

## 1. Description

KNX2908B, uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , Low gate charge, It can be used in a wide variety of applications.

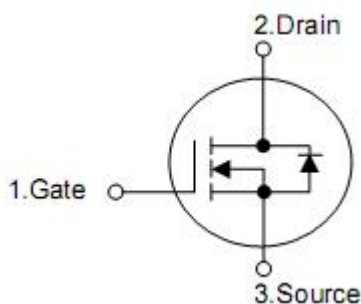
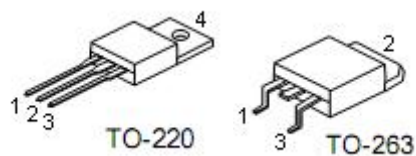
## 2. Features

- $V_{DS}=80V, I_D=130A R_{DS(ON)} (typ.)=5.0m\Omega @ V_{GS}=10V$
- 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
KNB2908B	TO-263	KIA
KNP2908B	TO-220	KIA

## 6. Absolute maximum ratings

Parameter	Symbol	Rating	Units
Drain-source voltage	$V_{DS}$	80	V
Gate-source voltage	$V_{GS}$	+20	V
Continuous drain current	$I_D$	130	A
Pulsed drain current <sup>(Note1)</sup>	$I_{DM}$	520	A
Single pulse avalanche energy <sup>(Note2)</sup>	$E_{AS}$	900	mJ
Derating Factor above 25°C	$P_D$	245	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	0.61	°C /W

**8. Electrical characteristics**

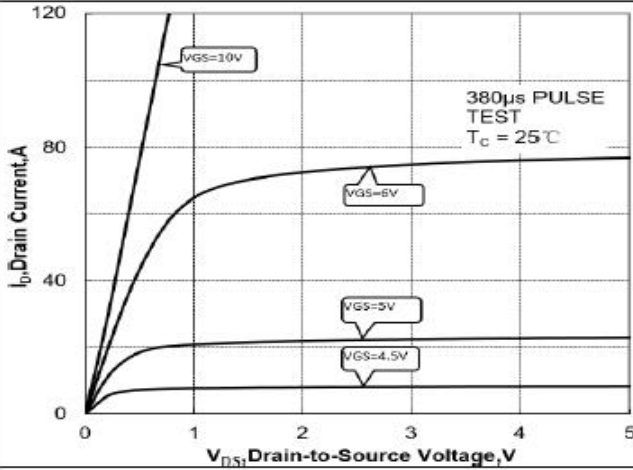
 (T<sub>A</sub>=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	80	-	-	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-Source Forward Leakage	I <sub>GSS(F)</sub>	V <sub>GS</sub> =+20V	-	-	100	nA
Gate-Source Reverse Leakage	I <sub>GSS(R)</sub>	V <sub>GS</sub> =-20V	-	-	-100	nA
<b>On Characteristics</b>						
Drain-source on-Resistance <sup>(Note3)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =35A	-	5.0	6.0	mΩ
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0	2.9	4.0	V
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =20A	-	42	-	S
<b>Dynamic Characteristics</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DD</sub> =40V, V <sub>GS</sub> =10V I <sub>D</sub> =20A	-	160	-	nC
Gate-source charge	Q <sub>gs</sub>		-	31	-	
Gate-drain charge	Q <sub>gd</sub>		-	50	-	
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =40A, R <sub>GEN</sub> =3Ω, V <sub>GS</sub> =10V,	-	24	-	ns
Rise time	t <sub>r</sub>		-	41	-	
Turn-off delay time	t <sub>d(off)</sub>		-	75	-	
Fall time	t <sub>f</sub>		-	25	-	
<b>Switching Characteristics</b> <sup>(Note 4)</sup>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	-	7950	-	pF
Output capacitance	C <sub>oss</sub>		-	460	-	
Reverse transfer capacitance	C <sub>rss</sub>		-	380	-	
<b>Drain-Source Diode Characteristics</b>						
Diode Forward voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A	-	-	1.3	V

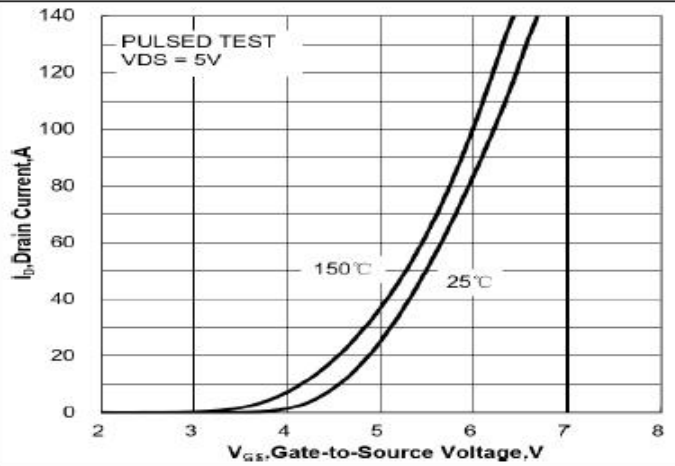
**Note**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition : T<sub>j</sub>=25°C, V<sub>DD</sub>=50V, V<sub>G</sub>=10V, L=0.5mH, R<sub>g</sub>=1Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

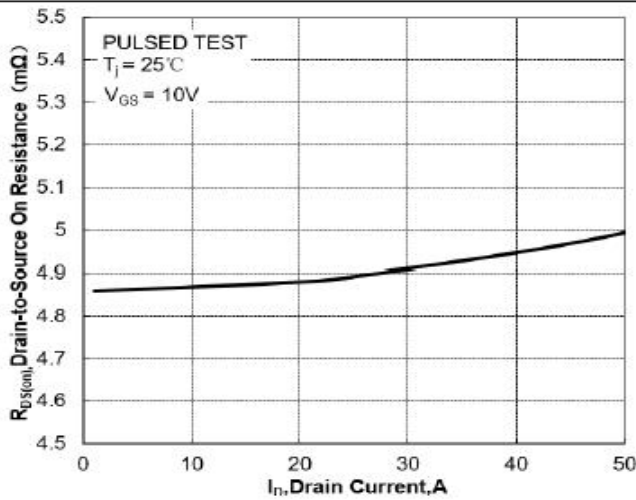
**Figure 1 Output Characteristics**



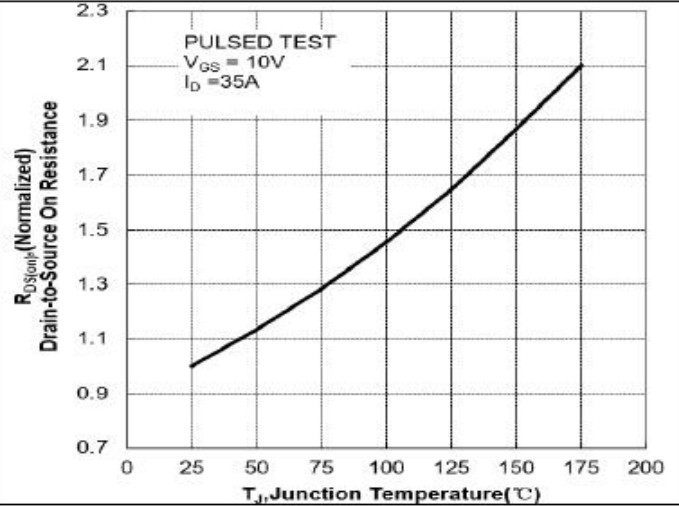
**Figure 2 Transfer Characteristics**



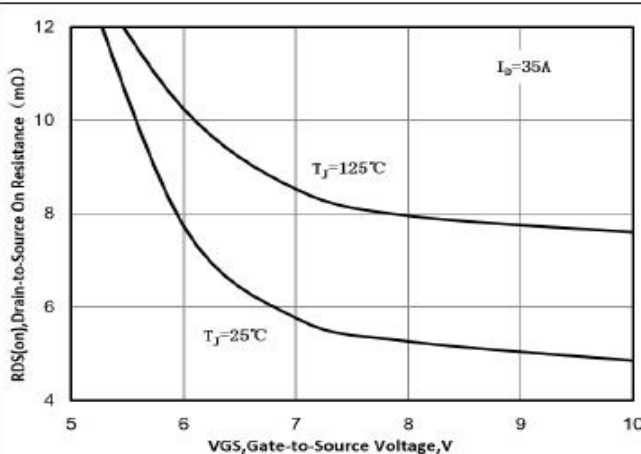
**Figure 3 On-Resistance vs.  $I_D$  and  $V_{GS}$**



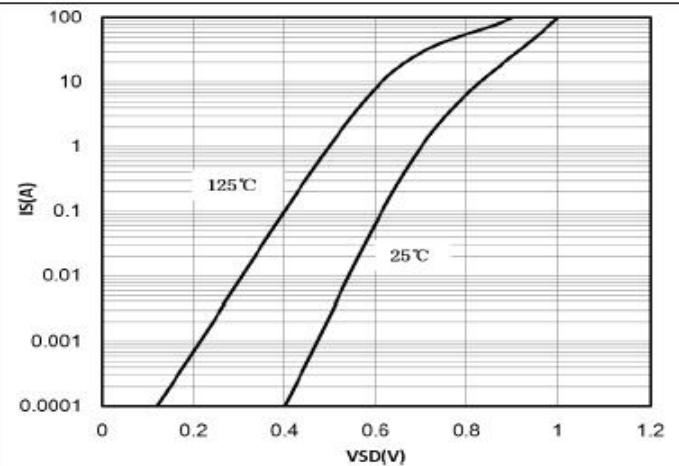
**Figure 4 On-Resistance vs. Junction Temperature**



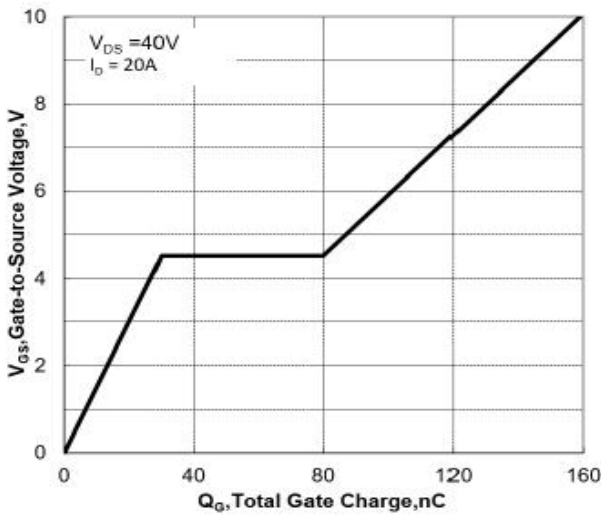
**Figure 5 On-Resistance vs.  $V_{GS}$**



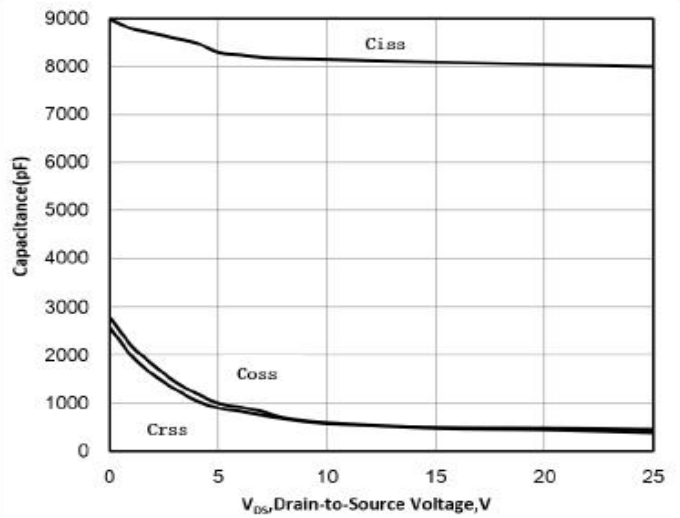
**Figure 6 Body Diode Forward Voltage**



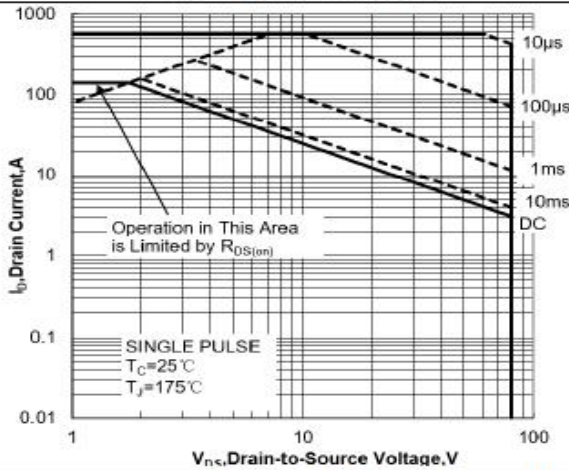
**Figure 7 Gate-Charge Characteristics**



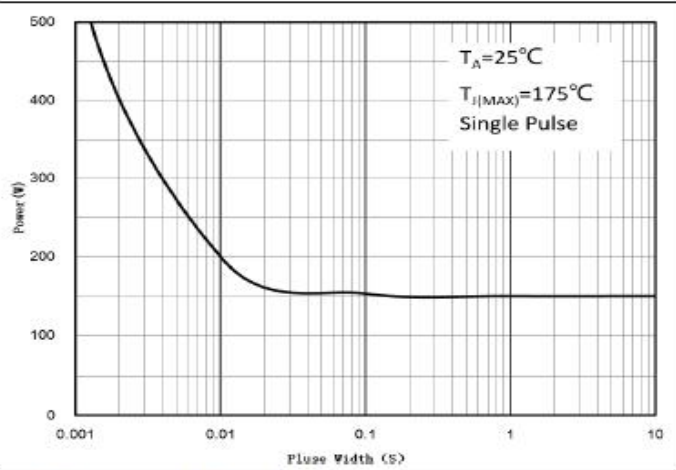
**Figure 8 Capacitance Characteristics**



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



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



**Figure 11 Normalized Maximum Transient Thermal Impedance**

