# KJ20N15Q

# N-Channel Enhancement Mode MOSFET

## 1. Product Information

### 1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design

### 1.2 Applications

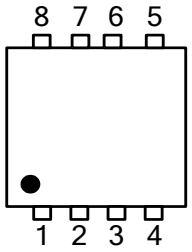
- ☑ LCD TV appliances
- ☑ LCDM appliances
- ☑ High power inverter system

### 1.3 Quick reference

- ☑ BV ≥ 150 V
- ☑ $P_{tot}$ ≦ 50 W
- ☑ $I_D$ ≦ 21 A
- ☑ $R_{DS(ON)}$ ≦ 52mΩ @ $V_{GS}$ = 10 V
- ☑ $R_{DS(ON)}$ ≦ 62mΩ @ $V_{GS}$ = 6 V

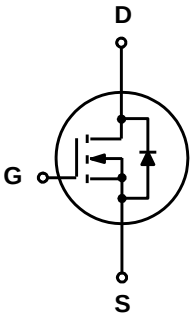
## 2. Pin Description

| Pin | Description | Simplified Outline | Symbol |
|---|---|---|---|
| 4 | Gate(G) | | |
| 5,6,7,8 | Drain(D) | | |
| 1,2,3 | Source(S) | | |




Top View

PDFN3.3x3.3-8L



## 3. Limiting Values

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | $T_C$ = 25 ℃ | 150 | - | V |
| $V_{GS}$ | Gate-Source Voltage | $T_C$ = 25 ℃ | - | ±20 | V |
| $I_D$ | Drain Current ( DC ) | $T_C$ = 25 ℃, $V_{GS}$ = 10 V | - | 21 | A |
| | | $T_C$ = 100 ℃, $V_{GS}$ = 10 V | - | 13.8 | A |
| $I_{DM}$* | Drain Current ( Pulsed ) | $T_C$ = 25 ℃, $V_{GS}$ = 10 V | - | 84 | A |
| $P_{tot}$ | Drain power dissipation | $T_C$ = 25 ℃ | - | 50 | W |
| $T_{stg}$ | Storage Temperature | | -55 | 150 | ℃ |
| $T_J$ | Junction Temperature | | - | 150 | ℃ |
| $I_S$ | Continuous-Source Current | $T_C$ = 25 ℃ | - | 21 | A |
| $R_{\theta JA}$** | Thermal Resistance- Junction to Ambient | | - | 50 | ℃/W |
| $R_{\theta JC}$** | Thermal Resistance- Junction to Case | | - | 2.5 | |

Notes：

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

** Mounted on Large Heat Sink

*** Limited by bonding wire

## 4. Marking Information

| Product Name | Marking |
|---|---|
| KJ20N15Q | 20N15<br>YWWXXX<br>YWW: Date Code |

## 5. Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|---|---|---|---|---|---|
| KJ20N15Q | 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 ° Unless Otherwise Noted )

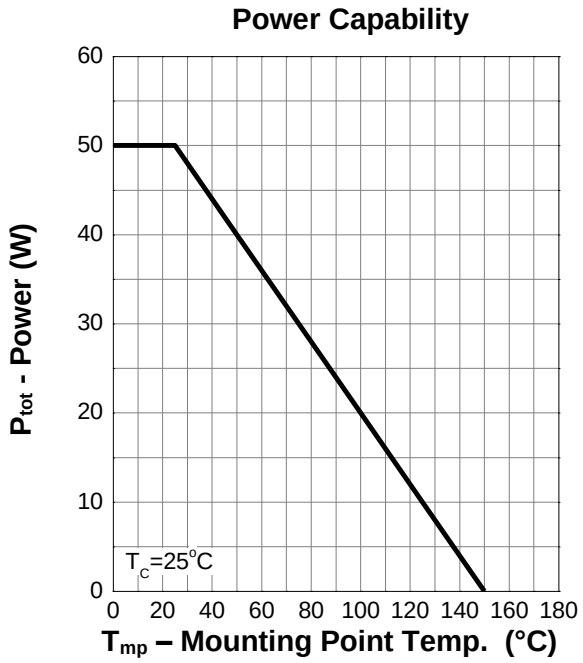
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Static Characteristics | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$ = 0 V, $I_{DS}$ = 250 μA | 150 | - | - | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_{DS}$ = 250 μA | 2.0 | - | 4.0 | V |
| $I_{DSS}$ | Drain Leakage Current | $V_{DS}$ = 120 V, $V_{GS}$ = 0 V | - | - | 1 | μA |
| $I_{GSS}$ | Gate Leakage Current | $V_{GS}$ = 0 V, $V_{GS}$ = ± 20 V | - | - | ±100 | nA |
| $R_{DS(ON)}$[a] | On-State Resistance | $V_{GS}$ = 10 V, $I_{DS}$ = 10 A | - | 42 | 52 | mΩ |
| | | $V_{GS}$ = 6 V, $I_{DS}$ =5 A | - | 48 | 62 | |
| Diode Characteristics | | | | | | |
| $V_{SD}$[a] | Diode Forward Voltage | $I_{SD}$ = 10 A, $V_{GS}$ = 0 V | - | - | 1.3 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_{DS}$ = 4 A, $V_{GS}$ = 0 V<br>$dI_{SD}/dt$ = 100 A/μs | - | 72 | - | ns |
| $Q_{rr}$ | Reverse Recovery Charge | | - | 143 | - | μC |
| Dynamic Characteristics[b] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0 V, $V_{DS}$ = 75 V<br>Frequency = 1 MHz | - | 1232 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 81 | - | |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 32 | - | |
| $t_{d}$(on) | Turn-on Delay Time | $V_{DS}$ = 75 V, $V_{GEN}$ = 10 V,<br>$R_G$ = 4.5 Ω, $R_L$ = 7.5 Ω,<br>$I_{DS}$ = 10 A | - | 11 | - | ns |
| $t_r$ | Turn-on Rise Time | | - | 40 | - | |
| $t_{d}$(off) | Turn-off Delay Time | | - | 19 | - | |
| $t_f$ | Turn-off Fall Time | | - | 32 | - | |
| Gate Charge Characteristics[b] | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$ = 75 V, $V_{GS}$ = 10 V,<br>$I_{DS}$ = 10 A | - | 25.8 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 8 | - | |
| $Q_{gd}$ | Gate-Drain Charge | | - | 8.3 | - | |

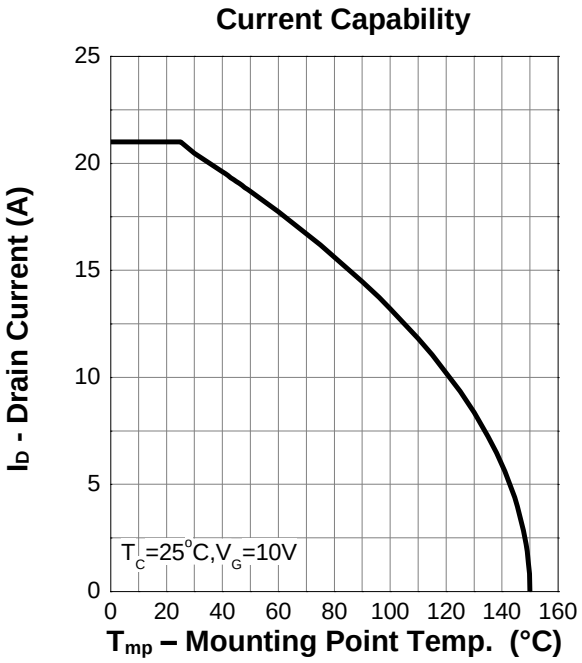
Notes：

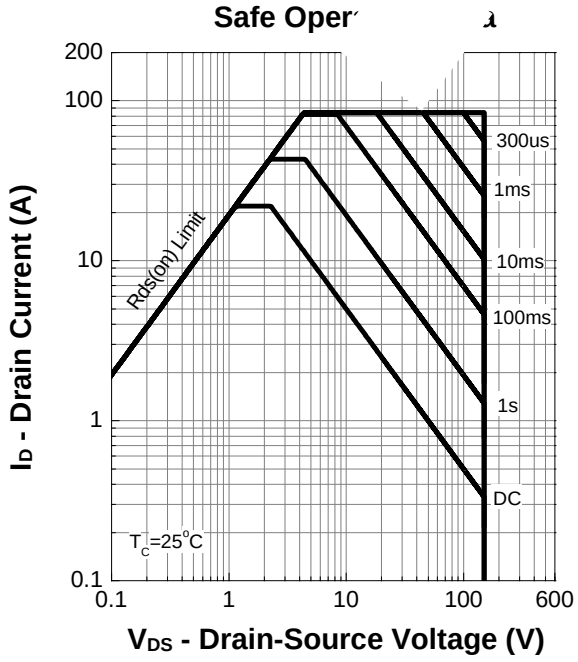
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

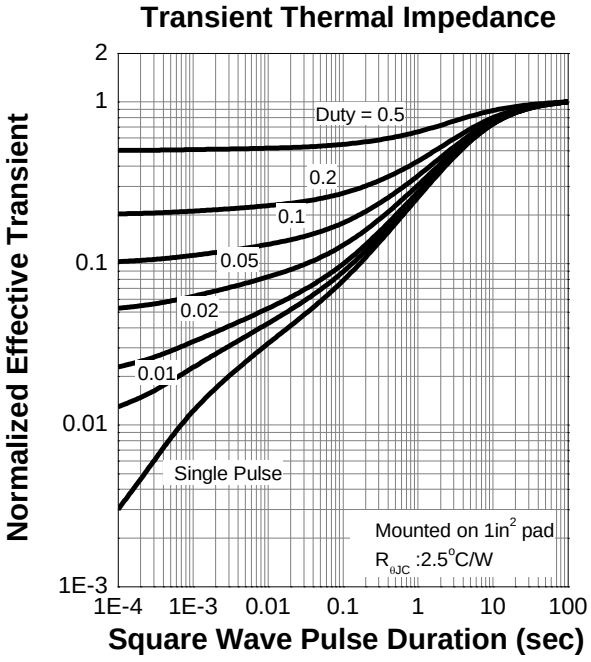
b : Guaranteed by design, not subject to production testing

## 7. Typical Characteristics

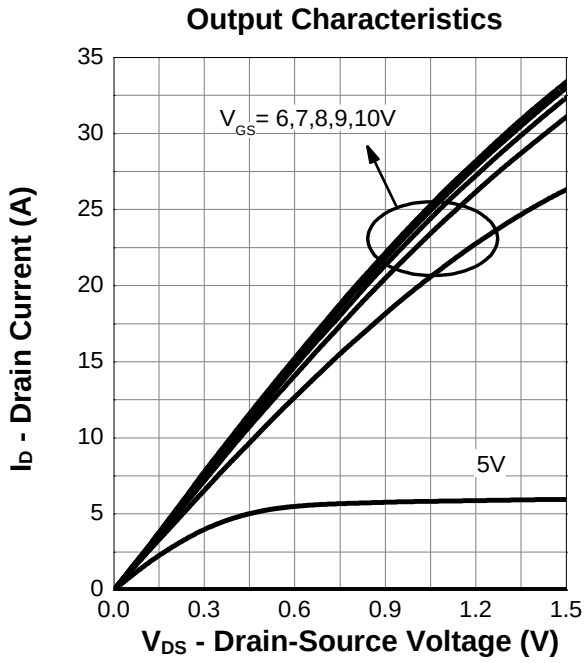


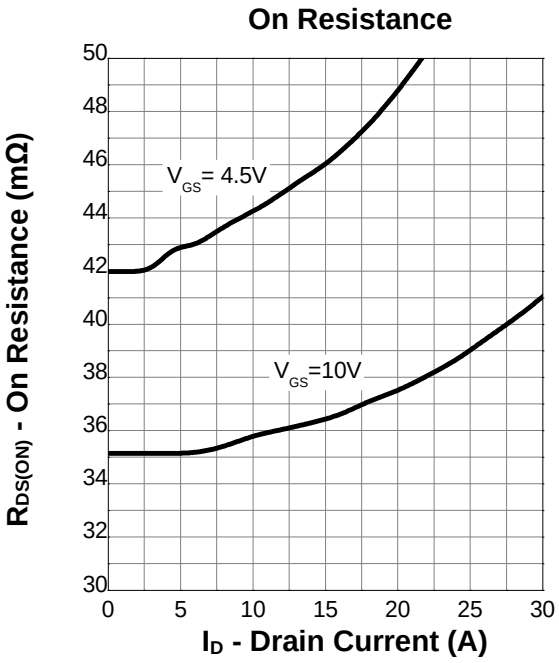



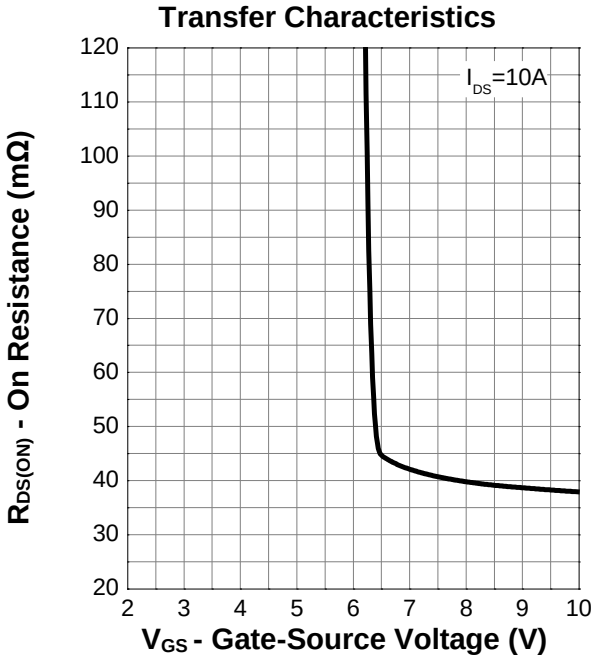



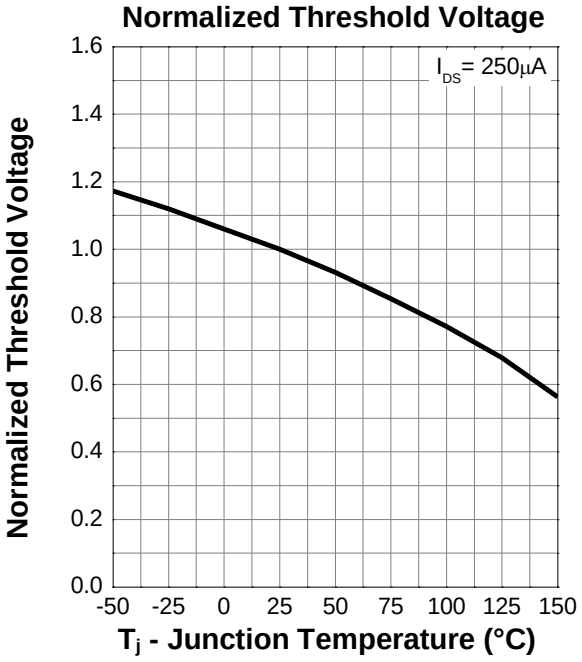



## 7. Typical Characteristics (cont.)

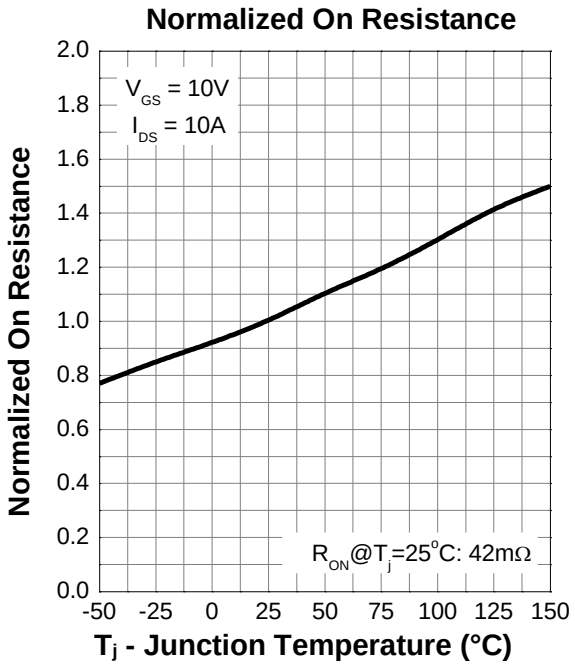


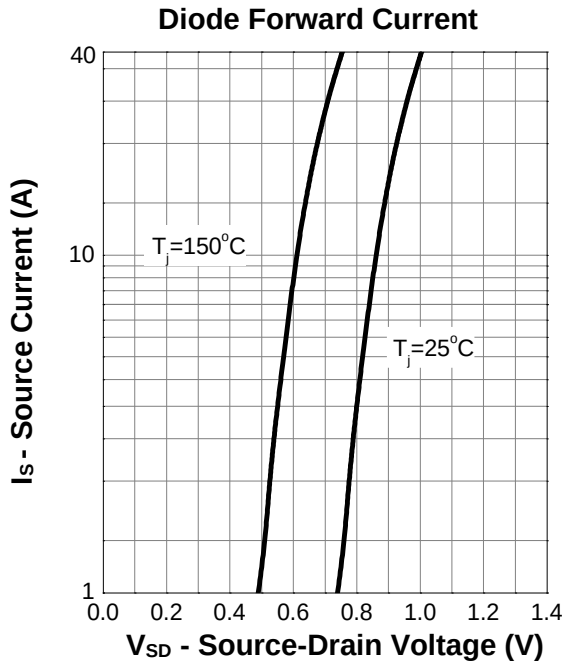



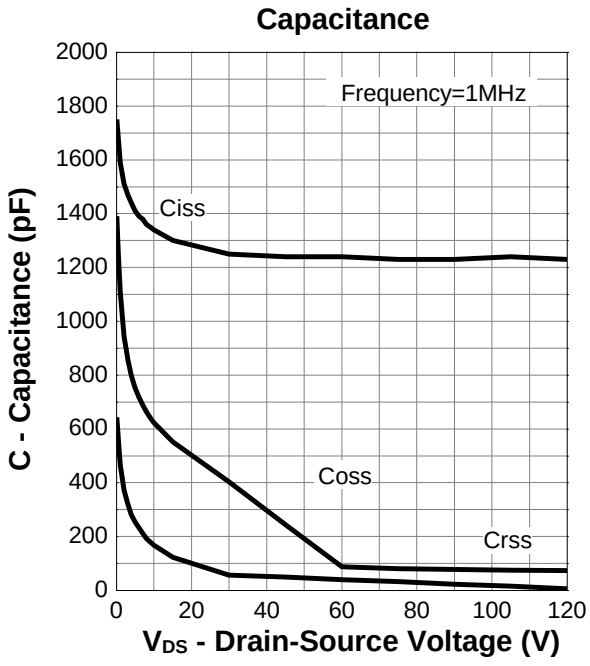



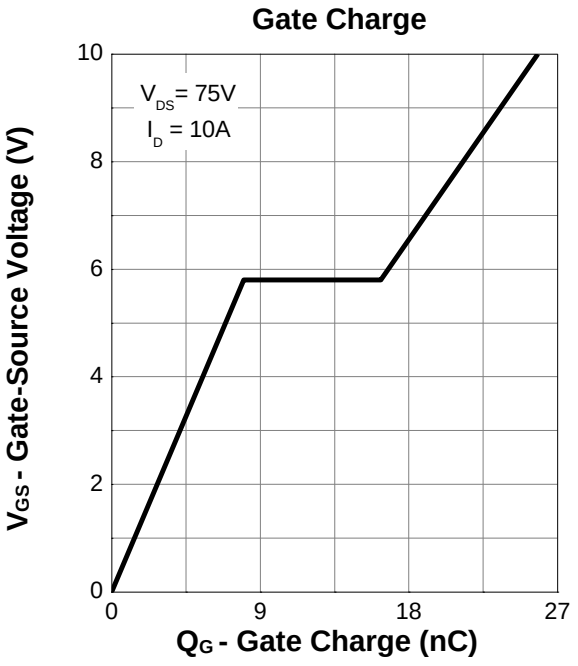



## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

**PDFN3.3*3.3**