

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Extremely low threshold voltage
- Advanced trench cell design
- ESD protected

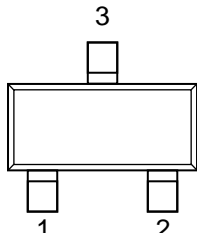
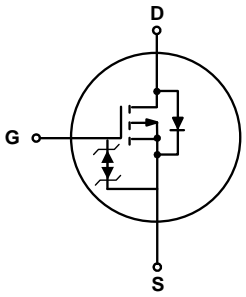
1.2 Applications

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

1.3 Quick reference

- $BV \leq -20\text{ V}$
- $R_{DS(ON)} \leq 37\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$
- $P_{tot} \leq 0.83\text{ W}$
- $R_{DS(ON)} \leq 52\text{ m}\Omega @ V_{GS} = -2.5\text{ V}$
- $I_D \leq -4\text{ A}$
- $R_{DS(ON)} \leq 72\text{ m}\Omega @ V_{GS} = -1.8\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View SOT-23	
2	Source(S)		
3	Drain(D)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _A = 25 °C	- 20	-	V
V _{GS}	Gate-Source Voltage	T _A = 25 °C	-	± 8	V
I _D *	Drain Current	T _A = 25 °C, V _{GS} = - 4.5 V	-	- 4	A
I _{DM} **	Pulsed Drain Current	T _A = 25 °C, V _{GS} = - 4.5 V	-	- 16	A
P _{tot}	Total Power Dissipation	T _A = 25 °C	-	0.83	W
		T _A = 100 °C	-	0.3	
T _{stg}	Storage Temperature		- 55	150	°C
T _J	Junction Temperature		-	150	°C
I _S	Diode Forward Current	T _A = 25 °C	-	- 1	A
R _{θJA}	Thermal Resistance- Junction to Ambient		-	150	°C / W

Notes :

* Surface Mounted on 1 in² pad area, t ≤ 10 sec

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

4. Marking Information

Product Name	Marking
KJ3415S	3415

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ3415S	SOT-23			3000	

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)

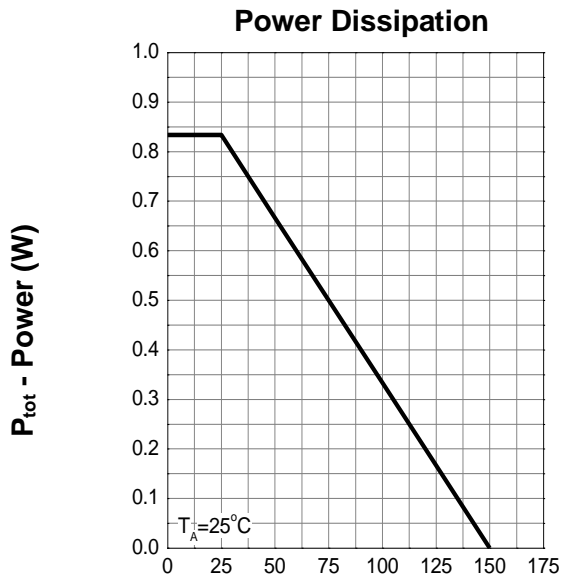
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = - 250 μA	- 20	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = - 250 μA	- 0.5	-	- 1	V
I _{DSS}	Drain Leakage Current	V _{DS} = - 16 V, V _{GS} = 0V	-	-	- 1	μA
		T _J = 85 °C	-	-	- 30	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 8 V, V _{DS} = 0 V	-	-	± 10	μA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = - 4.5 V, I _{DS} = - 4 A	-	30	37	m Ω
		V _{GS} = - 2.5 V, I _{DS} = - 3 A	-	42	52	
		V _{GS} = - 1.8 V, I _{DS} = - 2 A	-	57	72	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = - 1 A, V _{GS} = 0V	-0.5	-	- 1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} = - 4 A, dI _{SD} / dt = 100 A / μs	-	49.5	-	ns
Q _{rr}	Reverse Recovery Charge		-	16.5	-	nC
Dynamic Characteristics^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = - 10 V Frequency = 1 MHz	-	1121	-	pF
C _{oss}	Output Capacitance		-	161	-	
C _{rss}	Reverse Transfer Capacitance		-	148	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = - 10 V, V _{GEN} = - 4.5 V, R _G = 3.3 Ω, R _L = 2.5 Ω, I _{DS} = - 4 A	-	5.5	-	ns
t _r	Turn-on Rise Time		-	60.5	-	
t _{d(off)}	Turn-off Delay Time		-	89	-	
t _f	Turn-off Fall Time		-	73	-	
Gate Charge Characteristics^b						
Q _g	Total Gate Charge	V _{GS} = - 4.5 V, V _{DS} = - 10 V, I _{DS} = - 4 A	-	17.4	-	nC
Q _{gs}	Gate-Source Charge		-	1.9	-	
Q _{gd}	Gate-Drain Charge		-	4.1	-	

Notes :

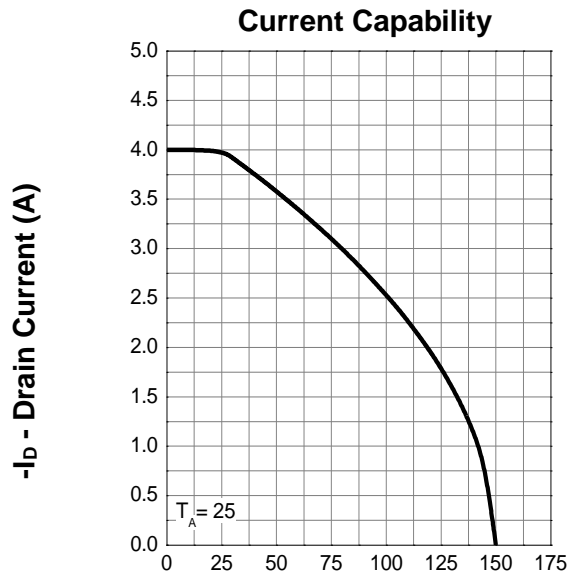
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

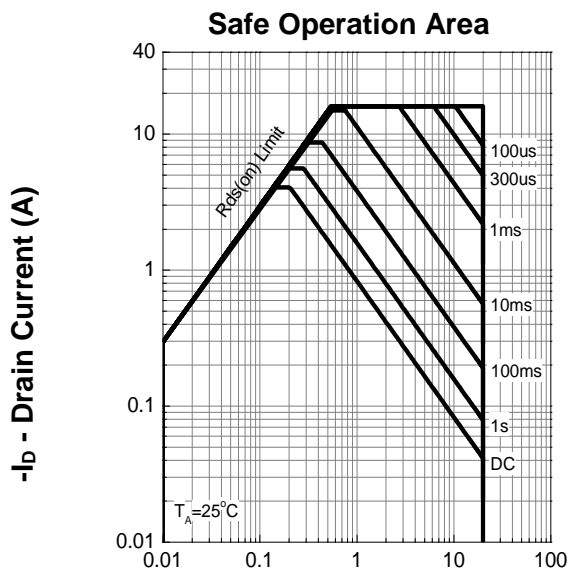
7. Typical Characteristics



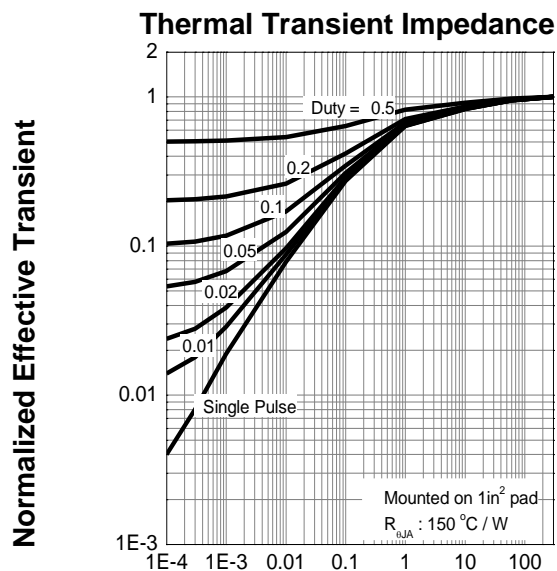
T_j - Junction Temperature ($^\circ\text{C}$)



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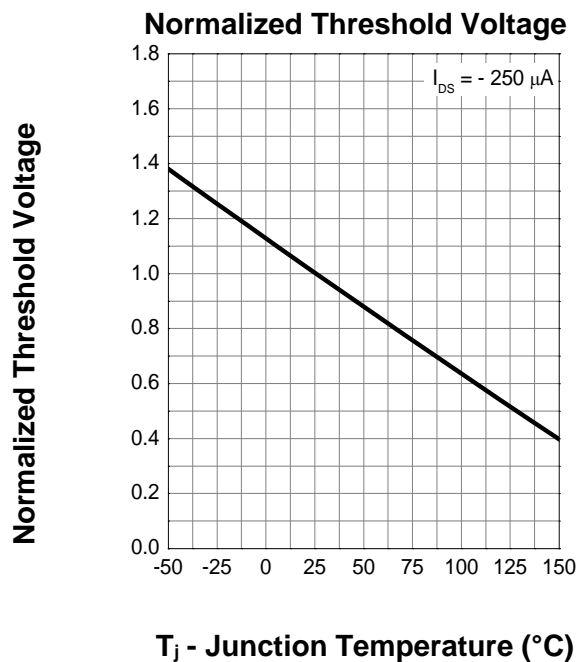
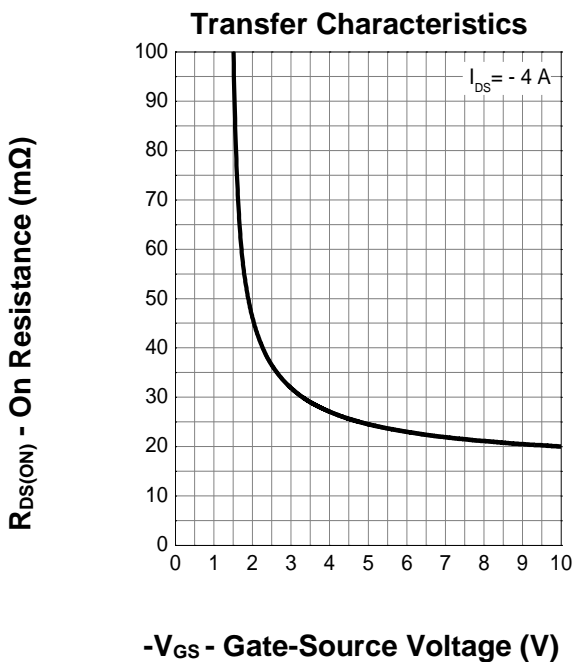
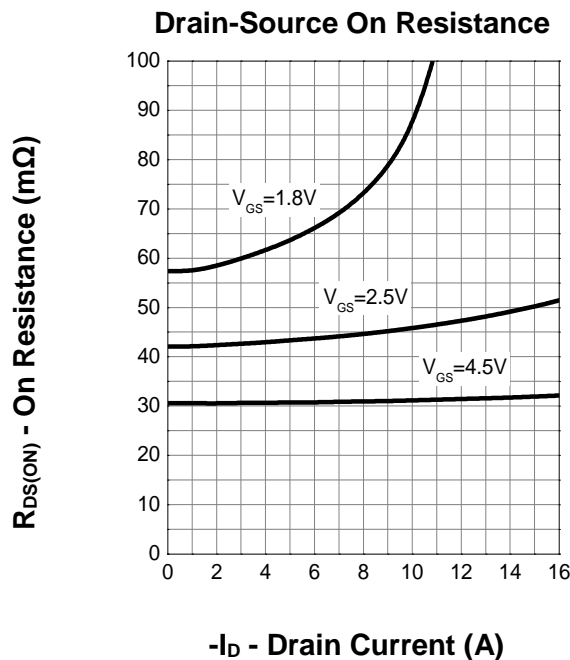
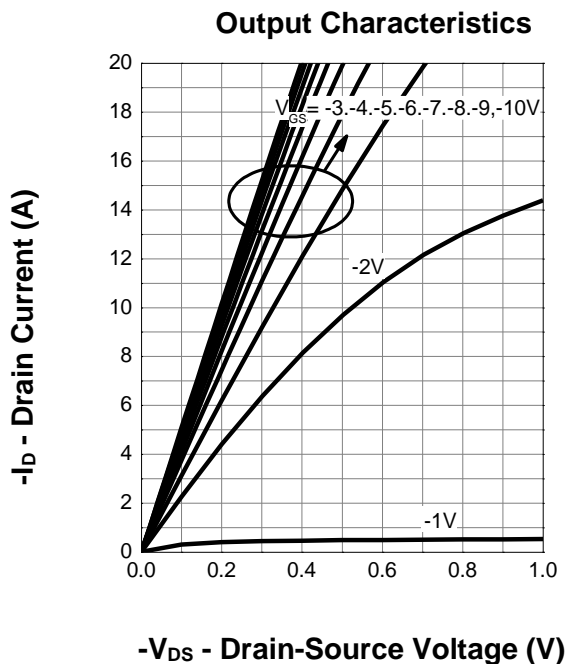


$-V_{DS}$ - Drain-Source Voltage (V)

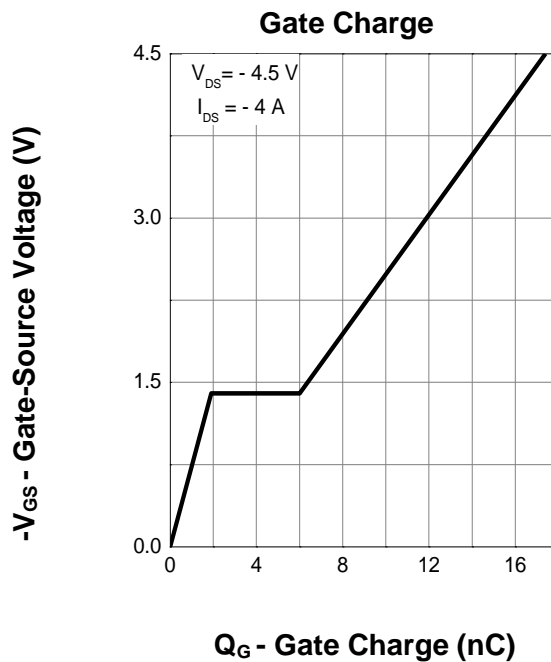
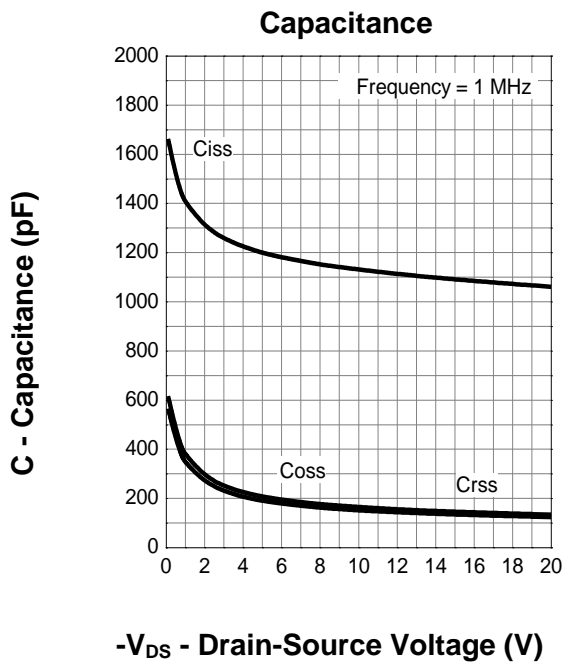
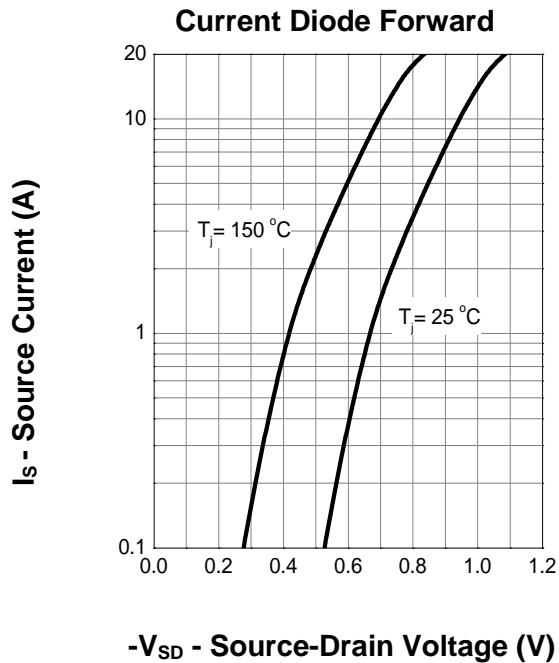
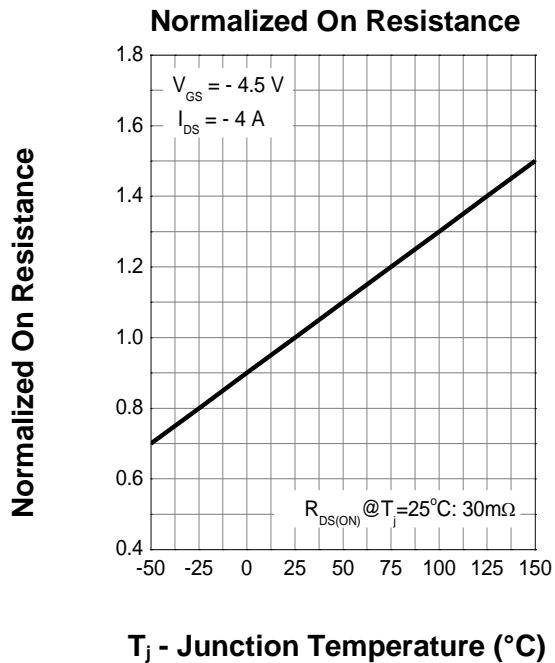


Square Wave Pulse Duration (sec)

7. Typical Characteristics (cont.)



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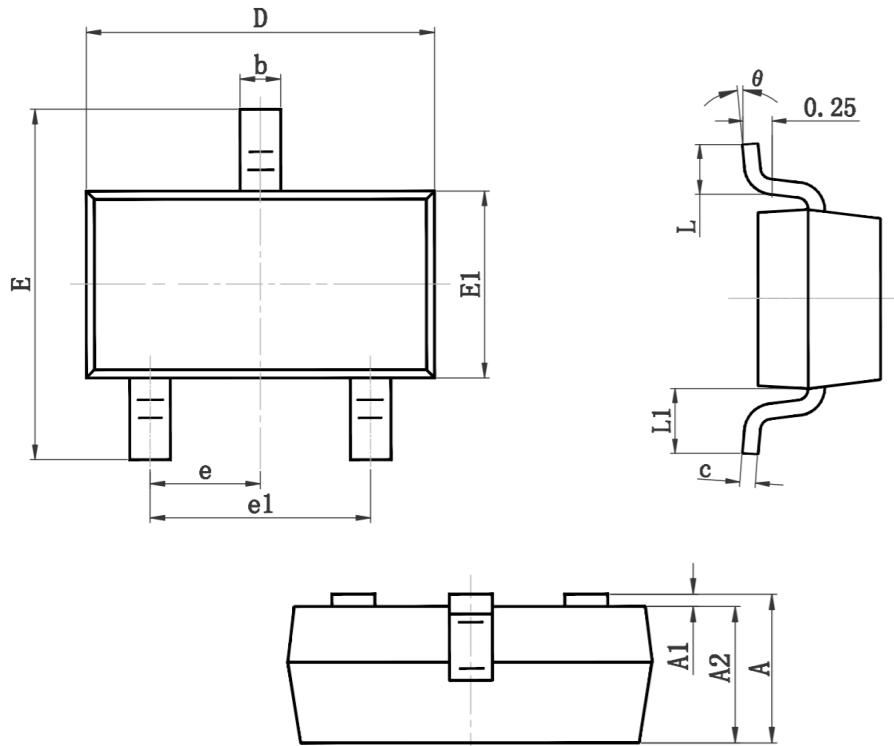




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8. Package Dimensions SOT-23



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	2.250	2.550
E1	1.200	1.400
e	0.950 TYP.	
e1	1.800	2.000
L	0.300	0.500
L1	0.550 REF.	
θ	0°	8°