

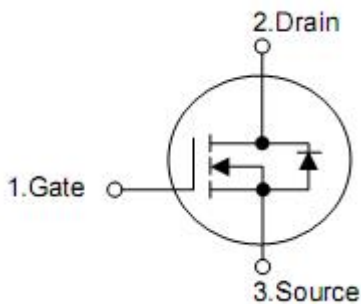
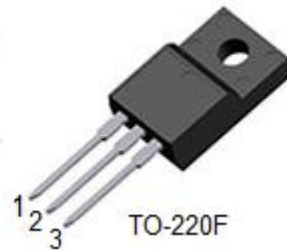
## 1. Features

- n RoHS Compliant
- n  $R_{DS(ON),typ.}=9.6\Omega@V_{GS}=10V$
- n Low Gate Charge Minimize Switching Loss
- n Fast Recovery Body Diode

## 2. Applications

- n Adaptor
- n Charger
- n SMPS Standby Power

## 3. Pin configuration



| Pin | Function |
|-----|----------|
| 1   | Gate     |
| 2   | Drain    |
| 3   | Source   |

## 4. Ordering Information

| Part Number | Package | Brand |
|-------------|---------|-------|
| KND41100A   | TO-252  | KIA   |
| KNP41100A   | TO-220  | KIA   |
| KNF41100A   | TO-220F | KIA   |

## 5. Absolute maximum ratings

(T<sub>c</sub>= 25 °C , unless otherwise specified)

| Parameter   | Symbol            | Ratings    | Unit |
|---|-------------------|------------|------|
| Drain-to-Source Voltage T <sub>J</sub> =25 °C                             | V <sub>DSS</sub>  | 1000       | V    |
| Gate-to-Source Voltage  | V <sub>GSS</sub>  | ±30        |      |
| Continuous Drain Current @ T <sub>c</sub> =25 °C                          | I <sub>D</sub>    | 2.0        | A    |
| Pulsed Drain Current at V <sub>GS</sub> =10V Limited by T <sub>Jmax</sub> | I <sub>DM</sub>   | 8.0        |      |
| Single Pulse Avalanche Energy(V <sub>DD</sub> =50V)                       | EAS               | 80         | mJ   |
| Maximum Power Dissipation   | P <sub>D</sub>    | 60         | W    |
| Max. Junction Temperature   | T <sub>Jmax</sub> | 150        | °C   |
| Storage Temperature Range   | T <sub>STG</sub>  | -55 to 150 |      |

## 6. Thermal characteristics

| Parameter                               | Symbol           | Ratings | Unit  |
|---|------------------|---------|-------|
| Thermal Resistance, Junction-to-Case    | R <sub>θJC</sub> | 2.08    | °C /W |
| Thermal Resistance, Junction-to-Ambient | R <sub>θJA</sub> | 75      | °C /W |

## 7. Electrical characteristics

(T<sub>J</sub>=25°C, unless otherwise specified)

| Parameter                         | Symbol              | Test Conditions  | Min. | Typ. | Max. | Unit |
|-----------------------------------|---------------------|--|------|------|------|------|
| Drain-to-Source Breakdown Voltage | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA   | 1000 | --   | --   | V    |
| Drain-to-Source Leakage Current   | I <sub>DSS</sub>    | V <sub>DS</sub> =1000V, V <sub>GS</sub> =0V  | --   | --   | 1    | uA   |
| Gate-to-Source Leakage Current    | I <sub>GSS</sub>    | V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V   | -100 | --   | 100  | nA   |
| Drain-to-Source ON Resistance     | R <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =1.0A   |      | 9.6  | 12   | Ω    |
| Gate Threshold Voltage            | V <sub>GS(TH)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA   | 2.0  | --   | 4.0  | V    |
| Input Capacitance                 | C <sub>iss</sub>    | V <sub>GS</sub> =0V,<br>V <sub>DS</sub> =25V,<br>f=1.0MHZ  | --   | 370  | --   | pF   |
| Reverse Transfer Capacitance      | C <sub>rss</sub>    |  | --   | 4.0  | --   |      |
| Output Capacitance                | C <sub>oss</sub>    |  | --   | 40   | --   |      |
| Total Gate Charge                 | Q <sub>g</sub>      | V <sub>DD</sub> =500V,<br>I <sub>D</sub> =2.0A,<br>V <sub>GS</sub> =10V  | --   | 15   | --   | nC   |
| Gate-to-Source Charge             | Q <sub>gs</sub>     |  | --   | 2.1  | --   |      |
| Gate-to-Drain (Miller) Charge     | Q <sub>gd</sub>     |  | --   | 6.0  | --   |      |
| Turn-on Delay Time                | t <sub>d(ON)</sub>  | V <sub>DD</sub> =500V, I <sub>D</sub> =2.0A,<br>R <sub>G</sub> =12Ω<br>V <sub>GS</sub> = 10V<br>(Resistive Load) | --   | 8.0  | --   | nS   |
| Rise Time                         | t <sub>rise</sub>   |  | --   | 6.0  | --   |      |
| Turn-Off Delay Time               | t <sub>d(OFF)</sub> |  | --   | 36   | --   |      |
| Fall Time                         | t <sub>fall</sub>   |  | --   | 15   | --   |      |
| Continuous Source Current         | I <sub>SD</sub>     |  | --   | --   | 2    | A    |
| Forward Voltage                   | V <sub>SD</sub>     | I <sub>S</sub> =2.0A, V <sub>GS</sub> =0V  | --   | -    | 1.5  | V    |
| Reverse recovery time             | t <sub>rr</sub>     | V <sub>GS</sub> =0V, I <sub>F</sub> =2.0A,<br>diF/dt=-100A/μs  | --   | 320  | --   | ns   |
| Reverse recovery charge           | Q <sub>rr</sub>     |  | --   | 1.0  | --   | uC   |

8. Test circuits and waveforms

Fig. 1. Output Characteristics  
@ 25°C

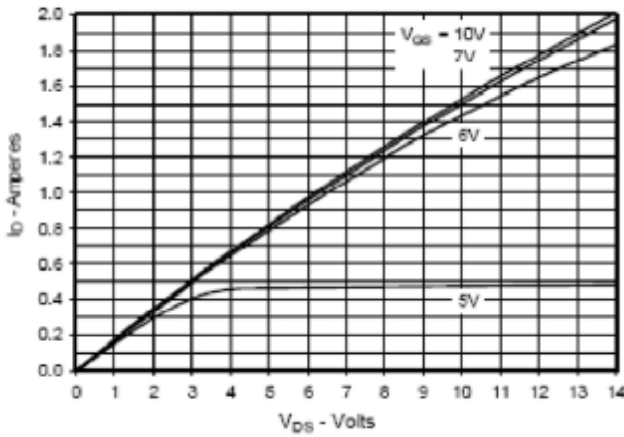


Fig. 2. Extended Output Characteristics  
@ 25°C

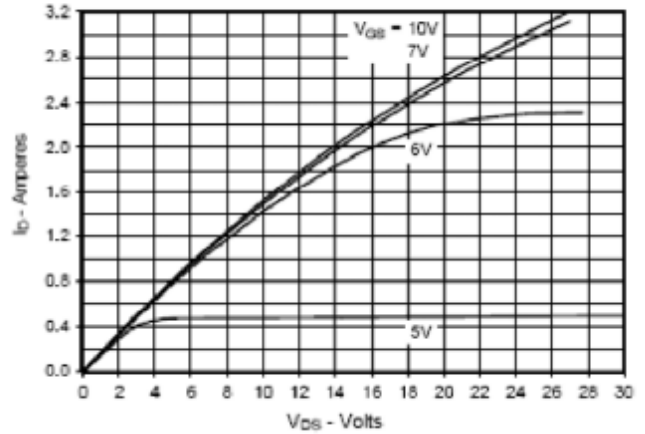


Fig. 3. Output Characteristics  
@ 125°C

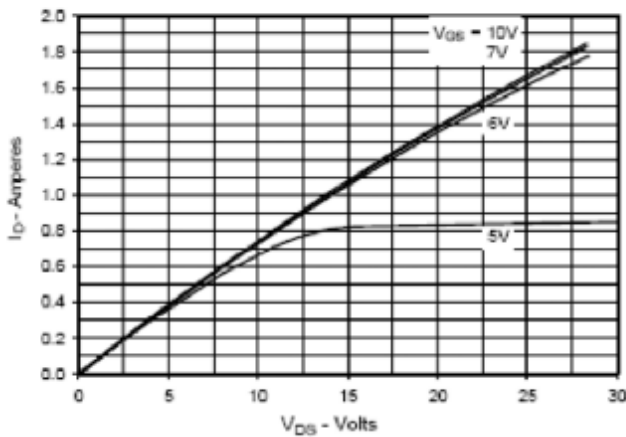


Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 1A$  Value  
vs. Junction Temperature

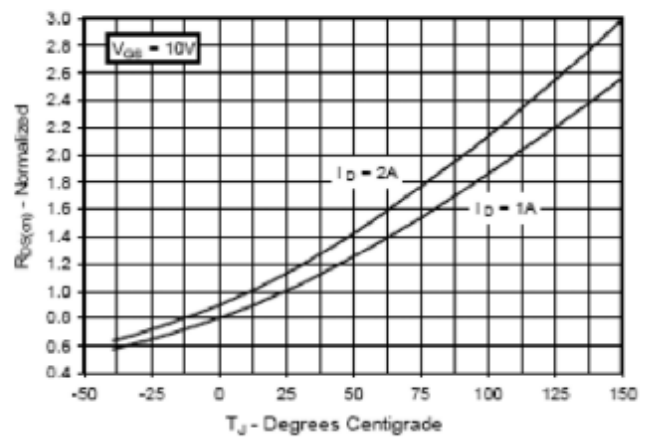


Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 1A$  Value  
vs. Drain Current

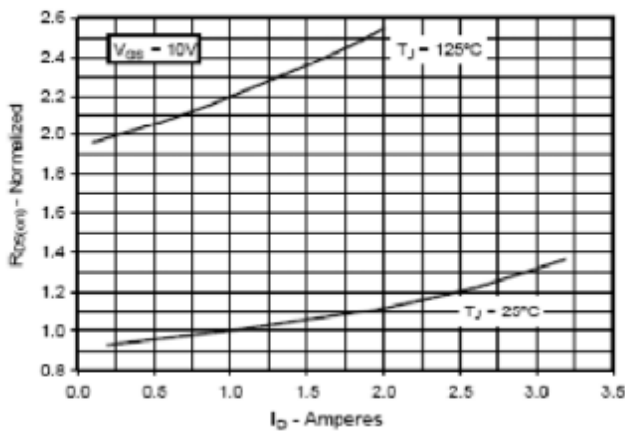


Fig. 6. Maximum Drain Current vs.  
Case Temperature

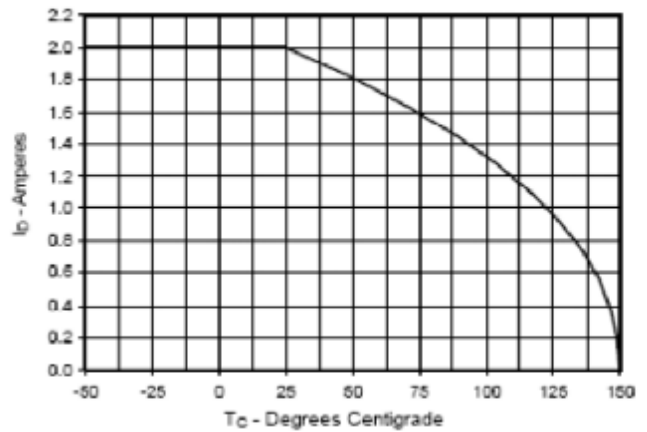


Fig. 7. Input Admittance

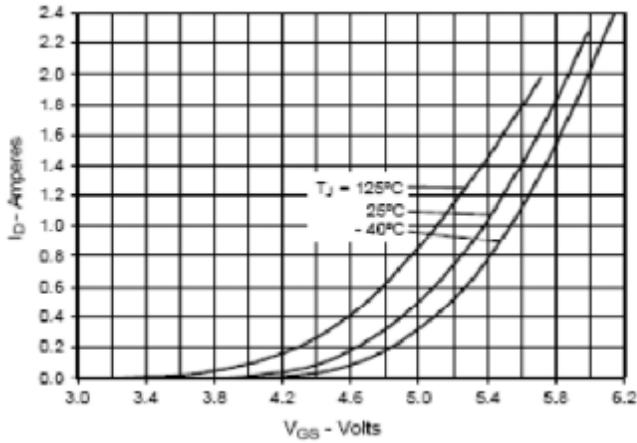


Fig. 8. Transconductance

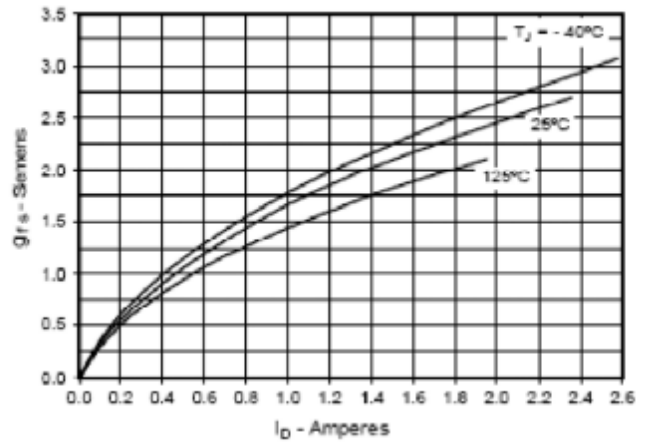


Fig. 9. Forward Voltage Drop of Intrinsic Diode

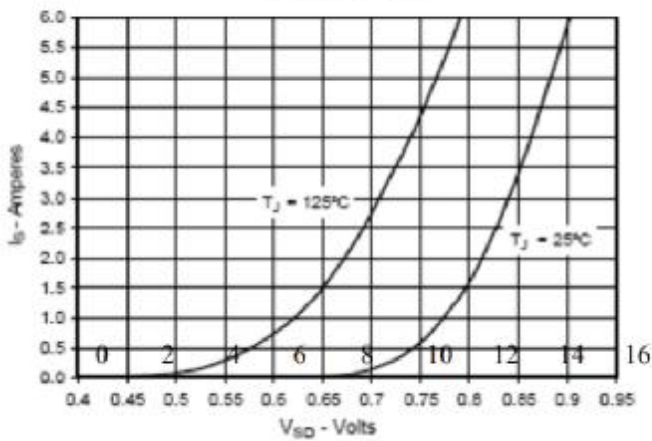


Fig. 10. Gate Charge

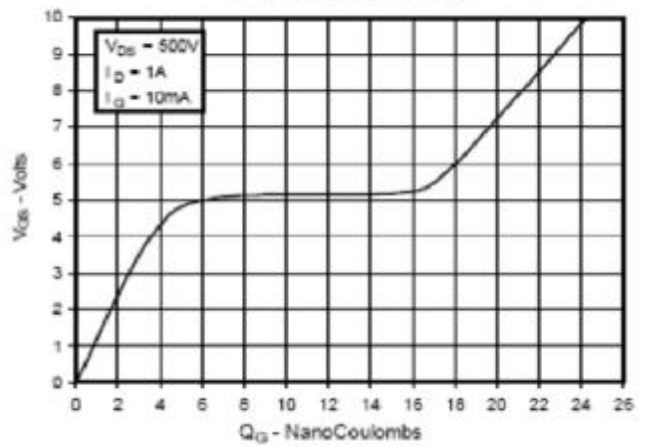


Fig. 11. Capacitance

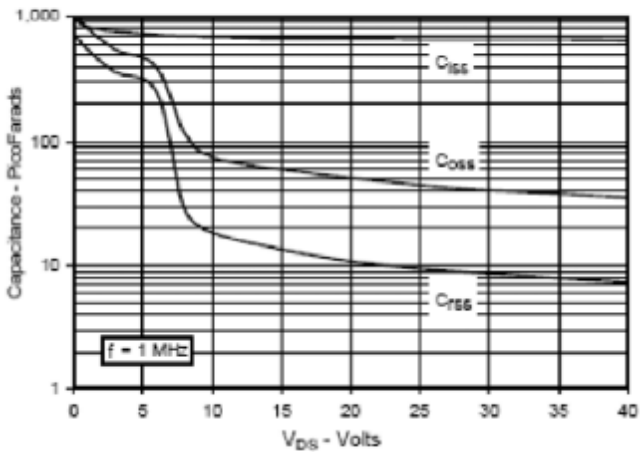


Fig. 12. Maximum Transient Thermal Impedance

