## 1. Features

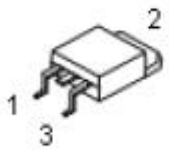
KNX3403B is an N-channel enhancement mode power Mosfet field effect transistor which is produced using KIA's LVMosfet technology.the improved process and cell structure have been especially tailored to minimize on-state resistance,provide superior switching performance. This device is widely used in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

## 2. Features

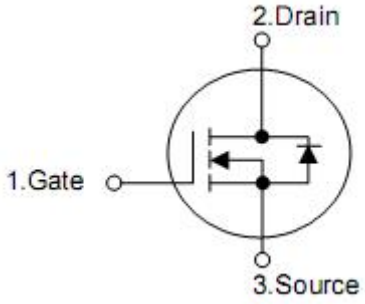
- 85A, 30V, $R_{DS}$(on) typ. = 4.5mΩ(typ.)@$V_{GS}$ = 10 V
- Low gate charge
- Low Crss
- Fast switching
- Improved dv/dt capability

## 3. Pin configuration


DFN5*6




TO-252




| 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

($T_C$= 25ºC , unless otherwise noted)

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | 30 | V |
| $I_D$ | Drain Current -Continuous ($T_C$ = 25 ºC) | 85 | A |
| | -Continuous ($T_C$ = 100 ºC) | 61 | A |
| $I_{DM}$ | Drain Current -Pulsed | 340 | A |
| $V_{GSS}$ | Gate-Source Voltage | ±20 | V |
| $E_{AS}$ | Single Pulsed Avalanche Energy (Note 1) | 156 | mJ |
| $P_D$ | Power Dissipation ($T_C$ = 25 ºC) | 71 | W |
| | -Derate above 25 ºC | 0.47 | W/ºC |
| $T_J$,$T_{STG}$ | Operating and Storage Temperature Range | -55 to +150 | ºC |

## 6. Thermal Characteristics

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance, Junction-to-Case | 2.1 | ºC /W |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 62 | ºC /W |

## 7. Electrical characteristics

($T_C$= 25ºC , unless otherwise noted)

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Off Characteristics | | | | | | |
| $B_{VDSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$ = 0 V, $I_D$ = 250 uA | 30 | -- | -- | V |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$ = 30 V, $V_{GS}$ = 0 V | -- | -- | 1 | uA |
| $I_{GSS}$ | Gate- Source Leakage Current | $V_{GS}$ = ±20 V, $V_{DS}$ = 0 V | -- | -- | ±100 | nA |
| On Characteristics | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_D$ = 250 uA | 0.8 | 1.3 | 2.5 | V |
| $R_{DS(on)}$ | Static Drain-Source On-Resistance | $V_{GS}$ = 10 V, $I_D$ = 20 A | -- | 4.5 | 5.5 | mΩ |
| | | $V_{GS}$ = 4.5V, $I_D$ = 15 A | -- | 5.5 | 7.2 | mΩ |
| $R_G$ | Gate Resistance | f = 1.0 MHz | -- | 5.0 | -- | Ω |
| Dynamic Characteristics | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$ = 25 V, $V_{GS}$ = 0 V, f = 1.0 MHz | -- | 2200 | -- | pF |
| $C_{oss}$ | Output Capacitance | | -- | 270 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 205 | -- | pF |
| Switching Characteristics | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD}$ = 20 V,$V_{GS}$=4.5V, $I_D$ = 60 A, $R_G$ =1.8 Ω (Note2.3) | -- | 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 V, $I_D$ = 30A, $V_{GS}$ = 10 V (Note 2,3) | -- | 47 | -- | nC |
| $Q_{gs}$ | Gate-Source Charge | | -- | 8.5 | -- | nC |
| $Q_{gd}$ | Gate-Drain Charge | | -- | 9.9 | -- | nC |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| $I_S$ | Continuous Source Current | Integral Reverse P-N Junction Diode in the MOSFET | -- | -- | 85 | A |
| $I_{SM}$ | Pulsed Source Current | | -- | -- | 340 | A |
| $V_{SD}$ | Drain-Source Diode Forward Voltage | $V_{GS}$ = 0 V, $I_S$ =20 A | -- | -- | 1.4 | V |
| $t_{rr}$ | Reverse Recovery Time | $V_{GS}$ = 0 V, $I_S$ = 30 A, $dI_F$ / dt = 100 A/us (Note 2) | -- | 15 | -- | ns |
| Qrr | Reverse Recovery Charge | | -- | 7.0 | -- | uC |

Notes:
1. L = 0.5mH, $V_{DD}$ = 15V, $V_{GS}$ = 10V,$R_G$ = 25Ω, Starting $T_J$ = 25°C
2. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 2%
3. Essentially independent of operating temperature

## 8. Typical Characteristics

Figure 1. Output Characteristics

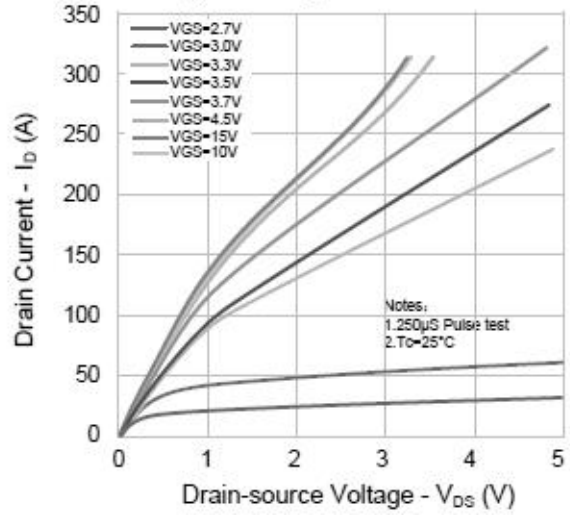



Figure 2. Transfer Characteristics

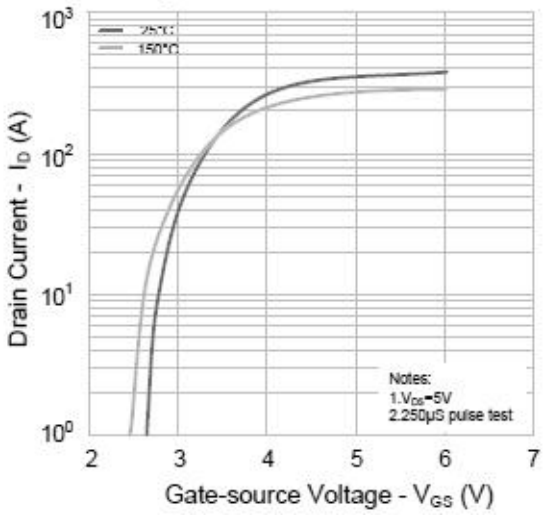



Figure 3. On-Resistance vs. Drain Current

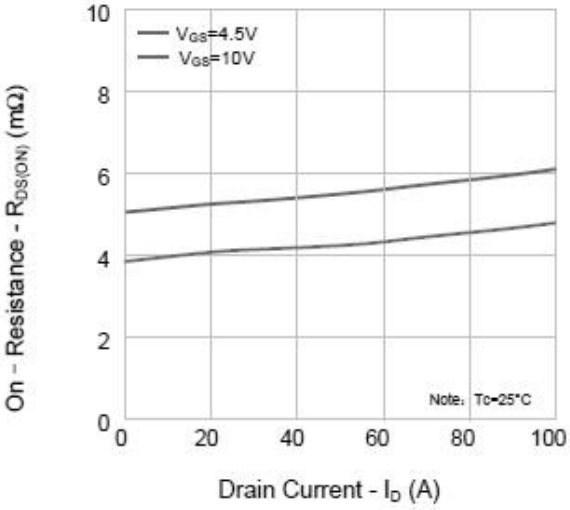



Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

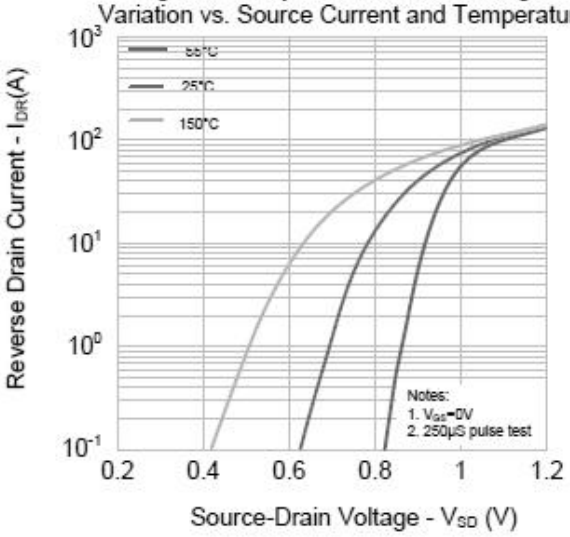



Figure 5. Capacitance Characteristics

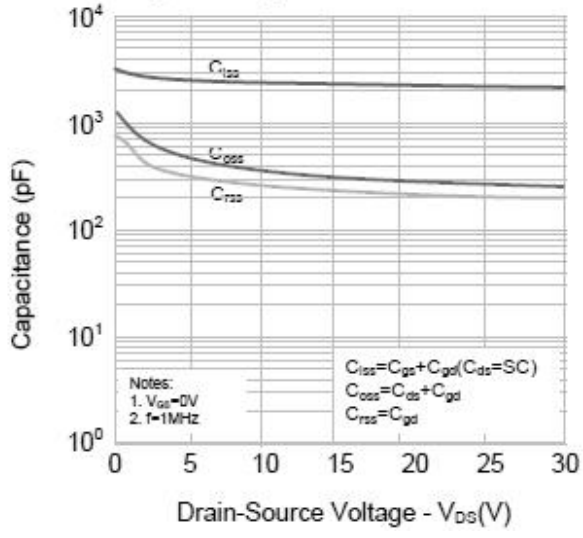



Figure 6. Gate Charge

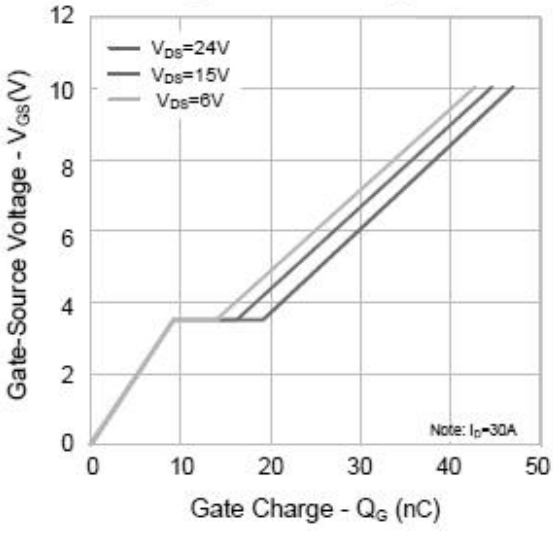


Figure 7. Breakdown Voltage vs. Temperature Characteristics

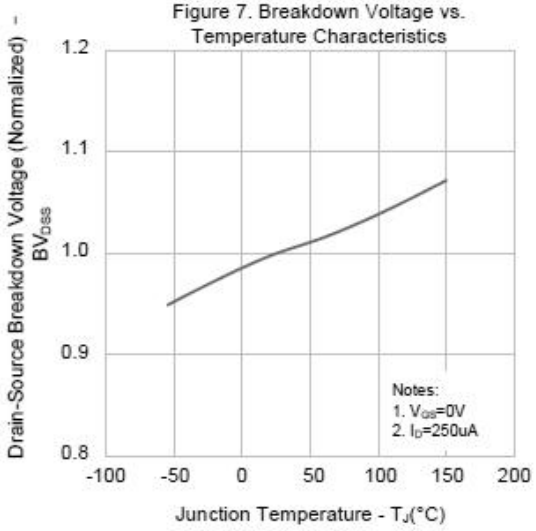



Figure 8. On-Resistance vs. Temperature Characteristics

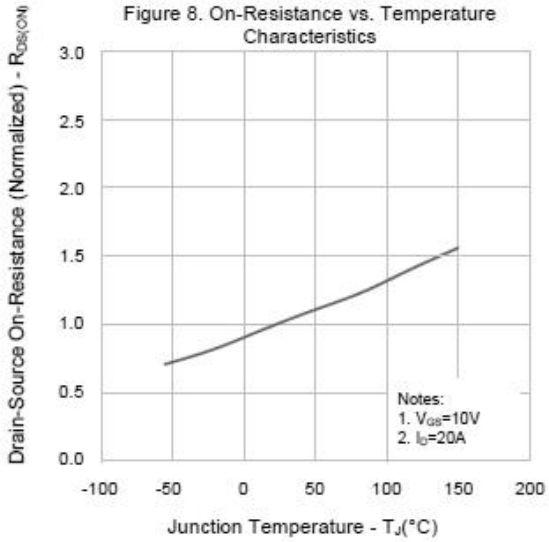
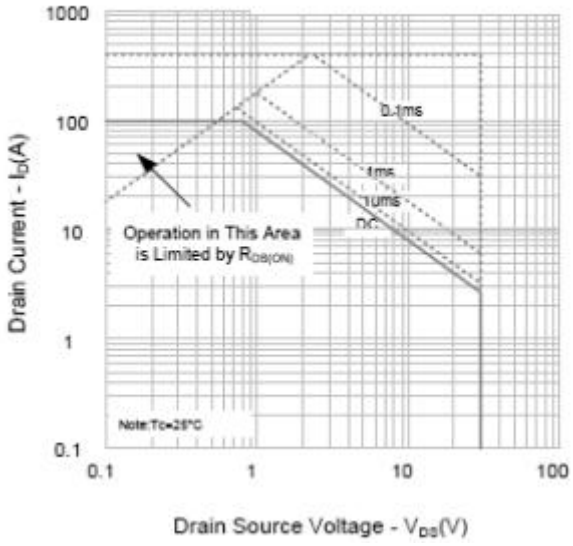



Figure 9 . Max. Safe Operating Area



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