# Dual N-Channel Enhancement Mode MOSFET

## 1. Product Information

### 1.1 Features

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

### 1.2 Applications

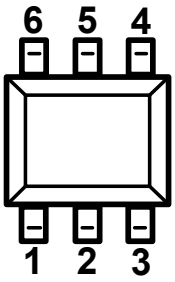
- ☑ Portable appliances
- ☑ Battery management

### 1.3 Quick reference

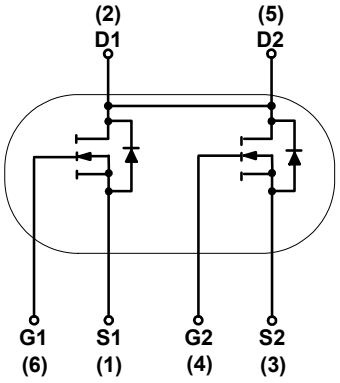
- ☑ BV ≧ 20 V
- ☑ $P_{tot}$ ≦ 0.83 W
- ☑ $I_D$ ≦ 6 A
- ☑ $R_{DS(ON)}$ ≦ 23 mΩ @ $V_{GS}$ = 4.5 V
  $R_{DS(ON)}$ ≦ 25 mΩ @ $V_{GS}$ = 2.5 V

## 2. Pin Description

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




Top View
TSOT23-6L



## 3. Limiting Values

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | $T_A$ = 25 ℃ | 20 | - | V |
| $V_{GS}$ | Gate-Source Voltage | $T_A$ = 25 ℃ | - | ± 12 | V |
| $I_D$* | Drain Current | $T_A$ = 25 ℃, $V_{GS}$ = 4.5 V | - | 6 | A |
| $I_{DM}$*,** | Pulsed Drain Current | $T_A$ = 25 ℃, $V_{GS}$ = 4.5 V | - | 20 | A |
| $P_{tot}$* | Total Power Dissipation | $T_A$ = 25 ℃ | - | 0.83 | W |
| | | $T_A$ = 100 ℃ | - | 0.3 | |
| $T_{stg}$ | Storage Temperature | | - 55 | 150 | ℃ |
| $T_J$ | Junction Temperature | | - | 150 | ℃ |
| $I_S$* | Diode Forward Current | $T_A$ = 25 ℃ | - | 6 | A |
| $R_{\theta JA}$* | Thermal Resistance- Junction to Ambient | | - | 150 | ℃ / W |

Notes：

* Surface Mounted on 1 $in^2$ pad area, t ≤ 10 sec

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

## 4. Marking Information

| Product Name | Marking |
|---|---|
| KJ8205 |  YWWXXX: Date Code |



## 5. Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|---|---|---|---|---|---|
| KJ8205 | SOT23-6 | | | 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 ($T_A$ = 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 | – | 1.0 | V |
| $I_{DSS}$ | Drain Leakage Current | $V_{DS}$ = 16 V, $V_{GS}$ = 0 V | - | - | 1 | μA |
| | | $T_J$ = 85 ℃ | - | - | 30 | μA |
| $I_{GSS}$ | Gate Leakage Current | $V_{GS}$ = ± 10 V, $V_{DS}$ = 0 V | - | - | ± 100 | nA |
| $R_{DS(ON)}$[a] | On-State Resistance | $V_{GS}$ = 4.5 V, $I_{DS}$ = 3 A | - | 21 | 23 | mΩ |
| | | $V_{GS}$ = 2.5 V, $I_{DS}$ = 2 A | - | 23 | 25 | |
| **Diode Characteristics** | | | | | | |
| $V_{SD}$[a] | Diode Forward Voltage | $I_{SD}$ = 3 A, $V_{GS}$ = 0 V | - | - | 1.2 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_{SD}$ = 3 A, $dI_{SD}/dt$ = 100 A/μs | - | 38 | - | nS |
| $Q_{rr}$ | Reverse Recovery Charge | | - | 17 | - | nC |
| **Dynamic Characteristics**[b] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0 V, $V_{DS}$ = 10 V Frequency = 1 MHz | - | 369 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 73 | - | |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 62 | - | |
| $t_d$(on) | Turn-on Delay Time | $V_{DS}$ = 10 V, $V_{GEN}$ = 4.5 V, $R_G$ = 4.5 Ω, $R_L$ = 3.3 Ω, $I_{DS}$ = 3 A | - | 3.2 | - | nS |
| $t_r$ | Turn-on Rise Time | | - | 26 | - | |
| $t_d$(off) | Turn-off Delay Time | | - | 68 | - | |
| $t_f$ | Turn-off Fall Time | | - | 35 | - | |
| **Gate Charge Characteristics**[b] | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$ = 10 V, $V_{GS}$ = 4.5 V, $I_{DS}$ = 3 A | - | 5.8 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 1.3 | - | |
| $Q_{gd}$ | Gate-Drain Charge | | - | 1.5 | - | |

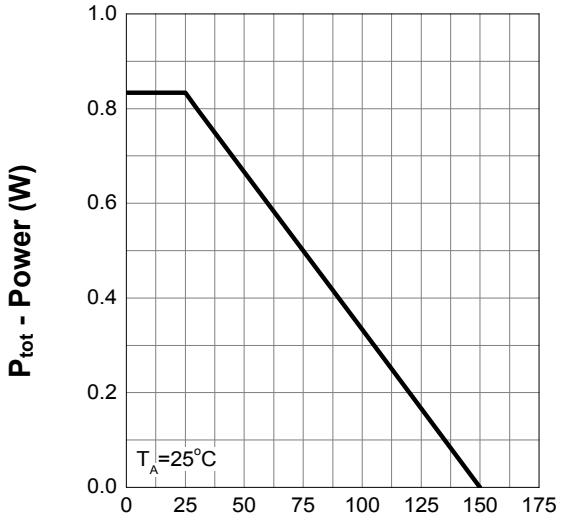
Notes :

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

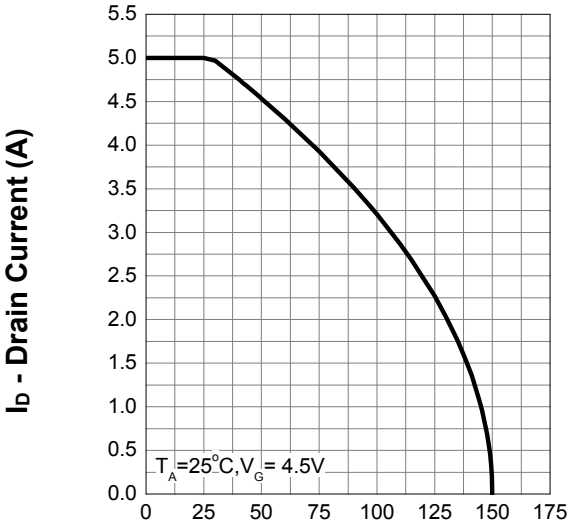
b : Guaranteed by design, not subject to production testing

# 7. Typical Characteristics

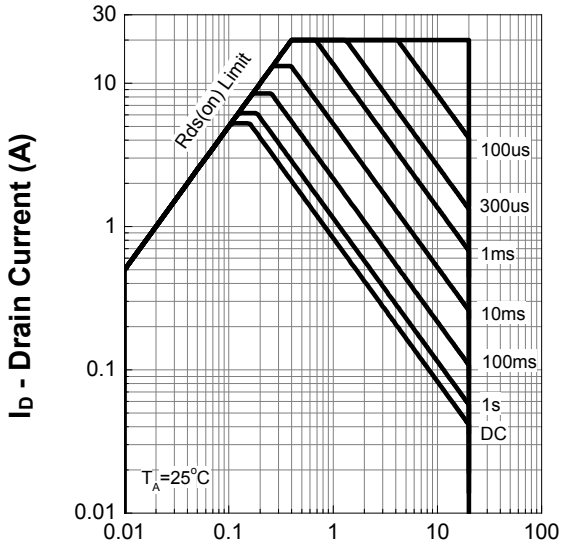
**Power Capability**



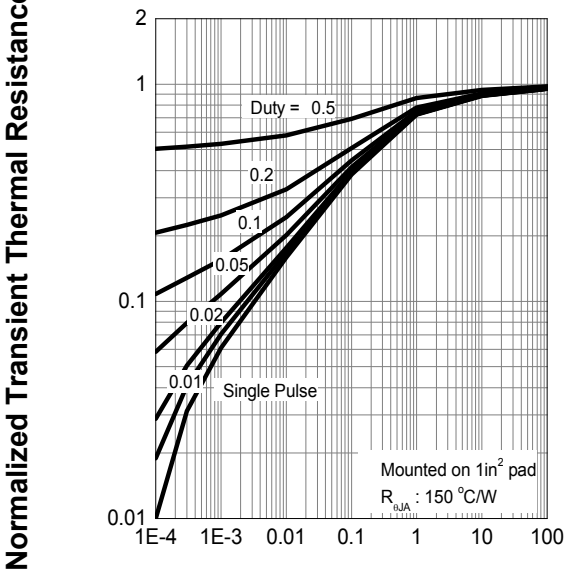

**Current Capability**




**Safe Operation Area**

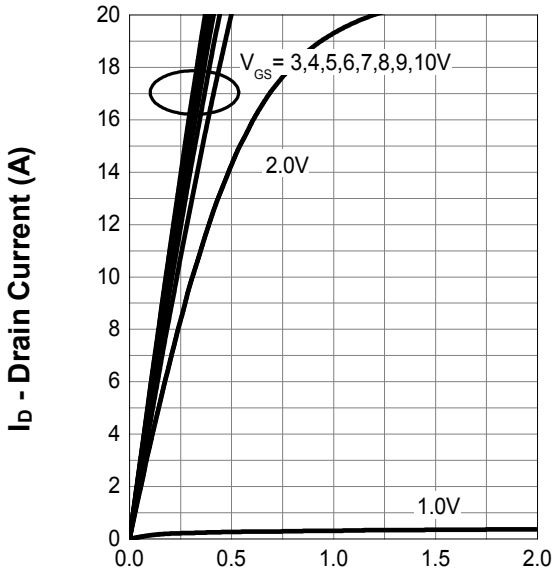



**Transient Thermal Impedance**

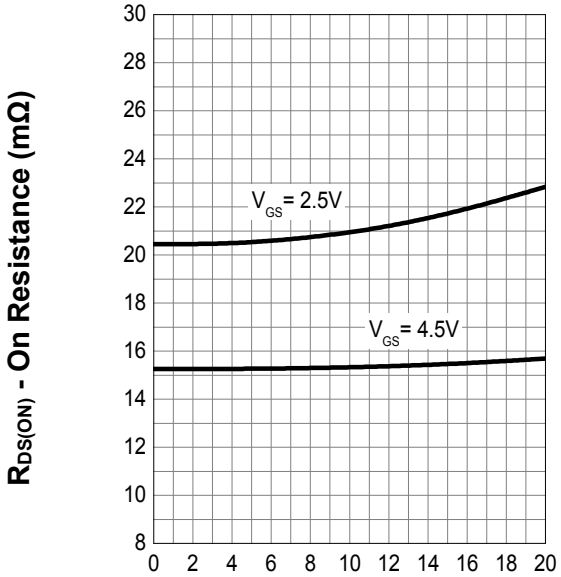


# 7. Typical Characteristics (cont.)

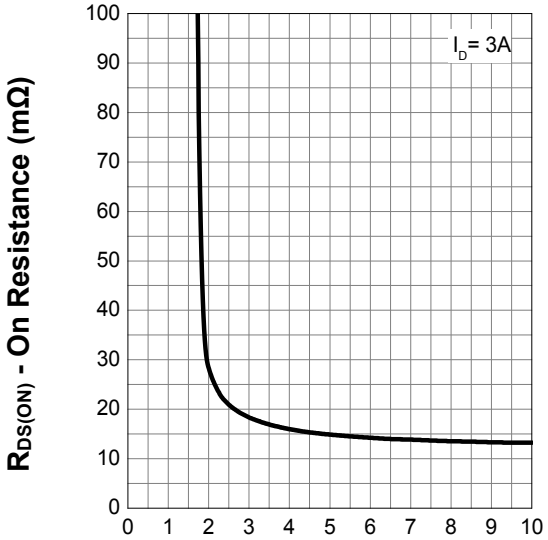
**Output Characteristics**



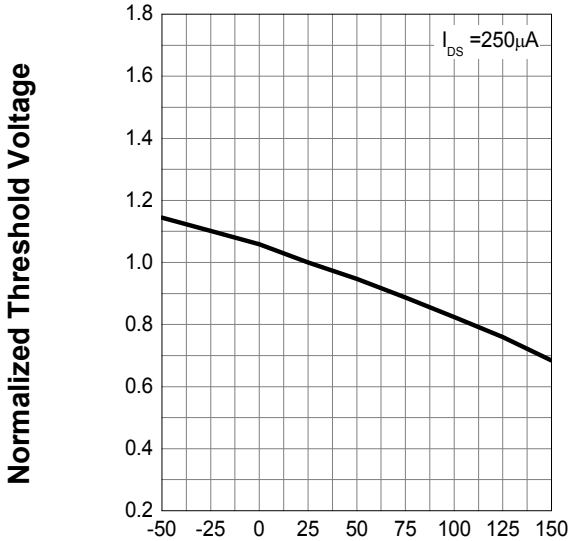

**On Resistance**




**Transfer Characteristics**

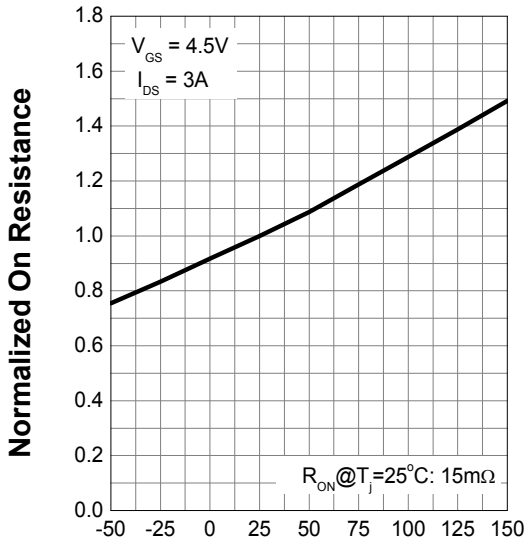



**Normalized Threshold Voltage**

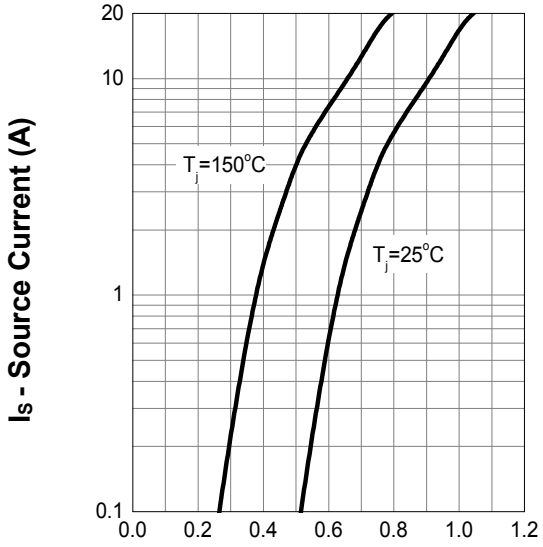


# 7. Typical Characteristics (cont.)

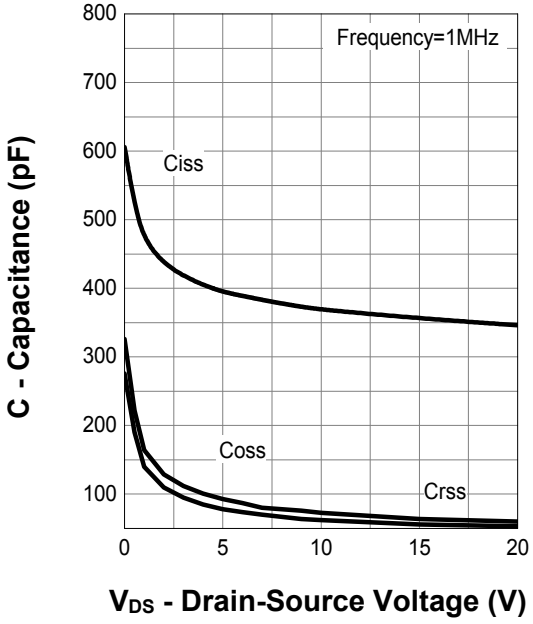
**Normalized On Resistance**



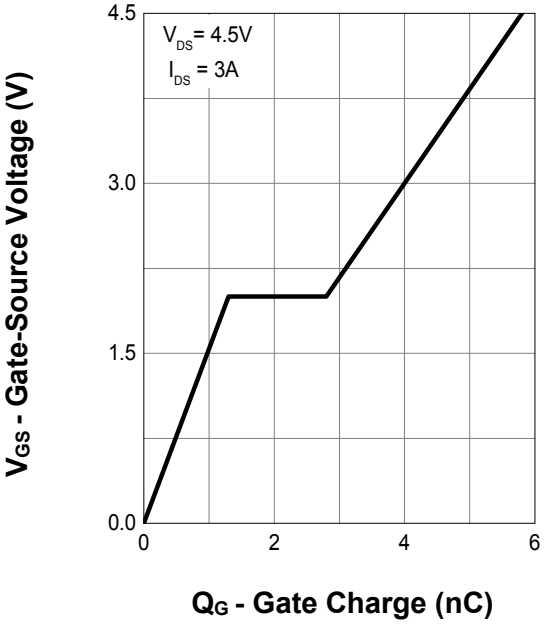

**Diode Forward Current**




**Capacitance**

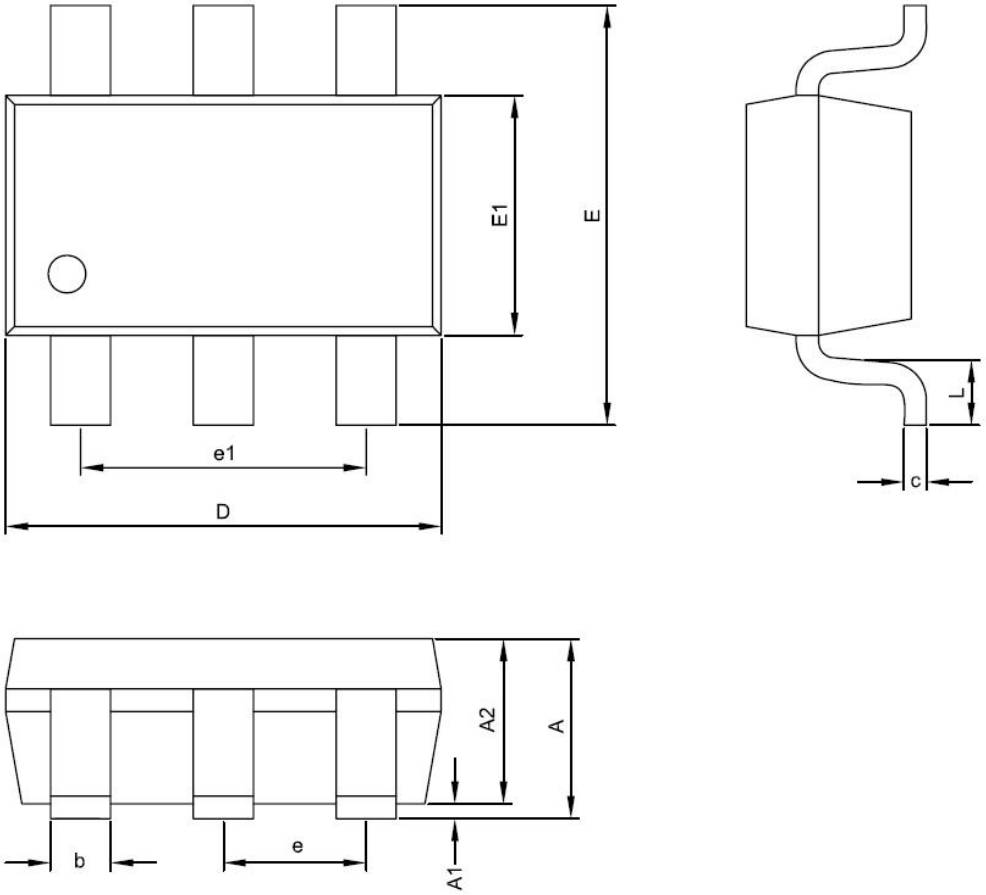



**Gate Charge**



# 8. Package Dimensions

**SOT23-6L**




| 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 |