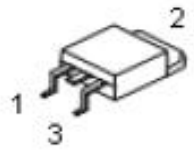
1. Features

- $R_{DS(ON),typ.}$=5.0mΩ(typ.)@V_{GS}=10V
- Uses CRM(CQ) advanced Trench MOS technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Qgx$R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria

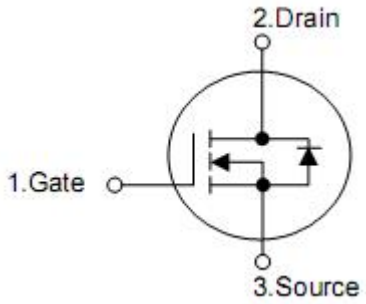
2. Applications

- Motor control and drive
- Battery management
- UPS (Uninterrupible Power Supplies)

3. Pin configuration



TO-252



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KND3404B	TO-252	KIA

5. Absolute maximum ratings

TC=25 °C unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V_{DSS}	40	V
Continuous Drain Current[1]	T_C=25 °C	I_D	80	A
	T_C=100 °C		58	
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})[2]		I_{DP}	320	
Avalanche energy, single pulse[3]		E_{AS}	225	mJ
Gate-Source voltage		V_{GS}	±20	V
Power dissipation (TC = 25 °C)[4]		P_{tot}	92	W
Junction & Storage Temperature Range		T_J& T_{STG}	-55 to 150	°C

6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient	$R_{\theta JA}$	94	°C/W
Thermal resistance, Junction-case	$R_{\theta JC}$	1.37	

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	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V , V_{GS}=0V ,Tj=25 ºC	-	-	1	μA
		V_{DS}=40V , V_{GS}=0V, Tj=125ºC	-	-	10	
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	1.8	2.5	V
Gate leakage current	I_{GSS}	V_{GS}=20V,V_{DS}=0V	-	1	100	nA
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS}=10V,I_D=30A	-	5.0	6.5	mΩ
		V_{GS}=4.5V, I_D=30A	-	5.5	8.0	
Forward Transconductance	gfs	V_{DS}=5V,I_D=40A	-	110	-	S
Dynamic characteristics						
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V Frequency=1MHz	-	2.0	-	Ω
Input capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, F=1MHz	-	2300	-	pF
Output capacitance	C_{oss}		-	290	-	pF
Reverse transfer capacitance	C_{rss}		-	150	-	pF
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V,I_D=40A, V_{GS}=10V,R_G=3Ω	-	9.5	-	ns
Rise time	t_r		-	30	-	ns
Turn-off delay time	$t_{d(off)}$		-	55	-	ns
Fall time	t_f		-	17.5	-	ns
Gate Charge Characteristics						
Total gate charge	Q_g	V_{DS}=20V,I_D=40A, V_{GS}=10V, F=1MHz	-	47.5	-	nC
Gate-source charge	Q_{gs}		-	9.0	-	nC
Gate-drain charge	Q_{gd}		-	10.0	-	nC
Diode characteristics						
Diode forward voltage[2]	V_{SD}	V_{GS}=0V,I_{SD}=40A	-	-	1.5	V
Reverse recovery time	t_{rr}	I_F=40A DI$_F$/dt=100A/μs	-	20	-	ns
Reverse recovery charge	Q_{rr}		-	9.0	-	nC

Note:1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤300us,duty cycle ≤2%.
3. The EAS data shows Max.rating. The test condition is V_{DD}=40V, V_{GS}=10V, L=0.5mH, I_{AS}=30A.
4. The power dissipation is limited by 150 ºC junction temperature.

8. Typical Characteristics

Fig 1: Output Characteristics

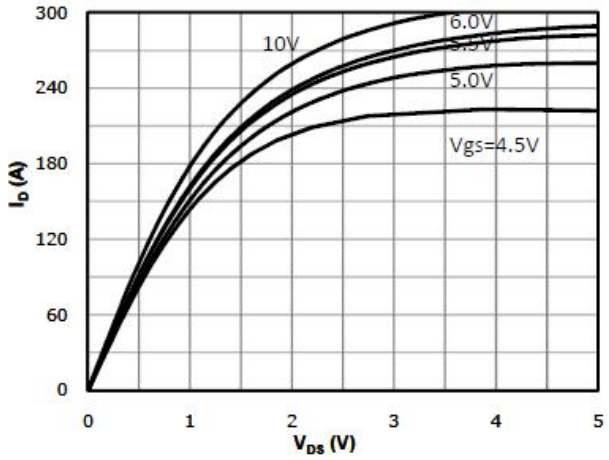


Fig 2: Transfer Characteristics

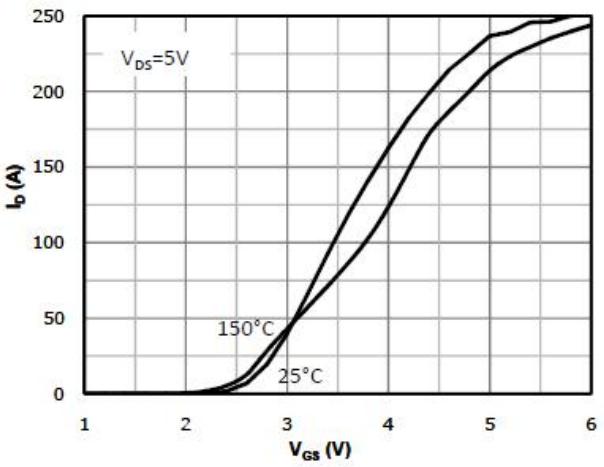


Fig 3: Rds(on) vs Drain Current and Gate Voltage

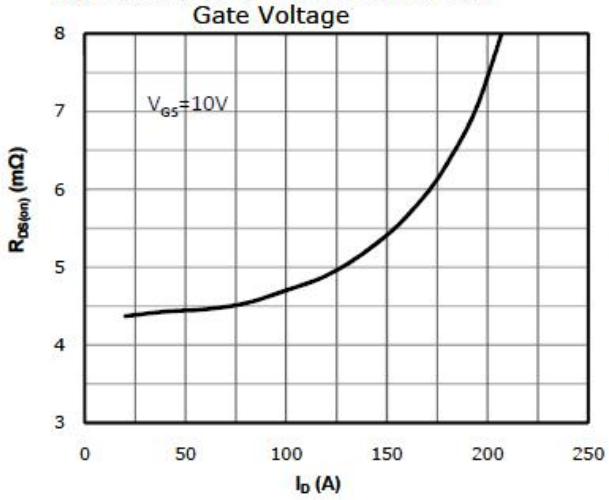


Fig 4: Rds(on) vs Gate Voltage

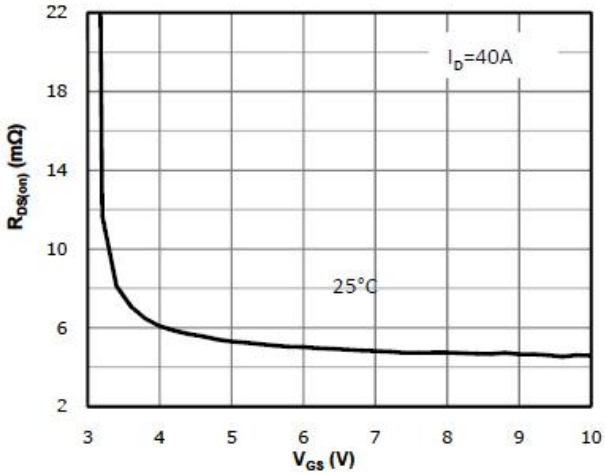


Fig 5: Rds(on) vs. Temperature

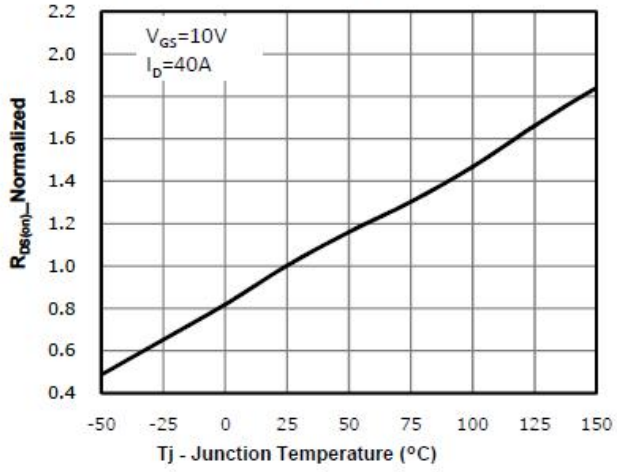


Fig 6: Capacitance Characteristics

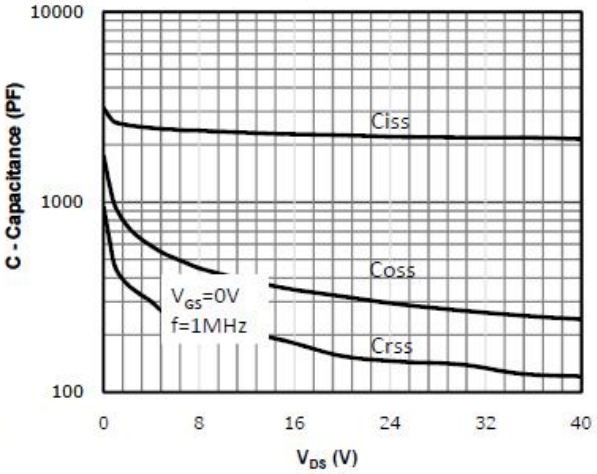


Fig 7: Gate Charge Characteristics

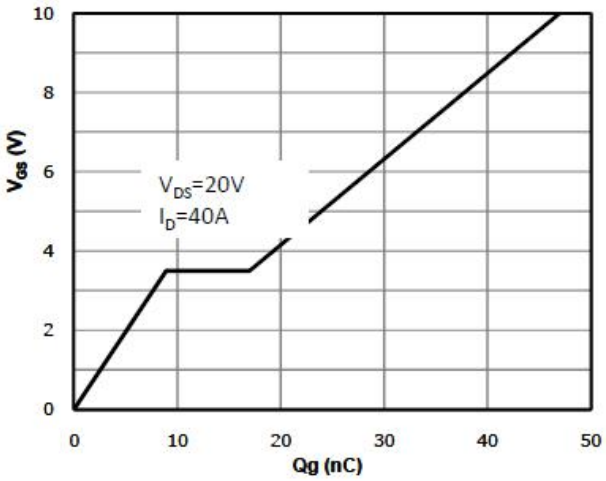


Fig 8: Body-diode Forward Characteristics

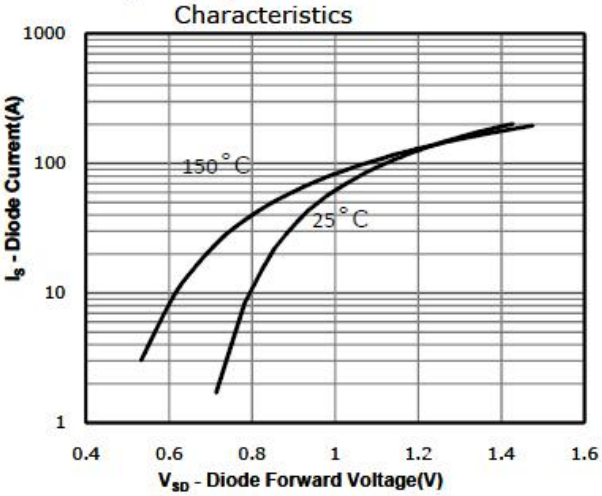


Fig 9: Power Dissipation

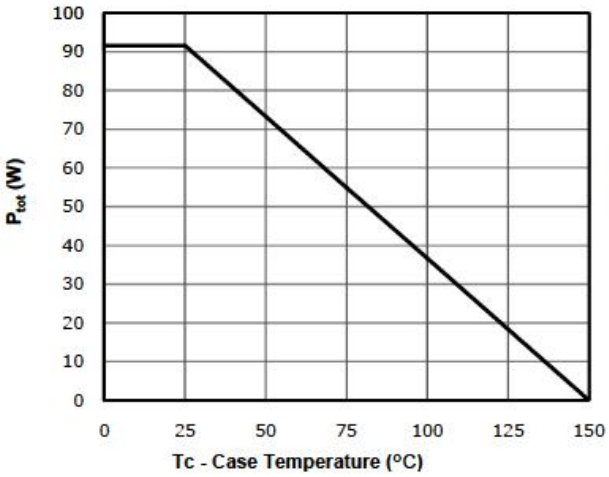


Fig 10: Drain Current Derating

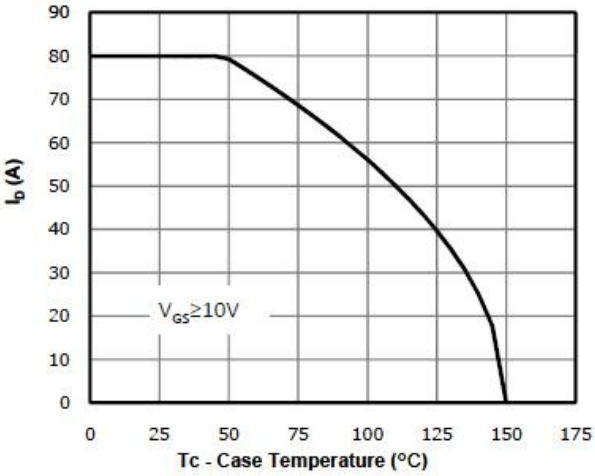


Fig 11: Safe Operating Area

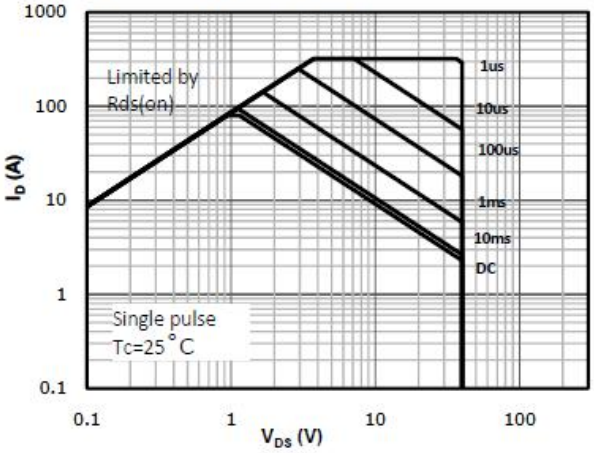
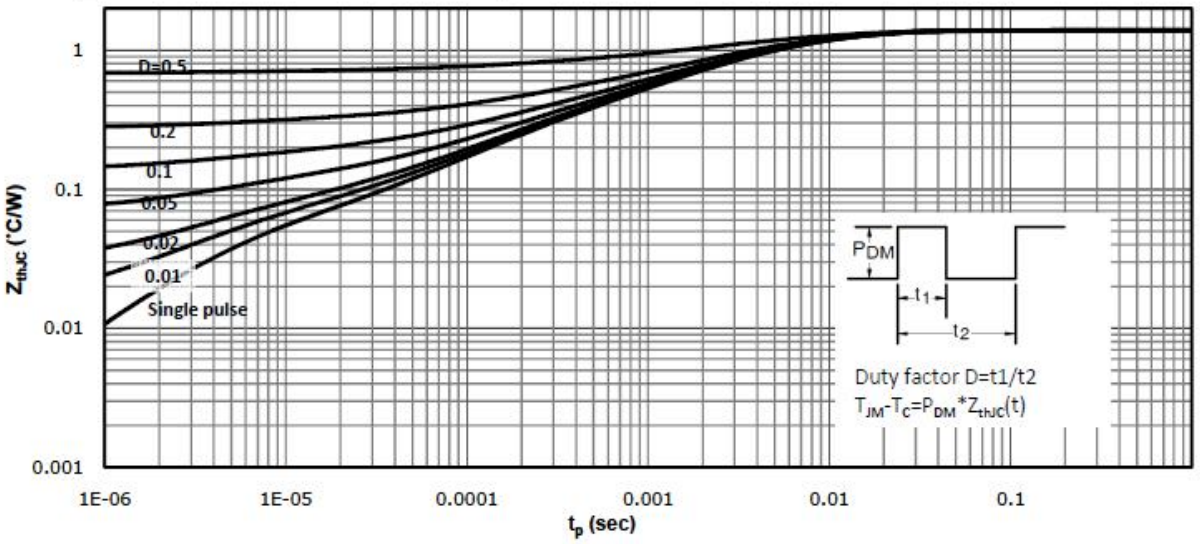


Fig 12: Max. Transient Thermal Impedance



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