

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- |                                                             |                                                           |
|-------------------------------------------------------------|-----------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface-mounted package | <input checked="" type="checkbox"/> SGT technology        |
| <input checked="" type="checkbox"/> Fast switching speed    | <input checked="" type="checkbox"/> 100% avalanche tested |

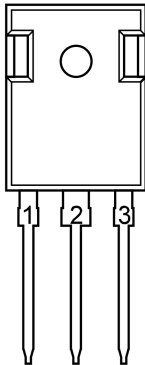
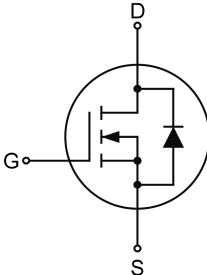
#### 1.2 Applications

- |                                                     |                                                  |
|-----------------------------------------------------|--------------------------------------------------|
| <input checked="" type="checkbox"/> DC/DC converter | <input checked="" type="checkbox"/> Power switch |
| <input checked="" type="checkbox"/> Motor drives    | <input checked="" type="checkbox"/> BMS          |

#### 1.3 Quick reference

- |                                                             |                                                                                              |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> $BV \geq 60\text{ V}$   | <input checked="" type="checkbox"/> $R_{DS(ON)} \leq 1.7\text{ m}\Omega @V_{GS}=10\text{ V}$ |
| <input checked="" type="checkbox"/> $P_D \leq 329\text{ W}$ |                                                                                              |
| <input checked="" type="checkbox"/> $I_D \leq 337\text{ A}$ |                                                                                              |

### 2. Pin Description

| Pin | Description | Simplified Outline                                                                                             | Symbol                                                                                |
|-----|-------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1   | Gate (G)    |  <p>Top View<br/>TO-247</p> |  |
| 2   | Drain (D)   |                                                                                                                |                                                                                       |
| 3   | Source (S)  |                                                                                                                |                                                                                       |

## 3. Limiting Values

| Symbol          | Parameter                                             | Conditions                                         | Min | Max      | Unit                 |
|-----------------|-------------------------------------------------------|----------------------------------------------------|-----|----------|----------------------|
| $V_{DS}$        | Drain-Source Voltage                                  | $T_C=25^{\circ}\text{C}$                           | 60  | -        | V                    |
| $V_{GS}$        | Gate-Source Voltage                                   | $T_C=25^{\circ}\text{C}$                           | -   | $\pm 20$ | V                    |
| $I_D$           | Continuous Drain Current                              | $T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}^{[1]}$ | -   | 337      | A                    |
|                 |                                                       | $T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$      | -   | 213      | A                    |
| $I_{DM}$        | Pulsed Drain Current <sup>[2]</sup>                   | $T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$       | -   | 1348     | A                    |
| $P_D$           | Power Dissipation                                     | $T_C=25^{\circ}\text{C}$                           | -   | 329      | W                    |
| $E_{AS}$        | Single Pulsed Avalanche Energy                        | $V_{DD}=30\text{ V}, L=0.3\text{ mH}$              | -   | 920      | mJ                   |
| $T_J, T_{stg}$  | Operating Junction and Storage Temperature Range      |                                                    | -55 | 175      | $^{\circ}\text{C}$   |
| $R_{\theta JA}$ | Thermal Resistance-Junction to Ambient <sup>[3]</sup> |                                                    | -   | 50       | $^{\circ}\text{C/W}$ |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case                   |                                                    | -   | 0.38     |                      |

Notes:

1. Package limited.
2. Pulse width limited by maximum junction temperature.
3.  $R_{\theta JA}$  is determined with the device mounted on a 1 in<sup>2</sup> pad 2 oz copper pad on a 1.5"x1.5" board of FR-4 material.

## 4. Marking Information

| Product Name | Marking                             |
|--------------|-------------------------------------|
| KJ018N06P    | <b>KJ018N06P</b><br><b>XXXXXX-X</b> |

## 5. Ordering Code

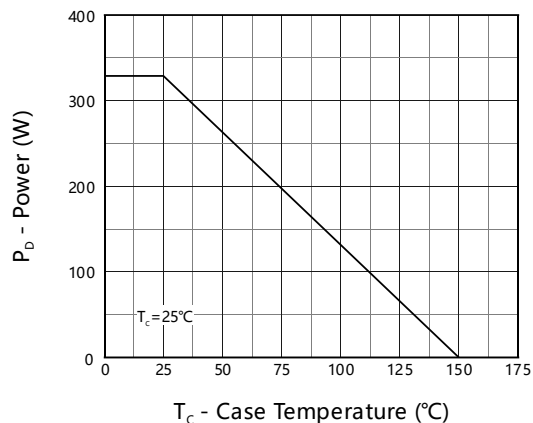
| Product Name | Package | Reel size | Tape width | Quantity (pcs) |
|--------------|---------|-----------|------------|----------------|
| KJ018N06P    | TO-247  | N/A       | N/A        | 600            |

Note: KUIJIEXIN 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).

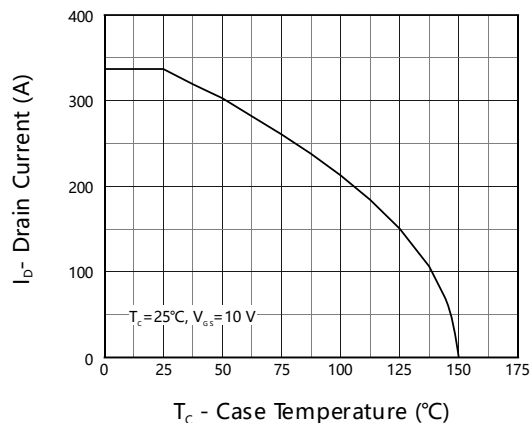
## 6. Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

| Symbol                      | Parameter                      | Conditions                                                                                     | Min | Typ  | Max  | Unit |
|-----------------------------|--------------------------------|------------------------------------------------------------------------------------------------|-----|------|------|------|
| Static Characteristics      |                                |                                                                                                |     |      |      |      |
| BV <sub>DSS</sub>           | Drain-Source Breakdown Voltage | V <sub>GS</sub> =0 V, I <sub>DS</sub> =250 μA                                                  | 60  | -    | -    | V    |
| V <sub>GS(th)</sub>         | Gate Threshold Voltage         | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250 μA                                     | 2   | 3    | 4    | V    |
| I <sub>DSS</sub>            | Drain Leakage Current          | V <sub>DS</sub> =60 V, V <sub>GS</sub> =0 V                                                    | -   | -    | 1    | μA   |
| I <sub>GSS</sub>            | Gate Leakage Current           | V <sub>DS</sub> =0 V, V <sub>GS</sub> =±20 V                                                   | -   | -    | ±100 | nA   |
| R <sub>DS(ON)</sub>         | On-State Resistance            | V <sub>GS</sub> =10 V, I <sub>DS</sub> =50 A                                                   | -   | 1.5  | 1.7  | mΩ   |
| R <sub>G</sub>              | Gate resistance                | f=1 MHz                                                                                        |     | 2    |      | Ω    |
| Diode Characteristics       |                                |                                                                                                |     |      |      |      |
| V <sub>SD</sub>             | Diode Forward Voltage          | V <sub>GS</sub> =0 V, I <sub>SD</sub> =50 A                                                    | -   | 0.8  | 1.1  | V    |
| t <sub>rr</sub>             | Reverse Recovery Time          | V <sub>DS</sub> =30 V, I <sub>DS</sub> =50 A,<br>dI <sub>SD</sub> /dt=100 A/μs                 | -   | 60   | -    | ns   |
| Q <sub>rr</sub>             | Reverse Recovery Charge        |                                                                                                | -   | 75   | -    | nC   |
| Dynamic Characteristics     |                                |                                                                                                |     |      |      |      |
| C <sub>iss</sub>            | Input Capacitance              | V <sub>DS</sub> =30 V, V <sub>GS</sub> =0 V,<br>f=1 MHz                                        | -   | 7880 | -    | pF   |
| C <sub>oss</sub>            | Output Capacitance             |                                                                                                | -   | 1440 | -    |      |
| C <sub>rss</sub>            | Reverse Transfer Capacitance   |                                                                                                | -   | 125  | -    |      |
| t <sub>d(on)</sub>          | Turn-on Delay Time             | V <sub>DS</sub> =30 V, V <sub>GEN</sub> =10 V,<br>R <sub>G</sub> =1.6 Ω, I <sub>DS</sub> =50 A | -   | 65   | -    | ns   |
| t <sub>r</sub>              | Turn-on Rise Time              |                                                                                                | -   | 45   | -    |      |
| t <sub>d(off)</sub>         | Turn-off Delay Time            |                                                                                                | -   | 60   | -    |      |
| t <sub>f</sub>              | Turn-off Fall Time             |                                                                                                | -   | 33   | -    |      |
| Gate Charge Characteristics |                                |                                                                                                |     |      |      |      |
| Q <sub>g</sub>              | Total Gate Charge              | V <sub>DS</sub> =30 V, V <sub>GS</sub> =10 V,<br>I <sub>DS</sub> =50 A                         | -   | 95   | -    | nC   |
| Q <sub>gs</sub>             | Gate-Source Charge             |                                                                                                | -   | 31   | -    |      |
| Q <sub>gd</sub>             | Gate-Drain Charge              |                                                                                                | -   | 18   | -    |      |

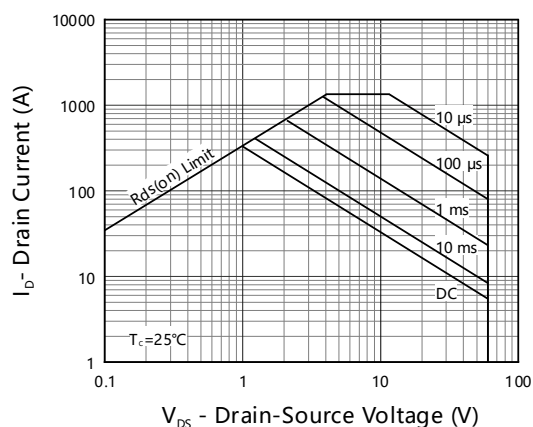
## 7. Typical Characteristics



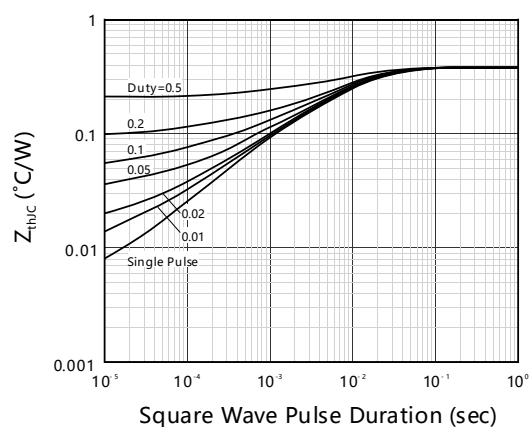
**Fig 1. Power Capability**



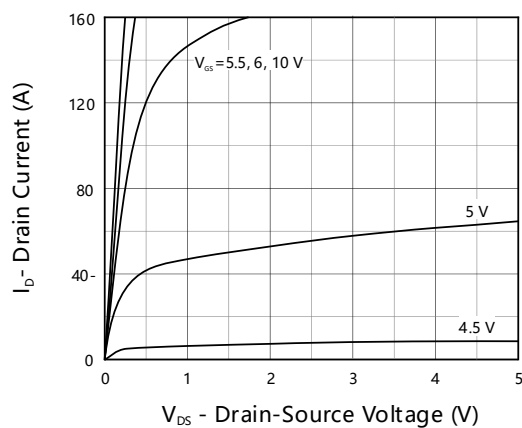
**Fig 2. Current Capability**



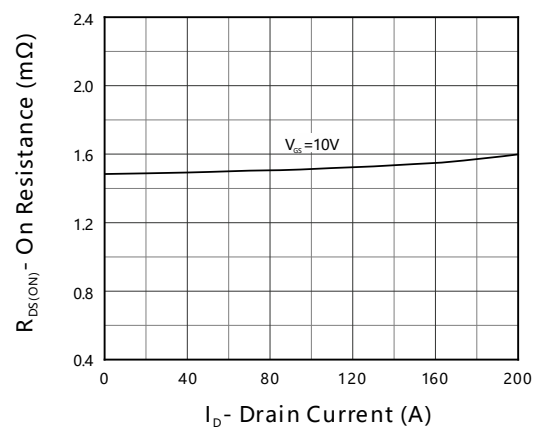
**Fig 3. Safe Operation Area**



**Fig 4. Transient Thermal Impedance**

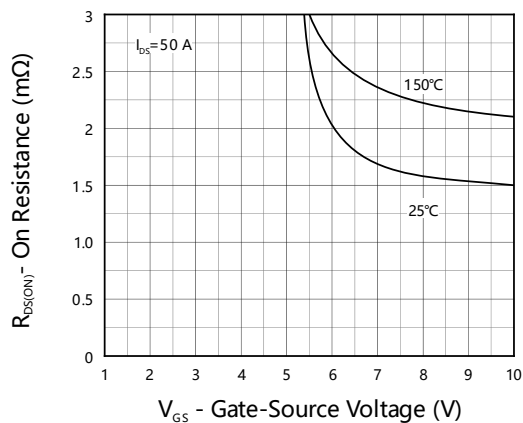


**Fig 5. Output Characteristics**

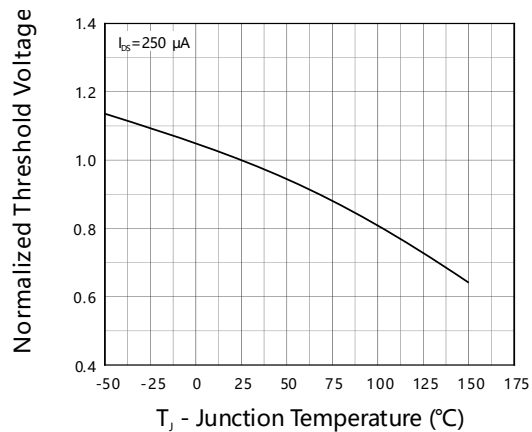


**Fig 6. On Resistance**

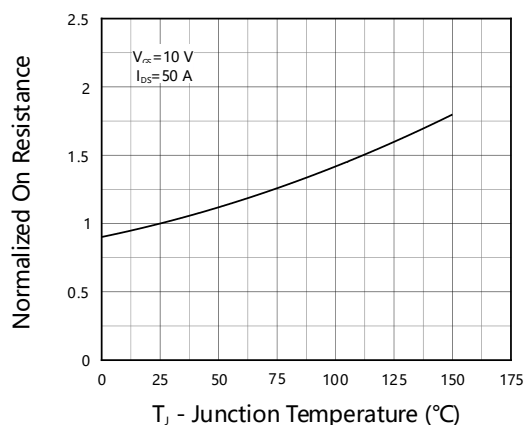
## 7. Typical Characteristics (cont.)



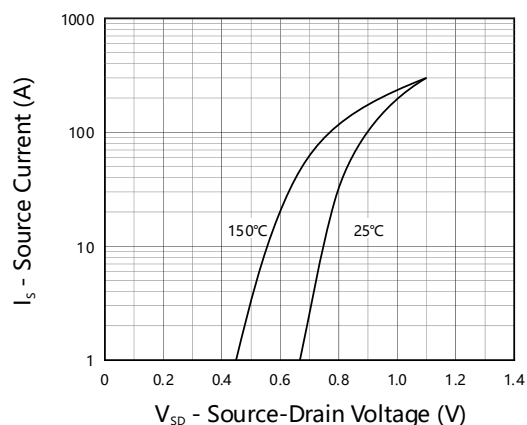
**Fig 7. Transfer Characteristics**



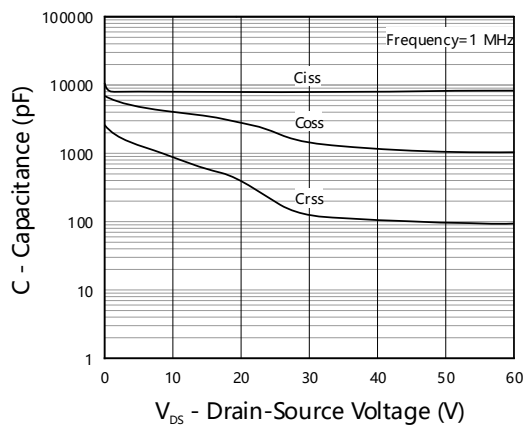
**Fig 8. Normalized Threshold Voltage**



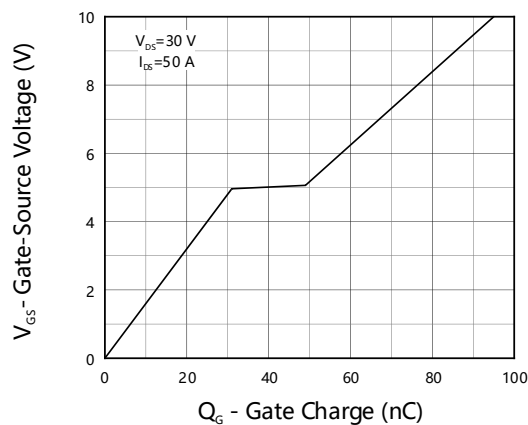
**Fig 9. Normalized On Resistance**



**Fig 10. Diode Forward Current**



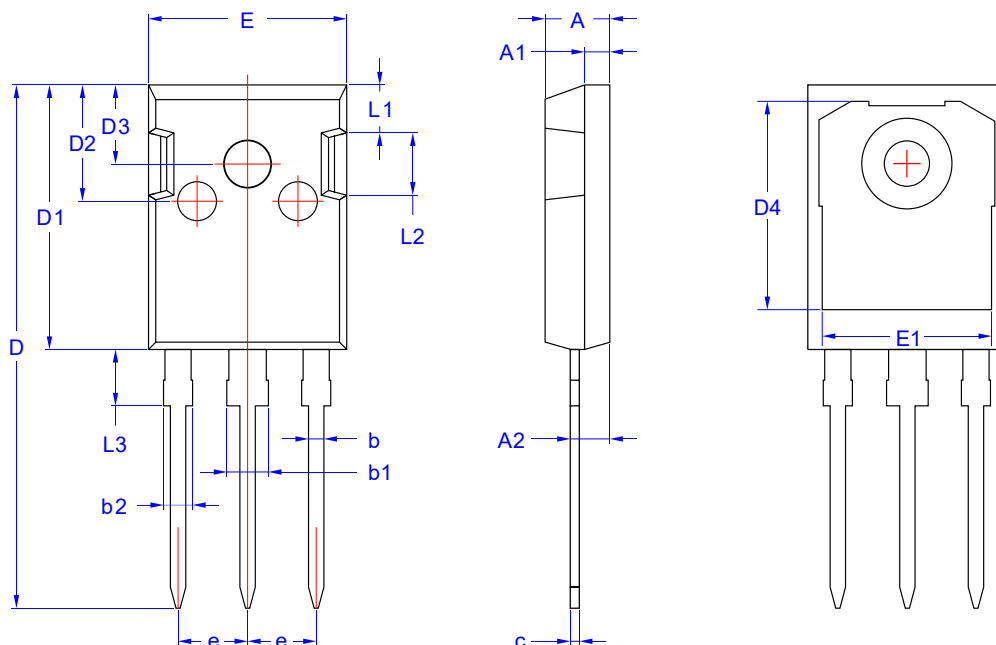
**Fig 11. Capacitance**



**Fig 12. Gate Charge**

## 8. Package Dimensions

### TO-247 Package



| Symbol | Dimensions in Millimeters |       |
|--------|---------------------------|-------|
|        | MIN                       | MAX   |
| A      | 4.90                      | 5.10  |
| A1     | 1.90                      | 2.10  |
| A2     | 2.00                      | 3.00  |
| b      | 1.16                      | 1.26  |
| b1     | 2.50                      | 3.50  |
| b2     | 1.75                      | 2.50  |
| c      | 0.55                      | 0.75  |
| D      | 40.0                      | 42.0  |
| D1     | 20.00                     | 21.00 |
| D2     | 8.00                      | 10.00 |
| D3     | 6.00                      | 6.30  |
| D4     | 16.10                     | 17.00 |
| E      | 15.00                     | 16.00 |
| E1     | 13.00                     | 13.50 |
| e      | TYP 5.44                  |       |
| L1     | 3.50                      | 4.00  |
| L2     | 4.75                      | 5.25  |
| L3     | 4.00                      | 5.00  |