

## Dual N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Advanced trench cell design
- Extremely low threshold voltage
- ESD: 2KV

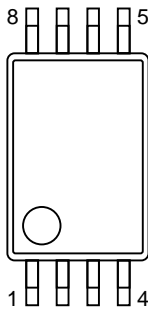
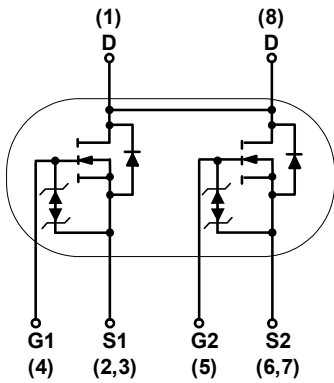
#### 1.2 Applications

- Portable appliances
- Battery management

#### 1.3 Quick reference

- $BV \geq 20\text{ V}$
- $P_{tot} \leq 0.83\text{ W}$
- $I_D \leq 7\text{ A}$
- $R_{DS(ON)} \leq 23\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $R_{DS(ON)} \leq 27\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$

### 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Drain(D)	 <p>Top View TSSOP8</p>	
2,3	Source(S1)		
4	Gate(G1)		
5	Gate(G2)		
6,7	Source(S2)		
8	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	-	± 12	V
I <sub>D</sub> *	Drain Current	T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 4.5 V	-	7	A
I <sub>DM</sub> **,**	Pulsed Drain Current	T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 4.5 V	-	20	A
P <sub>tot</sub> *	Total Power Dissipation	T <sub>A</sub> = 25 °C	-	0.83	W
		T <sub>A</sub> = 100 °C	-	0.3	
T <sub>stg</sub>	Storage Temperature		- 55	150	°C
T <sub>J</sub>	Junction Temperature		-	150	°C
I <sub>S</sub> *	Diode Forward Current	T <sub>A</sub> = 25 °C	-	7	A
R <sub>θJA</sub> *	Thermal Resistance- Junction to Ambient		-	150	°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
KJ8820A	<div style="display: inline-block; background-color: black; color: white; padding: 2px;">8820 YYWW</div> YYWW: Date Code

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ8820A	TSSOP8			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<sub>A</sub> = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
B <sub>VDS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0 V, I <sub>DS</sub> = 250 μA	20	-	-	V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>DS</sub> = 250 μA	0.5	-	1.0	V
I <sub>DSS</sub>	Drain Leakage Current	V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V	-	-	1	μA
		T <sub>J</sub> = 85 °C	-	-	30	μA
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> = ± 10 V, V <sub>DS</sub> = 0 V	-	-	± 100	nA
R <sub>DS(ON)</sub> <sup>a</sup>	On-State Resistance	V <sub>GS</sub> = 4.5 V, I <sub>DS</sub> = 3 A	-	17	23	mΩ
		V <sub>GS</sub> = 2.5 V, I <sub>DS</sub> = 2 A	-	20	27	
<b>Diode Characteristics</b>						
V <sub>SD</sub> <sup>a</sup>	Diode Forward Voltage	I <sub>SD</sub> = 3 A, V <sub>GS</sub> = 0 V	-	-	1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>SD</sub> = 3 A, dI <sub>SD</sub> /dt = 100 A/μs	-	38	-	nS
Q <sub>rr</sub>	Reverse Recovery Charge		-	17	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 10 V Frequency = 1 MHz	-	369	-	pF
C <sub>oss</sub>	Output Capacitance		-	73	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	62	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> = 10 V, V <sub>GEN</sub> = 4.5 V, R <sub>G</sub> = 4.5 Ω, R <sub>L</sub> = 3.3 Ω, I <sub>DS</sub> = 3 A	-	3.2	-	nS
t <sub>r</sub>	Turn-on Rise Time		-	26	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	68	-	
t <sub>f</sub>	Turn-off Fall Time		-	35	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>DS</sub> = 3 A	-	5.8	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	1.3	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	1.5	-	

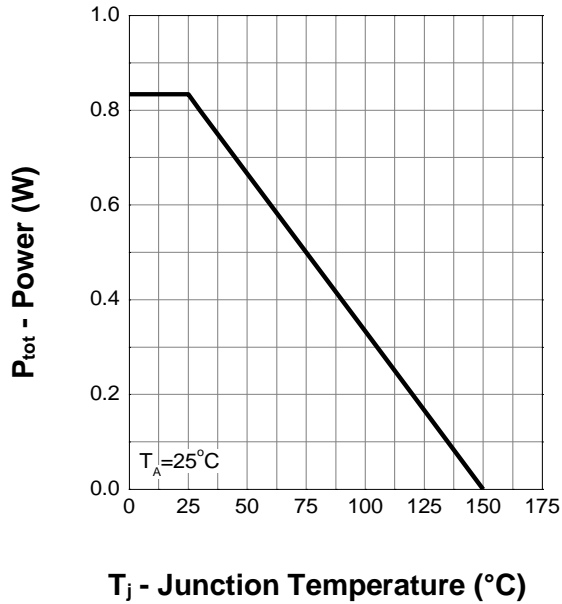
Notes :

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

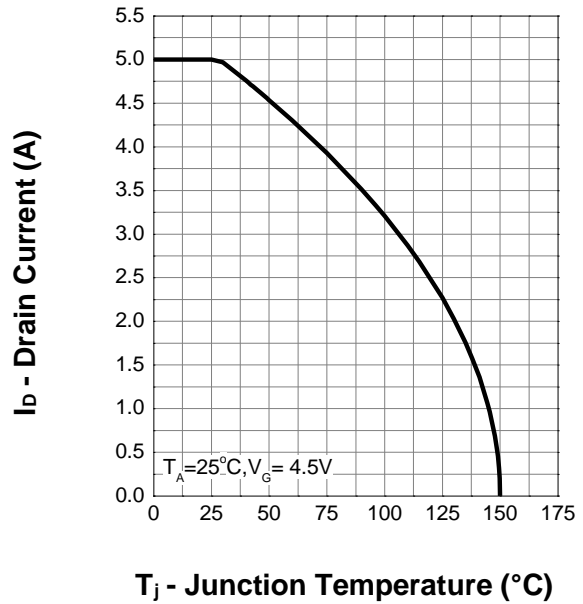
b : Guaranteed by design, not subject to production testing

## 7. Typical Characteristics

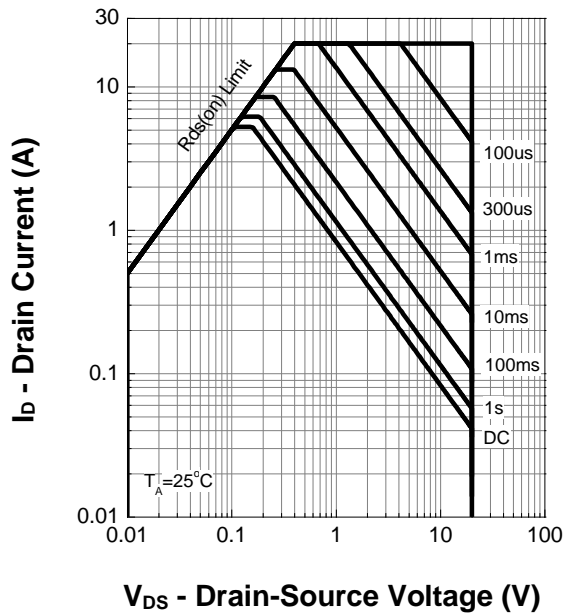
### Power Capability



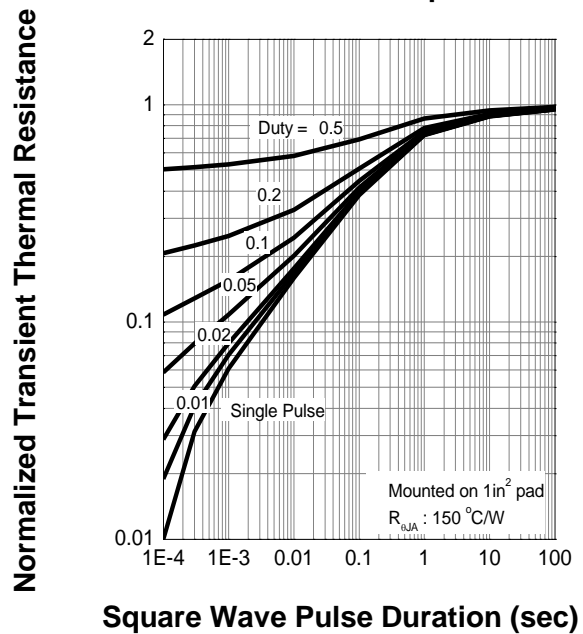
### Current Capability



### Safe Operation Area

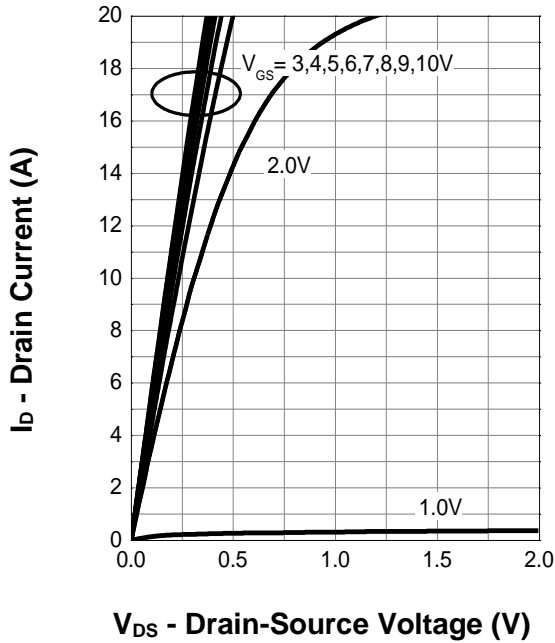


### Transient Thermal Impedance

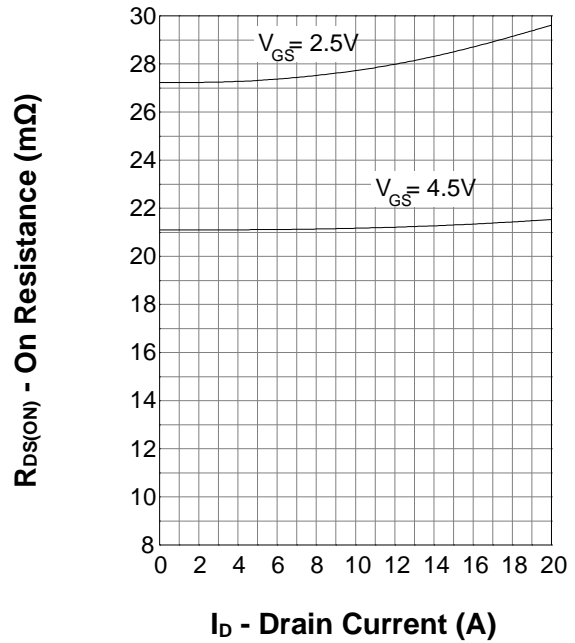


## 7. Typical Characteristics (cont.)

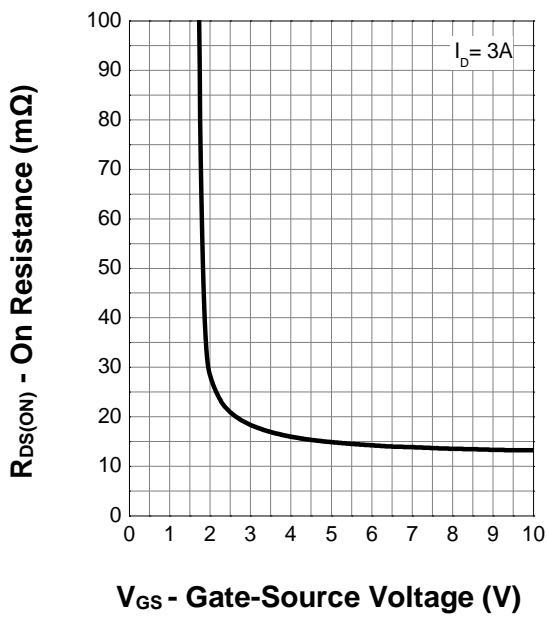
Output Characteristics



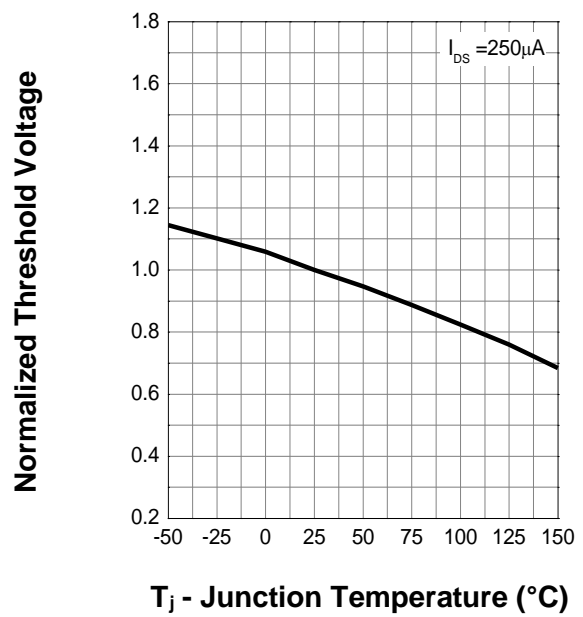
On Resistance



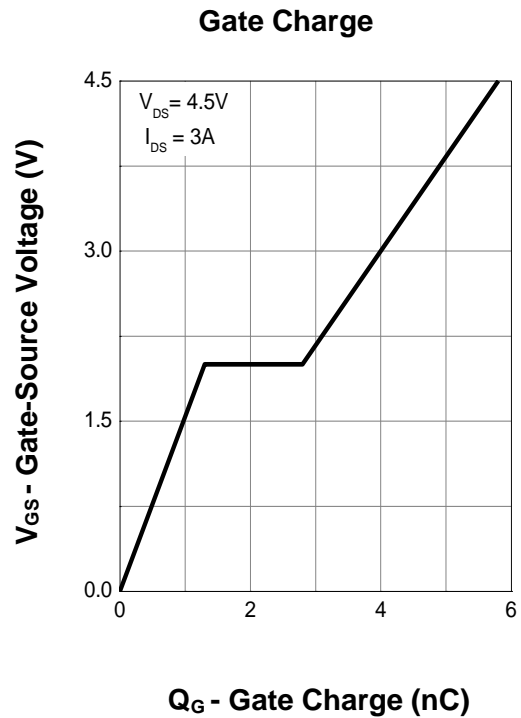
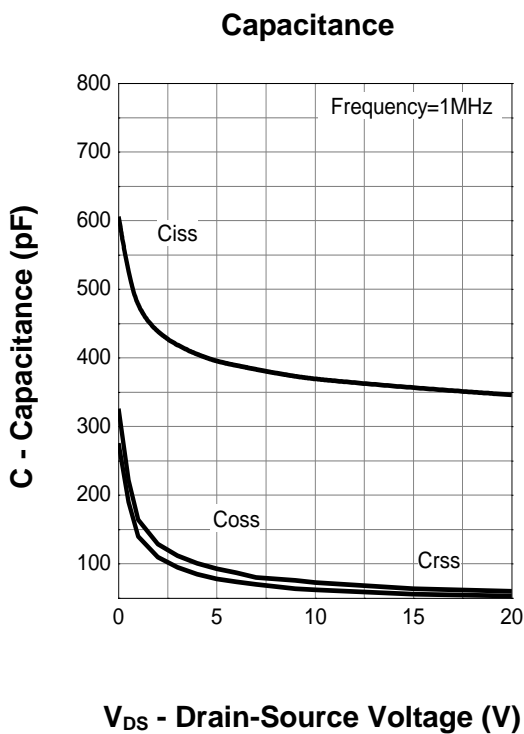
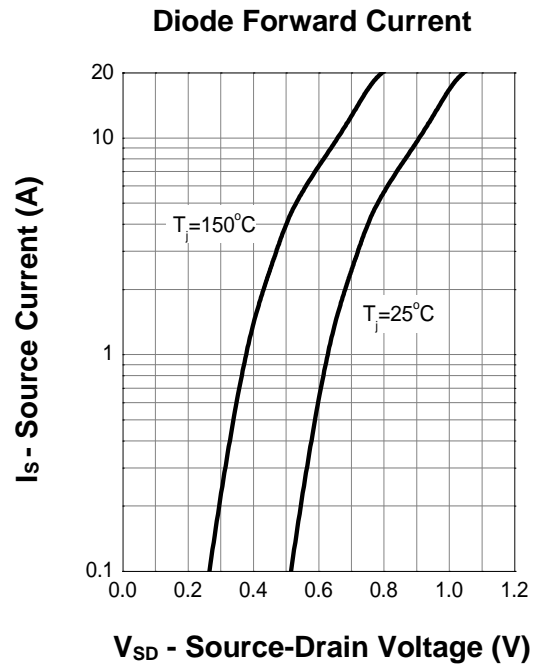
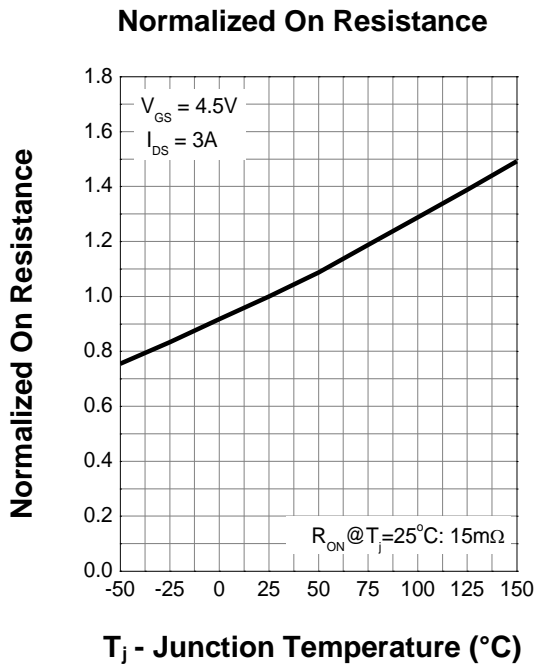
Transfer Characteristics



Normalized Threshold Voltage

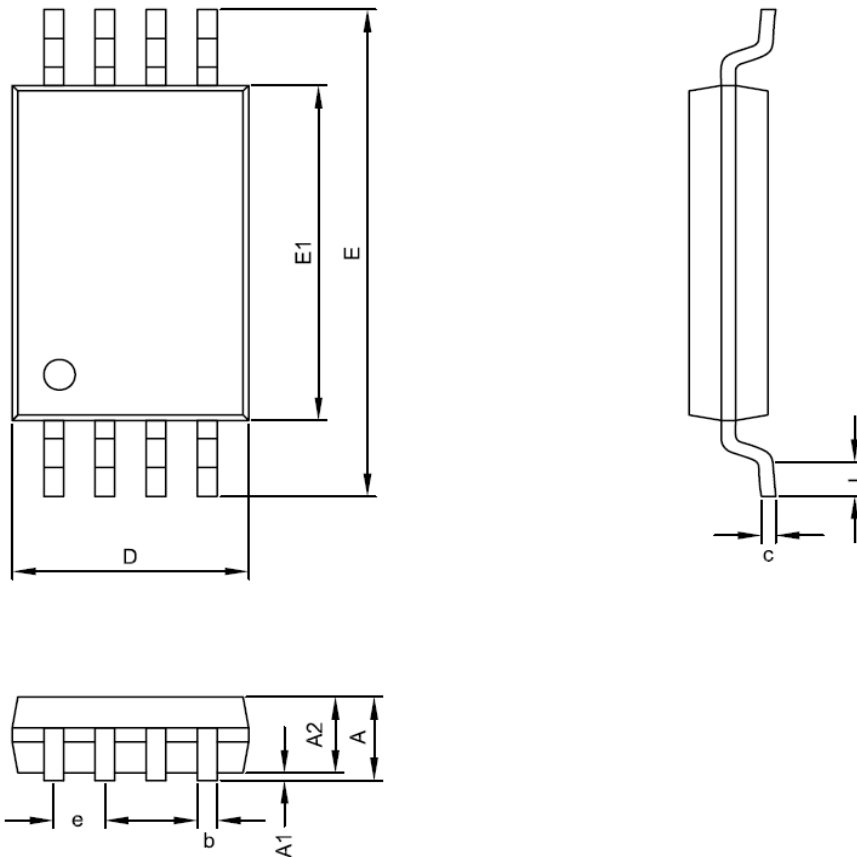


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

TSSOP8



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	—	1.20
A1	0.00	0.15
A2	0.85	1.05
D	2.90	3.10
E	6.20	6.60
E1	4.30	4.50
c	0.09	0.20
b	0.19	0.30
e	0.65 BSC	
L	0.45	0.75