# KJ75N04K

# N-Channel Enhancement Mode MOSFET

## 1. Product Information

### 1.1 Features

- ☑ Advanced trench cell design
- ☑ Low Thermal Resistance

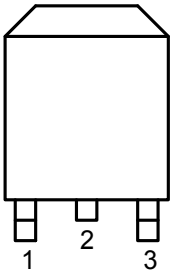
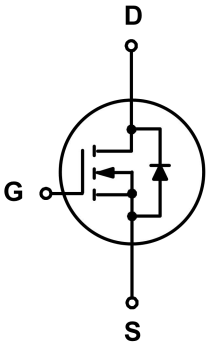
### 1.2 Applications

- ☑ Motor drivers
- ☑ DC - DC Converter

### 1.3 Quick reference

- ☑ BV ≧ 40 V
- ☑ $P_{tot}$ ≦ 35 W
- ☑ $I_D$ ≦ 75A
- ☑ $R_{DS(ON)}$ ≦ 7 mΩ @ $V_{GS}$ = 10 V
  $R_{DS(ON)}$ ≦ 12 mΩ @ $V_{GS}$ = 4.5 V

## 2. Pin Description

| Pin | Description | Simplified Outline | Symbol |
|---|---|---|---|
| 1 | Gate(G) |  |  |
| 2 | Drain(D) | | |
| 3 | Source(S) | | |



Top View
TO252

## 3. Limiting Values

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | $T_C$ = 25 ℃ | 40 | - | V |
| $V_{GS}$ | Gate-Source Voltage | $T_C$ = 25 ℃ | - | ± 20 | V |
| $I_D$* | Drain Current | $T_C$ = 25 ℃, $V_{GS}$ = 10 V | - | 75 | A |
| $I_{DM}$*,*** | Pulsed Source Current | $T_C$ = 25 ℃, $V_{GS}$ = 10 V | - | 160 | A |
| $P_{tot}$* | Total Power Dissipation | $T_C$ = 25 ℃ | - | 35 | W |
| $T_{stg}$ | Storage Temperature | | - 55 | 150 | ℃ |
| $T_J$ | Junction Temperature | | - | 150 | ℃ |
| $I_S$ | Diode Forward Current | $T_C$ = 25 ℃ | - | 75 | A |
| $R_{\theta JA}$* | Thermal Resistance- Junction to Ambient | | - | 62.5 | ℃ / W |
| $R_{\theta JC}$* | Thermal Resistance- Junction to Case | | - | 3.5 | |

Notes：

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

** Pulse width ≤ 10 μs, duty cycle ≤ 1 %

*** limited by bonding wire

## 4. Marking Information

| Product Name | Marking |
|---|---|
| KJ75N04K | 75N04<br>YWWXXX<br>YWWXXX: Date Code |

## 5. Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|---|---|---|---|---|---|
| KJ75N04K | TO252 | | | 2500 | |

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 | 40 | – | – | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_{DS}$ = 250 μA | 1.0 | 1.5 | 2.5 | V |
| $I_{DSS}$ | Zero Gate Voltage Source Current | $V_{DS}$ = 40V, $V_{GS}$ = 0 V | - | - | 1 | μA |
| | | $T_J$ = 85 ℃ | - | - | 30 | μA |
| $I_{GSS}$ | Gate Leakage Current | $V_{GS}$ = ± 20 V, $V_{DS}$ = 0 V | - | - | ± 100 | nA |
| $R_{DS(ON)}$[a] | Drain-Source On-State Resistance | $V_{GS}$ = 10 V, $I_D$ = 30 A | - | 5.5 | 7 | mΩ |
| | | $V_{GS}$ = 4.5 V, $I_D$ = 20 A | - | 8 | 12 | |
| **Diode Characteristics** | | | | | | |
| $V_{SD}$[a] | Diode Forward Voltage | $I_{SD}$ = 30 A, $V_{GS}$ = 0 V | - | - | 1.2 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_{SD}$ = 20 A, $dI_{SD}/dt$ = 100 A/μs | - | 15 | - | ns |
| $Q_{rr}$ | Reverse Recovery Charge | | - | 6 | - | nC |
| **Dynamic Characteristics**[b] | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0 V, $V_{DS}$ = 20 V Frequency = 1 MHz | - | 2229 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 187 | - | |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 167 | - | |
| $t_d$(on) | Turn-on Delay Time | $V_{DS}$ = 20 V, $V_{GEN}$ = 10 V, $R_G$ = 3 Ω, $R_L$ = 1 Ω, $I_{DS}$ = 30 A | - | 13 | - | ns |
| $t_r$ | Turn-on Rise Time | | - | 37 | - | |
| $t_d$(off) | Turn-off Delay Time | | - | 46 | - | |
| $t_f$ | Turn-off Fall Time | | - | 15 | - | |
| **Gate Charge Characteristics**[b] | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$ = 20 V, $V_{GS}$ = 10 V, $I_{DS}$ = 30 A | - | 48 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 6 | - | |
| $Q_{gd}$ | Gate-Drain Charge | | - | 13 | - | |

Notes :

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

b : Guaranteed by design, not subject to production testing

## 7. Typical Characteristics (Cont.)

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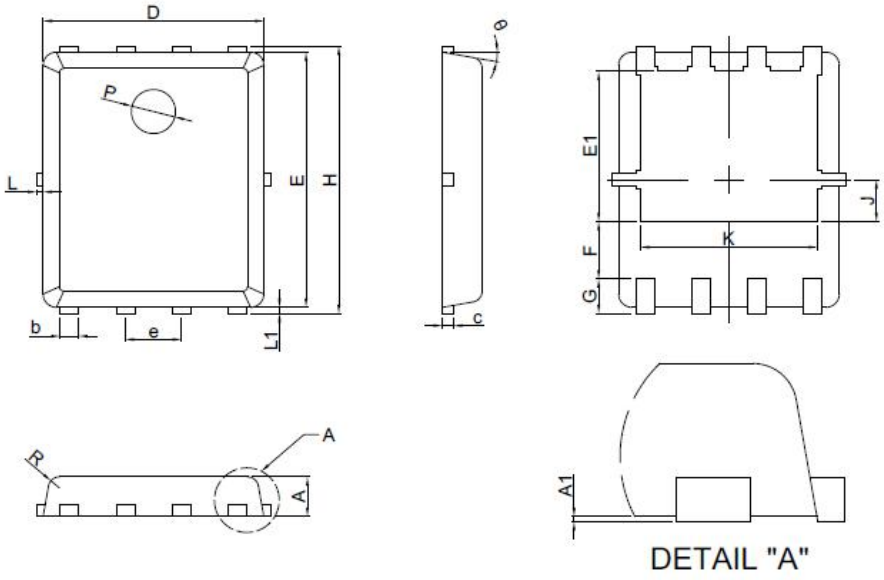
# 8. Package Dimensions

**PDFN5x6 - 8L Package**




| Symbol | Dimensions In Millimeters | |
|---|---|---|
| | MIN. | MAX. |
| A | 0.80 | 1.00 |
| A1 | 0.00 | 0.05 |
| b | 0.35 | 0.49 |
| c | 0.254REF | |
| D | 4.90 | 5.10 |
| F | 1.40REF | |
| E | 5.70 | 5.90 |
| e | 1.27BSC | |
| H | 5.95 | 6.20 |
| L1 | 0.10 | 0.18 |
| G | 0.60REF | |
| K | 4.00REF | |
| L | - | 0.15 |
| J | 0.95BSC | |
| P | 1.00REF | |
| E1 | 3.40REF | |
| θ | 6° | 14° |
| R | 0.25REF | |