1. Features

- $R_{DS(ON)}$=4.8mΩ(typ.) @ V_{GS}=10V
- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- High avalanche Current

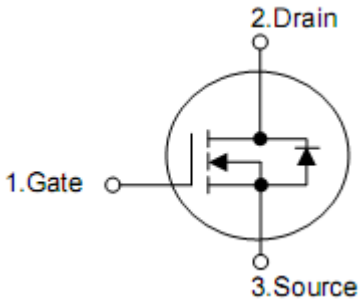
2. Applications

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

3. Symbol

TO-220

TO-3P



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KNP2908D	TO-220	KIA
KNH2908D	TO-3P	KIA

5. Absolute maximum ratings

(T_A=25°C, unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-source voltage		V_{DS}	80	V
Gate-source voltage		V_{GS}	±25	V
Continuous drain current [3]	T_C=25ºC	I_D	130	A
	T_C=100ºC	I_D	95	A
Pulsed drain current (@T_C=25ºC) [4]		I_{DM}	500	A
Avalanche Current [5]		I_{AS}	30	A
Single pulse avalanche energy		E_{AS}	900	mJ
Total power dissipation	T_C=25ºC	P_D	246	W
	T_C=100ºC	P_D	150	W/ºC
Operation junction and temperature range		T_J, T_{STG}	-55 to 175	ºC

6. Thermal characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.78	ºC/W
Thermal resistance, Junction to ambient	$R_{\theta JA}$	62.5	ºC/W

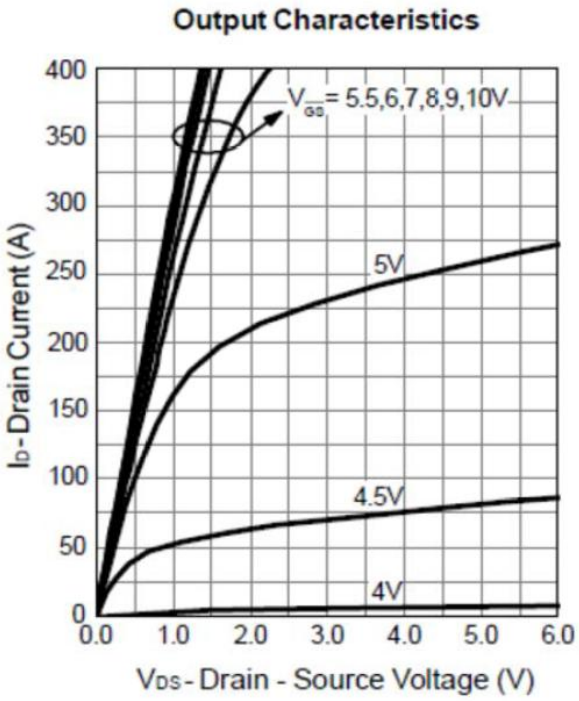
7. Electrical characteristics

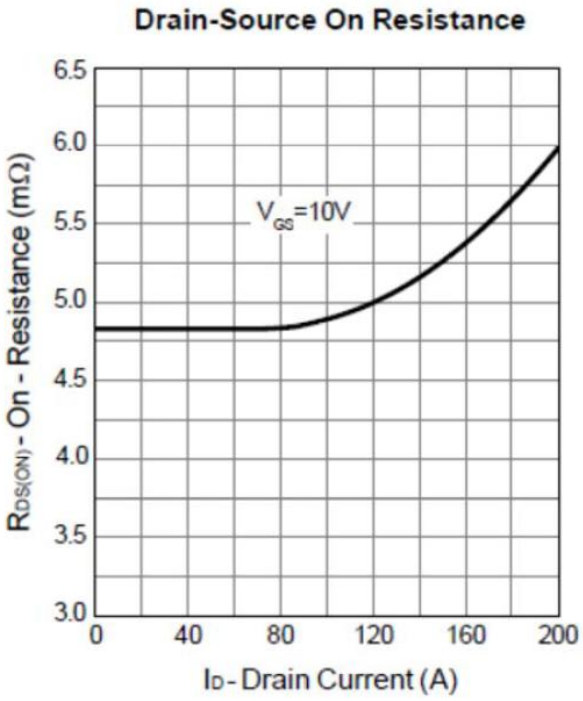
(T_A=25°C, unless otherwise noted)

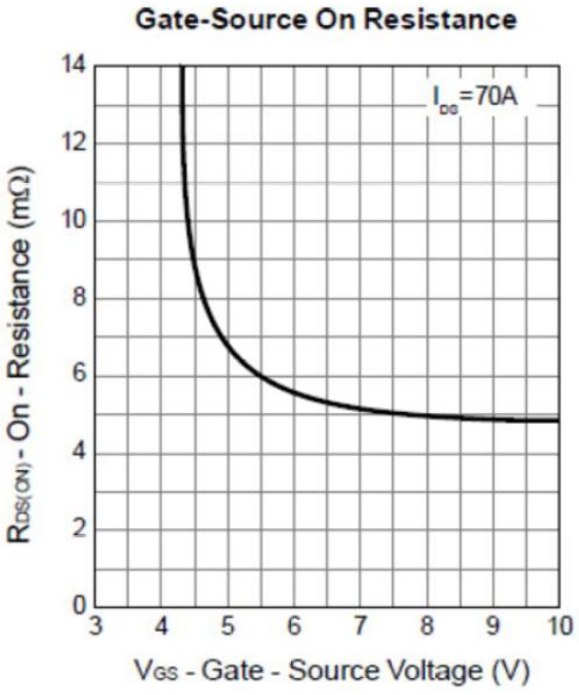
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	80	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=64V, V_{GS}=0V	-	-	1	μA
		V_{DS}=64V, T_J=125°C	-	-	10	uA
Gate to source leakage current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	3	4	V
Drain-source on-Resistance [1]	$R_{DS(on)}$	V_{GS}=10V,I_D=50A,	-	4.8	6	mΩ
Gate resistance	R_G	V_{DS}=0V, V_{DS}=0V, f=1MHz	-	1.7	-	Ω
Total gate charge	Q_g	V_{DS}=64V, V_{GS}=10V,I_D=60A [2]	-	110	-	nC
Gate-source charge	Q_{gs}		-	16	-	
Gate-drain charge	Q_{gd}		-	45	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=60V,I_D=40A, R_G=6Ω, V_{GS}=10V [2]	-	25	-	ns
Rise time	t_r		-	16	-	
Turn-off delay time	$t_{d(off)}$		-	40	-	
Fall time	t_f		-	52	-	
Input capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz [2]	-	4500	-	pF
Output capacitance	C_{oss}		-	640	-	
Reverse transfer capacitance	C_{rss}		-	230	-	
Continuous source current [3]	I_S	—	-	-	130	A
Diode Forward voltage [1]	V_{SD}	V_{GS}=0V,I_S=130A	-	-	1.3	V
Reverse recovery time	t_{rr}	I_F=30A, V_{GS}=0V, dI_F/dt=100A/us	-	30	-	ns
Reverse recovery charge	Q_{rr}		-	52	-	nC

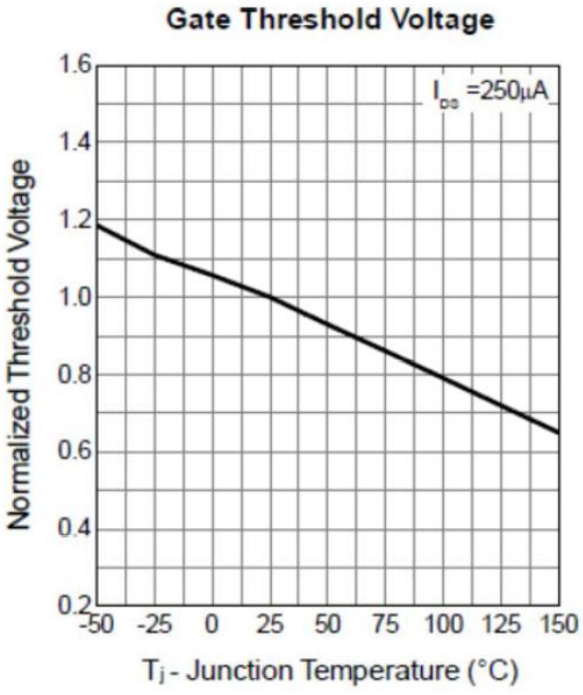
Note
1) Pulse test; pulse width≤300us, duty cycle≤2%.
2) Guaranteed by design, not subject to production testing.
3) Package limitation current is 55A. Calculated continuous current based on maximum allowable junction temperature.
4) Repetitive rating, pulse width limited by max junction temperature.
5) Starting T_J=25°C, L=0.5mH, V_{DD}=64V, I_{AS}=64A.

8. Typical operating characteristics

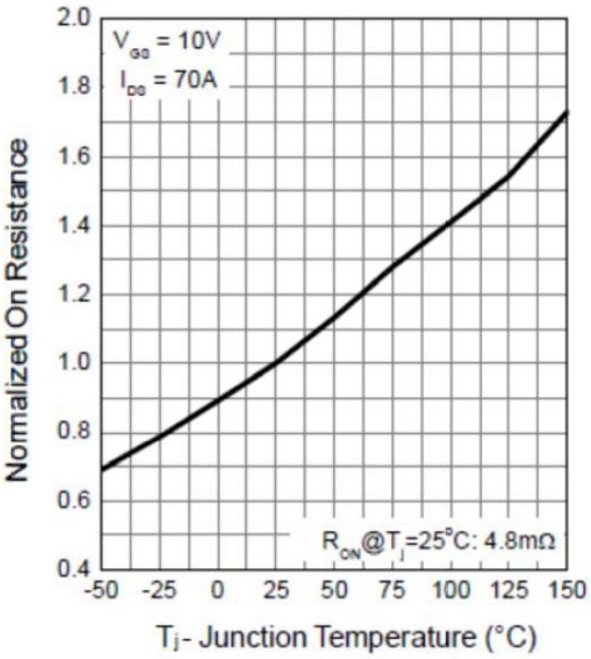




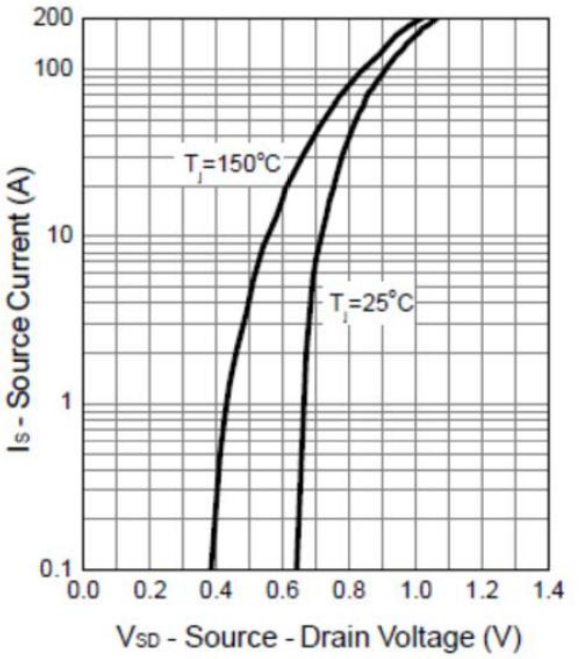




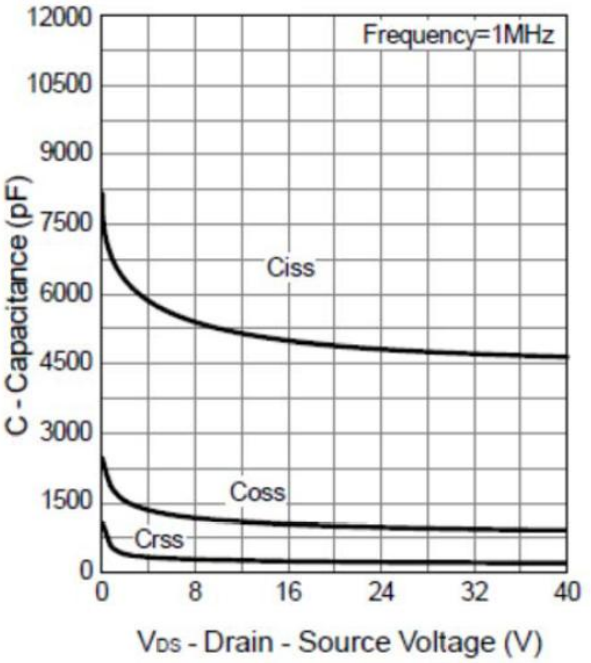
Drain-Source On Resistance



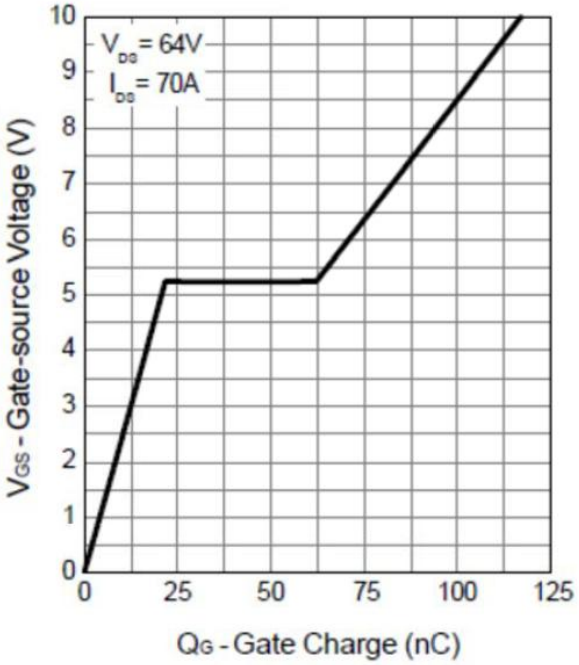
Source-Drain Diode Forward



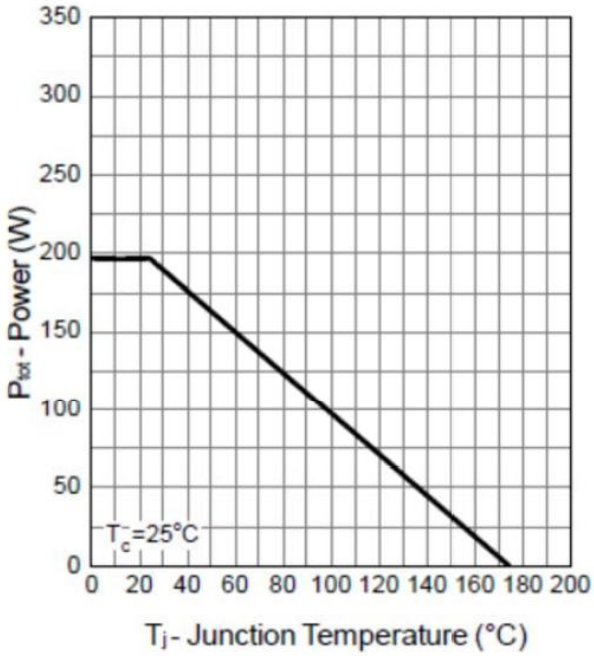
Capacitance



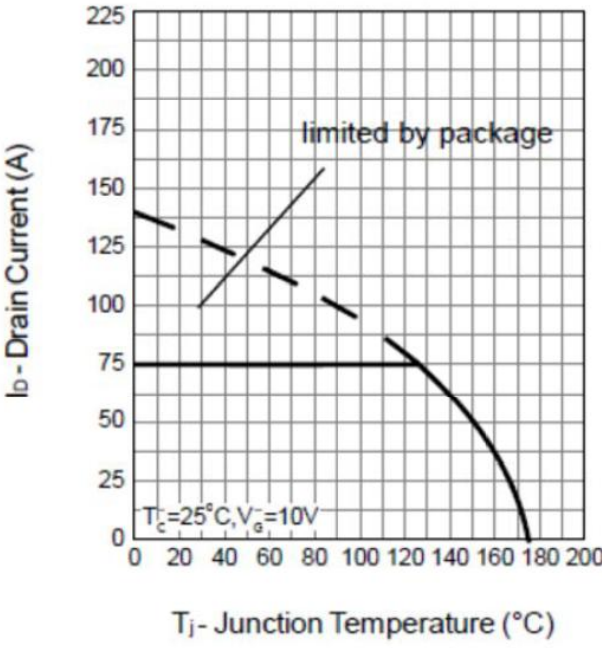
Gate Charge



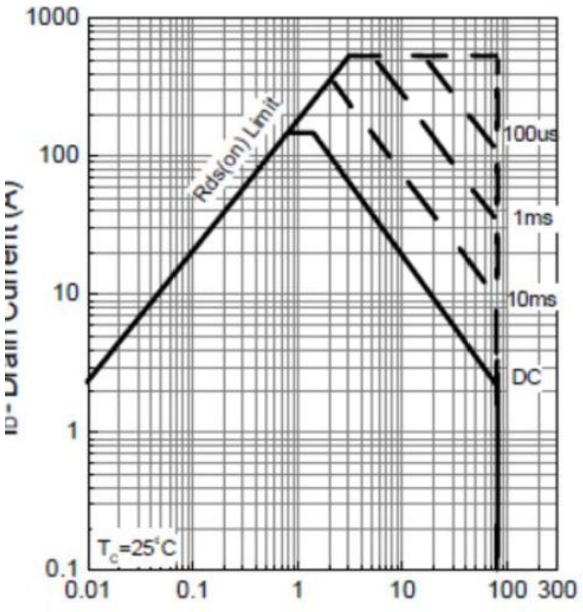
Power Dissipation



Drain Current



Safe Operation Area



Thermal Transient Impedance