# KJ2008QD

# Dual N-Channel Enhancement Mode MOSFET

## 1. Product Information

### 1.1 Features

- ☑ Surface-mounted package
- ☑ ESD 2KV
- ☑ Low Thermal Resistance

### 1.2 Applications

- ☑ Motor drivers
- ☑ DC - DC Converter

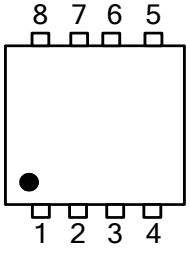
### 1.3 Quick reference

- ☑ BV ≧ 20 V
- ☑ $P_{tot}$ ≦ 20.8 W
- ☑ $I_D$ ≦ 38 A
- ☑ $R_{DS(ON)}$ ≦ 9.5 mΩ @ $V_{GS}$ = 4.5 V
  $R_{DS(ON)}$ ≦ 13 mΩ @ $V_{GS}$ = 2.5 V
  $R_{DS(ON)}$ ≦ 20 mΩ @ $V_{GS}$ = 1.8 V

## 2. Pin Description

| Pin | Description |
|---|---|
| 1 | Source(S1) |
| 2 | Gate(G1) |
| 3 | Source(S2) |
| 4 | Gate(G2) |
| 5,6 | Drain(D2) |
| 7,8 | Drain(D1) |

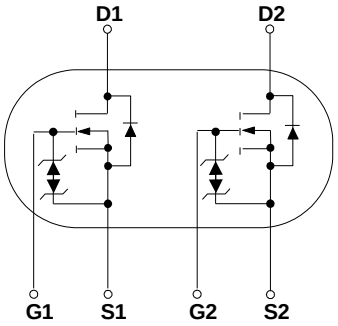
Simplified Outline




Top View

PDFN3x3-8L

Symbol



## 3. Limiting Values

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | $T_C$ = 25 ℃ | 20 | - | V |
| $V_{GS}$ | Gate-Source Voltage | $T_C$ = 25 ℃ | - | ± 10 | V |
| $I_D$* | Drain Current | $T_C$ = 25 ℃, $V_{GS}$ = 4.5 V | - | 38 | A |
| | | $T_C$ = 100 ℃, $V_{GS}$ = 4.5 V | - | 23.5 | A |
| $I_{DM}$*,**,*** | Pulsed Source Current | $T_C$ = 25 ℃, $V_{GS}$ = 4.5 V | - | 112 | A |
| $P_{tot}$* | Total Power Dissipation | $T_C$ = 25 ℃ | - | 20.8 | W |
| $T_{stg}$ | Storage Temperature | | - 55 | 150 | ℃ |
| $T_J$ | Junction Temperature | | - | 150 | ℃ |
| $I_S$ | Diode Forward Current | $T_C$ = 25 ℃ | - | 38 | A |
| $E_{AS}$* | Single Pulsed Avalanche Energy | $V_{DD}$= 20 V, L= 1.0 mH | - | 66 | mJ |
| $R_{\theta JA}$* | Thermal Resistance- Junction to Ambient | | - | 62.5 | ℃ / W |
| $R_{\theta JC}$* | Thermal Resistance- Junction to Case | | - | 6 | |

Notes：

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

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

*** Limited by bonding wire

## 4. Marking Information

| Product Name | Marking |
|---|---|
| KJ2008QD | 2008D<br>YWWXXX<br>YWW: Date Code |

## 5. Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|---|---|---|---|---|---|
| KJ2008QD | PDFN3.3*3.3 | | | 5000 | |

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, $I_D$ = 250 μA | 20 | - | - | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_{DS}$ = 250 μA | 0.5 | - | 1 | V |
| $I_{DSS}$ | Zero Gate Voltage Source Current | $V_{DS}$ = 16 V, $V_{GS}$ = 0 V | - | - | 1 | μA |
| $I_{GSS}$ | Gate Leakage Current | $V_{GS}$ = ± 10 V, $V_{DS}$ = 0 V | - | - | ± 10 | uA |
| $R_{DS(ON)}$[a] | Drain-Source On-State Resistance | $V_{GS}$ = 4.5 V, $I_D$ = 5 A | - | 8.5 | 9.5 | mΩ |
| | | $V_{GS}$ = 2.5 V, $I_D$ = 3 A | - | 11 | 13 | |
| | | $V_{GS}$ = 1.8 V, $I_D$ = 2 A | - | 16 | 20 | |
| **Diode Characteristics** | | | | | | |
| $V_{SD}$[a] | Diode Forward Voltage | $I_{SD}$ = 5 A, $V_{GS}$ = 0 V | - | - | 1.2 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_{SD}$ = 5 A, $dI_{SD}/dt$ = 100 A/μs | - | 25 | - | nS |
| $Q_{rr}$ | Reverse Recovery Charge | | - | 10.5 | - | nC |
| **Dynamic Characteristics**[b] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0 V, $V_{DS}$ = 10 V<br>Frequency = 1 MHz | - | 998 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 131 | - | |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 125 | - | |
| $t_d$(on) | Turn-on Delay Time | $V_{DS}$ = 10 V, $V_{GEN}$ = 4.5 V,<br>$R_G$ = 3.9 Ω, $R_L$ = 2 Ω,<br>$I_D$ = 5 A | - | 8.1 | - | nS |
| $t_r$ | Turn-on Rise Time | | - | 21.1 | - | |
| $t_d$(off) | Turn-off Delay Time | | - | 59.1 | - | |
| $t_f$ | Turn-off Fall Time | | - | 29.3 | - | |
| **Gate Charge Characteristics**[b] | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{GS}$ = 4.5 V, $V_{DS}$ = 10 V,<br>$I_{DS}$ = 5 A | - | 13.6 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 2.85 | - | |
| $Q_{gd}$ | Gate-Drain Charge | | - | 3.4 | - | |

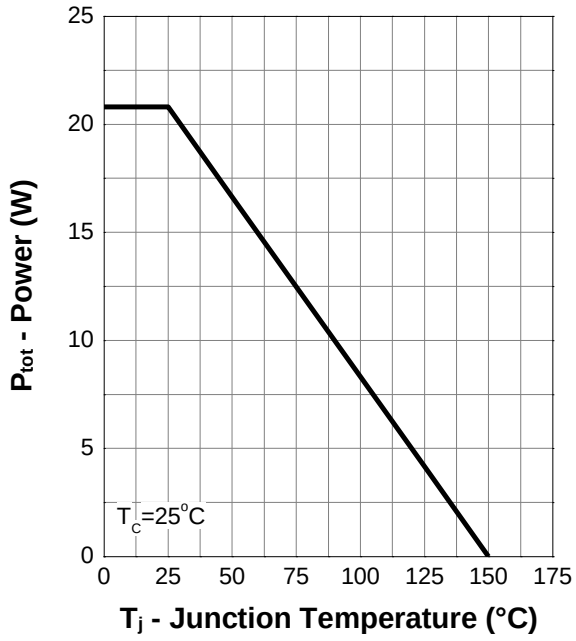
Notes：

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

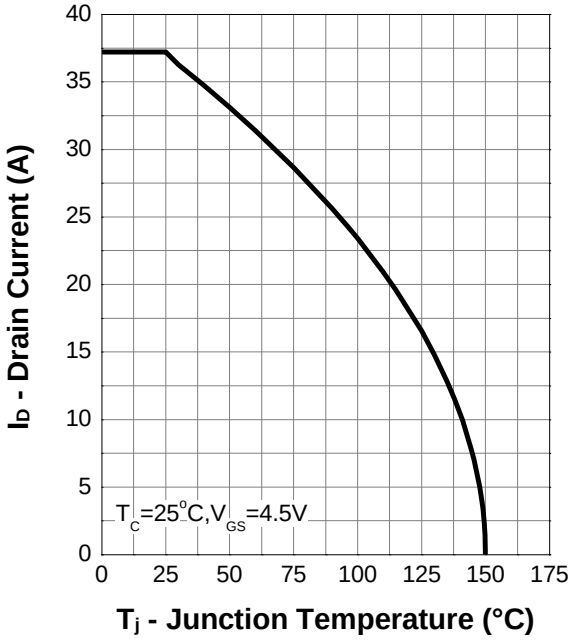
b : Guaranteed by design, not subject to production testing

## 7. Typical Characteristics (Cont.)

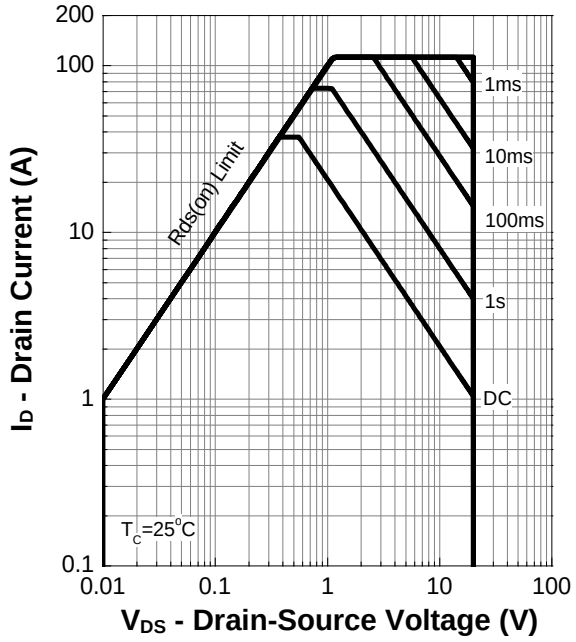
**Power Capability**



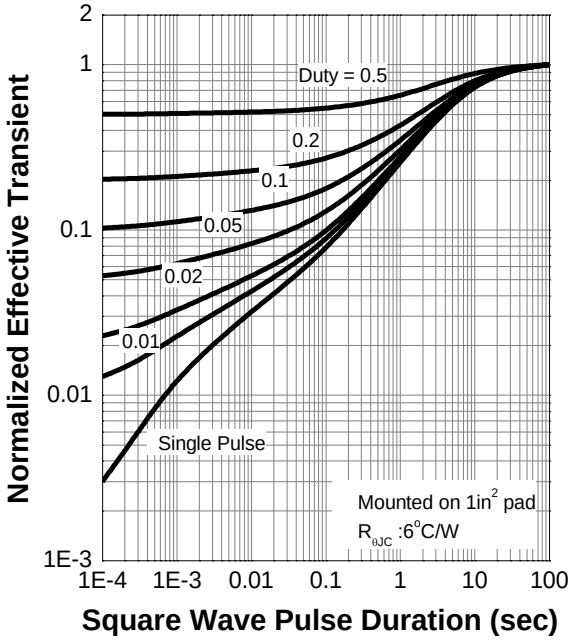

**Current Capability**




**Safe Operatio a**

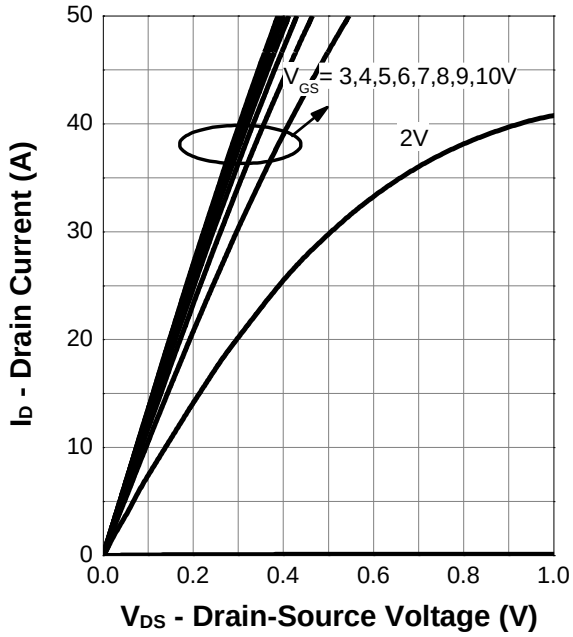



**Transient Thermal Impedance**

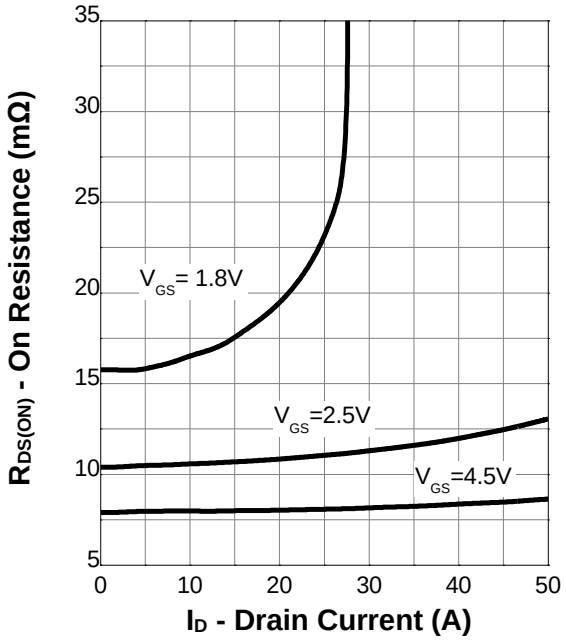


## 7. Typical Characteristics (Cont.)

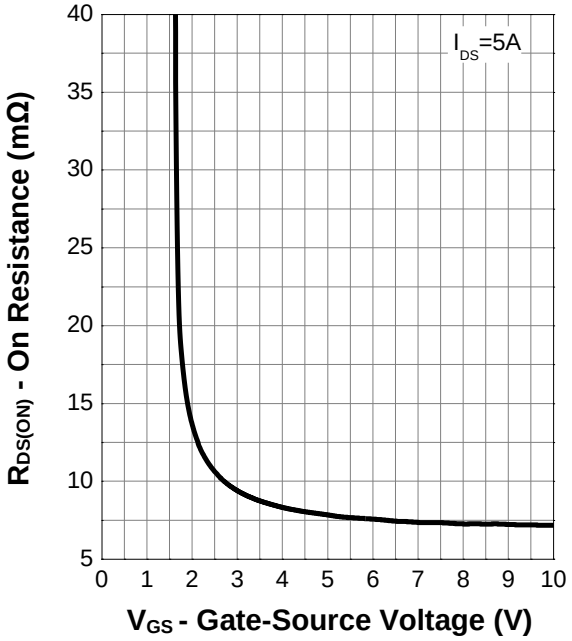
**Output Characteristics**



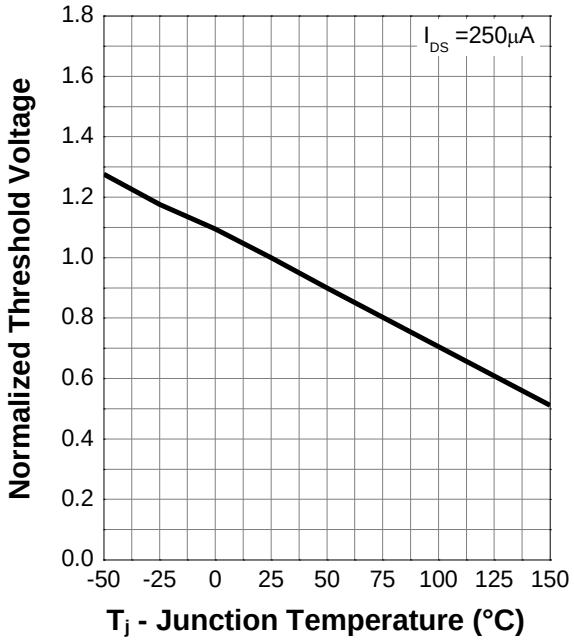

**On Resistance**




**Transfer Characteristics**

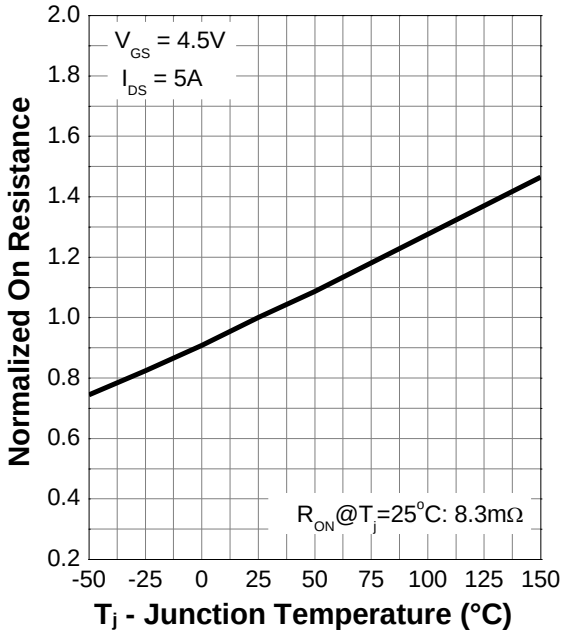



**Normalized Threshold Voltage**

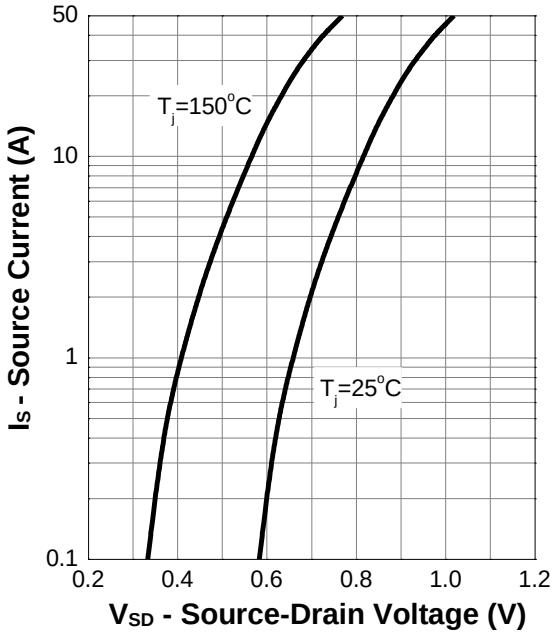


## 7. Typical Characteristics (Cont.)

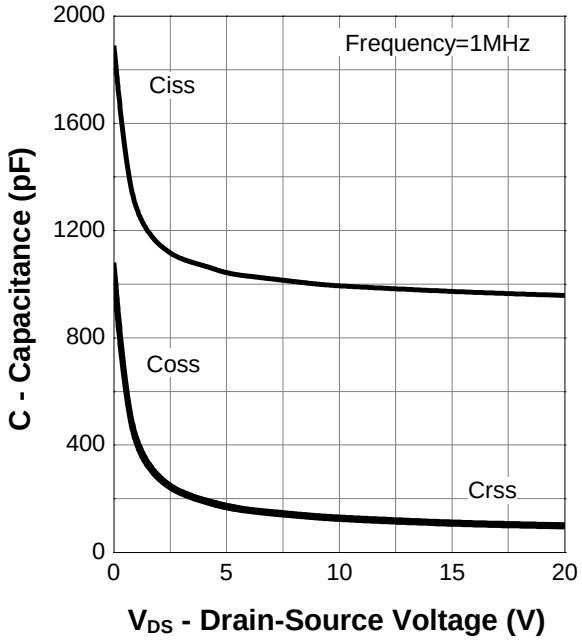
**Normalized On Resistance**



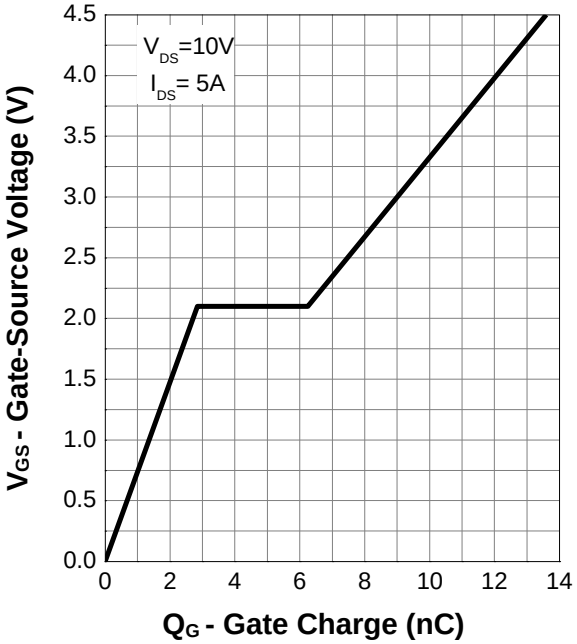

**Diode Forward Current**




**Capacitance**




**Gate Charge**



## 8. Package Dimensions

**PDFN3.3*3.3**