1. Features

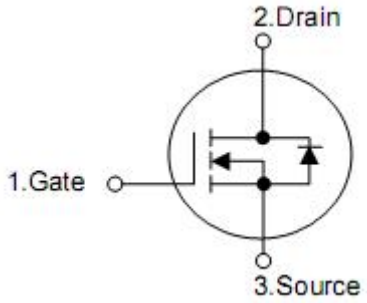
- $R_{DS(ON),typ.}$=7.0mΩ@V_{GS}=10V
- Super low gate charge
- Excellent Cdv/dt effect decline
- Advanced high cell density trench technology

2. Applications

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

3. Pin configuration

DFN5*6



Pin	Function
4	Gate
5,6,7,8	Drain
1,2,3	Source

4. Ordering Information

Part Number	Package	Brand
KNY3406C	DFN5*6	KIA

5. Absolute maximum ratings

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V_{DSS}	60	V
Continuous Drain Current V_{GS}@10V[1]	T_C=25 ºC	I_D	80	A
	T_C=100 ºC		47	
Pulsed Drain Current[2]		I_{DM}	280	
Avalanche Energy single pulse[3]		E_{AS}	80	mJ
Gate-Source voltage		V_{GS}	±20	V
Power dissipation (TC = 25°C)		P_D	41	W
Junction & Storage Temperature Range		T_J，T_{STG}	-55 to 150	ºC

6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient[1]	$R_{\theta JA}$	62	ºC/W
Thermal resistance, Junction-case[1]	$R_{\theta JC}$	1.4	

7. Electrical characteristics

(TJ=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		60	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA		1.3	1.9	2.5	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V	T_j=25ºC	-	-	1	μA
			T_j=125ºC	-	-	10	
Gate leakage current	I_{GSS}	V_{GS}=20V,V_{DS}=0V		-	-	100	nA
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS}=10V,I_D=10A	T_j=25ºC	-	7.0	8.5	mΩ
		V_{GS}=4.5V,I_D=5A	T_j=25ºC	-	9.5	12	mΩ
Dynamic characteristics							
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V,f=1MHz		-	1.2	-	Ω
Input capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V, F=1MHz		-	3300	-	pF
Output capacitance	C_{oss}			-	200	-	pF
Reverse transfer capacitance	C_{rss}			-	150	-	pF
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=30V, R_G=3.3Ω, I_D=20A,		-	16	-	ns
Rise time	t_r			-	41	-	ns
Turn-off delay time	$t_{d(off)}$			-	56	-	ns
Fall time	t_f			-	16	-	ns
Gate Charge Characteristics							
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=30V, I_D=18A, F=1MHz		-	55	-	nC
Gate-source charge	Q_{gs}			-	8.5	-	nC
Gate-drain charge	Q_{gd}			-	14	-	nC
Diode characteristics							
Continuous Source Current[1,5]	I_S	V_G=V_D=0V , Force Current		-	-	80	A
Diode forward voltage[2]	V_{SD}	V_{GS}=0V,I_{SD}=5A		-	-	1.3	V
Reverse recovery time	t_{rr}	I_F=20A dI/dt=100A/μs		-	20	-	ns
Reverse recovery charge	Q_{rr}			-	70	-	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}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=40A.
4. The power dissipation is limited by 150 ºC junction temperature.
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation

8. Typical Characteristics

Typical Characteristics

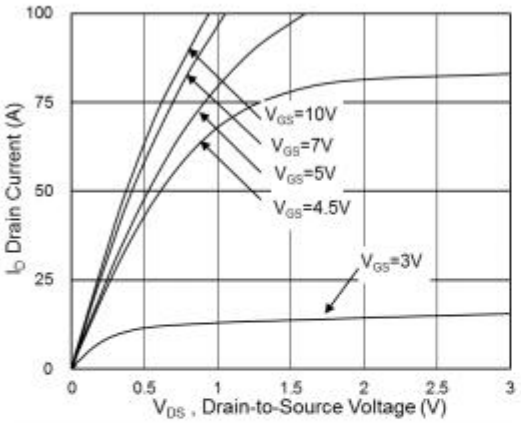


Fig.1 Typical Output Characteristics

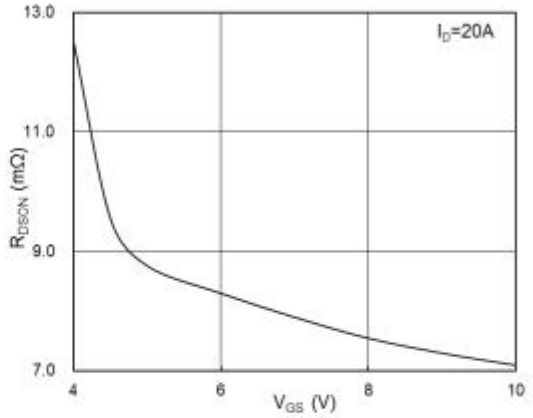


Fig.2 On-Resistance vs Gate-Source Voltage

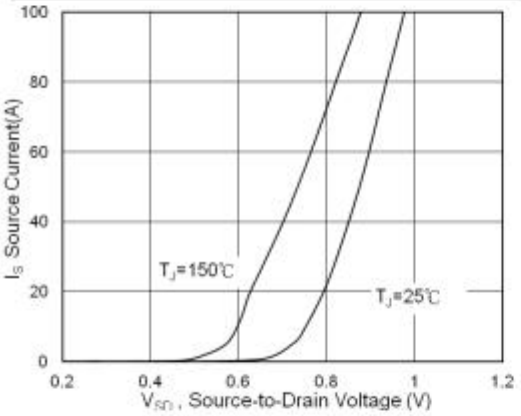


Fig.3 Forward Characteristics of Reverse

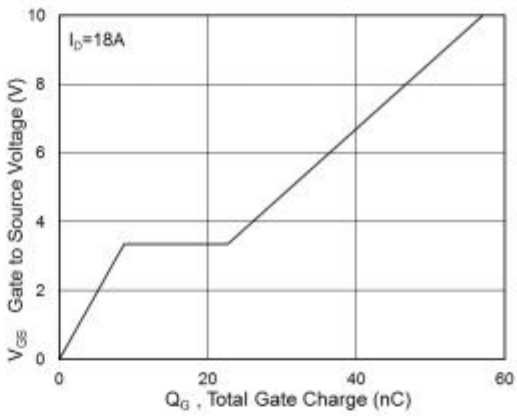


Fig.4 Gate-Charge Characteristics

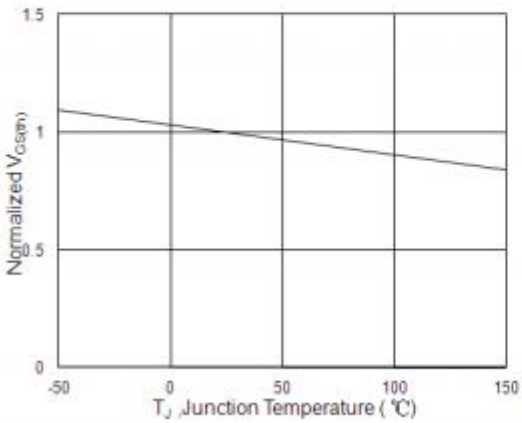


Fig.5 Normalized $V_{GS(th)}$ vs T_J

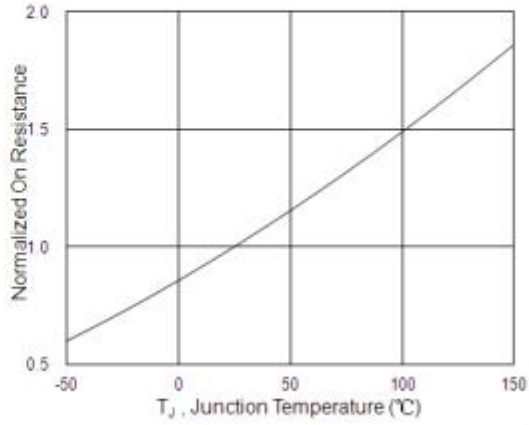


Fig.6 Normalized R_{DSON} vs T_J

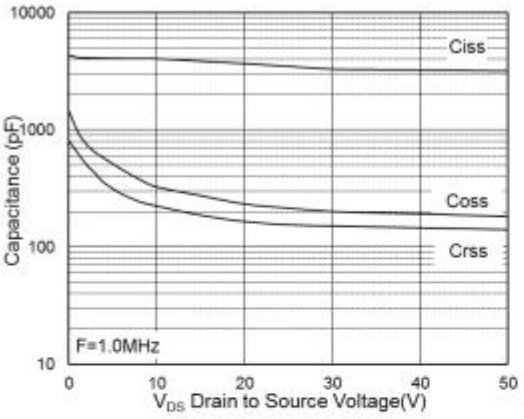


Fig.7 Capacitance

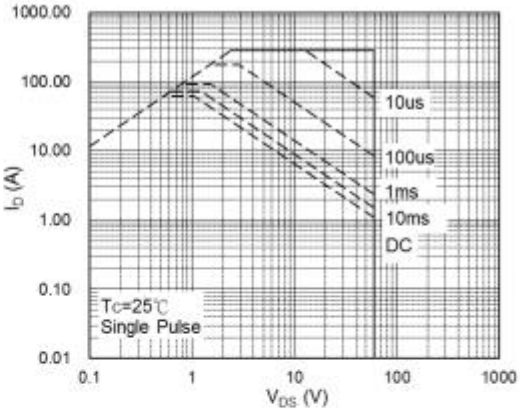


Fig.8 Safe Operating Area

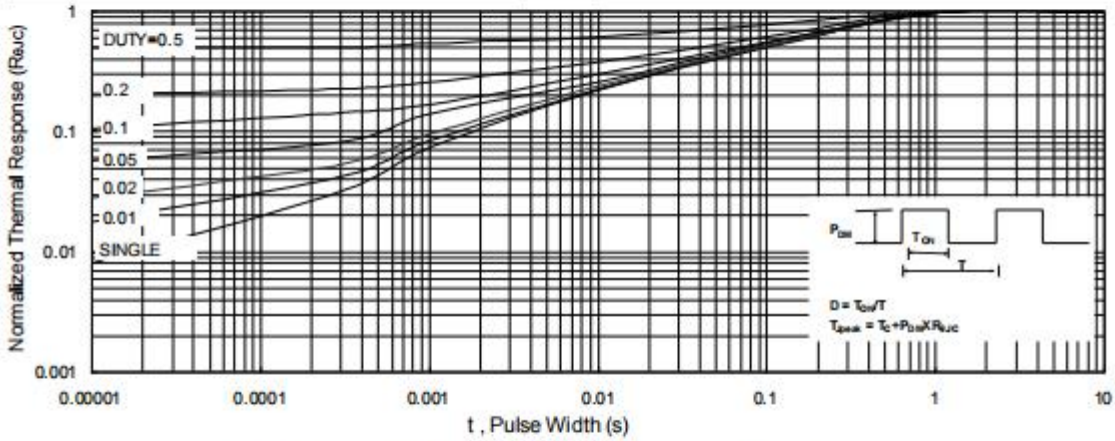


Fig.9 Normalized Maximum Transient Thermal Impedance

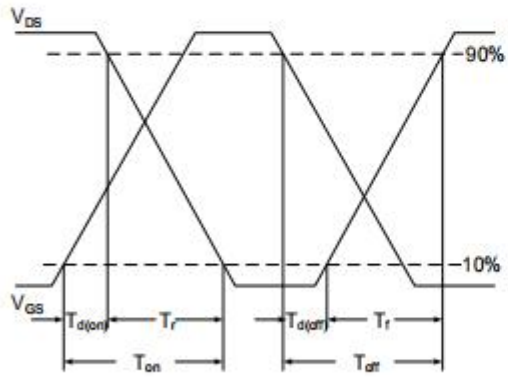


Fig.10 Switching Time Waveform

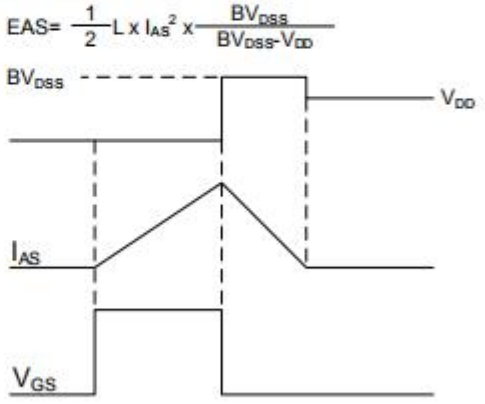


Fig.11 Unclamped Inductive Switching Waveform