

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Advanced trench cell design

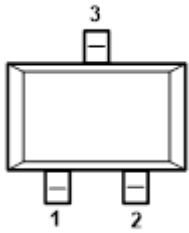
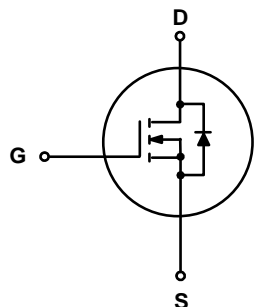
#### 1.2 Applications

- Portable appliances
- Battery management
- High speed switch
- Low power DC to DC Converter

#### 1.3 Quick reference

- $BV \leq 20\text{ V}$
- $R_{DS(ON)} \leq 22\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $P_{tot} \leq 0.71\text{ W}$
- $R_{DS(ON)} \leq 26\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$
- $I_D \leq 5.2\text{ A}$

### 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 <p style="text-align: center;">Top View SOT23</p>	
2	Source(S)		
3	Drain(D)		

### 3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	Drain-Source Voltage	T <sub>A</sub> = 25 °C	20	-	V
V <sub>GS</sub>	Gate-Source Voltage	T <sub>A</sub> = 25 °C	-	± 8	V
I <sub>D</sub> *	Drain Current	T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 10 V	-	6.5	A
		T <sub>A</sub> = 70 °C, V <sub>GS</sub> = 10 V	-	5.2	A
I <sub>DM</sub> **	Pulsed Drain Current	T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 10 V	-	30	A
P <sub>tot</sub>	Total Power Dissipation	T <sub>A</sub> = 25 °C	-	0.71	W
T <sub>stg</sub>	Storage Temperature		- 55	150	°C
T <sub>J</sub>	Junction Temperature		- 55	150	°C
I <sub>S</sub>	Diode Forward Current	T <sub>A</sub> = 25 °C	-	6.5	A
R <sub>θJA</sub> *	Thermal Resistance- Junction to Ambient		-	175	°C / W

Notes :

\* Surface Mounted on 1 in<sup>2</sup> pad area, t ≤ 10 sec

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

### 4. Marking Information

Product Name	Marking
KJ3416S	<b>3416</b>

### 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ3416S	SOT23			3000	

Note: KUAIJIXIN 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** ( $T_A = 25\text{ }^\circ\text{C}$  Unless Otherwise Noted)

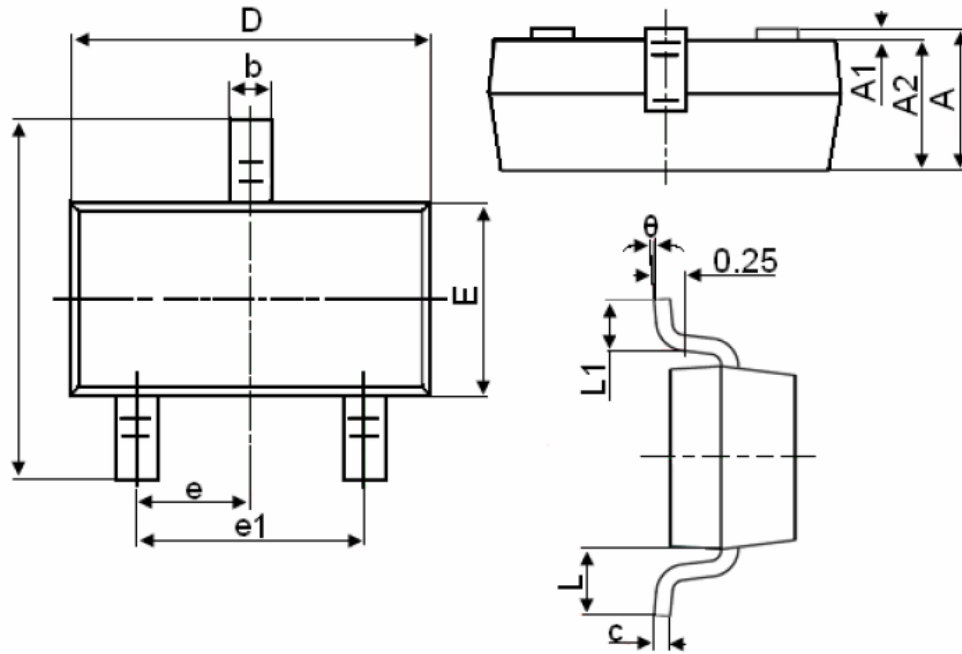
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$	20	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$	0.4	0.7	1.1	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 8\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = 4.5\text{ V}, I_{DS} = 6.5\text{ A}$	-	15	22	
		$V_{GS} = 2.5\text{ V}, I_{DS} = 5.5\text{ A}$	-	18	26	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 1\text{ A}, V_{GS} = 0\text{ V}$	-	0.72	1.2	V
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 10\text{ V}$ Frequency = 1 MHz	-	1300	-	pF
$C_{oss}$	Output Capacitance		-	160	-	
$C_{riss}$	Reverse Transfer Capacitance		-	87	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 10\text{ V}, V_{GEN} = 4.5\text{ V},$ $R_G = 3\text{ }\Omega, R_L = 1.54\text{ }\Omega,$	-	280	-	ns
$t_r$	Turn-on Rise Time		-	328	-	
$t_d(off)$	Turn-off Delay Time		-	3.76	-	
$t_f$	Turn-off Fall Time		-	2.24	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_{DS} = 6.5\text{ A}$	-	10		nC
$Q_{gs}$	Gate-Source Charge		-	4.2		
$Q_{gd}$	Gate-Drain Charge		-	2.6		

Notes : a : Pulse test ; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$

b : Guaranteed by design, not subject to production testing

## 7. Package Dimensions

SOT23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°