

## Dual N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

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

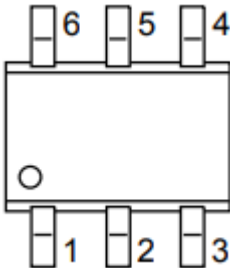
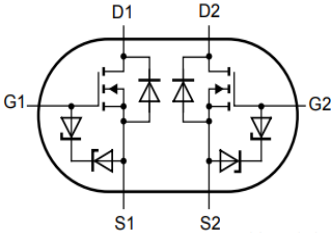
#### 1.2 Applications

- Portable appliances

#### 1.3 Quick reference

- $BV \geq 60\text{ V}$
- $R_{DS(ON)} \leq 2\ \Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 1.33\text{ W}$
- $R_{DS(ON)} \leq 2.7\ \Omega @ V_{GS} = 4.5\text{ V}$
- $I_D \leq 0.8\text{ A}$

### 2. Pin Description

| Pin | Description | Simplified Outline                                                                                             | Symbol                                                                                |
|-----|-------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1   | Source(S1)  |  <p>Top View<br/>SOT363</p> |  |
| 2   | Gate(G1)    |                                                                                                                |                                                                                       |
| 3   | Drain(D2)   |                                                                                                                |                                                                                       |
| 4   | Source(S2)  |                                                                                                                |                                                                                       |
| 5   | Gate(G2)    |                                                                                                                |                                                                                       |
| 6   | Drain(D1)   |                                                                                                                |                                                                                       |



## 3. Limiting Values

| Symbol                | Parameter                               | Conditions                                     | Min  | Max  | Unit   |
|-----------------------|-----------------------------------------|------------------------------------------------|------|------|--------|
| V <sub>DS</sub>       | Drain-Source Voltage                    | T <sub>A</sub> = 25 °C                         | 60   | -    | V      |
| V <sub>GS</sub>       | Gate-Source Voltage                     | T <sub>A</sub> = 25 °C                         | -    | ± 20 | V      |
| I <sub>D</sub> *      | Drain Current                           | T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 10 V | -    | 0.8  | A      |
| I <sub>DM</sub> **,** | Pulsed Drain Current                    | T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 10 V | -    | 2    | A      |
| P <sub>tot</sub> *    | Total Power Dissipation                 | T <sub>A</sub> = 25 °C                         | -    | 0.83 | W      |
| 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                         | -    | 0.8  | 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 %
- \*\*\* Limited by bonding wire

## 4. Marking Information

| Product Name | Marking                                                                                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KJ2N7002KS3  | <div style="display: inline-block; border: 1px solid black; padding: 2px;">702S3<br/>YWWXXX</div> <span style="margin-left: 10px;">YWW:<br/>Date Code</span> |

## 5. Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|--------------|---------|-----------|------------|----------|------|
| KJ2N7002KS3  | SOT363  |           |            | 3000     |      |

Note: KUIJIEXIN 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 (  $T_A = 25\text{ }^\circ\text{C}$  Unless Otherwise Noted )

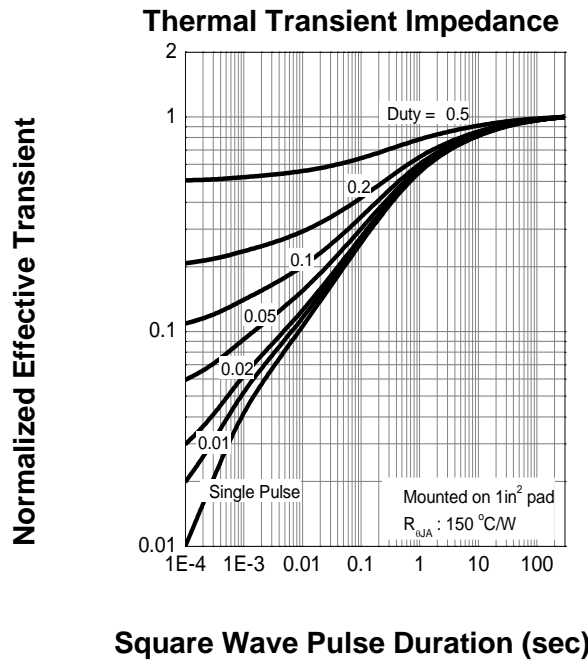
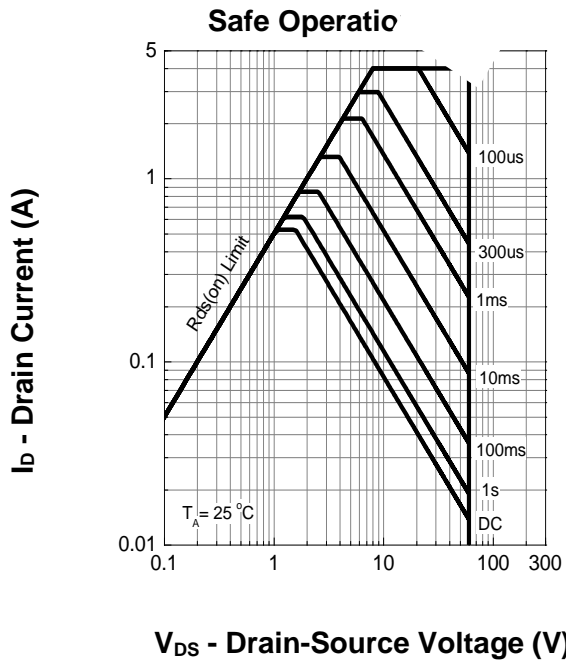
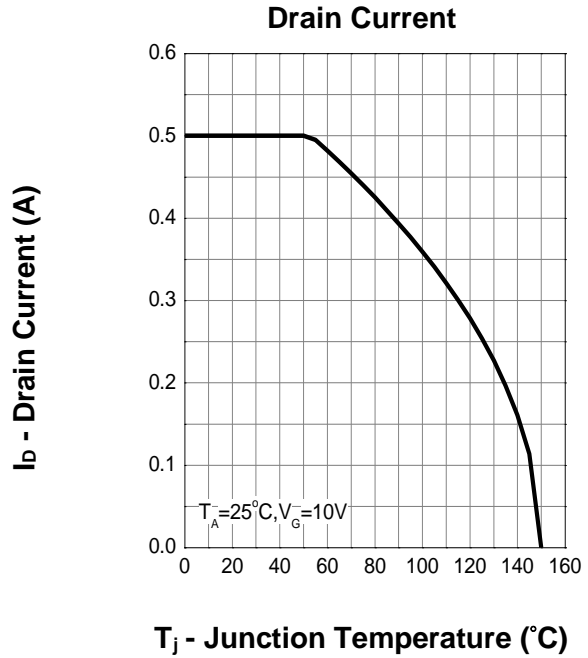
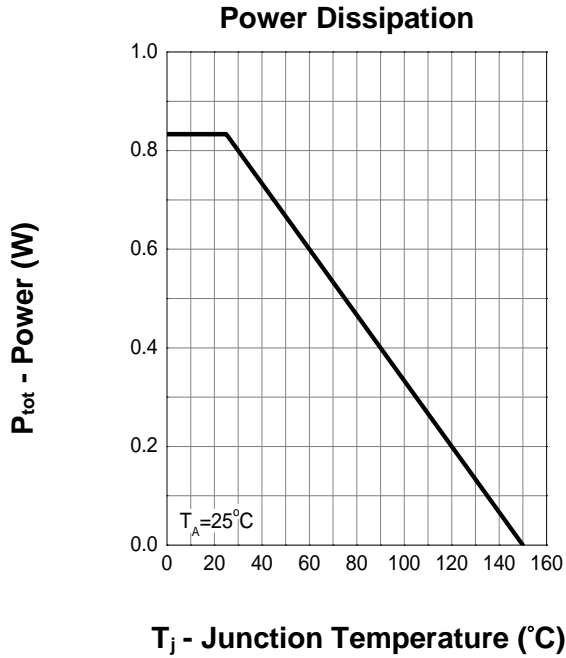
| Symbol                                     | Parameter                      | Conditions                                                                                                                     | Min | Typ       | Max | Unit          |
|--------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|-----------|-----|---------------|
| <b>Static Characteristics</b>              |                                |                                                                                                                                |     |           |     |               |
| $BV_{DSS}$                                 | Drain-Source Breakdown Voltage | $V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$                                                                         | 60  | -         | -   | V             |
| $V_{GS(th)}$                               | Gate Threshold Voltage         | $V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$                                                                             | 1   | 1.5       | 2   | V             |
| $I_{DSS}$                                  | Drain Leakage Current          | $V_{DS} = 48\text{ V}, V_{GS} = 0\text{ V}$                                                                                    | -   | -         | 1   | $\mu\text{A}$ |
| $I_{GSS}$                                  | Gate Leakage Current           | $V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$                                                                                | -   | $\pm 0.8$ | -   | $\mu\text{A}$ |
| $R_{DS(ON)}^a$                             | On-State Resistance            | $V_{GS} = 10\text{ V}, I_{DS} = 0.5\text{ A}$                                                                                  | -   | 1.5       | 2   | $\Omega$      |
|                                            |                                | $V_{GS} = 4.5\text{ V}, I_{DS} = 0.2\text{ A}$                                                                                 | -   | 2.0       | 2.7 |               |
| <b>Diode Characteristics</b>               |                                |                                                                                                                                |     |           |     |               |
| $V_{SD}^a$                                 | Diode Forward Voltage          | $I_{SD} = 0.5\text{ A}, V_{GS} = 0\text{ V}$                                                                                   | -   | 0.85      | -   | V             |
| $t_{rr}$                                   | Reverse Recovery Time          | $I_{SD} = 0.5\text{ A}, dI_{SD}/dt = 100\text{ A}/\mu\text{s}$                                                                 | -   | 30        | -   | ns            |
| $Q_{rr}$                                   | Reverse Recovery Charge        |                                                                                                                                | -   | 29        | -   | nC            |
| <b>Dynamic Characteristics<sup>b</sup></b> |                                |                                                                                                                                |     |           |     |               |
| $R_G$                                      | Gate Resistance                | $V_{GS} = V_{DS} = 0\text{ V}, F = 1\text{ MHz}$                                                                               | -   | 200       | -   | $\Omega$      |
| $C_{iss}$                                  | Input Capacitance              | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}$<br>Frequency = 1 MHz                                                               | -   | 14.7      | -   | pF            |
| $C_{oss}$                                  | Output Capacitance             |                                                                                                                                | -   | 0.76      | -   |               |
| $C_{rss}$                                  | Reverse Transfer Capacitance   |                                                                                                                                | -   | 0.63      | -   |               |
| $t_d(on)$                                  | Turn-on Delay Time             | $V_{DS} = 30\text{ V}, V_{GEN} = 10\text{ V},$<br>$R_G = 25\text{ }\Omega, R_L = 60\text{ }\Omega,$<br>$I_{DS} = 0.5\text{ A}$ | -   | 2.7       | -   | ns            |
| $t_r$                                      | Turn-on Rise Time              |                                                                                                                                | -   | 2.5       | -   |               |
| $t_d(off)$                                 | Turn-off Delay Time            |                                                                                                                                | -   | 13        | -   |               |
| $t_f$                                      | Turn-off Fall Time             |                                                                                                                                | -   | 8         | -   |               |
| $Q_g$                                      | Total Gate Charge              | $V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$<br>$I_{DS} = 0.5\text{ A}$                                                      | -   | 0.44      | -   | nC            |
| $Q_{gs}$                                   | Gate-Source Charge             |                                                                                                                                | -   | 0.2       | -   |               |
| $Q_{gd}$                                   | Gate-Drain Charge              |                                                                                                                                | -   | 0.1       | -   |               |

Notes :

- a : Pulse test ; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$
- b : Guaranteed by design, not subject to production testing

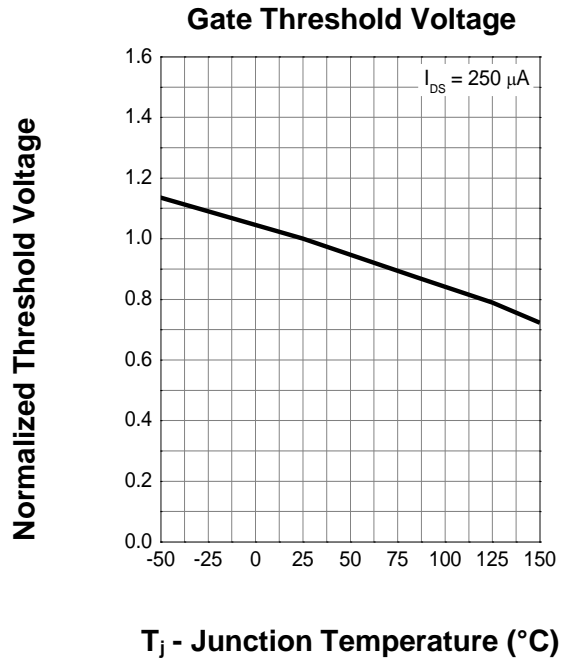
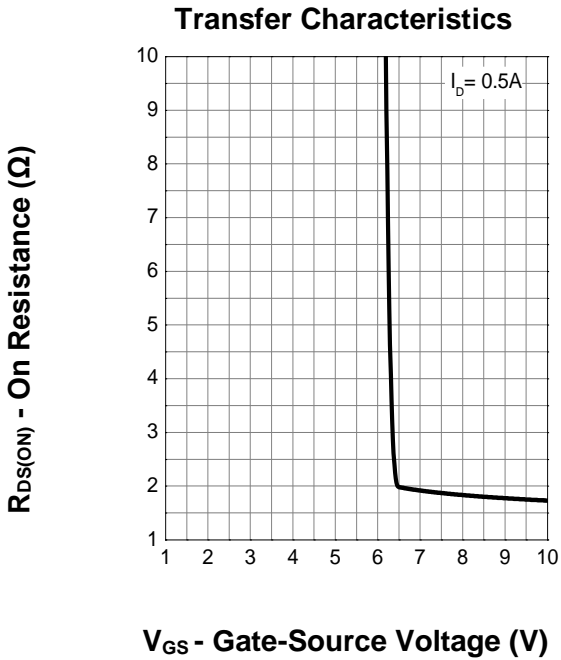
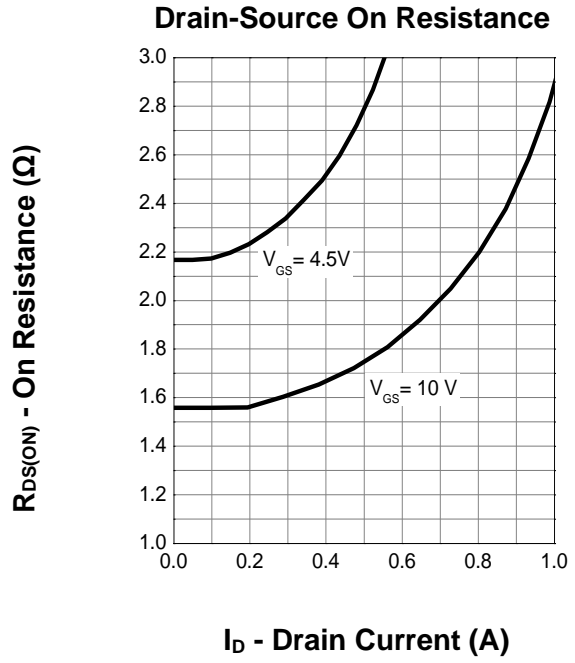
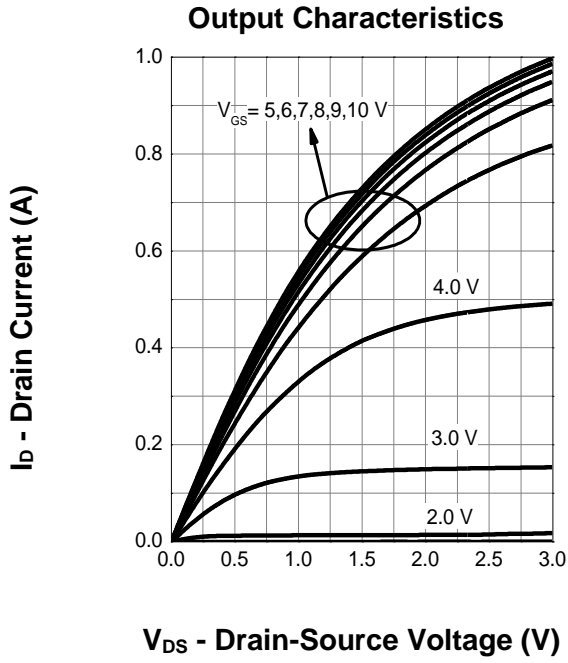


## 7. Typical Characteristics



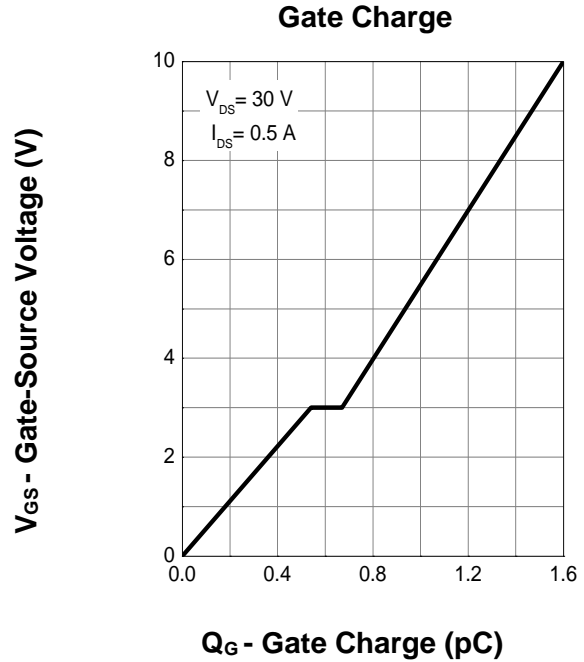
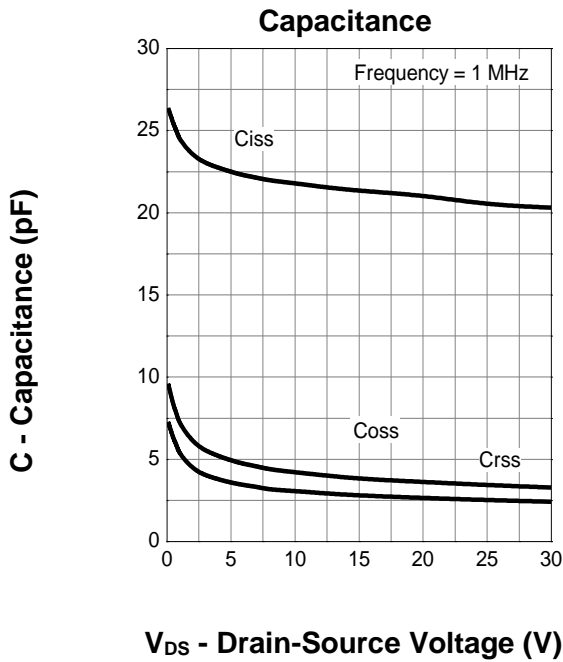
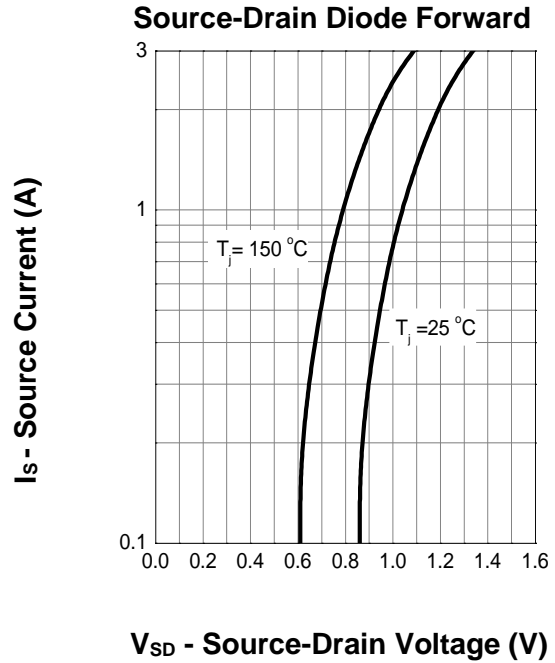
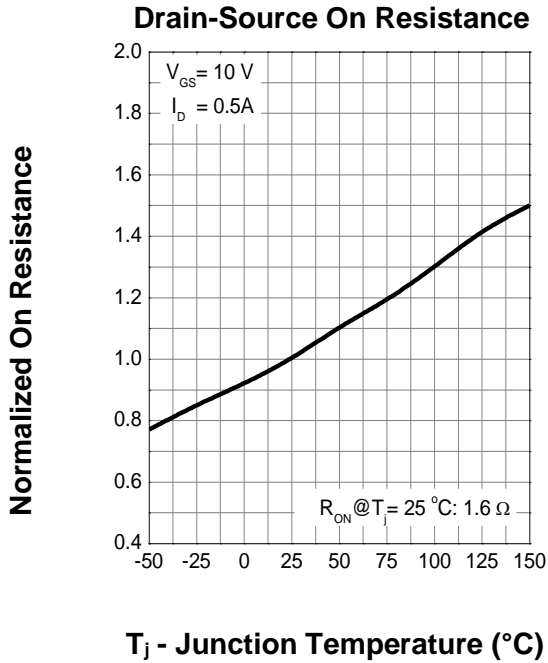


## 7. Typical Characteristics (cont.)





## 7. Typical Characteristics (cont.)





## 8. Package Dimensions

SOT363

