快捷芯
KUAIJIEXIN

KJ3004DS

N+P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Low gate charge

1.2 Applications

- ☑ PWM applications
- ☑ Load switch

1.3 Quick reference

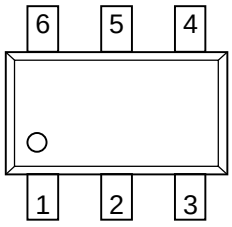
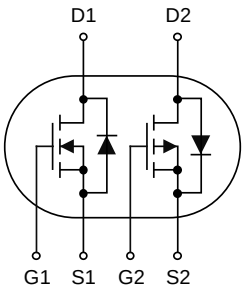
N- Channel

- ☑ BV ≥ 30 V
- ☑ I_D ≤ 4 A
- ☑ $R_{DS(ON)}$ ≤ 35 mΩ @ V_{GS} = 4.5 V
- ☑ $R_{DS(ON)}$ ≤ 50 mΩ @ V_{GS} = 2.5 V

P- Channel

- ☑ BV ≤ -30 V
- ☑ I_D ≥ -4 A
- ☑ $R_{DS(ON)}$ ≤ 85 mΩ @ V_{GS} = -4.5 V
- ☑ $R_{DS(ON)}$ ≤ 110 mΩ @ V_{GS} = -2.5 V

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G1)		
2	Source(S2)		
3	Gate(G2)		
4	Drain(D2)		
5	Source(S1)		
6	Drain(D1)		

Top View
SOT23-6L

3. Limiting Values

Symbol	Parameter		Limit		Unit
			N	P	
V_{DS}	Drain-Source Voltage		30	-30	V
V_{GS}	Gate-Source Voltage		±12	±12	V
I_D *	Drain Current	T_A=25℃	4	-4	A
		T_A=75℃	3.2	-3.2	A
I_{DM} *, **	Pulsed Drain Current		16	-16	A
P_{tot}	Maximum Power Dissipation		1.4		W
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55 to 150		℃
$R_{\theta JA}$*	Thermal Resistance-Junction to Ambient	≤ 10 s	70	90	℃/W
		Steady-State	100	125	
$R_{\theta JC}$*	Thermal Resistance-Junction to Case	Steady-State	63	80	

Notes:

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

** Pulse width ≤ 300 μs, duty cycle ≤ 2%.

*** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ3004DS	3004 YYWW YYWW: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ3004DS	SOT23-6L	7"	8 mm	3000	

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_{DS}=250 μA	30	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	0.5	0.8	1.3	V
I_{DSS}	Drain Leakage Current	V_{DS}=30 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]	On-State Resistance	V_{GS}=4.5 V, I_D=4 A	-	28	35	mΩ
		V_{GS}=2.5 V, I_D=3 A	-	36	50	
g_{fs} [a]	Forward transconductance	V_{DS}=5 V, I_D=4 A	-	33	-	S
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{DS}=15 V, V_{GS}=0 V, F=1 MHz	-	630	-	pF
C_{oss}	Output Capacitance		-	75	-	
C_{rss}	Reverse Transfer Capacitance		-	55	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15 V, V_{GS}=10 V, R_L=2.6 Ω, R_{GEN}=3 Ω	-	3	-	ns
t_r	Turn-on Rise Time		-	2.5	-	
$t_{d(off)}$	Turn-off Delay Time		-	25	-	
t_f	Turn-off Fall Time		-	4	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=15 V, V_{GS}=4.5 V, I_{DS}=4 A	-	6	-	nC
Q_{gs}	Gate-Source Charge		-	1.3	-	
Q_{gd}	Gate-Drain Charge		-	1.8	-	
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=1 A, V_{GS}=0 V	-	0.72	1.2	V

Notes:

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

b. Guaranteed by design, not subject to production testing

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	-30	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250 μA	-0.5	-0.8	-1.3	V
I_{DSS}	Drain Leakage Current	V_{DS}=-30 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]	On-State Resistance	V_{GS}=-4.5 V, I_D=-4 A	-	65	85	mΩ
		V_{GS}=-2.5 V, I_D=-2 A	-	85	110	
g_{fs} [a]	Forward transconductance	V_{DS}=-5 V, I_D=-4 A	-	9	-	S
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{DS}=-15 V, V_{GS}=0 V, F=1 MHz	-	676	-	pF
C_{oss}	Output Capacitance		-	60	-	
C_{rss}	Reverse Transfer Capacitance		-	51	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=-15 V, V_{GS}=-10 V, R_L=3.6 Ω, R_{GEN}=6 Ω	-	8	-	ns
t_r	Turn-on Rise Time		-	5	-	
$t_{d(off)}$	Turn-off Delay Time		-	26	-	
t_f	Turn-off Fall Time		-	11	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=-8 V, V_{GS}=-4.5 V, I_{DS}=-3 A	-	8.2	-	nC
Q_{gs}	Gate-Source Charge		-	1.8	-	
Q_{gd}	Gate-Drain Charge		-	2.0	-	
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=-1 A, V_{GS}=0 V	-	-0.75	-1.2	V

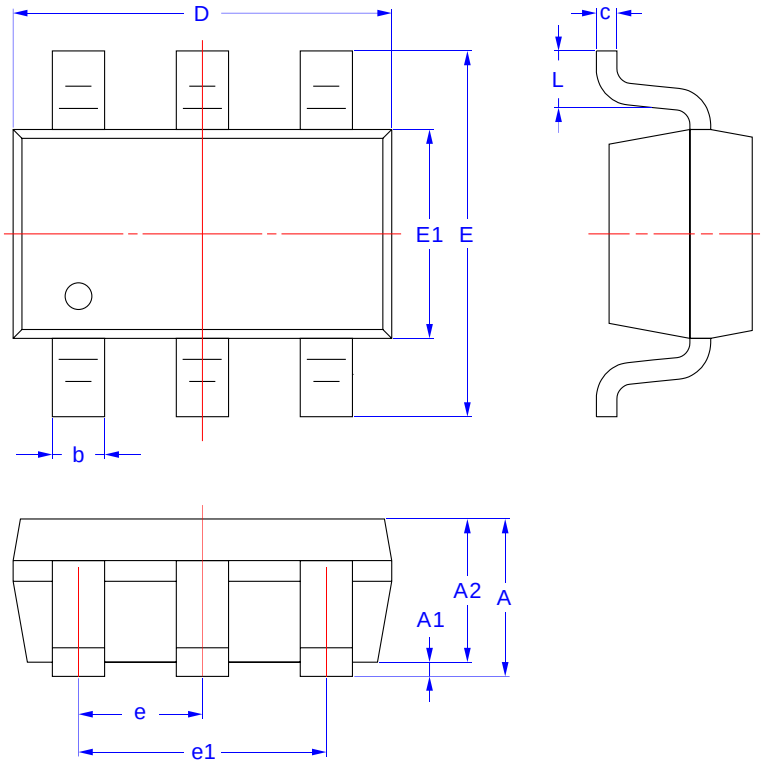
Notes:

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

b. Guaranteed by design, not subject to production testing

7. Package Dimensions

SOT23-6L Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	1.05	1.25
A1	0.00	0.10
A2	1.05	1.15
b	0.30	0.50
c	0.10	0.20
D	2.82	3.02
E	2.65	2.95
E1	1.50	1.70
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60