

## Dual N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

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

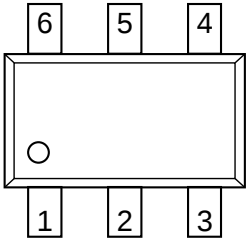
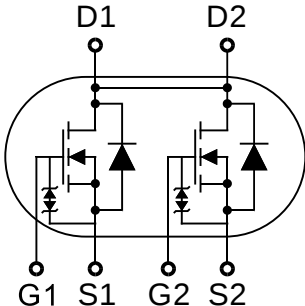
#### 1.2 Applications

- ☒ Portable appliances
- ☒ Battery management

#### 1.3 Quick reference

- ☒  $BV \geq 18\text{ V}$
- ☒  $R_{DS(ON)} \leq 13\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- ☒  $P_{tot} \leq 1.56\text{ W}$
- ☒  $R_{DS(ON)} \leq 15\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$
- ☒  $I_D \leq 10\text{ A}$

### 2. Pin Description

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

Top View  
SOT23-6L

## 3. Limiting Values

| Symbol               | Parameter                                        | Conditions                                       | Min | Max      | Unit                 |
|----------------------|--------------------------------------------------|--------------------------------------------------|-----|----------|----------------------|
| $V_{DS}$             | Drain-Source Voltage                             | $T_A=25^{\circ}\text{C}$                         | 18  | -        | V                    |
| $V_{GS}$             | Gate-Source Voltage                              | $T_A=25^{\circ}\text{C}$                         | -   | $\pm 12$ | V                    |
| $I_D$                | Drain Current                                    | $T_A=25^{\circ}\text{C}$ , $V_{GS}=4.5\text{ V}$ | -   | 10       | A                    |
| $I_{DM}^*$           | Pulsed Drain Current                             | $T_A=25^{\circ}\text{C}$ , $V_{GS}=4.5\text{ V}$ | -   | 35       | A                    |
| $P_{tot}$            | Total Power Dissipation                          | $T_A=25^{\circ}\text{C}$                         | -   | 1.56     | W                    |
| $T_J, T_{stg}$       | Operating Junction and Storage Temperature Range |                                                  | -55 | 150      | $^{\circ}\text{C}$   |
| $R_{\theta JA}^{**}$ | Thermal Resistance-Junction to Ambient           |                                                  | -   | 80       | $^{\circ}\text{C/W}$ |

Notes:

- \* Surface mounted on 1 in<sup>2</sup> pad area,  $t \leq 10\text{ sec.}$
- \*\* Pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ .
- \*\*\* Limited by bonding wire.

## 4. Marking Information

| Product Name | Marking        |
|--------------|----------------|
| KJ8817A      | <b>KJ8817A</b> |

## 5. Ordering Code

| Product Name | Package | Reel size | Tape width | Quantity (pcs) |
|--------------|---------|-----------|------------|----------------|
| KJ8817A      | SOT23-6 | 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<sub>A</sub>=25°C unless otherwise noted)

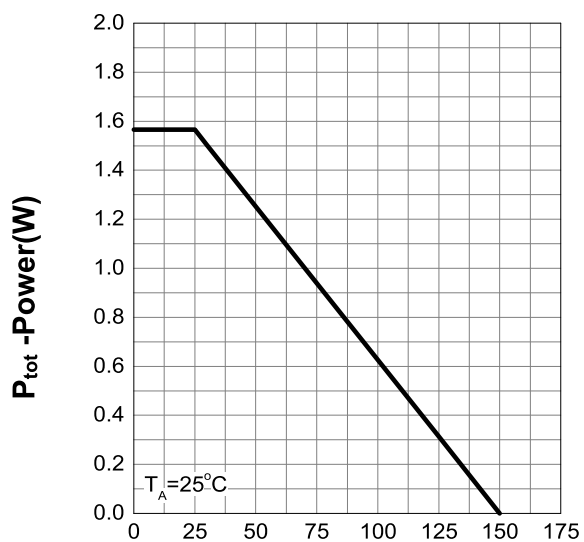
| Symbol                                   | Parameter                      | Conditions                                                                                                           | Min | Typ  | Max  | Unit |
|------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------|-----|------|------|------|
| Static Characteristics                   |                                |                                                                                                                      |     |      |      |      |
| BV <sub>DSS</sub>                        | Drain-Source Breakdown Voltage | V <sub>GS</sub> =0 V, I <sub>DS</sub> =250 μA                                                                        | 18  | -    | -    | 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> =12 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> =8 A                                                                         | -   | 10   | 13   | mΩ   |
|                                          |                                | V <sub>GS</sub> =2.5 V, I <sub>DS</sub> =5 A                                                                         | -   | 14   | 15   |      |
| Diode Characteristics                    |                                |                                                                                                                      |     |      |      |      |
| V <sub>SD</sub> <sup>a</sup>             | Diode Forward Voltage          | I <sub>SD</sub> =8 A, V <sub>GS</sub> =0 V                                                                           | -   | -    | 1.2  | V    |
| Dynamic Characteristics <sup>b</sup>     |                                |                                                                                                                      |     |      |      |      |
| C <sub>iss</sub>                         | Input Capacitance              | V <sub>GS</sub> =0 V, V <sub>DS</sub> =10 V, Frequency=1 MHz                                                         | -   | 963  | -    | pF   |
| C <sub>oss</sub>                         | Output Capacitance             |                                                                                                                      | -   | 301  | -    |      |
| C <sub>rss</sub>                         | Reverse Transfer Capacitance   |                                                                                                                      | -   | 284  | -    |      |
| t <sub>d(on)</sub>                       | Turn-on Delay Time             | V <sub>DS</sub> =7.5 V, V <sub>GEN</sub> =4.5 V, R <sub>G</sub> =4.5 Ω, R <sub>L</sub> =0.93 Ω, I <sub>DS</sub> =8 A | -   | 0.1  | -    | ns   |
| t <sub>r</sub>                           | Turn-on Rise Time              |                                                                                                                      | -   | 0.03 | -    |      |
| t <sub>d(off)</sub>                      | Turn-off Delay Time            |                                                                                                                      | -   | 0.03 | -    |      |
| t <sub>f</sub>                           | Turn-off Fall Time             |                                                                                                                      | -   | 5.3  | -    |      |
| Gate Charge Characteristics <sup>b</sup> |                                |                                                                                                                      |     |      |      |      |
| Q <sub>g</sub>                           | Total Gate Charge              | V <sub>DS</sub> =7.5 V, V <sub>GS</sub> =10 V, I <sub>DS</sub> =8 A                                                  | -   | 22.6 | -    | nC   |
| Q <sub>gs</sub>                          | Gate-Source Charge             |                                                                                                                      | -   | 2.7  | -    |      |
| Q <sub>gd</sub>                          | Gate-Drain Charge              |                                                                                                                      | -   | 3.9  | -    |      |

Notes:

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

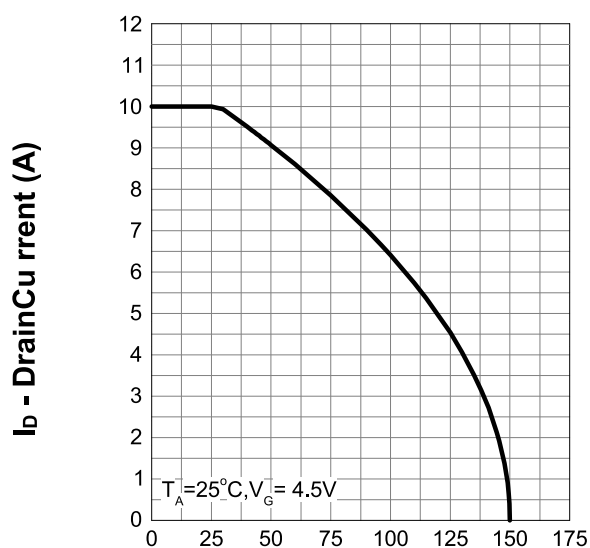
## 7. Typical Characteristics

**Power Capability**



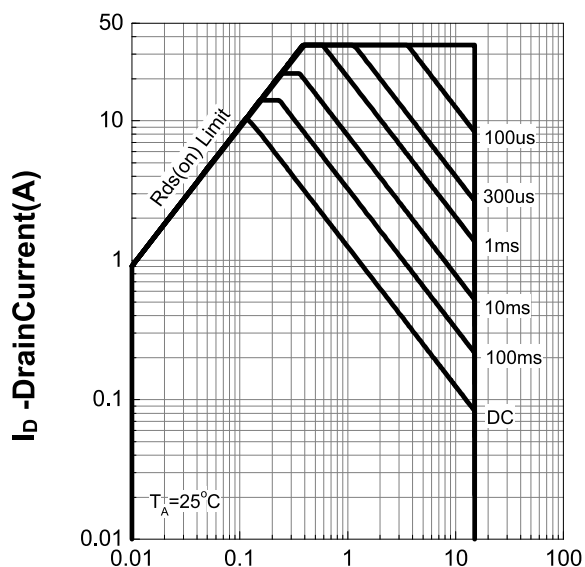
$T_J$  - Junction Temperature (°C)

**Current Capability**



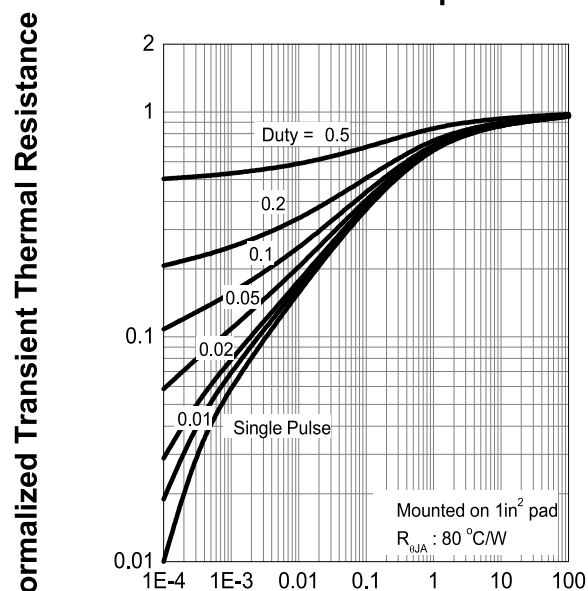
$T_J$  - Junction Temperature (°C)

**Safe Operation Area**



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

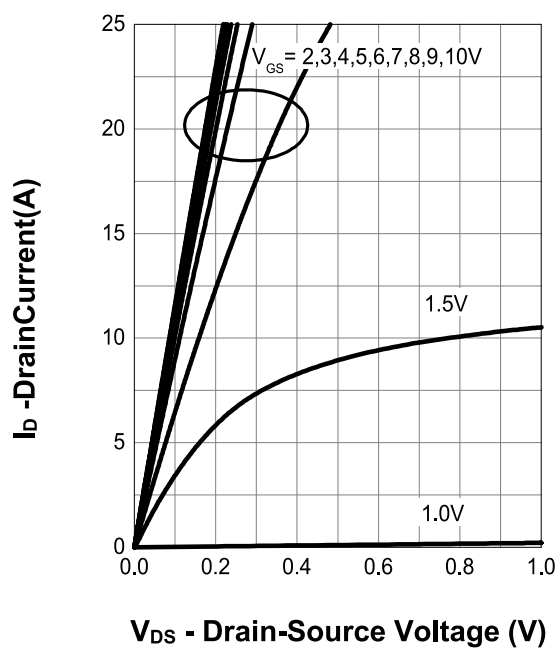
**Transient Thermal Impedance**



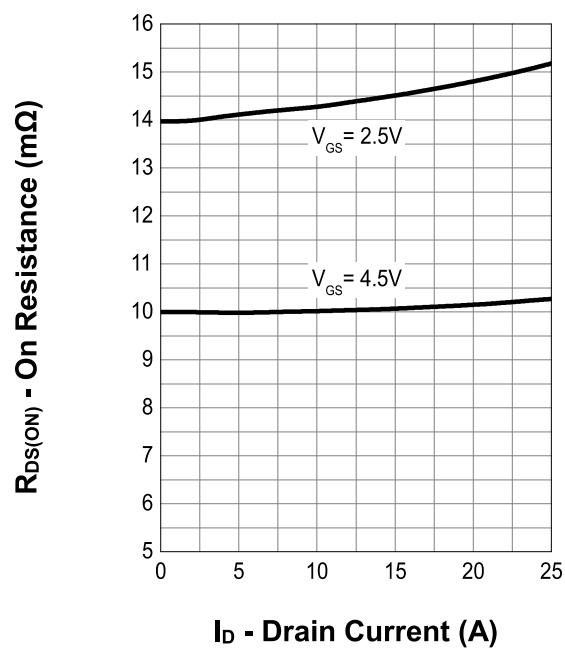
Square Wave Pulse Duration (sec)

## 7. Typical Characteristics (cont.)

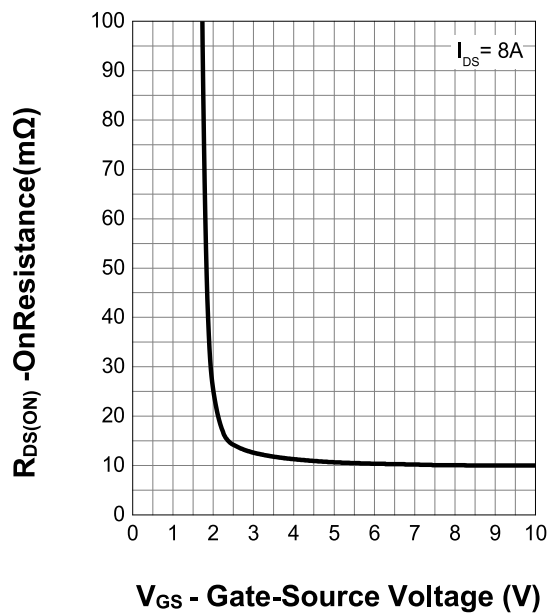
**Output Characteristics**



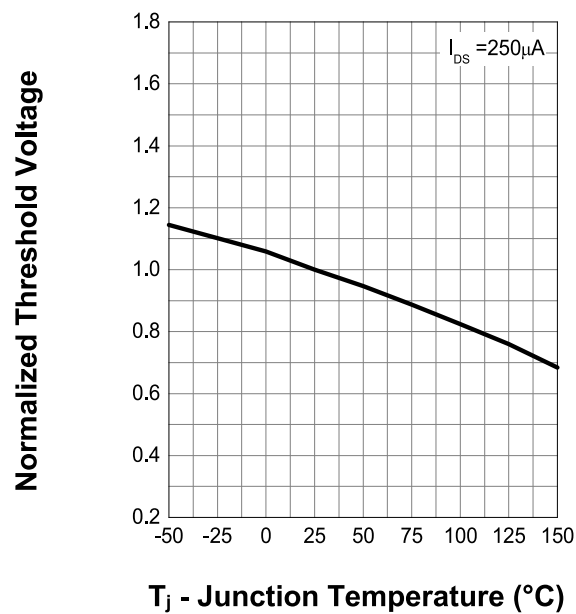
**On Resistance**



**Transfer Characteristics**

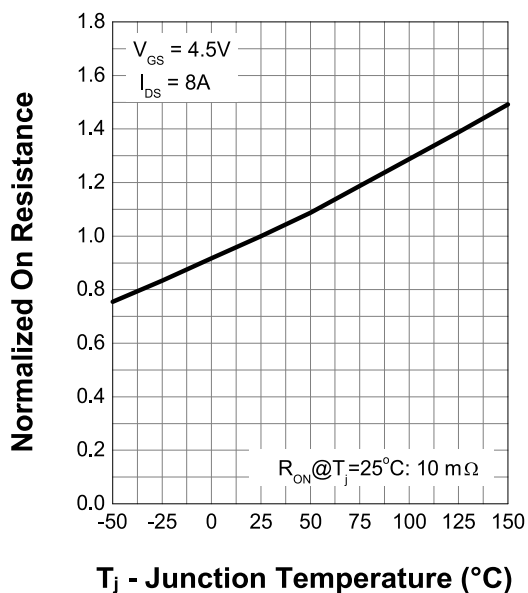


**Normalized Threshold Voltage**

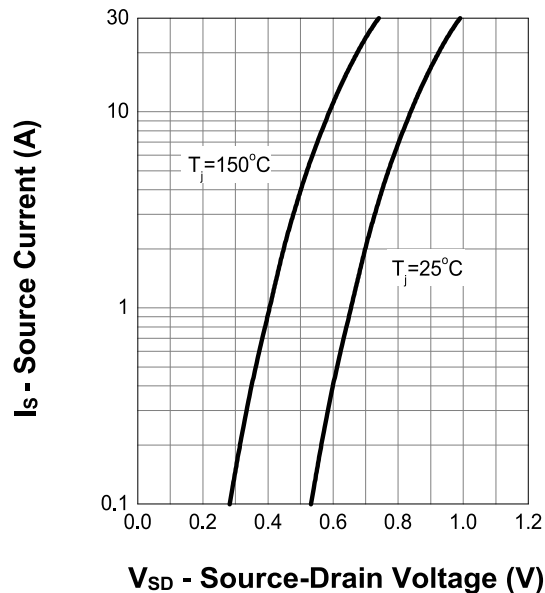


## 7. Typical Characteristics (cont.)

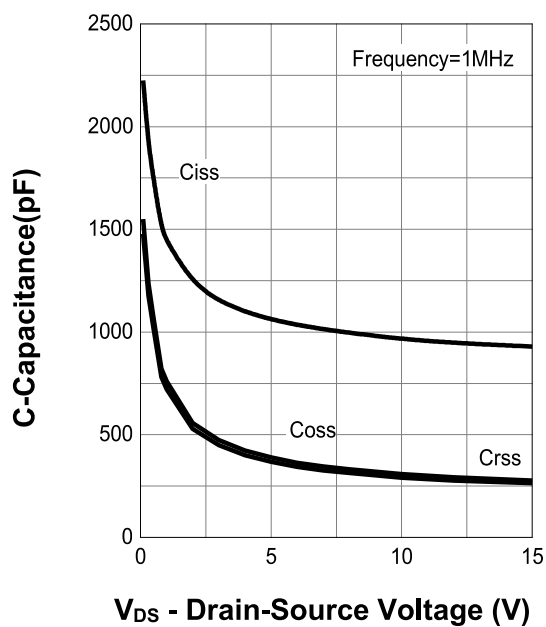
**Normalized On Resistance**



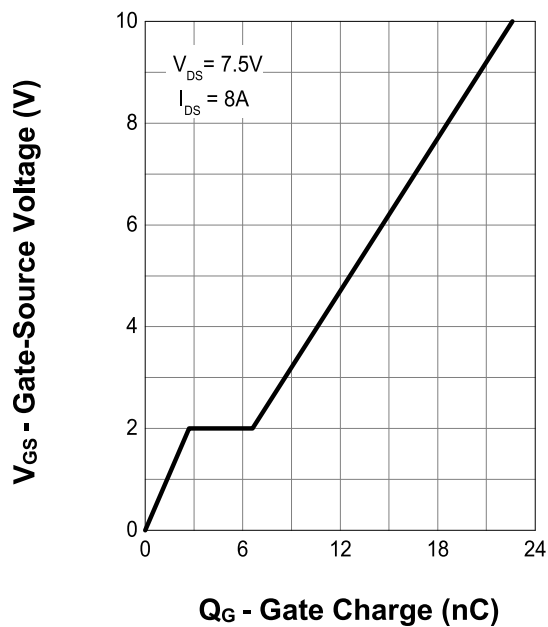
**Diode Forward Current**



**Capacitance**

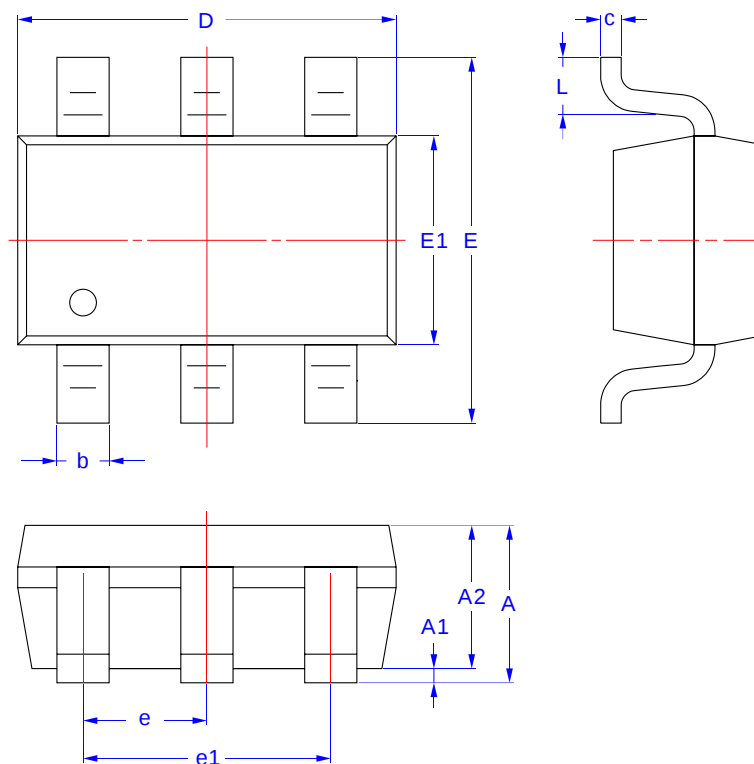


**Gate Charge**



## 8. Package Dimensions

### SOT23-6L Package



| Symbol | Dimensions in Millimeters |      |
|--------|---------------------------|------|
|        | MIN                       | MAX  |
| A      | —                         | 0.90 |
| A1     | 0.00                      | 0.10 |
| A2     | 0.70                      | 0.80 |
| D      | 2.90 BSC                  |      |
| E      | 2.80 BSC                  |      |
| E1     | 1.50                      | 1.70 |
| c      | 0.08                      | 0.25 |
| b      | 0.30                      | 0.51 |
| e      | 0.95 BSC                  |      |
| e1     | 1.90 BSC                  |      |
| L      | 0.30                      | 0.60 |