

## 1. Description

KNX2910B, uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , Low gate charge, It can be used in a wide variety of applications.

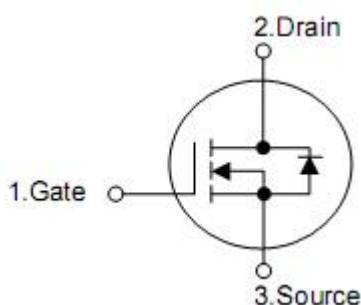
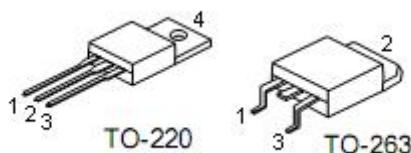
## 2. Features

- $V_{DS}=100V, I_D=130A R_{DS(ON) \text{ typ.}}=9.0m\Omega @ V_{GS}=10V$
- High density cell design for lower  $R_{DS(on)}$
- 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
KNB2910B	TO-263	KIA
KNP2910B	TO-220	KIA

## 6. Absolute maximum ratings

Parameter	Symbol	Rating	Units
Drain-source voltage	$V_{DS}$	100	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current	$I_D$	130	A
Pulsed drain current (Note1)	$I_{DM}$	520	A
Single pulse avalanche energy (Note2)	$E_{AS}$	650.25	mJ
Derating Factor above 25°C	$P_D$	211	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	0.71	°C /W

## 8. Electrical characteristics

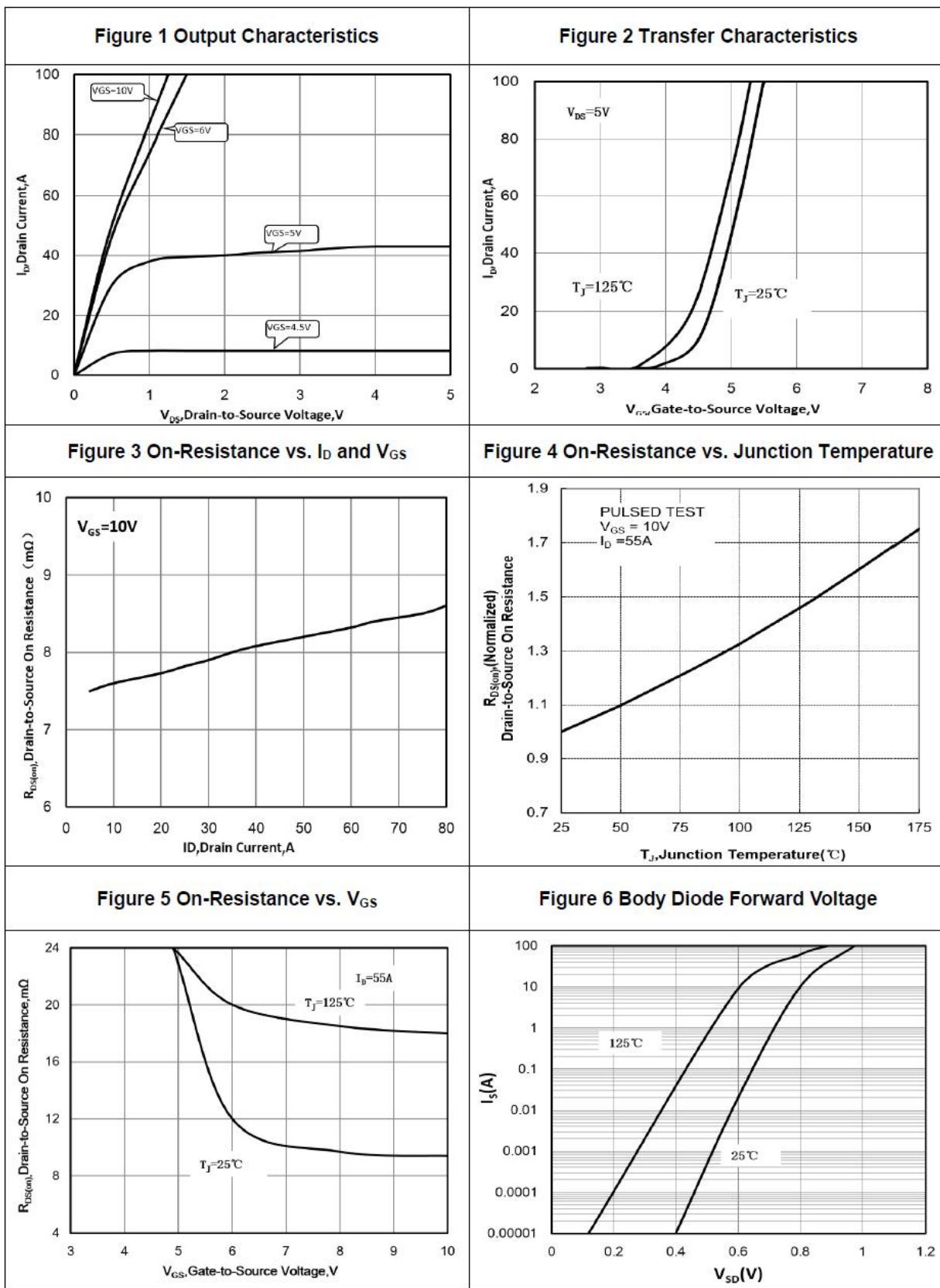
( $T_A=25^\circ\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-source breakdown voltage	$\text{BV}_{\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	100	-	-	V
Drain-Source Leakage Current	$I_{\text{DSS}}$	$V_{\text{DS}}=80\text{V}, V_{\text{GS}}=0\text{V}$	-	-	1	$\mu\text{A}$
Gate-Soure Forward Leakage	$I_{\text{GSS(F)}}$	$V_{\text{GS}}=+20\text{V}$	-	-	100	nA
Gate-Soure Reverse Leakage	$I_{\text{GSS(R)}}$	$V_{\text{GS}}=-20\text{V}$	-	-	-100	nA
<b>On Characteristics</b>						
Drain-source on-Resistance <sup>(Note 3)</sup>	$R_{\text{DS(on)}}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=35\text{A}$	-	9.0	11	$\text{m}\Omega$
Gate threshold voltage	$V_{\text{GS(th)}}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	2.0	2.8	4.0	V
Forward Transconductance	$g_{\text{fs}}$	$V_{\text{DS}}=5\text{V}, I_{\text{D}}=20\text{A}$	-	95	-	S
<b>Dynamic Characteristics</b>						
Total gate charge	$Q_g$	$V_{\text{DD}}=30\text{V}, V_{\text{GS}}=10\text{V}$ $I_{\text{D}}=30\text{A}$	-	160	-	nC
Gate-source charge	$Q_{\text{gs}}$		-	31	-	
Gate-drain charge	$Q_{\text{gd}}$		-	50	-	
Turn-on delay time	$t_{\text{d(on)}}$	$V_{\text{DD}}=30\text{V},$ $I_{\text{D}}=40\text{A},$ $R_{\text{GEN}}=3\Omega,$ $V_{\text{GS}}=10\text{V},$	-	24	-	ns
Rise time	$t_r$		-	22	-	
Turn-off delay time	$t_{\text{d(off)}}$		-	92	-	
Fall time	$t_f$		-	42	-	
<b>Switching Characteristics</b> <sup>(Note 4)</sup>						
Input capacitance	$C_{\text{iss}}$	$V_{\text{DS}}=25\text{V}, V_{\text{GS}}=0\text{V},$ $f=1\text{MHz}$	-	7950	-	pF
Output capacitance	$C_{\text{oss}}$		-	460	-	
Reverse transfer capacitance	$C_{\text{rss}}$		-	380	-	
<b>Drain-Source Diode Characteristics</b>						
Diode Forward voltage	$V_{\text{SD}}$	$V_{\text{GS}}=0\text{V}, I_{\text{s}}=20\text{A}$	-	-	1.3	V

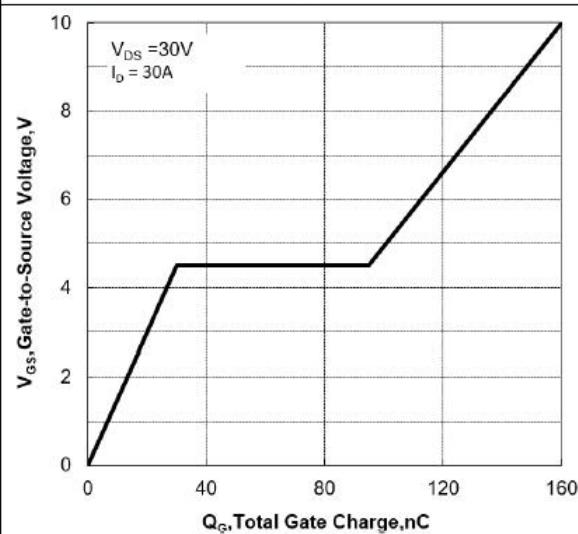
### Note

- Repetitive Rating: Pulse width limited by maximum junction temperature.
- EAS condition :  $T_j=25^\circ\text{C}, V_{\text{DD}}=50\text{V}, V_{\text{G}}=10\text{V}, L=0.5\text{mH}, R_g=1\Omega$
- Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production.

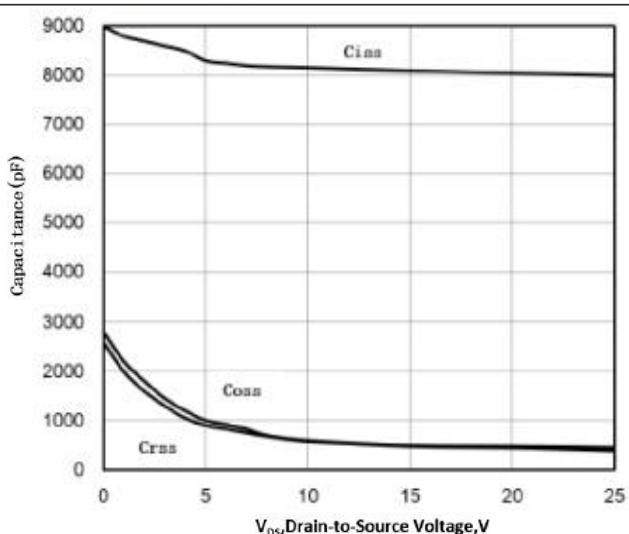
## 9. Test circuits



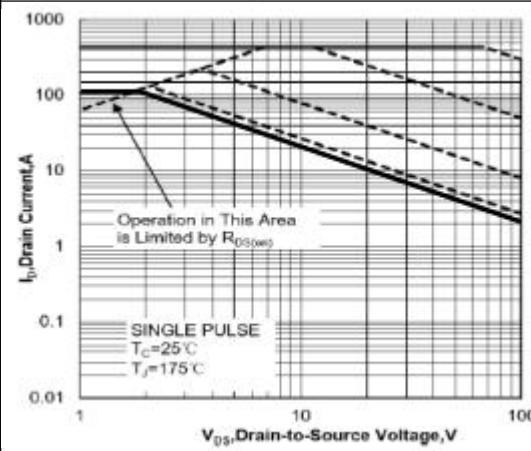
**Figure 7 Gate-Charge Characteristics**



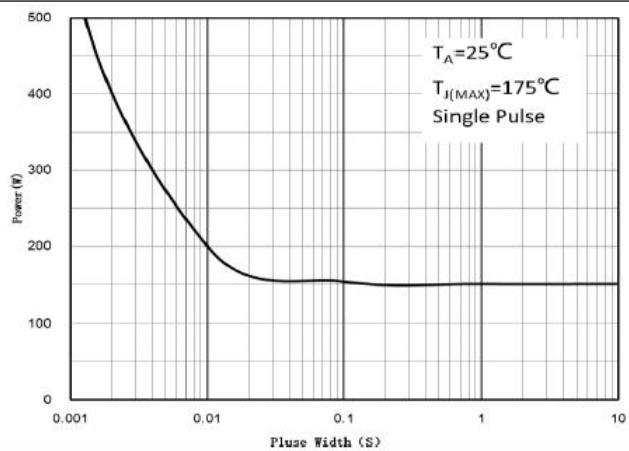
**Figure 8 Capacitance Characteristics**



**Figure 9 Maximum Forward Biased Safe Operation Area**



**Figure 10 Single Pulse Power Rating Junction-to-Ambient**



**Figure 11 Normalized Maximum Transient Thermal Impedance**

