

Dual N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Advanced trench cell design

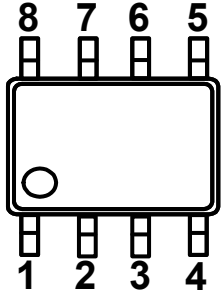
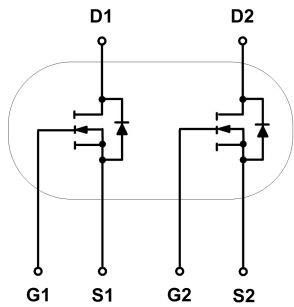
1.2 Applications

- LCD TV appliances
- High power inverter system
- LCDM appliances

1.3 Quick reference

- $BV \geq 60\text{ V}$
- $R_{DS(ON)} \leq 32\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \cong 2\text{ W}$
- $R_{DS(ON)} \leq 38\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $I_D \cong 8\text{ A}$

2. Pin Description

| Pin | Description | Simplified Outline | Symbol |
|-----|-------------|---|---|
| 1 | Source(S1) |  Top View SOP- 8L |  |
| 2 | Gate(G1) | | |
| 3 | Source(S2) | | |
| 4 | Gate(G2) | | |
| 5,6 | Drain(D2) | | |
| 7,8 | Drain(D1) | | |
| 7,8 | Drain(D1) | | |
| 7,8 | Drain(D1) | | |

3. Limiting Values

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-------------------|---|---|------|----------|-------------------------------|
| V_{DS} | Drain-Source Voltage | $T_A = 25\text{ }^{\circ}\text{C}$ | - | 60 | V |
| V_{GS} | Gate-Source Voltage | $T_A = 25\text{ }^{\circ}\text{C}$ | - | ± 20 | V |
| I_D^* | Drain Current | $T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$ | - | 8 | A |
| | | $T_A = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$ | - | 3.9 | A |
| $I_{DM}^{*,**}$ | Pulsed Drain Current | $T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$ | - | 24.8 | 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 | $T_A = 25\text{ }^{\circ}\text{C}$ | - | 8 | 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 |
|--------------|--|
| KJ4946S | <div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 5px; margin-right: 10px;"> 4946 YWWXXX </div> <div> YWW: Date Code </div> </div> |

5. Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|--------------|---------|-----------|------------|----------|------|
| KJ4946S | SOP8 | | | 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 ($T_A=25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--|--------------------------------|--|-----|------|-----------|---------------|
| Static Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$ | 60 | - | - | 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 | $V_{DS} = 48\text{ V}, V_{GS} = 0\text{ V}$ | - | - | 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 | $V_{GS} = 10\text{ V}, I_{DS} = 6\text{ A}$ | - | 27 | 32 | m Ω |
| | | $V_{GS} = 4.5\text{ V}, I_{DS} = 3\text{ A}$ | - | 34 | 38 | |
| Diode Characteristics | | | | | | |
| V_{SD}^a | Diode Forward Voltage | $I_{SD} = 6\text{ A}, V_{GS} = 0\text{ V}$ | - | - | 1.3 | V |
| t_{rr} | Reverse Recovery Time | $I_{SD} = 6\text{ A}, di_{SD}/dt = 100\text{ A}/\mu\text{s}$ | - | 12.2 | - | ns |
| Q_{rr} | Reverse Recovery Charge | | - | 2.2 | - | nC |
| Dynamic Characteristics^b | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS} = 0\text{ V}, V_{DS} = 15\text{ V}$ Frequency = 1 MHz | - | 1051 | - | pF |
| C_{oss} | Output Capacitance | | - | 42 | - | |
| C_{riss} | Reverse Transfer Capacitance | | - | 35 | - | |
| $t_d(on)$ | Turn-on Delay Time | $V_{DS} = 30\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 5\text{ }\Omega,$ $I_{DS} = 6\text{ A}$ | - | 7.4 | - | ns |
| t_r | Turn-on Rise Time | | - | 26 | - | |
| $t_d(off)$ | Turn-off Delay Time | | - | 17.6 | - | |
| t_f | Turn-off Fall Time | | - | 28 | - | |
| Gate Charge Characteristics^b | | | | | | |
| Q_g | Total Gate Charge | $V_{GS} = 10\text{ V}, V_{DS} = 30\text{ V},$ $I_{DS} = 6\text{ A}$ | - | 19.5 | - | nC |
| Q_{gs} | Gate-Source Charge | | - | 5.4 | - | |
| Q_{gd} | Gate-Drain Charge | | - | 2.6 | - | |

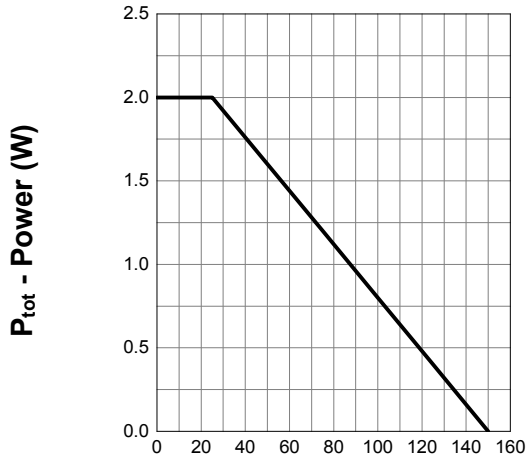
Notes :

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

b : Guaranteed by design, not subject to production testing

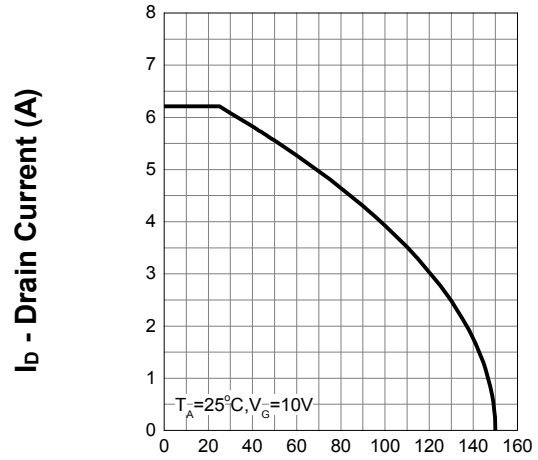
7. Typical Characteristics

Power Capability



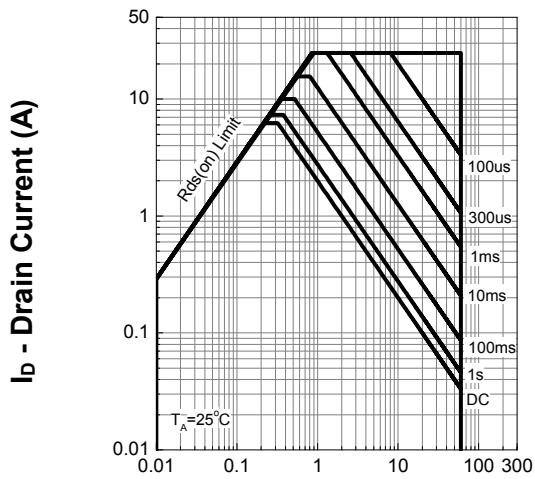
T_{mp} - Mounting Point Temp. (°C)

Current Capability



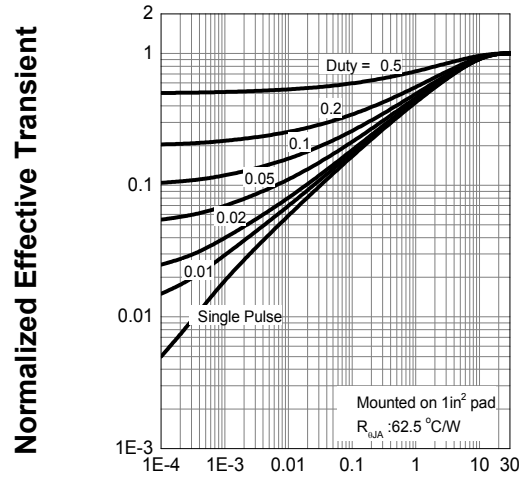
T_{mp} - Mounting Point Temp. (°C)

Operating



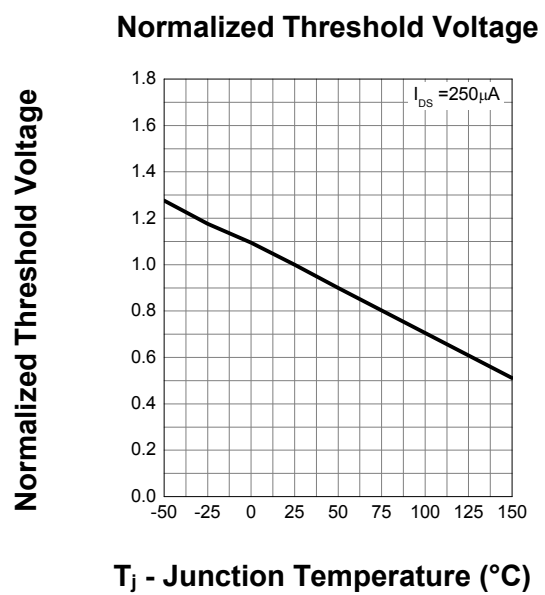
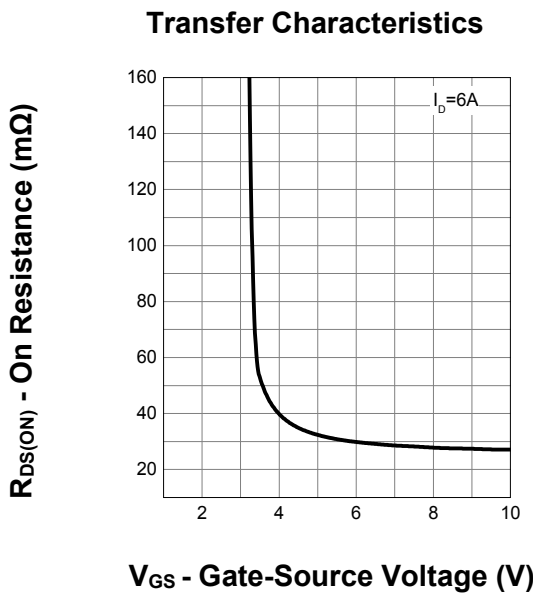
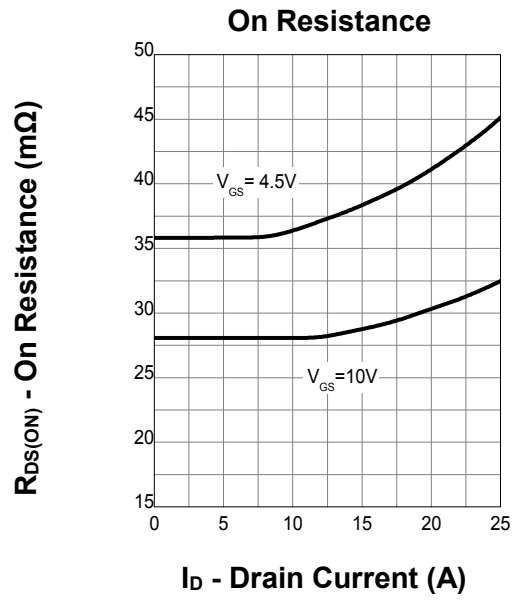
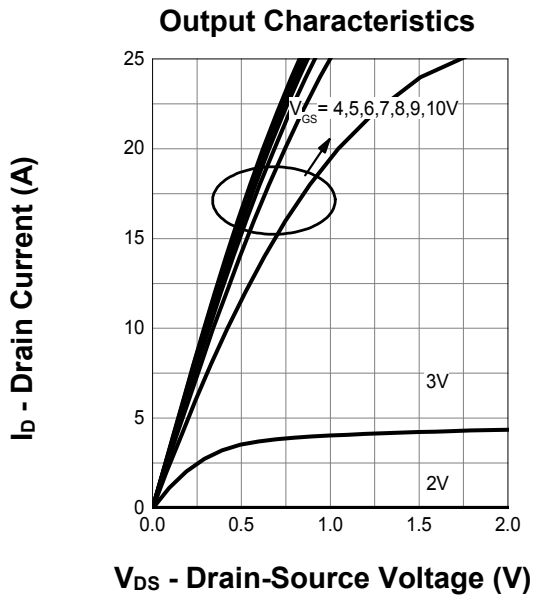
V_{DS} - Drain-Source Voltage (V)

Transient Thermal Impedance



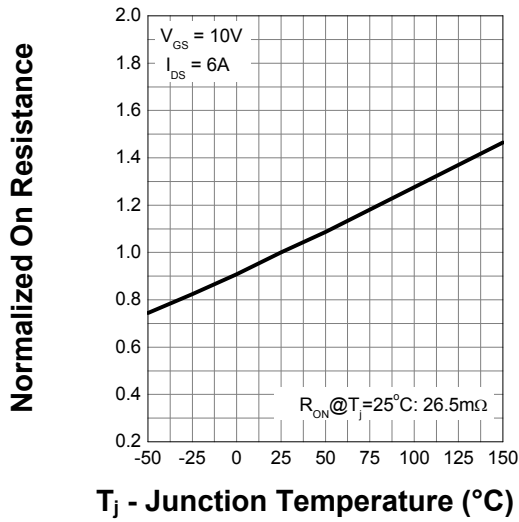
Square Wave Pulse Duration (sec)

7. Typical Characteristics (cont.)

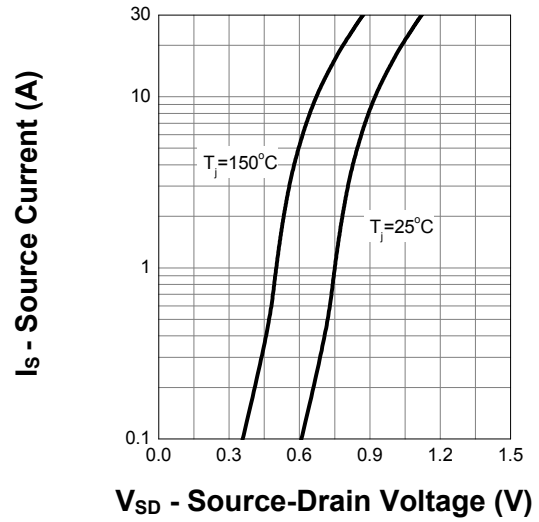


7. Typical Characteristics (cont.)

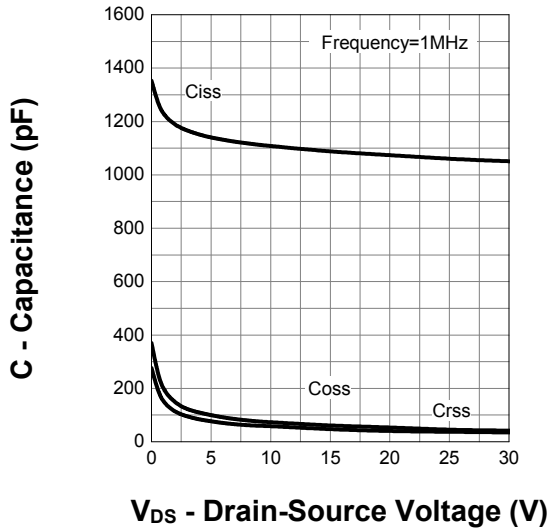
Normalized On Resistance



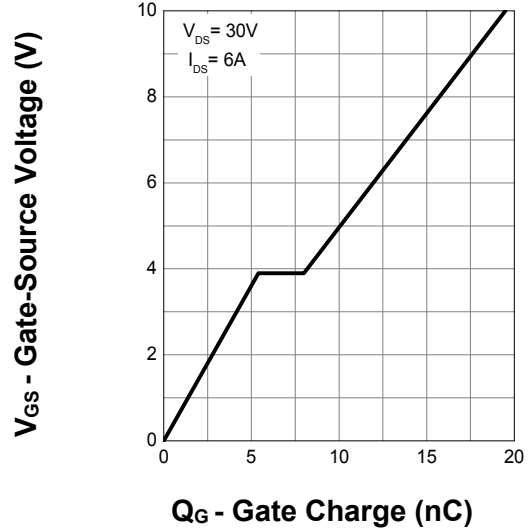
Diode Forward Current



Capacitance

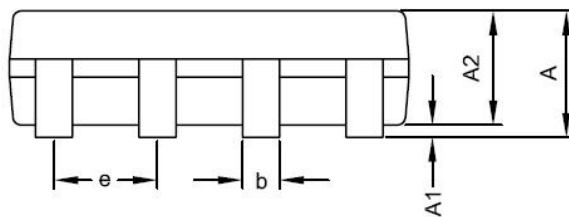
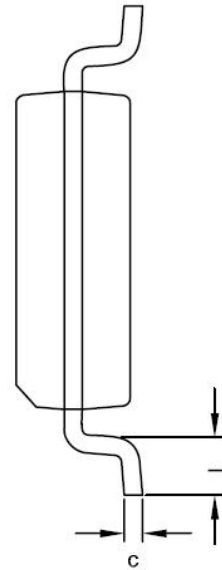
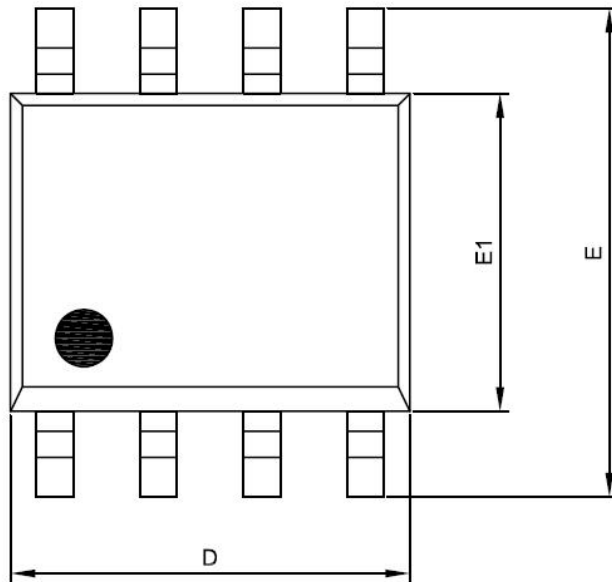


Gate Charge



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.