1. Description

KNX2912A, uses advanced trench technology to provide excellent $R_{DS(ON)}$, Low gate charge,It can be used in a wide variety of applications.

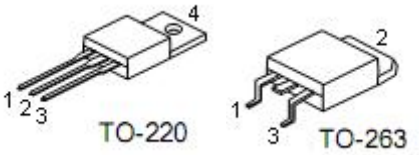
2. Features

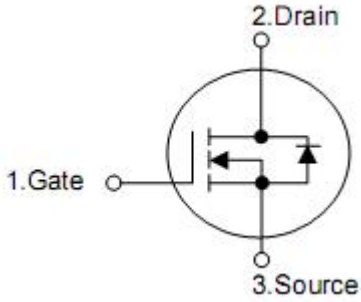
- V_{DS}=120V,I_D=130A $R_{DS(ON)}$ (typ.)=6.0mΩ @ V_{GS}=10V
- High density cell design for lower Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

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
KNB2912A	TO-263	KIA
KNP2912A	TO-220	KIA

6. Absolute maximum ratings

Parameter	Symbol	Rating	Units
Drain-source voltage	V_{DS}	120	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain curren	I_D	130	A
Pulsed drain current (Note1)	I_{DM}	520	A
Single pulse avalanche energy(Note2)	E_{AS}	1155	mJ
Derating Factor above 25ºC	P_D	339	W/ºC
Operation junction and temperature range	T_J, T_{STG}	-55 to175	ºC

7. Thermal characteristics

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.44	ºC /W

8. Electrical characteristics

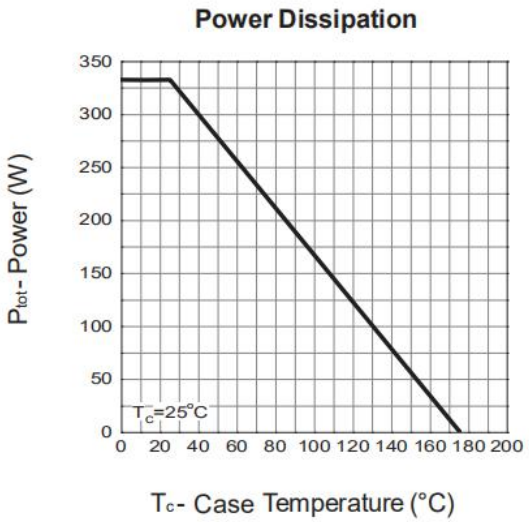
(T_A=25°C,unless otherwise noted)

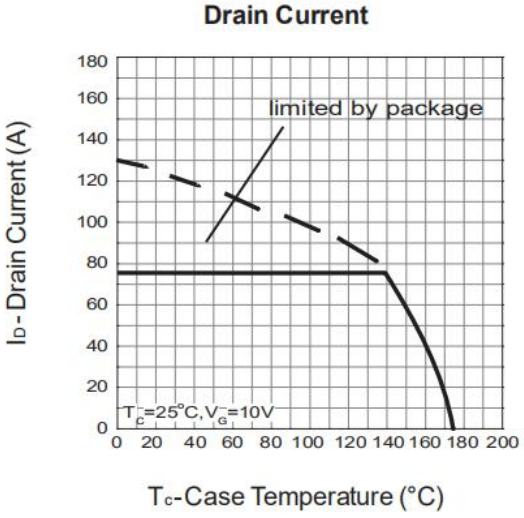
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	120	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=1200V, V_{GS}=0V	-	-	1	μA
Gate-Soure Forward Leakage	$I_{GSS(F)}$	V_{GS}=+20V	-	-	100	nA
Gate-Soure Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-20V	-	-	-100	nA
On Characteristics						
Drain-source on-Resistance(Note3)	$R_{DS(on)}$	V_{GS}=10V,I_D=30A	-	6.0	7.5	mΩ
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	3.0	4.0	V
Gate Resistance	Rg	VGS=0V,VDS=0V, F=1MHz	-	3.0	-	Ω
Dynamic Characteristics						
Total gate charge	Q_g	V_{DD}=100V, V_{GS}=10V I_D =85A	-	189	-	nC
Gate-source charge	Q_{gs}		-	29	-	
Gate-drain charge	Q_{gd}		-	90	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=60V, I_D=85A, R_{GEN}=6Ω, V_{GS}=10V,	-	35	-	ns
Rise time	t_r		-	46	-	
Turn-off delay time	$t_{d(off)}$		-	95	-	
Fall time	t_f		-	52	-	
Switching Characteristics (Note 4)						
Input capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz	-	8120	-	pF
Output capacitance	C_{oss}		-	788	-	
Reverse transfer capacitance	C_{rss}		-	530	-	
Drain-Source Diode Characteristics						
Diode Forward voltage	V_{SD}	V_{GS}=0V,I_S=30A	-	-	1.2	V

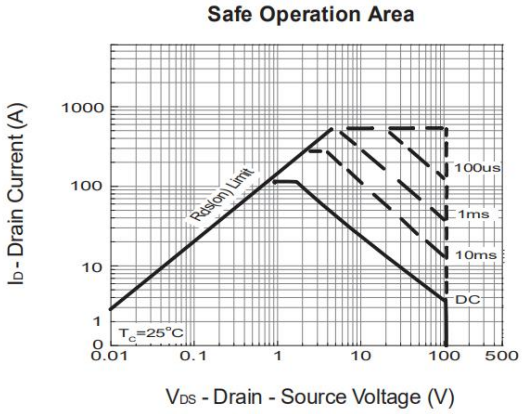
Note
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition :T j=25℃,VDD=50V,VG=10V,L=0.5mH,Rg=1Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

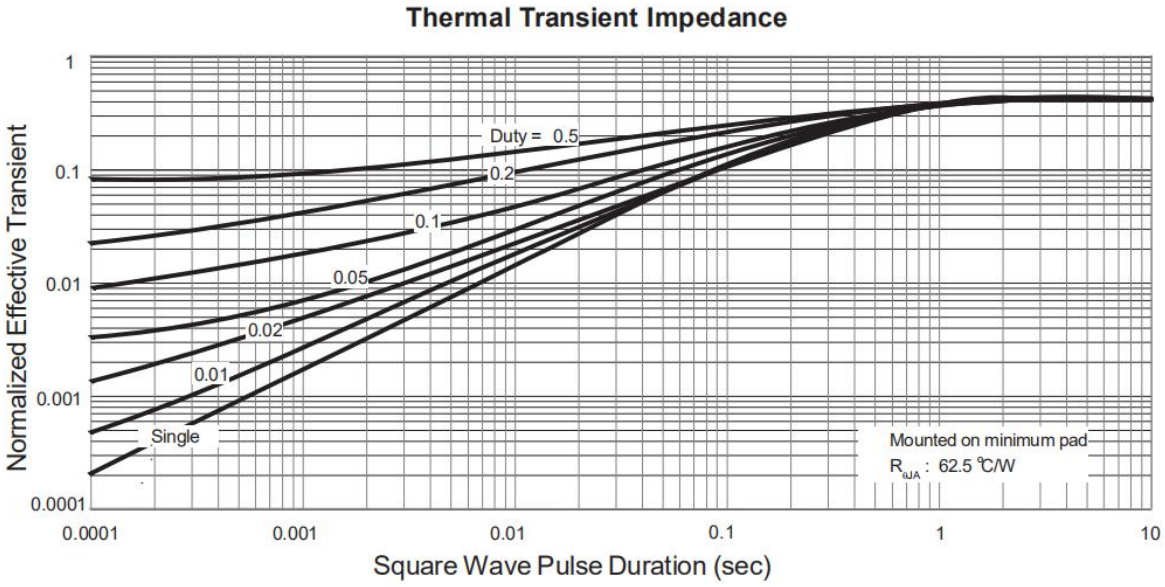
9. Test circuits

Typical Operating Characteristics



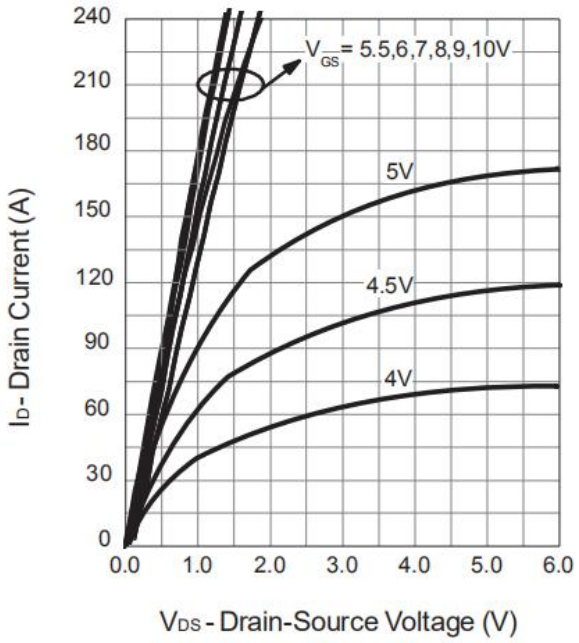




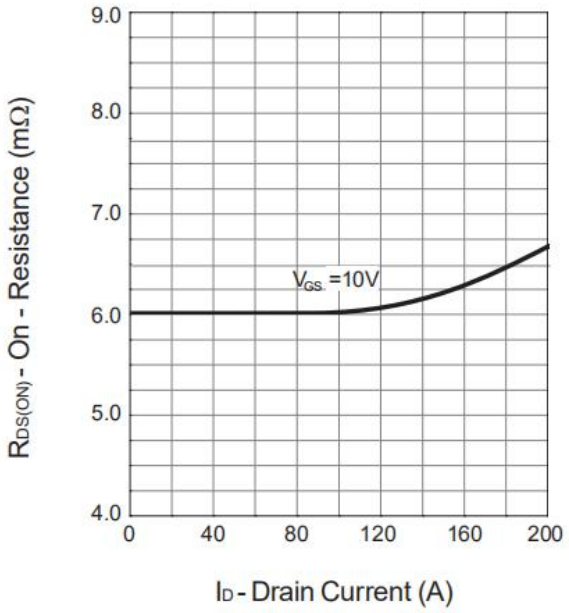


Typical Operating Characteristics (Cont.)

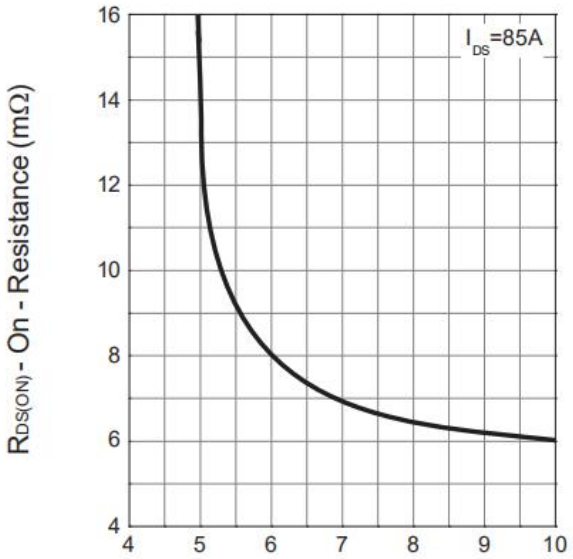
Output Characteristics



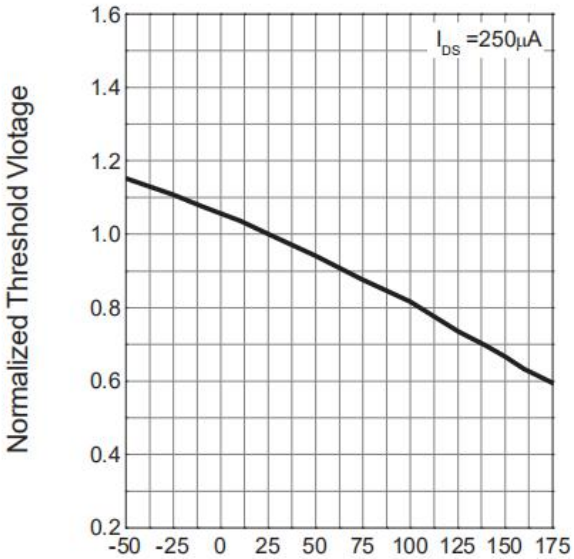
Drain-Source On Resistance



Drain-Source On Resistance

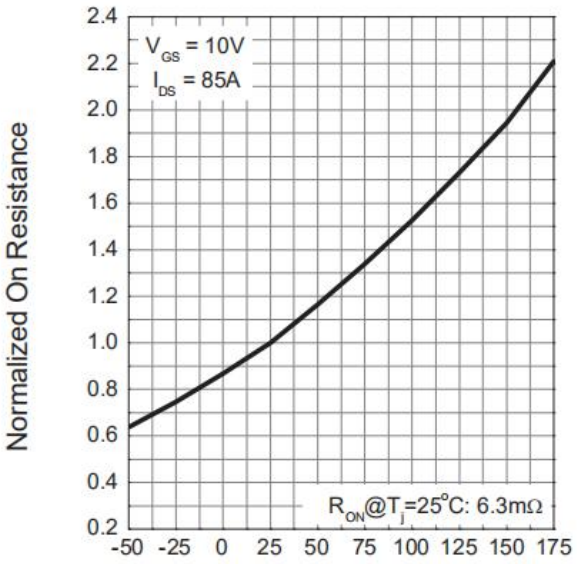


Gate Threshold Voltage

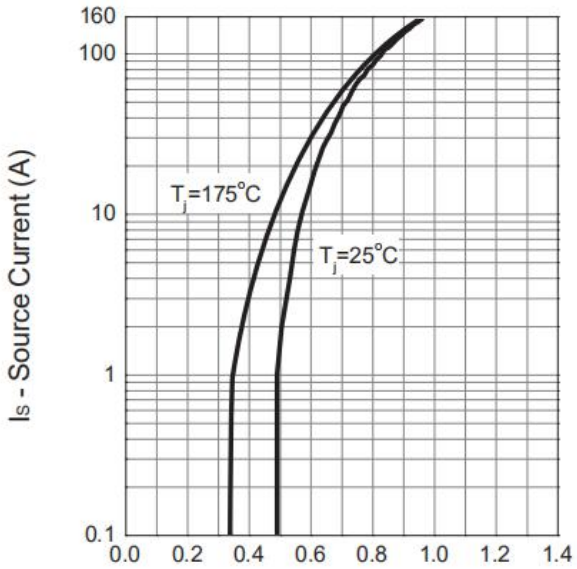


Typical Operating Characteristics (Cont.)

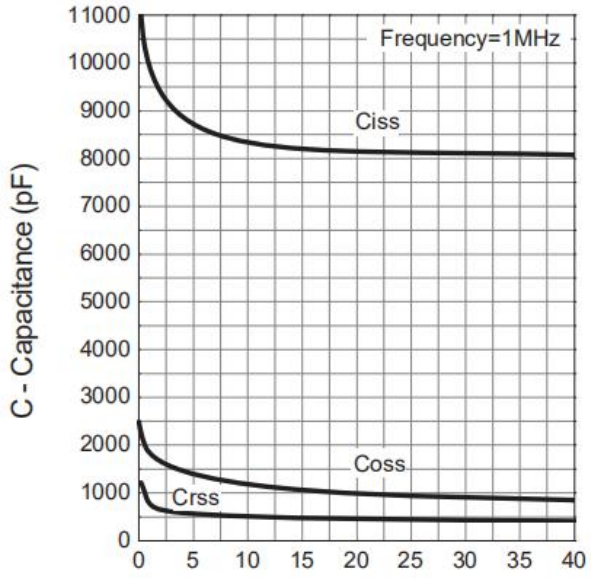
Drain-Source On Resistance



Source-Drain Diode Forward



Capacitance



Gate Charge