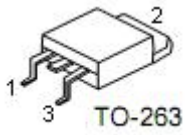
1. Features

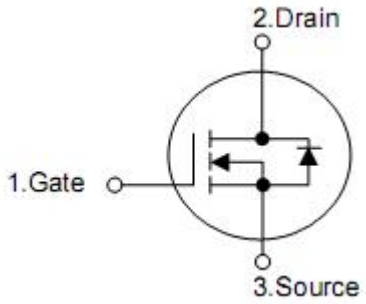
- Uses CRM(CQ)advanced Trench technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Qgx$R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria

2. Features

- $R_{DS(on)}$=7mΩ（typ.)@ V_{GS}=10V
- Motor control and drive
- Battery management
- UPS (Uninterrupible Power Supplies)

3. Pin configuration





Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KNB3112A	TO-263	KIA

5. Absolute maximum ratings

TC=25 °C unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V_{DSS}	120	V
Continuous Drain Current	T_C=25 °C	I_D	110	A
	T_C=100 °C		70	
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})		I_{DP}	440	
Avalanche energy, single pulse (L=0.5mH, Rg=25Ω)		E_{AS}	256	mJ
Gate-Source voltage		V_{GS}	±25	V
Power dissipation (TC = 25 °C)		P_D	254	W
Junction & Storage Temperature Range		T_J& T_{STG}	-55 to 150	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)		T_{sold}	260	°C

6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient[1]	$R_{\theta JA}$[2]	91	°C/W
Thermal resistance, Junction-case[1]	$R_{\theta JC}$	0.49	

7. Electrical characteristics

(T_J=25°C,unless otherwise notes)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	120	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=120V, V_{GS}=0V,Tj=25 ºC	-	-	1	μA
		V_{DS}=120V , V_{GS}=0V, Tj=150 ºC	-	-	200	
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	3	4	V
Gate leakage current	I_{GSS}	V_{GS}=±25V,V_{DS}=0V	-	±10	±100	nA
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS}=10V,I_D=30A, Tj=25 ºC	-	7	10	mΩ
Forward Transconductance	gfs	V_{DS}=5V,I_D=75A	-	150	-	S
Dynamic characteristics						
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V Frequency=1MHz	-	1.5	-	Ω
Input capacitance	C_{iss}	V_{DS}=60V,V_{GS}=0V, F=1MHz	-	6000	-	pF
Output capacitance	C_{oss}		-	412	-	pF
Reverse transfer capacitance	C_{rss}		-	130	-	pF
Turn-on delay time	$t_{d(on)}$	V_{DD}=60V,I_D=75A, V_{GS}=10V,R_G=2.7Ω	-	20	-	ns
Rise time	t_r		-	103	-	ns
Turn-off delay time	$t_{d(off)}$		-	62	-	ns
Fall time	t_f		-	110	-	ns
Gate Charge Characteristics						
Total gate charge	Q_g	V_{DS}=60V,I_D=75A, V_{GS}=10V, F=1MHz	-	128	-	nC
Gate-source charge	Q_{gs}		-	30	-	nC
Gate-drain charge	Q_{gd}		-	46	-	nC
Diode characteristics						
Diode forward voltage[2]	V_{SD}	V_{GS}=0V,I_{SD}=75A	-	0.9	1.3	V
Body Diode Continuous Forward Current[2]	I_S	T_C=25 ºC	-	-	110	A
Reverse recovery time	t_{rr}	I_F=75A DI$_F$/dt=100A/μs	-	60	-	ns
Reverse recovery charge	Q_{rr}		-	150	-	nC

Note:1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 20Z copper.

2.The data tested by pulsed, pulse width≤300μs,duty cycle≤2%

3.The value of RthJA is measured by placing the device in a still air box which is one cubic foot.

8. Typical Characteristics

Fig 1: Output Characteristics

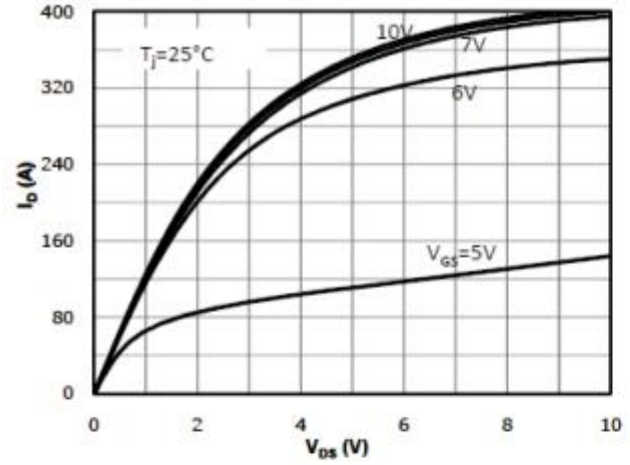


Fig 2: Transfer Characteristics

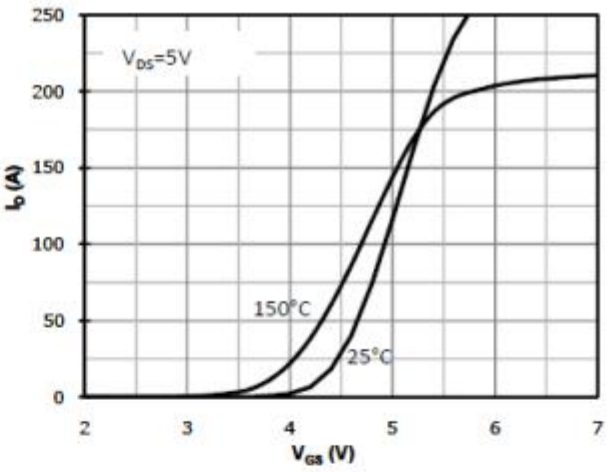


Fig 3: Rds(on) vs Drain Current and Gate Voltage

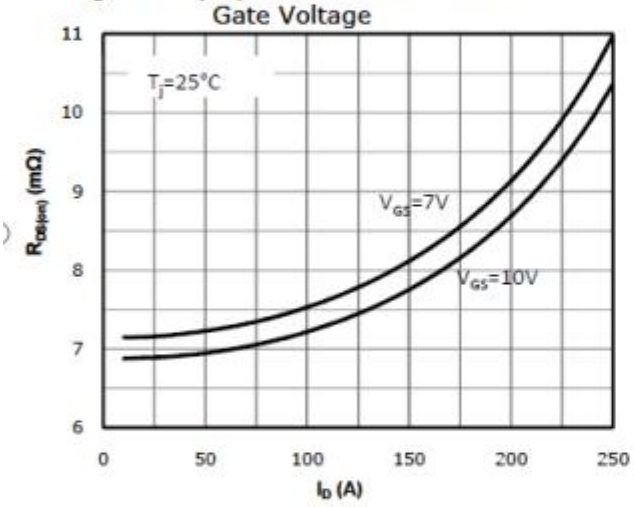


Fig 4: Rds(on) vs Gate Voltage

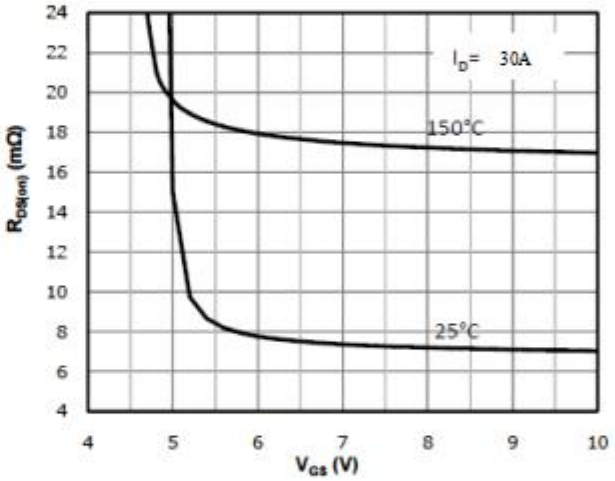


Fig 5: Rds(on) vs. Temperature

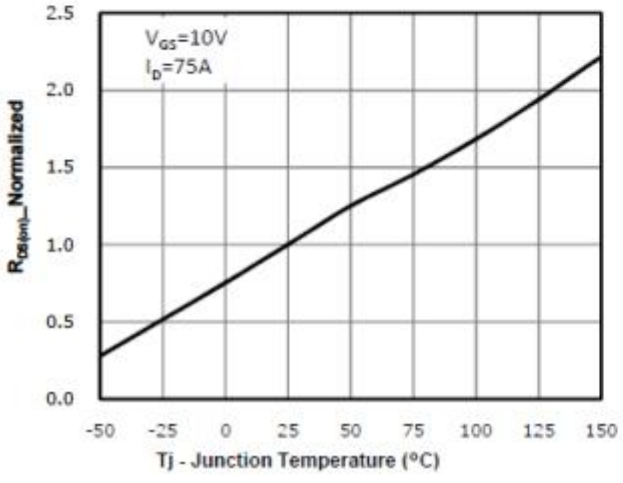


Fig 6: Capacitance Characteristics

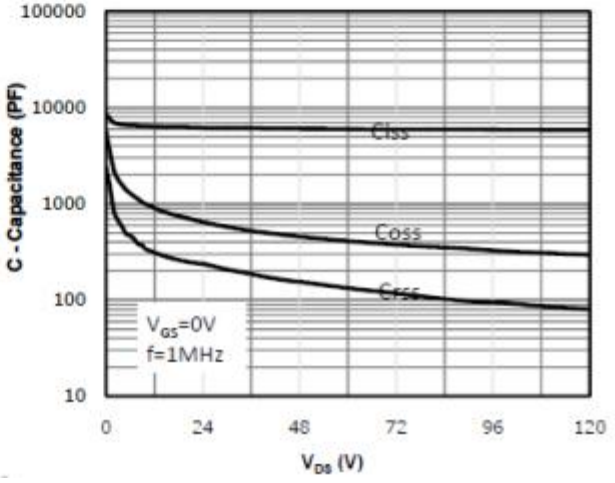


Fig 7: Gate Charge Characteristics

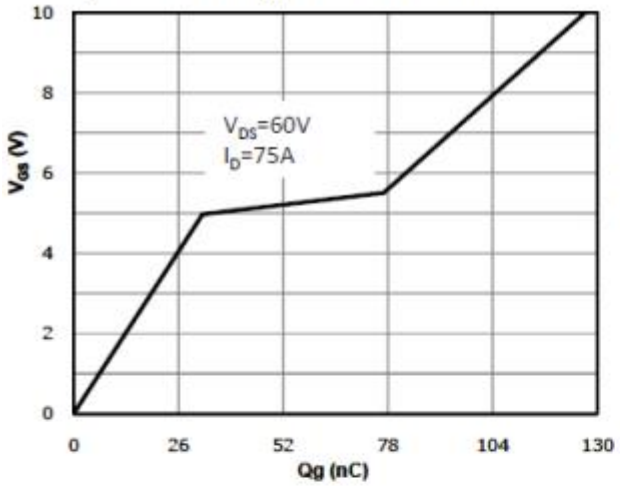


Fig 8: Body-diode Forward Characteristics

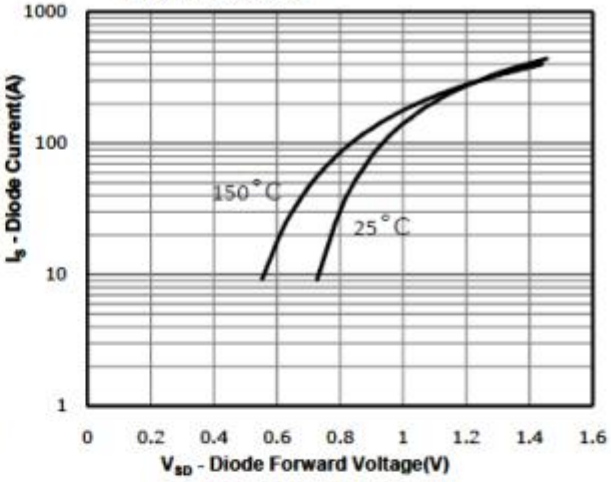


Fig 9: Power Dissipation

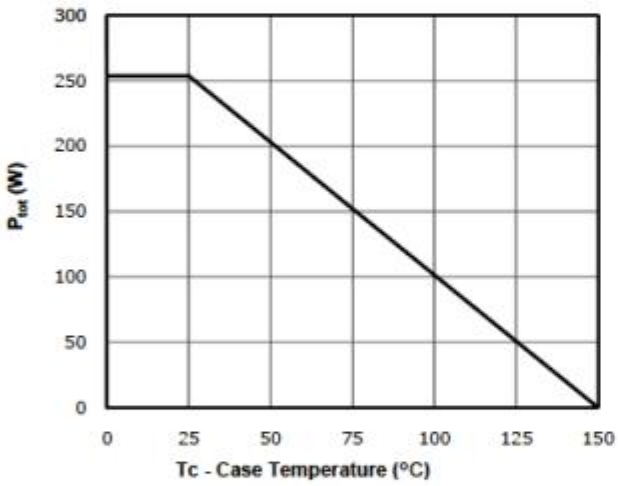


Fig 10: Drain Current Derating

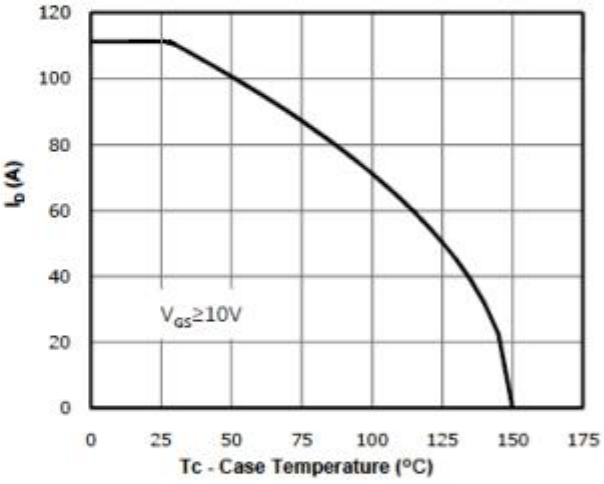


Fig 11: Safe Operating Area

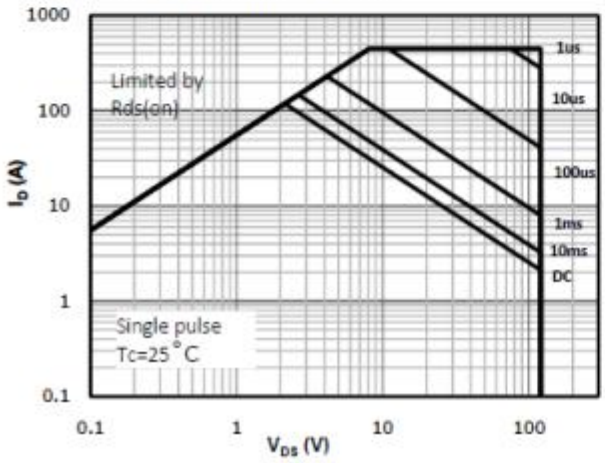


Fig 12: Max. Transient Thermal Impedance