

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

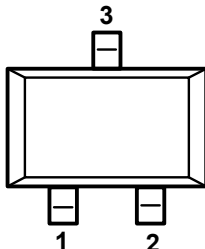
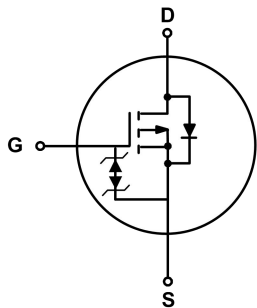
1.2 Applications

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

1.3 Quick reference

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

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View SOT23-3L	
2	Source(S)		
3	Drain(D)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	- 20	-	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	± 8	V
I_D^*	Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = -4.5\text{ V}$	-	- 4	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = -4.5\text{ V}$	-	- 16	A
P_{tot}	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	0.83	W
		$T_A = 100\text{ }^\circ\text{C}$	-	0.3	
T_{stg}	Storage Temperature		- 55	150	$^\circ\text{C}$
T_J	Junction Temperature		-	150	$^\circ\text{C}$
I_S	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	- 1	A
$R_{\theta JA}$	Thermal Resistance- Junction to Ambient		-	150	$^\circ\text{C} / \text{W}$

Notes :

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$
- ** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

4. Marking Information

Product Name	Marking
KJ3415S	3415

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ3415S	SOT23-3L			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)

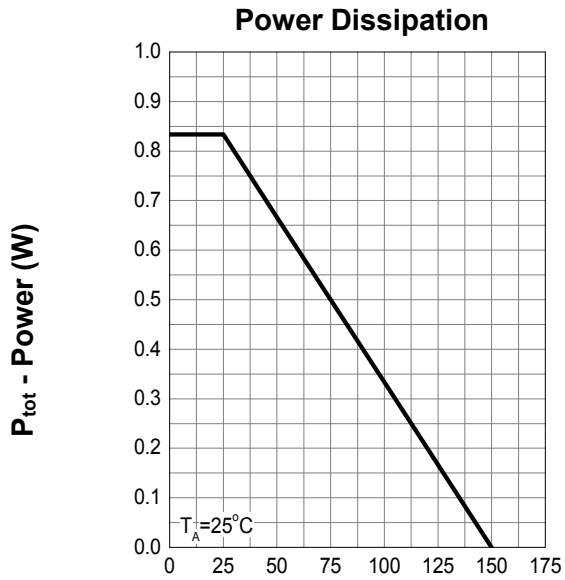
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = - 250 μA	- 20	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = - 250 μA	- 0.5	-	- 1	V
I _{DSS}	Drain Leakage Current	V _{DS} = - 16 V, V _{GS} = 0V	-	-	- 1	μA
		T _J = 85 °C	-	-	- 30	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 8 V, V _{DS} = 0 V	-	-	± 10	uA
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 :

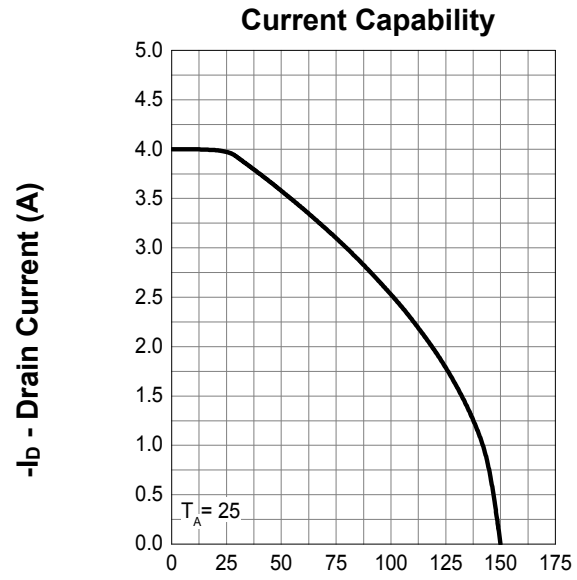
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

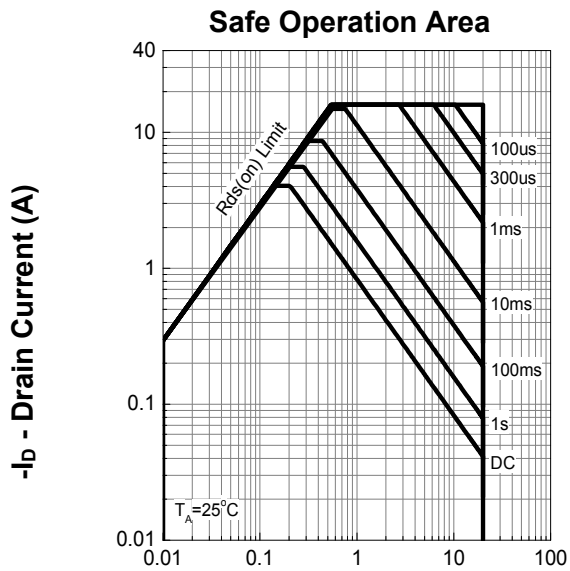
7. Typical Characteristics



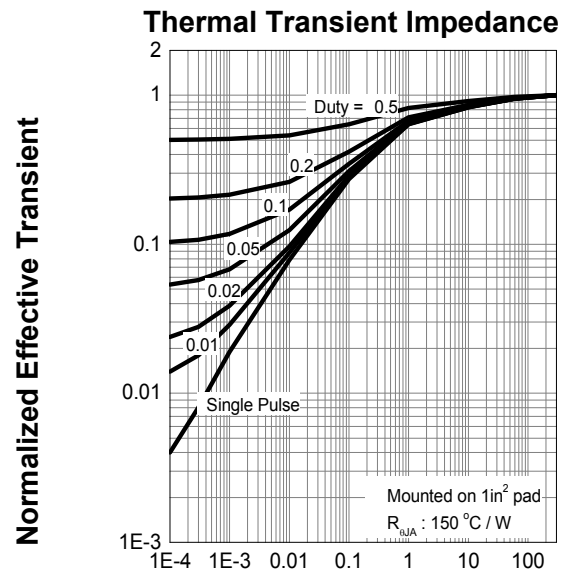
T_j - Junction Temperature ($^\circ\text{C}$)



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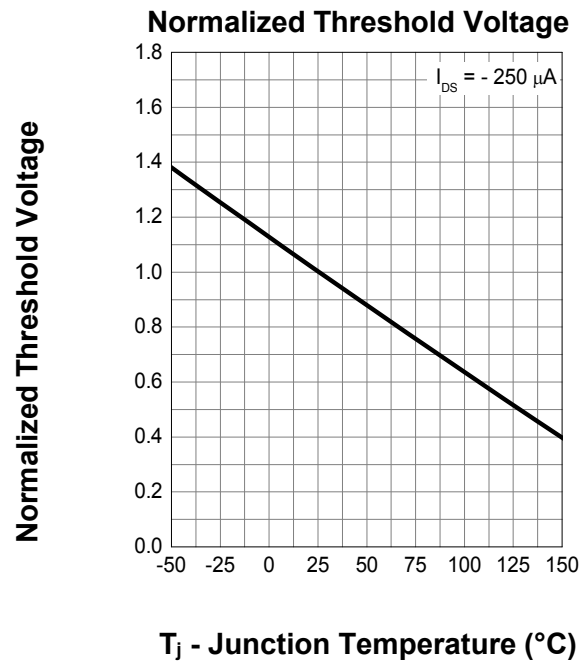
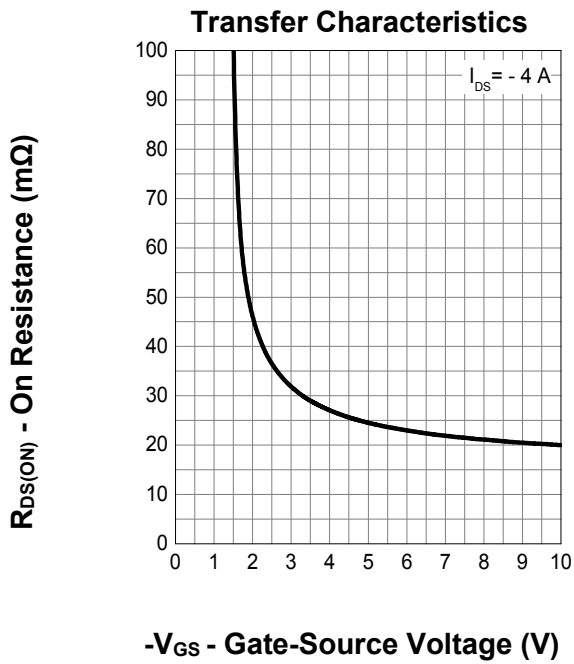
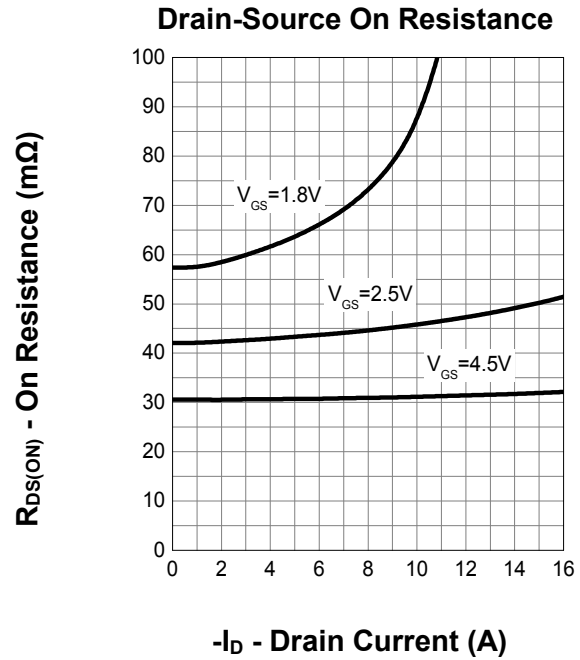
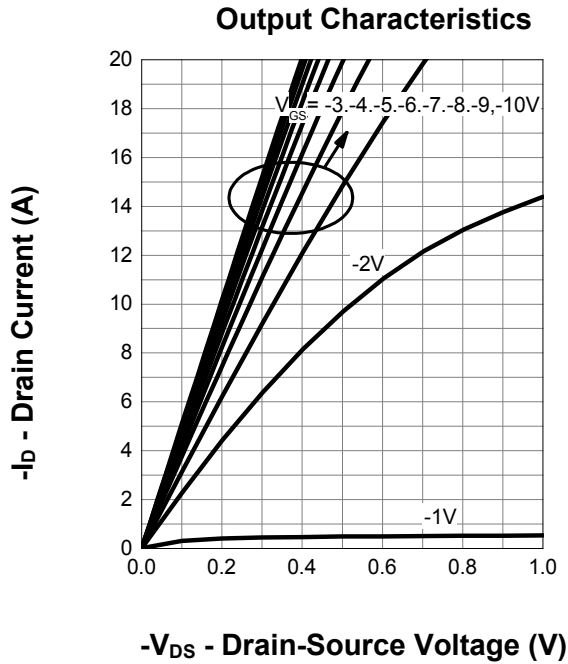


$-V_{DS}$ - Drain-Source Voltage (V)

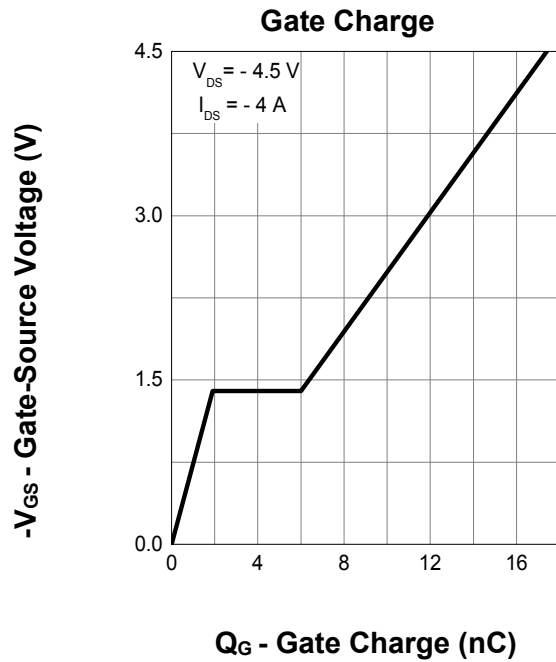
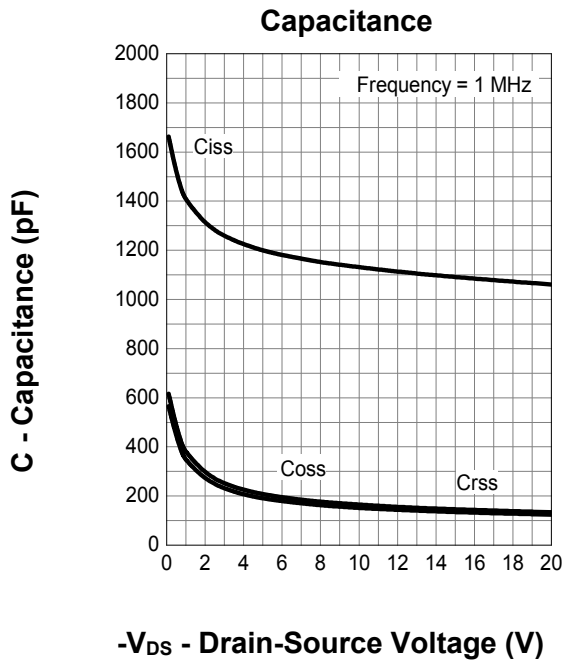
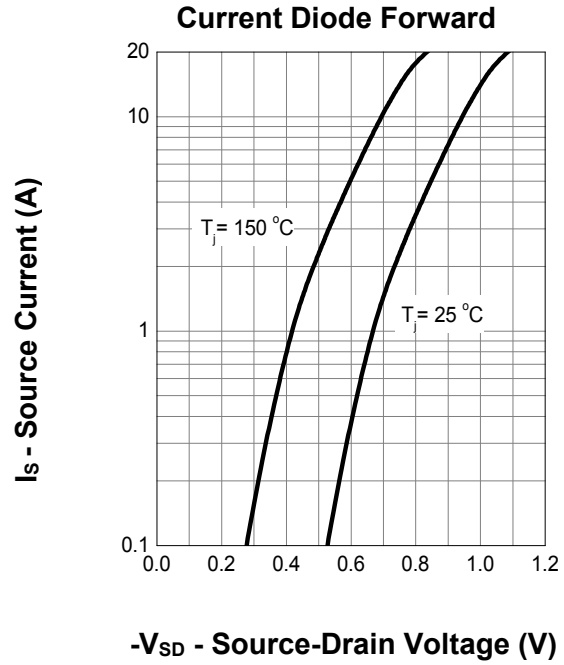
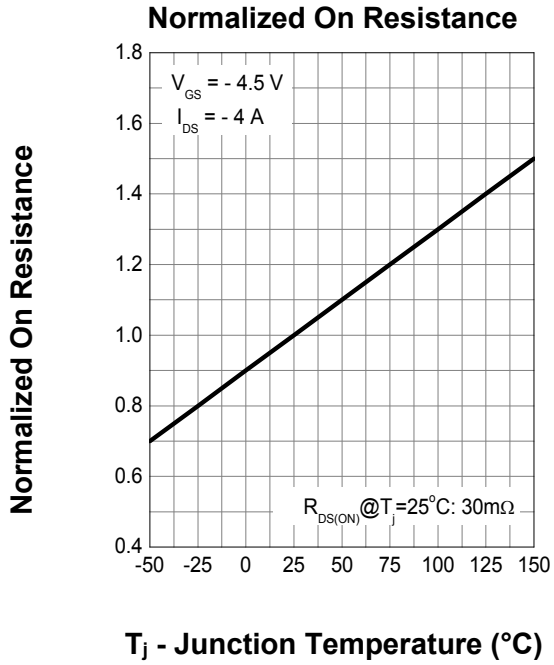


Square Wave Pulse Duration (sec)

7. Typical Characteristics (cont.)

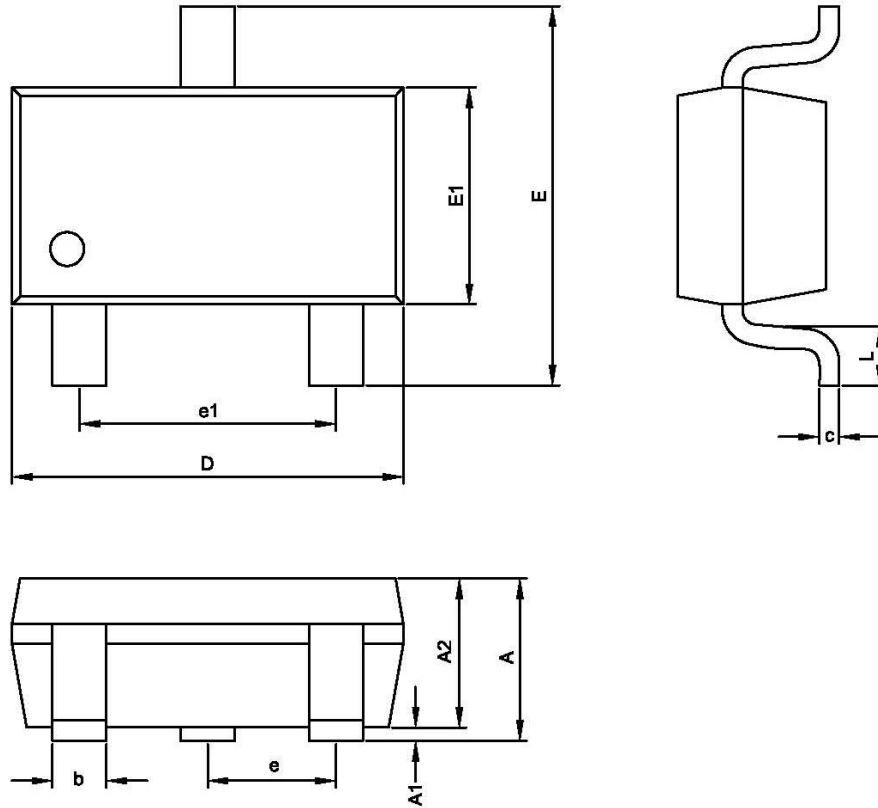


7. Typical Characteristics (cont.)



8. Package Dimensions

SOT23-3L



Symbol	Dimensions In MM			Dimensions In INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	1.00	1.10	1.45	0.039	0.043	0.057
A1	0.00	---	0.15	0.000	---	0.006
A2	1.00	1.10	1.30	0.039	0.043	0.051
D	2.70	2.90	3.10	0.106	0.114	0.122
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
c	0.08	0.15	0.25	0.003	0.006	0.010
b	0.30	0.40	0.50	0.012	0.016	0.020
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
L	0.30	0.45	0.60	0.012	0.018	0.024