

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Advanced trench cell design

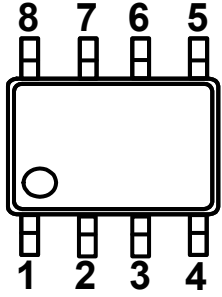
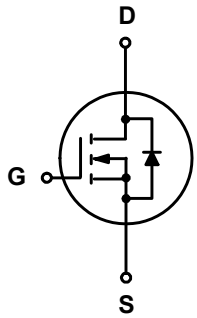
1.2 Applications

- Motor appliances
- High power inverter system

1.3 Quick reference

- $BV \geq 30\text{ V}$
- $R_{DS(ON)} \leq 11\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \cong 2\text{ W}$
- $R_{DS(ON)} \leq 15\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $I_D \cong 10\text{ A}$

2. Pin Description

| Pin | Description | Simplified Outline | Symbol |
|---------|-------------|--|---|
| 1,2,3 | Source(S) |  <p style="text-align: center;">Top View SOP- 8L</p> |  |
| 4 | Gate(G) | | |
| 5,6,7,8 | Drain(D) | | |

3. Limiting Values

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-------------------|---|---|------|----------|-------------------------------|
| V_{DS} | Drain-Source Voltage | $T_A = 25\text{ }^{\circ}\text{C}$ | - | 30 | V |
| V_{GS} | Gate-Source Voltage | $T_A = 25\text{ }^{\circ}\text{C}$ | - | ± 20 | V |
| I_D^* | Drain Current | $T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$ | - | 10 | A |
| | | $T_A = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$ | - | 6.4 | A |
| I_{DM}^{**} | Pulsed Drain Current | $T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$ | - | 40 | A |
| P_{tot} | Total Power Dissipation | $T_A = 25\text{ }^{\circ}\text{C}$ | - | 2 | W |
| T_{stg} | Storage Temperature | | - 55 | 150 | $^{\circ}\text{C}$ |
| T_J | Junction Temperature | | - 55 | 150 | $^{\circ}\text{C}$ |
| I_S | Diode Forward Current | $T_A = 25\text{ }^{\circ}\text{C}$ | - | 10 | A |
| $R_{\theta JA}^*$ | Thermal Resistance- Junction to Ambient | | - | 62.5 | $^{\circ}\text{C} / \text{W}$ |

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 |
|--------------|--|
| KJ3010SI | <div style="display: inline-block; background-color: black; color: white; padding: 2px;">3010 YWWXXX</div> X : Date Code |

5. Ordering Code

| | |
|----------|--|
| KJ3010SI | Assembly Material G: Halogen and Lead Free Device |
|----------|--|

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

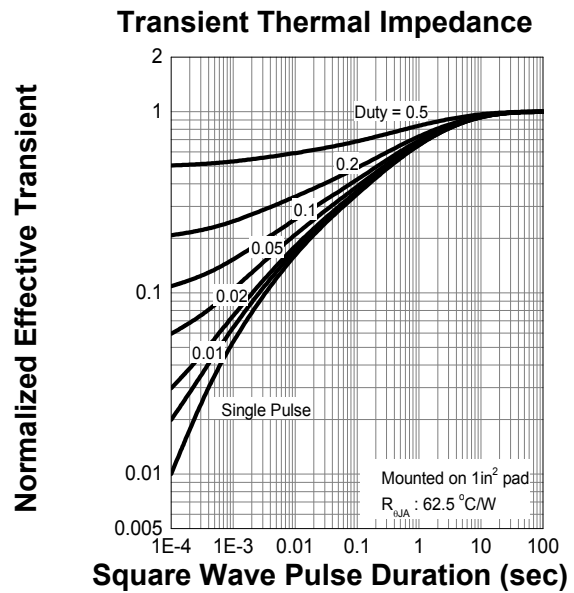
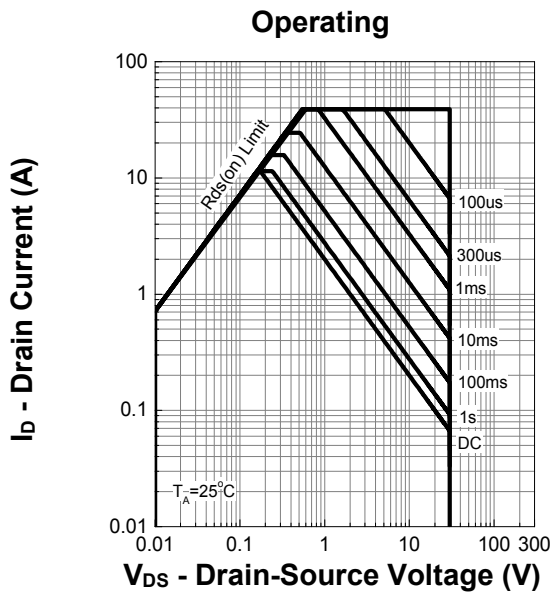
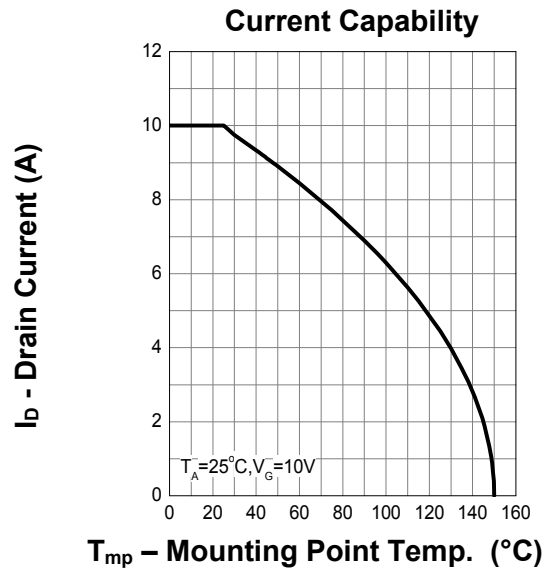
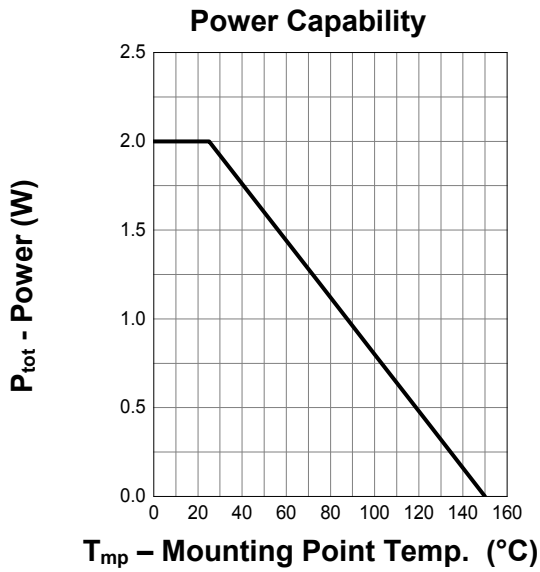
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--|--------------------------------|---|-----|------|-----------|---------------|
| Static Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$ | 30 | - | - | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$ | 1.0 | - | 2.0 | V |
| I_{DSS} | Drain Leakage Current | $V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$ | - | - | 1 | μA |
| | | $T_J = 85\text{ }^\circ\text{C}$ | - | - | 30 | μA |
| I_{GSS} | Gate Leakage Current | $V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$ | - | - | ± 100 | nA |
| $R_{DS(ON)}^a$ | On-State Resistance | $V_{GS} = 10\text{ V}, I_{DS} = 10\text{ A}$ | - | 10 | 11 | m Ω |
| | | $V_{GS} = 4.5\text{ V}, I_{DS} = 5\text{ A}$ | - | 13 | 15 | |
| Diode Characteristics | | | | | | |
| V_{SD}^a | Diode Forward Voltage | $I_{SD} = 10\text{ A}, V_{GS} = 0\text{ V}$ | - | - | 1.3 | V |
| t_{rr} | Reverse Recovery Time | $I_{DS} = 10\text{ A}, V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$ | - | 34 | - | ns |
| Q_{rr} | Reverse Recovery Charge | | - | 7.1 | - | μC |
| Dynamic Characteristics ^b | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS} = 0\text{ V}, V_{DS} = 15\text{ V}$ Frequency = 1 MHz | - | 1145 | - | pF |
| C_{oss} | Output Capacitance | | - | 106 | - | |
| C_{rss} | Reverse Transfer Capacitance | | - | 87 | - | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DS} = 15\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 1.5\text{ }\Omega,$ $I_{DS} = 10\text{ A}$ | - | 7 | - | ns |
| t_r | Turn-on Rise Time | | - | 30 | - | |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 19 | - | |
| t_f | Turn-off Fall Time | | - | 18 | - | |
| Gate Charge Characteristics ^b | | | | | | |
| Q_g | Total Gate Charge | $V_{GS} = 15\text{ V}, V_{DS} = 10\text{ V},$ $I_{DS} = 10\text{ A}$ | - | 22 | - | nC |
| Q_{gs} | Gate-Source Charge | | - | 5 | - | |
| Q_{gd} | Gate-Drain Charge | | - | 3.3 | - | |

Notes :

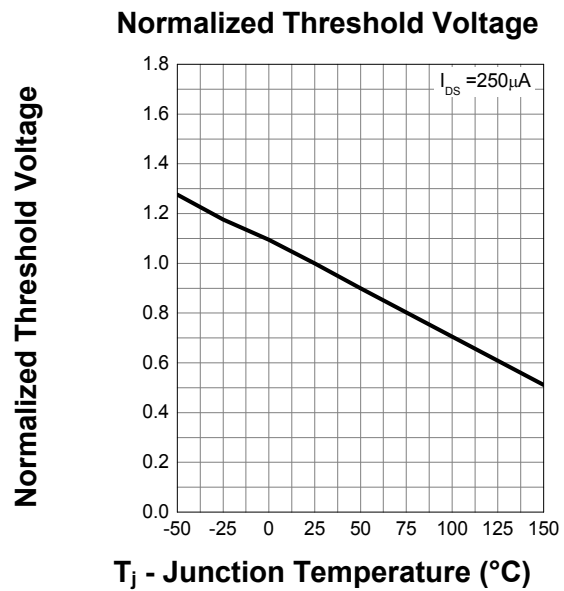
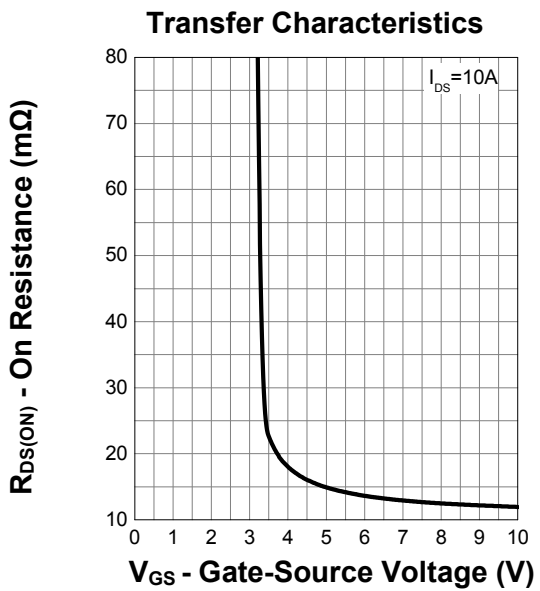
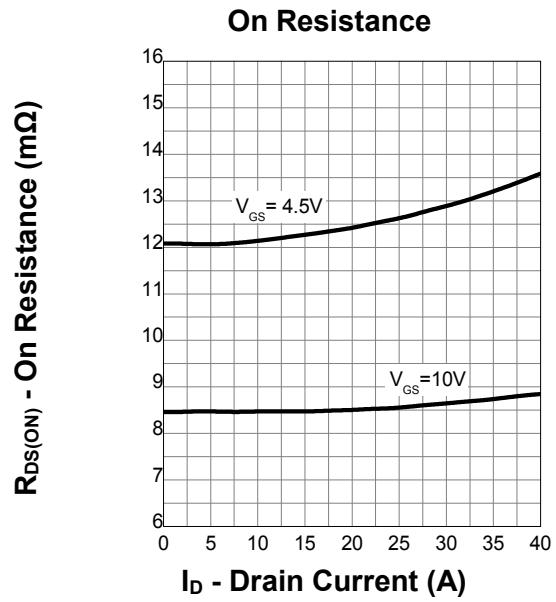
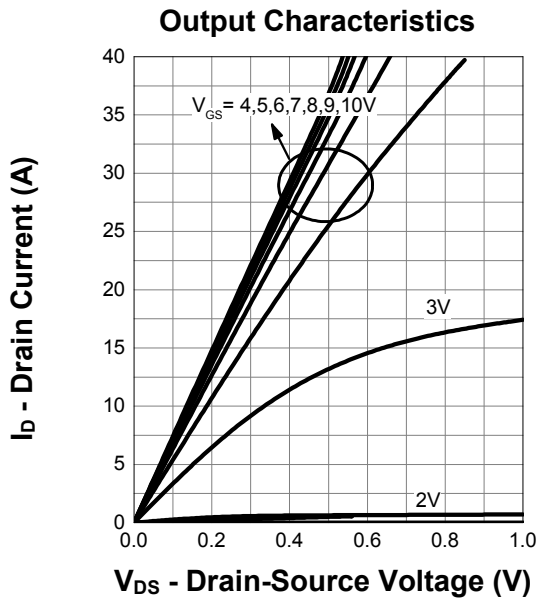
a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

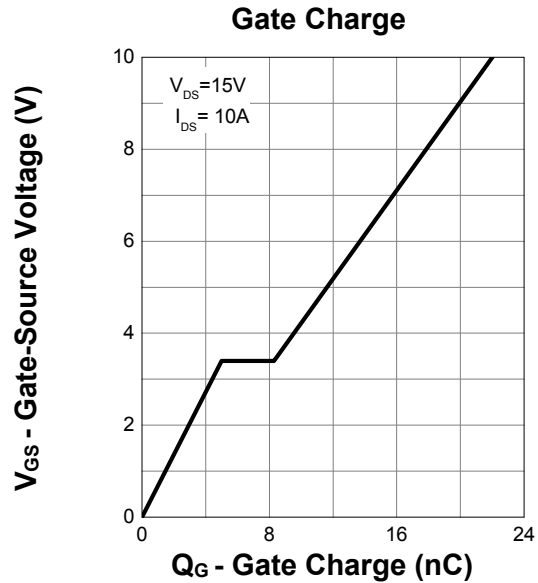
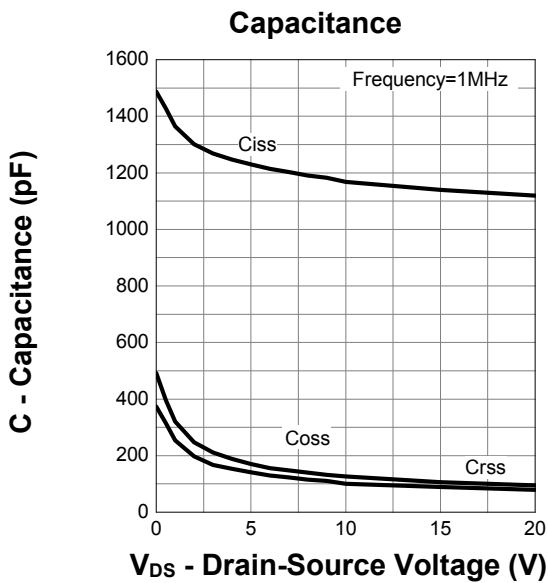
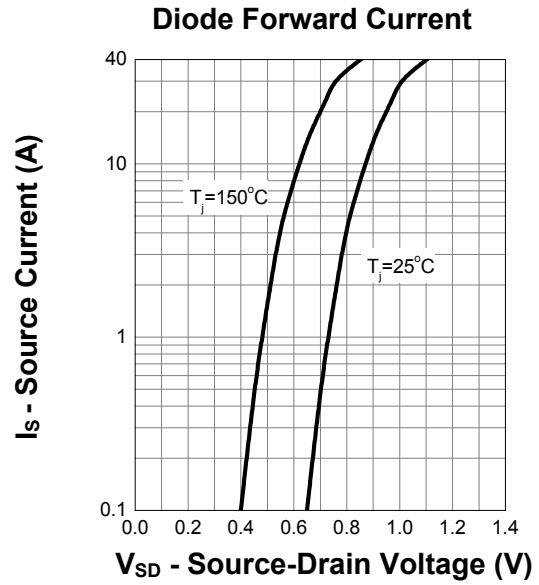
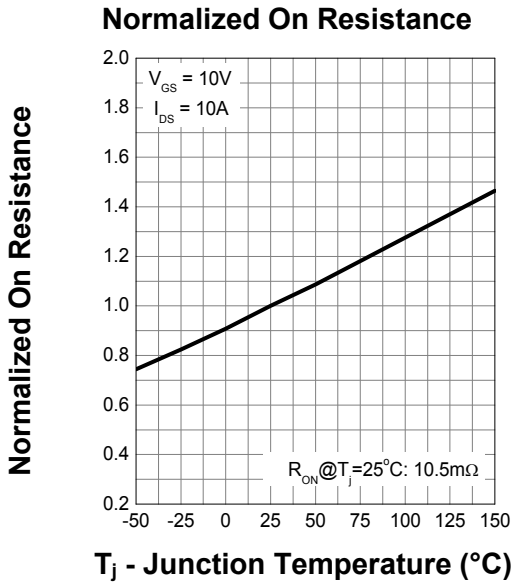
7. Typical Characteristics



7. Typical Characteristics (cont.)

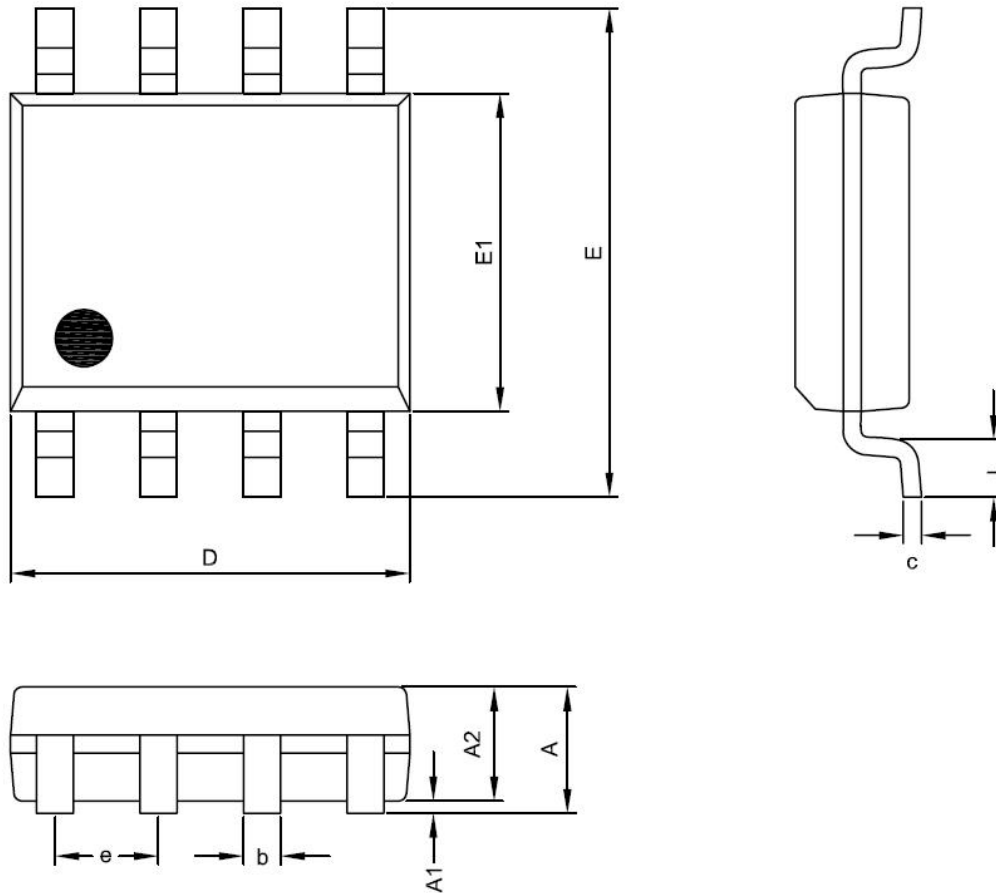


7. Typical Characteristics (cont.)



8. Package Dimensions

SOP- 8L



| Symbol | Dimensions In Millimeters | |
|--------|---------------------------|------|
| | MIN. | MAX. |
| A | 1.35 | 1.75 |
| A1 | 0.00 | 0.25 |
| A2 | 1.15 | 1.50 |
| D | 4.80 | 5.00 |
| E | 5.80 | 6.20 |
| E1 | 3.80 | 4.00 |
| c | 0.19 | 0.27 |
| b | 0.33 | 0.53 |
| e | 1.27 BSC | |
| L | 0.40 | 1.27 |

Notes :

1. Jedec outline : MS-012AA
2. Dimensions " D " does not include mold flash, protrusions and gate burrs shall not exceed .15 mm (.006 in) per side .
3. Dimensions " E1 " does not include inter-lead flash, or protrusions. Inter-lead flash and protrusions shall not exceed .25 mm (.010 in) per side.