

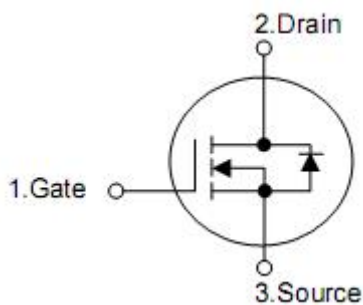
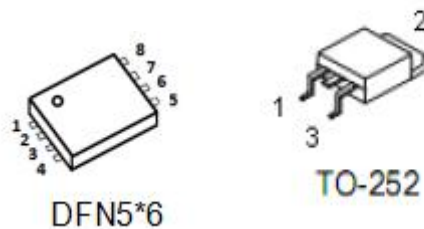
## 1. Features

KNX3403B is an N-channel enhancement mode power Mosfet field effect transistor which is produced using KIA's LVMosfet technology.the improved process and cell structure have been especially tailored to minimize on-state resistance,provide superior switching performance. This device is widely used in UPS,Power Management for Inverter Systems.

## 2. Features

- 85A, 30V,  $R_{DS(on)}$  typ. =  $4.5m\Omega$ (typ.)@ $V_{GS} = 10 V$
- Low gate charge
- Low Crss
- Fast switching
- Improved dv/dt capability

## 3. Pin configuration



| Pin DFN5*6 | Pin TO-252 | Function |
|------------|------------|----------|
| 4          | 1          | Gate     |
| 5,6,7,8    | 2          | Drain    |
| 1,2,3      | 3          | Source   |

## 4. Ordering Information

| Part Number | Package | Brand |
|-------------|---------|-------|
| KND3403B    | TO-252  | KIA   |
| KNY3403B    | DFN5*6  | KIA   |

## 5. Absolute maximum ratings

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

| Symbol                            | Parameter  | Value       | Units |
|-----------------------------------|--|-------------|-------|
| V <sub>DSS</sub>                  | Drain-Source Voltage                               | 30          | V     |
| I <sub>D</sub>                    | Drain Current -Continuous (T <sub>C</sub> = 25 °C) | 85          | A     |
|                                   | -Continuous (T <sub>C</sub> = 100 °C)              | 61          | A     |
| I <sub>DM</sub>                   | Drain Current -Pulsed                              | 340         | A     |
| V <sub>GSS</sub>                  | Gate-Source Voltage                                | ±20         | V     |
| E <sub>AS</sub>                   | Single Pulsed Avalanche Energy (Note 1)            | 156         | mJ    |
| P <sub>D</sub>                    | Power Dissipation (T <sub>C</sub> = 25 °C)         | 71          | W     |
|                                   | -Derate above 25 °C                                | 0.47        | W/°C  |
| T <sub>J</sub> , T <sub>STG</sub> | Operating and Storage Temperature Range            | -55 to +150 | °C    |

## 6. Thermal Characteristics

| Symbol           | Parameter                               | Value | Units |
|------------------|---|-------|-------|
| R <sub>θJC</sub> | Thermal Resistance, Junction-to-Case    | 2.1   | °C /W |
| R <sub>θJA</sub> | Thermal Resistance, Junction-to-Ambient | 62    | °C /W |

## 7. Electrical characteristics

( $T_C = 25^\circ\text{C}$ , unless otherwise noted)

| Symbol  | Parameter                          | Test Conditions  | Min | Typ  | Max       | Units         |
|---|------------------------------------|--|-----|------|-----------|---------------|
| <b>Off Characteristics</b>                                    |                                    |  |     |      |           |               |
| $B_{V_{DS}}$  | Drain-Source Breakdown Voltage     | $V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$  | 30  | --   | --        | V             |
| $I_{DSS}$   | Drain-Source Leakage Current       | $V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$  | --  | --   | 1         | $\mu\text{A}$ |
| $I_{GSS}$   | Gate- Source Leakage Current       | $V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$  | --  | --   | $\pm 100$ | nA            |
| <b>On Characteristics</b>                                     |                                    |  |     |      |           |               |
| $V_{GS(th)}$  | Gate Threshold Voltage             | $V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$  | 0.8 | 1.3  | 2.5       | V             |
| $R_{DS(on)}$  | Static Drain-Source On-Resistance  | $V_{GS} = 10\text{ V}, I_D = 20\text{ A}$  | --  | 4.5  | 5.5       | m $\Omega$    |
|   |                                    | $V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$   | --  | 5.5  | 7.2       | m $\Omega$    |
| $R_G$   | Gate Resistance                    | $f = 1.0\text{ MHz}$   | --  | 5.0  | --        | $\Omega$      |
| <b>Dynamic Characteristics</b>                                |                                    |  |     |      |           |               |
| $C_{iss}$   | Input Capacitance                  | $V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$<br>$f = 1.0\text{ MHz}$   | --  | 2200 | --        | pF            |
| $C_{oss}$   | Output Capacitance                 |  | --  | 270  | --        | pF            |
| $C_{rss}$   | Reverse Transfer Capacitance       |  | --  | 205  | --        | pF            |
| <b>Switching Characteristics</b>                              |                                    |  |     |      |           |               |
| $t_{d(on)}$   | Turn-On Delay Time                 | $V_{DD} = 20\text{ V}, V_{GS} = 4.5\text{ V},$<br>$I_D = 60\text{ A}, R_G = 1.8\text{ }\Omega$<br>(Note 2,3) | --  | 11   | --        | ns            |
| $t_r$   | Turn-On Rise Time                  |  | --  | 87   | --        | ns            |
| $t_{d(off)}$  | Turn-Off Delay Time                |  | --  | 140  | --        | ns            |
| $t_f$   | Turn-Off Fall Time                 |  | --  | 82   | --        | ns            |
| $Q_g$   | Total Gate Charge                  | $V_{DD} = 24\text{ V}, I_D = 30\text{ A},$<br>$V_{GS} = 10\text{ V}$ (Note 2,3)                              | --  | 47   | --        | nC            |
| $Q_{gs}$  | Gate-Source Charge                 |  | --  | 8.5  | --        | nC            |
| $Q_{gd}$  | Gate-Drain Charge                  |  | --  | 9.9  | --        | nC            |
| <b>Drain-Source Diode Characteristics and Maximum Ratings</b> |                                    |  |     |      |           |               |
| $I_S$   | Continuous Source Current          | Integral Reverse P-N<br>Junction Diode in the<br>MOSFET  | --  | --   | 85        | A             |
| $I_{SM}$  | Pulsed Source Current              |  | --  | --   | 340       | A             |
| $V_{SD}$  | Drain-Source Diode Forward Voltage | $V_{GS} = 0\text{ V}, I_S = 20\text{ A}$   | --  | --   | 1.4       | V             |
| $t_{rr}$  | Reverse Recovery Time              | $V_{GS} = 0\text{ V}, I_S = 30\text{ A},$<br>$dI_F / dt = 100\text{ A}/\mu\text{s}$ (Note 2)                 | --  | 15   | --        | ns            |
| $Q_{rr}$  | Reverse Recovery Charge            |  | --  | 7.0  | --        | $\mu\text{C}$ |

**Notes:**

1.  $L = 0.5\text{ mH}, V_{DD} = 15\text{ V}, V_{GS} = 10\text{ V}, R_G = 25\text{ }\Omega$ , Starting  $T_J = 25^\circ\text{C}$
2. Pulse Test : Pulse width  $\leq 300\text{ }\mu\text{s}$ , Duty cycle  $\leq 2\%$
3. Essentially independent of operating temperature

8. Typical Characteristics

Figure 1. Output Characteristics

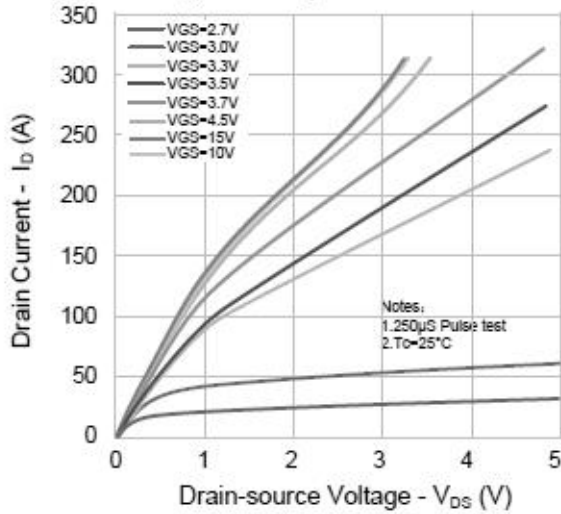


Figure 2. Transfer Characteristics

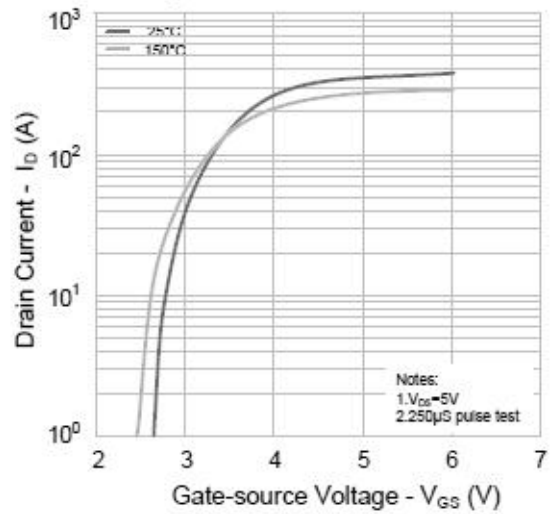


Figure 3. On-Resistance vs. Drain Current

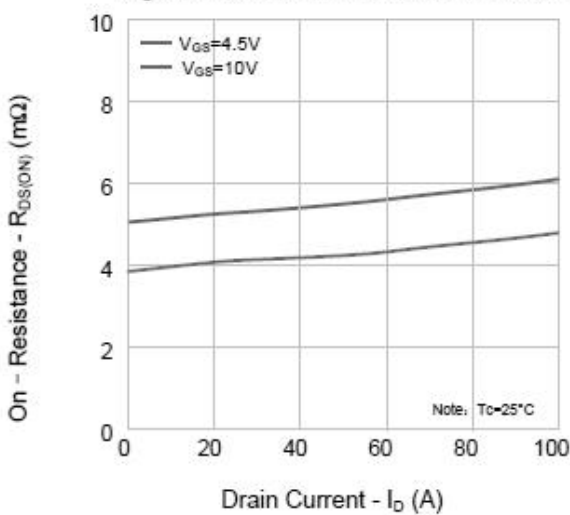


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

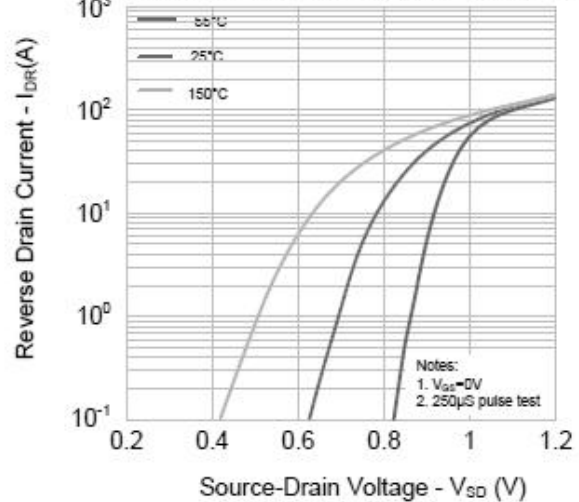


Figure 5. Capacitance Characteristics

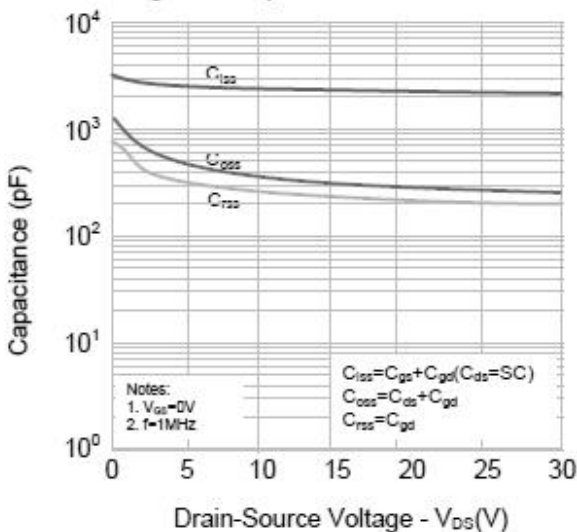


Figure 6. Gate Charge

