## 1. Features

KNX3403C 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

- 80A, 30V, R_{DS}(on)(typ.)= 5.0mΩ@V_{GS} = 10 V
- Low gate charge
- Low Crss
- Fast switching
- Improved dv/dt capability

3. Pin configuration

TO-252
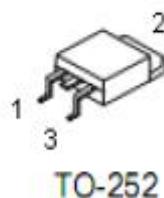
2.Drain
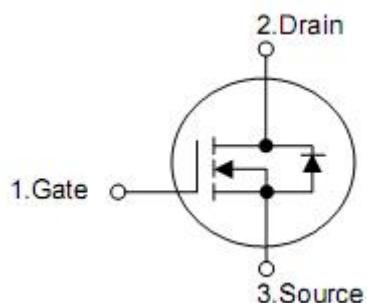
1.Gate

3.Source

Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KND3403C	TO-252	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)	80	A
	-Continuous (T$_C$ = 100 ºC)	57	A
I$_{DM}$	Drain Current -Pulsed	320	A
V$_{GSS}$	Gate-Source Voltage	±20	V
E$_{AS}$	Single Pulsed Avalanche Energy (Note 1)	110.25	mJ
P$_D$	Power Dissipation (T$_C$ = 25 ºC)	65	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	0.52	ºC /W
R$_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62	ºC /W

7. Electrical characteristics

$(T_C= 25^oC$, 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	$V_{GS} = \pm20$ 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	--	5.0	6.2	mΩ
		$V_{GS} = 4.5$V, $I_D = 10$ A	--	7.5	9.0	mΩ
R_G	Gate Resistance	f = 1.0 MHz, V_{DS} =0 V, $V_{GS} = 0$ V,	--	1.5	--	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 25$ V, $V_{GS} = 0$ V, f = 1.0 MHz	--	2500	--	pF
C_{oss}	Output Capacitance		--	1250	--	pF
C_{rss}	Reverse Transfer Capacitance		--	1100	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} =15 V, V_{GS}=4.5V, I_D =1 A, R_G =3Ω (Note2.3)	--	7	--	ns
t_r	Turn-On Rise Time		--	3.6	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	36.8	--	ns
t_f	Turn-Off Fall Time		--	22.5	--	ns
Q_g	Total Gate Charge	V_{DS}=25V,I_D=14A , V_{GS}=10V[Note 2,3]	--	38.9	--	nC
Q_{gs}	Gate-Source Charge		--	4.48	--	nC
Q_{gd}	Gate-Drain Charge		--	10.78	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Continuous Source Current	Integral Reverse P-N Junction Diode in the MOSFET	--	--	80	A
I_{SM}	Pulsed Source Current		--	--	320	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, $I_S = 20$ A, dI_F / dt = 100 A/us [Note 2]	--	12.8	--	ns
Q_{rr}	Reverse Recovery Charge		--	3.3	--	nC

Notes:

1. L = 0.5mH, V_{DD} = 25V, 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
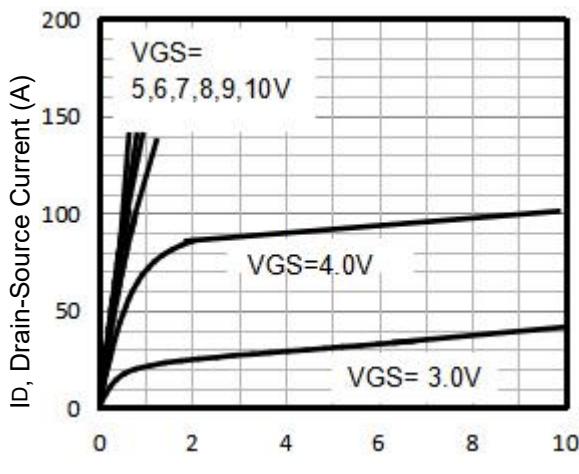
VDS, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics
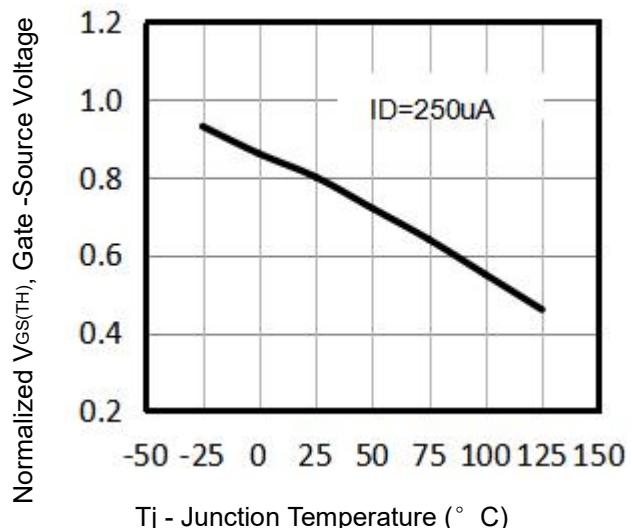
Tj - Junction Temperature (° C)
Fig2. Normalized Threshold Voltage Vs. Temperature
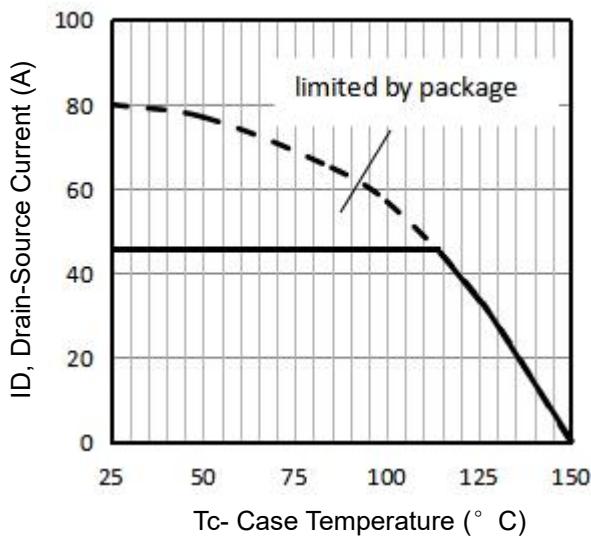
Tc- Case Temperature (° C)
Fig3. Typical Transfer Characteristics

Tj - Junction Temperature (° C)
Fig4. Normalized Threshold Voltage Vs. Temperature
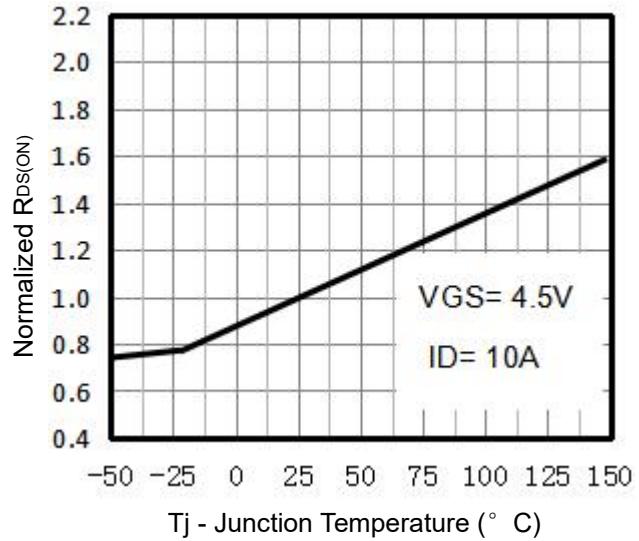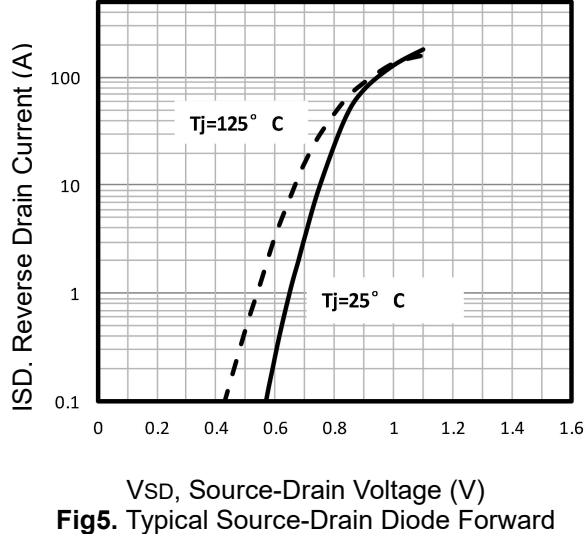
VSD, Source-Drain Voltage (V)
Fig5. Typical Source-Drain Diode Forward
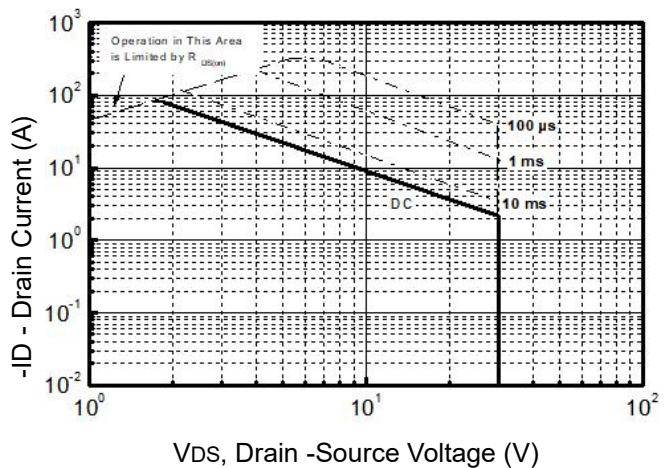
VDS, Drain -Source Voltage (V)
**Fig6.** Maximum Safe Operating Area
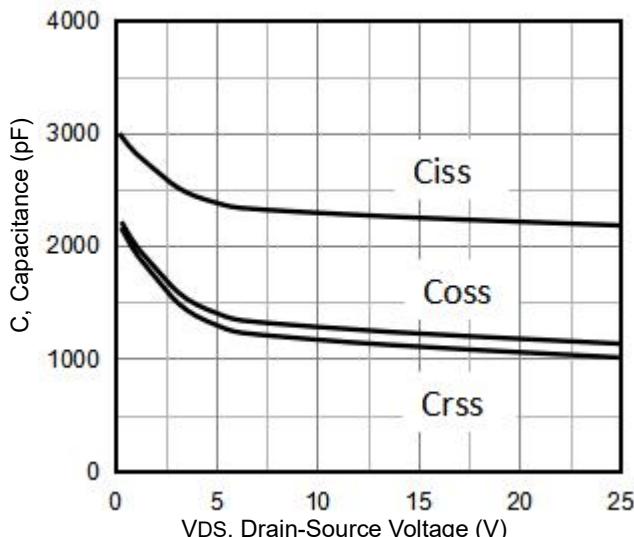
Fig7. Typical Capacitance Vs. Drain-Source Voltage
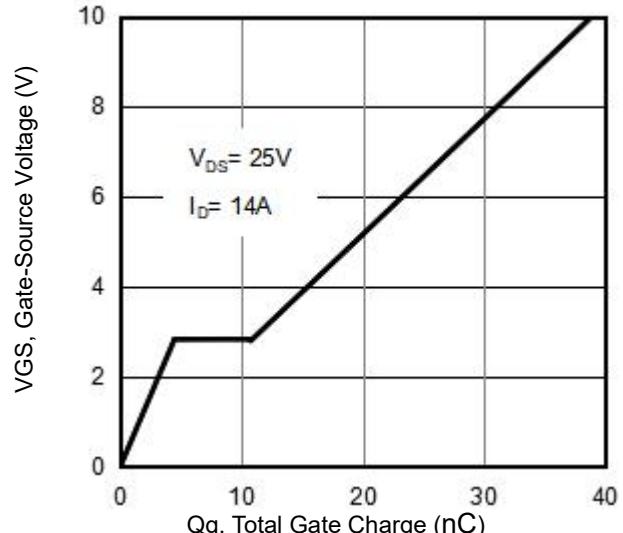
Fig8. Typical Gate Charge Vs. Gate-Source Voltage
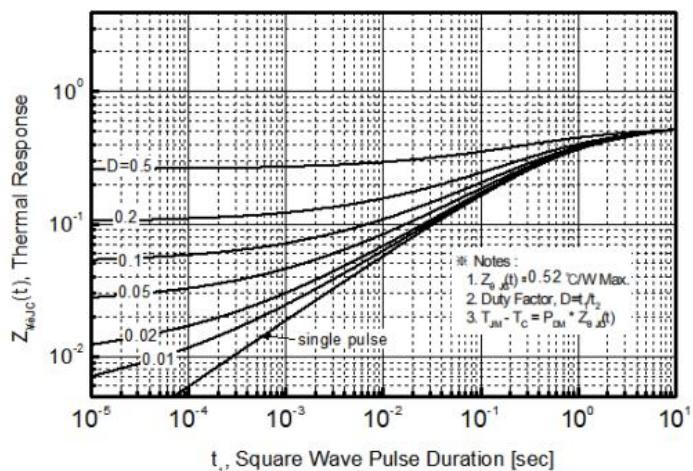
Fig9. Transient Thermal Response Curve
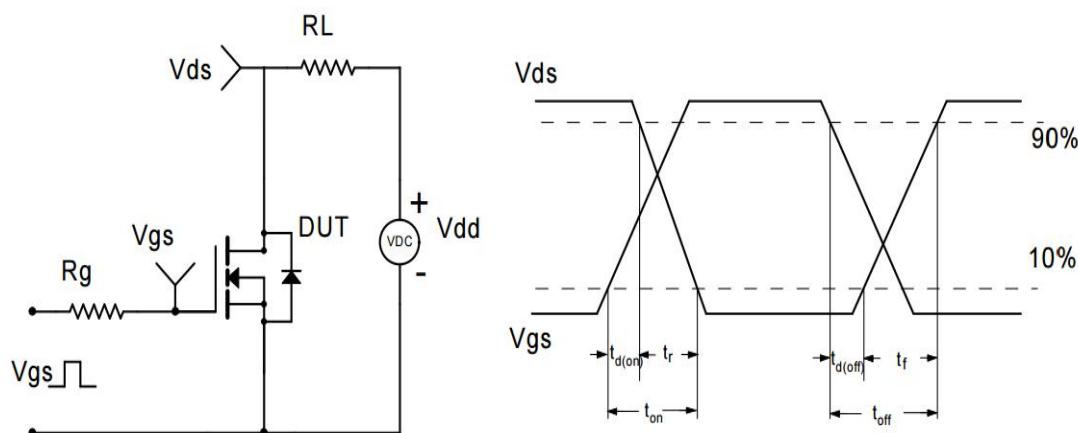
Fig10. Switching Time Test Circuit and waveforms