

1. Description

KNX3610A, uses advanced trench technology to provide excellent $R_{DS(ON)}$, Low gate charge, It can be used in a wide variety of applications.

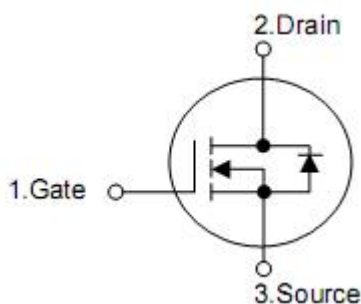
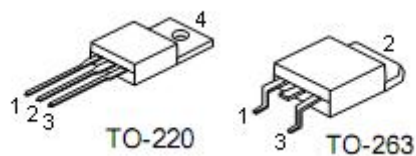
2. Features

- $V_{DS}=100V, I_D=60A$ $R_{DS(ON)}$ (typ.)= $17m\Omega$ @ $V_{GS}=10V$
- High density cell design for lower R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

3. Applications

- Power switching application
- Hard switched and High frequency circuits
- Uninterruptible power supply

4. Symbol



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

5. Ordering Information

Part Number	Package	Brand
KNB3610A	TO-263	KIA
KNP3610A	TO-220	KIA

6. Absolute maximum ratings

Parameter	Symbol	Rating	Units
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	I_D	60	A
Pulsed drain current (Note1)	I_{DM}	240	A
Single pulse avalanche energy (Note2)	E_{AS}	250	mJ
Derating Factor above 25°C	P_D	160	W/°C
Operation junction and temperature range	T_J, T_{STG}	-55 to 175	°C

7. Thermal characteristics

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.93	°C /W

8. Electrical characteristics

 (T_A=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	100	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V	-	-	1	μA
Gate-Source Forward Leakage	I _{GSS(F)}	V _{GS} =+20V	-	-	100	nA
Gate-Source Reverse Leakage	I _{GSS(R)}	V _{GS} =-20V	-	-	-100	nA
On Characteristics						
Drain-source on-Resistance ^(Note3)	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	17	20	mΩ
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =20A	-	20	-	S
Dynamic Characteristics						
Total gate charge	Q _g	V _{DD} =80V, V _{GS} =10V I _D =30A	-	82	-	nC
Gate-source charge	Q _{gs}		-	24	-	
Gate-drain charge	Q _{gd}		-	28	-	
Turn-on delay time	t _{d(on)}	V _{DD} =50V, I _D =30A, R _{GEN} =3Ω, V _{GS} =10V,	-	13	-	ns
Rise time	t _r		-	10	-	
Turn-off delay time	t _{d(off)}		-	21	-	
Fall time	t _f		-	18	-	
Switching Characteristics ^(Note 4)						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	3830	-	pF
Output capacitance	C _{oss}		-	235	-	
Reverse transfer capacitance	C _{rss}		-	208	-	
Drain-Source Diode Characteristics						
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A	-	-	1.2	V

Note

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition : T_j=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

9. Test circuits

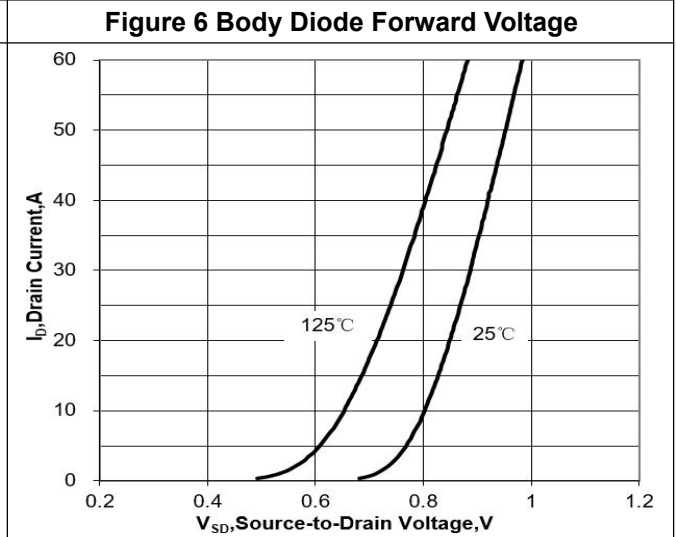
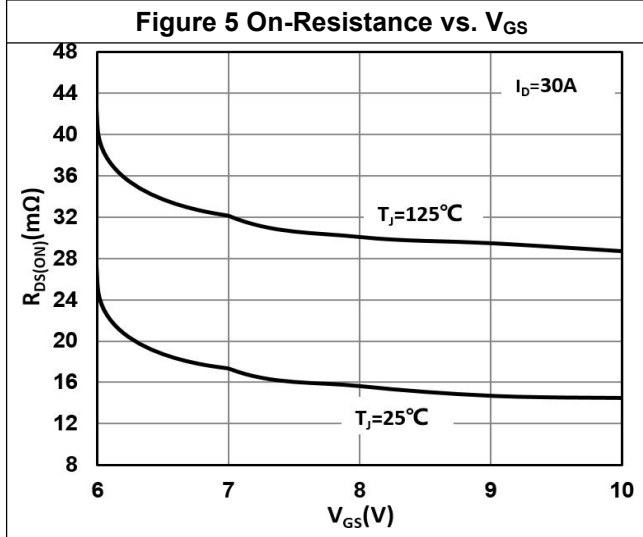
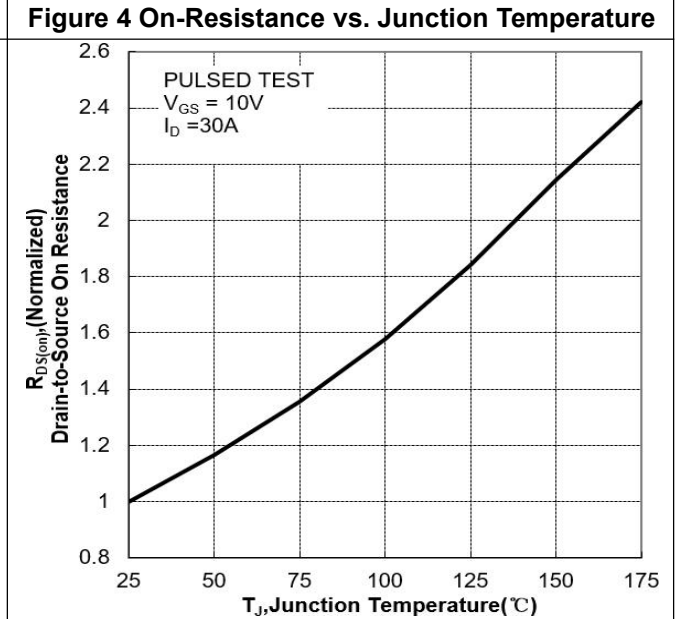
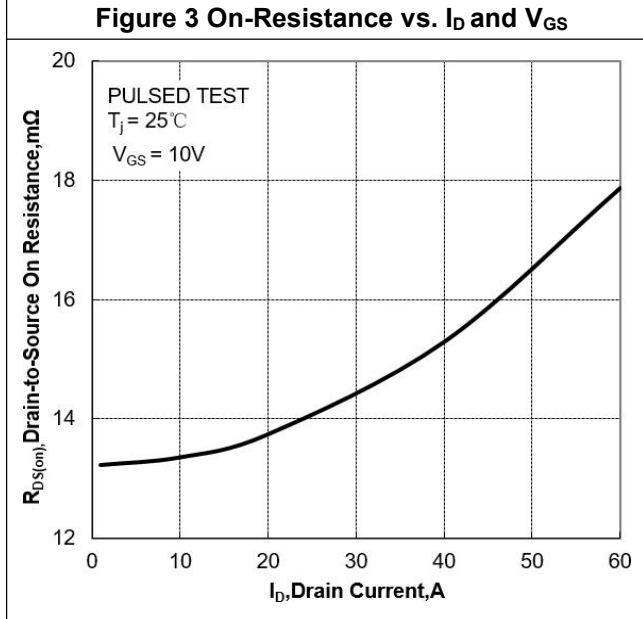
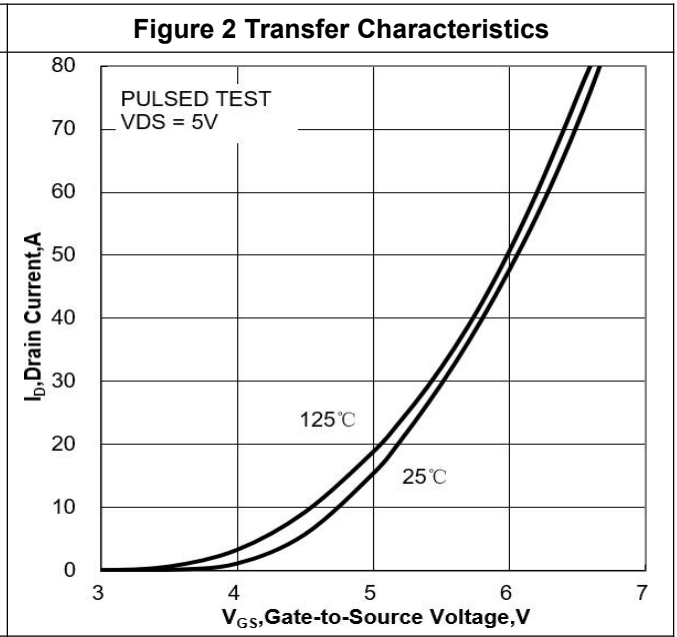
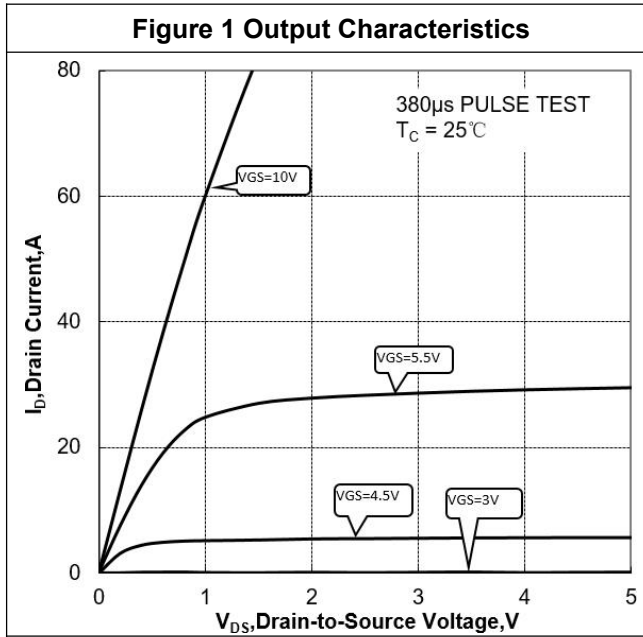


Figure 7 Gate-Charge Characteristics

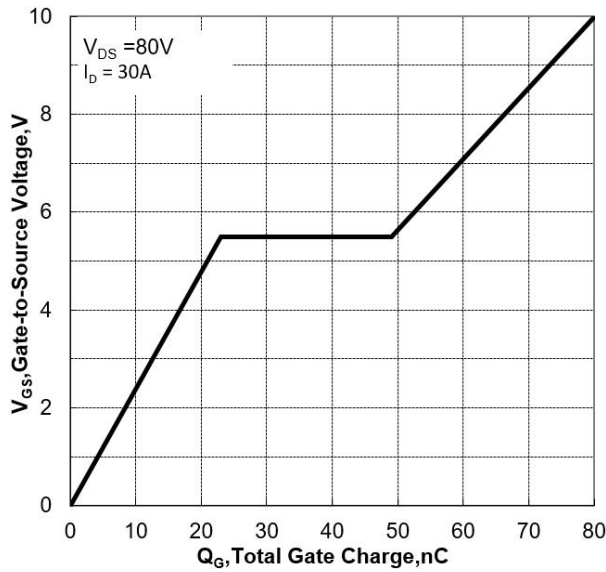


Figure 8 Capacitance Characteristics

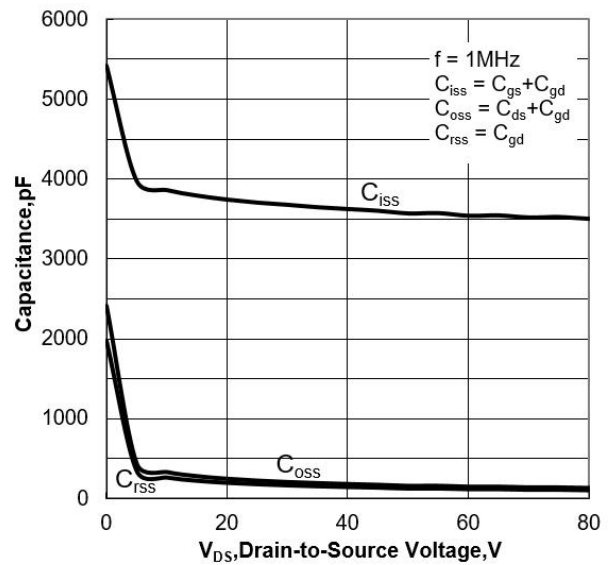


Figure 9 Maximum Forward Biased Safe Operation Area

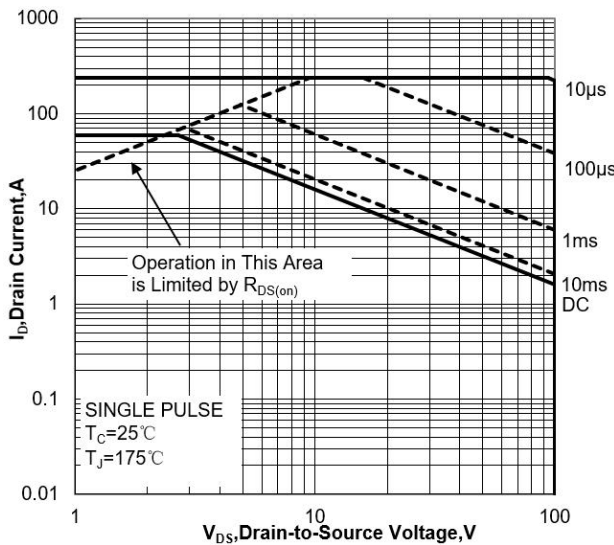


Figure 10 Single Pulse Power Rating Junction-to-Ambient

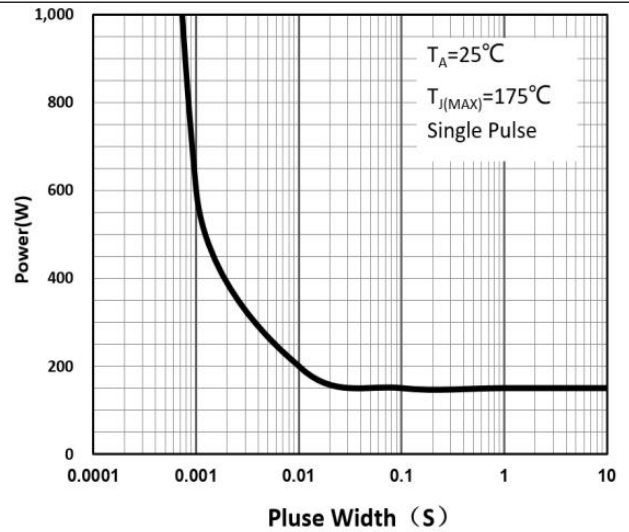
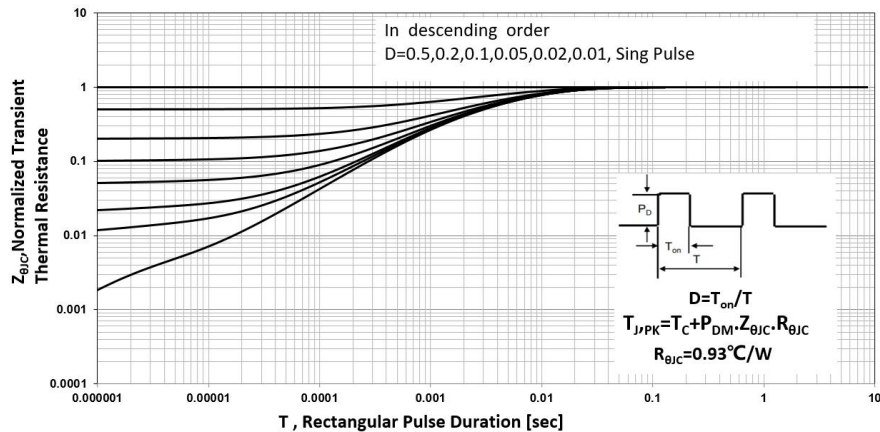


Figure 11 Normalized Maximum Transient Thermal Impedance



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