12 mm**	**5000**

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)

• N-Channel

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_D=250 μA	20	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	0.4	0.7	1.0	V
I_{DSS}	Drain Leakage Current	V_{DS}=20 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{GS}=±12 V, V_{DS}=0 V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-State Resistance	V_{GS}=4.5 V, I_D=10 A	-	8	10	mΩ
		V_{GS}=2.5 V, I_D=7 A	-	12	16	
gfs	Forward transconductance	V_{DS}=5 V, I_D=5 A	-	5	-	S
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{GS}=0 V, V_{DS}=10 V, f=1 MHz	-	1255	-	pF
C_{oss}	Output Capacitance		-	225	-	
C_{rss}	Reverse Transfer Capacitance		-	165	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=10 V, V_{GEN}=4.5 V, R_G=50 Ω, I_D=5 A	-	6.5	-	ns
t_r	Turn-on Rise Time		-	8.6	-	
$t_{d(off)}$	Turn-off Delay Time		-	70	-	
t_f	Turn-off Fall Time		-	45	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=10 V, V_{GS}=4.5 V, I_{DS}=10 A	-	28	-	nC
Q_{gs}	Gate-Source Charge		-	5.5	-	
Q_{gd}	Gate-Drain Charge		-	6.3	-	
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=1 A, V_{GS}=0 V	-	0.75	1.2	V

Notes:

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

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

7. Electrical Characteristics (T_A=25℃ unless otherwise noted)

• P-Channel

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	-0.45	-0.7	-1.0	V
I_{DSS}	Drain Leakage Current	V_{DS}=-20 V, V_{GS}=0 V	-	-	-1.0	μA
I_{GSS}	Gate Leakage Current	V_{DS}=0 V, V_{GS}=±12 V	-	-	±100	nA
$R_{DS(ON)}$ [a]	On-State Resistance	V_{GS}=-4.5 V, I_{DS}=-8 A	-	17	26	mΩ
		V_{GS}=-2.5 V, I_{DS}=-5 A	-	22	37	
gfs	Forward transconductance	V_{DS}=-5 V, I_D=-8 A	-	5	-	S
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{GS}=0 V, V_{DS}=-4.5 V f=1 MHz	-	1200	-	pF
C_{oss}	Output Capacitance		-	195	-	
C_{rss}	Reverse Transfer Capacitance		-	170	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=-10 V, V_{GEN}=-4.5 V, R_G=10 Ω, I_{DS}=-5 A	-	11	-	ns
t_r	Turn-on Rise Time		-	35	-	
$t_{d(off)}$	Turn-off Delay Time		-	30	-	
t_f	Turn-off Fall Time		-	10	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=-10 V, V_{GS}=-4.5 V, I_{DS}=-5 A	-	34	-	nC
Q_{gs}	Gate-Source Charge		-	3.8	-	
Q_{gd}	Gate-Drain Charge		-	10.4	-	
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=-1 A, V_{GS}=0 V	-	-0.78	-1.3	V

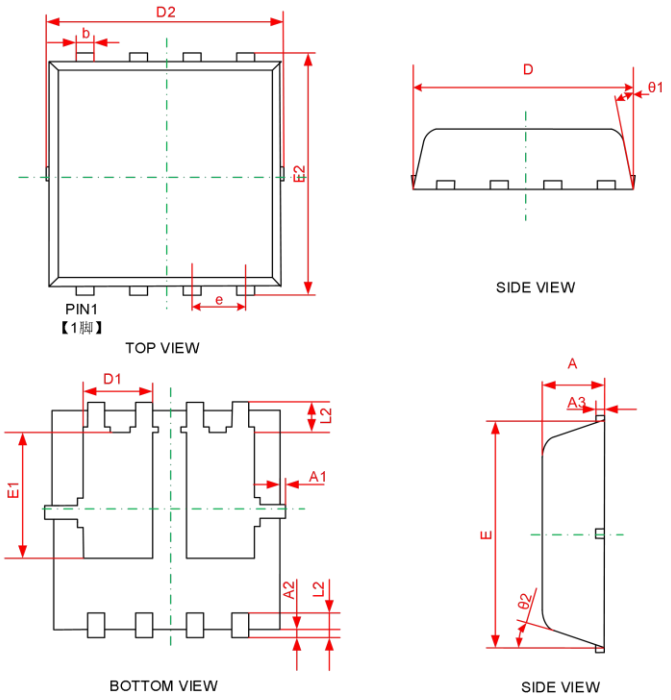
Notes:

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

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

8. Package Dimensions

PDFN3.3x3.3-8L (Dual) package



Symbol	Dimensions in Millimeters	
	Min	Max
A	0.750	0.850
A1	0.000	0.050
A2	0.100	0.200
A3	0.152 REF.	
b	0.200	0.400
D	3.050	3.250
D1	0.935	1.135
D2	3.200	3.400
E	2.900	3.100
E1	1.635	1.835
E2	3.150	3.350
e	0.625	0.675
L1	0.350	0.450
L2	0.365	0.465
θ1	10°	12°
θ2	10°	12°