

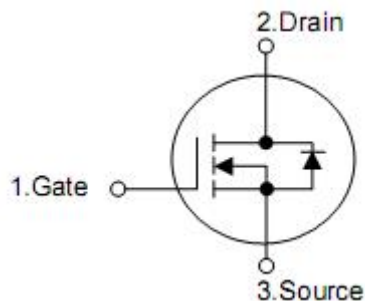
1. Features

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

2. Applications

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

3. Pin configuration



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 $V_{GS}@10V^1$	$T_C=25\text{ }^\circ\text{C}$	80	A
	$T_C=100\text{ }^\circ\text{C}$	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	°C

6. Thermal characteristics

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

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	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 =25°C	-	-	1	μA
			T _J =125°C	-	-	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 =25°C	-	7.0	8.5	mΩ	
		V _{GS} =4.5V, I _D =5A T _J =25°C	-	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)}		-	16	-	ns	
Rise time	t _r	V _{GS} =10V, V _{DD} =30V, R _G =3.3Ω, I _D =20A,	-	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 inch² 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 °C 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

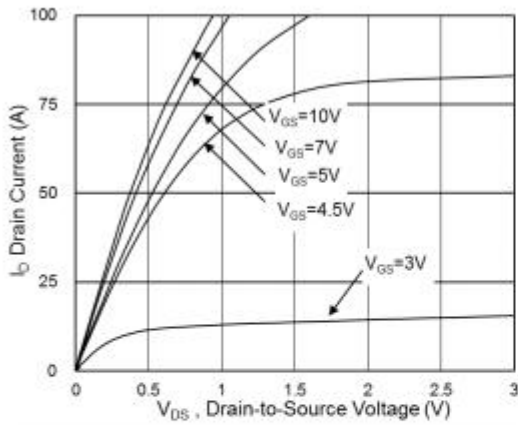


Fig.1 Typical Output Characteristics

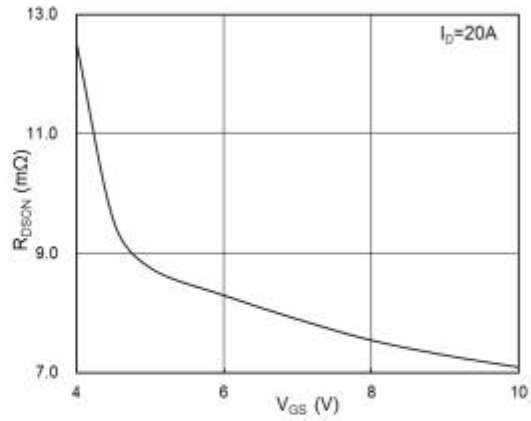


Fig.2 On-Resistance vs Gate-Source Voltage

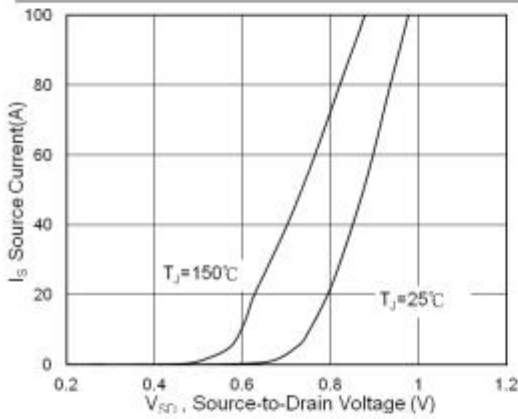


Fig.3 Forward Characteristics of Reverse

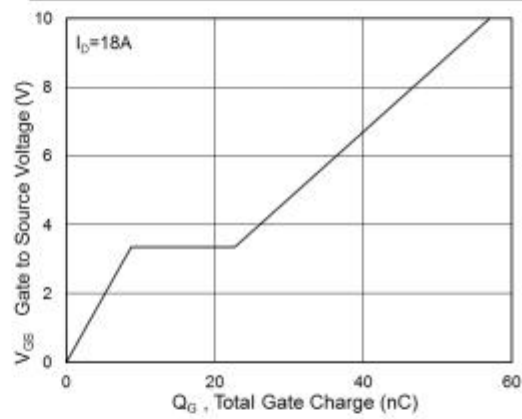


Fig.4 Gate-Charge Characteristics

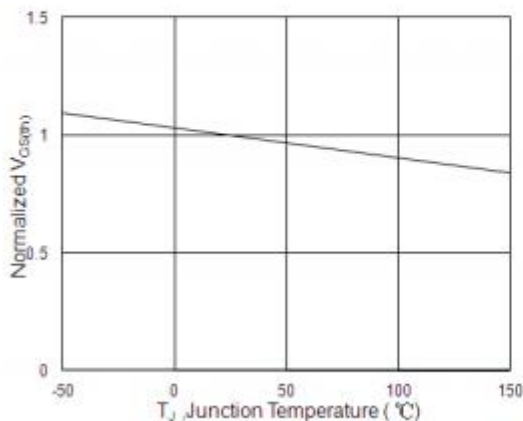


Fig.5 Normalized $V_{GS(th)}$ vs T_J

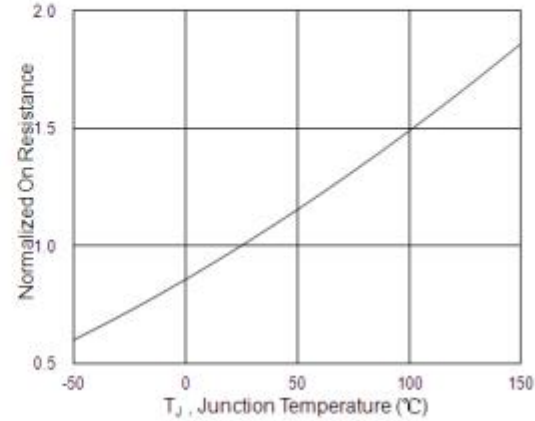


Fig.6 Normalized $R_{DS(on)}$ vs T_J

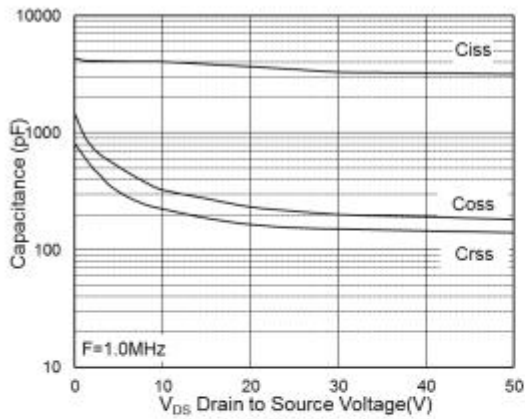


Fig.7 Capacitance

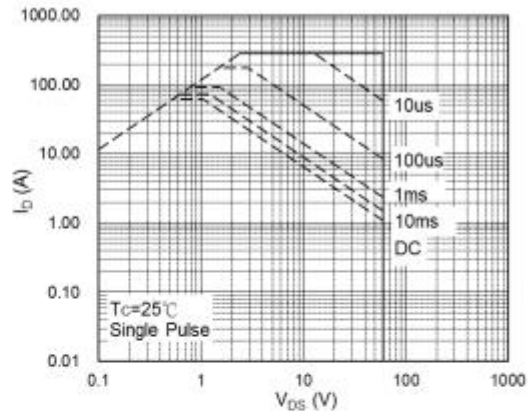


Fig.8 Safe Operating Area

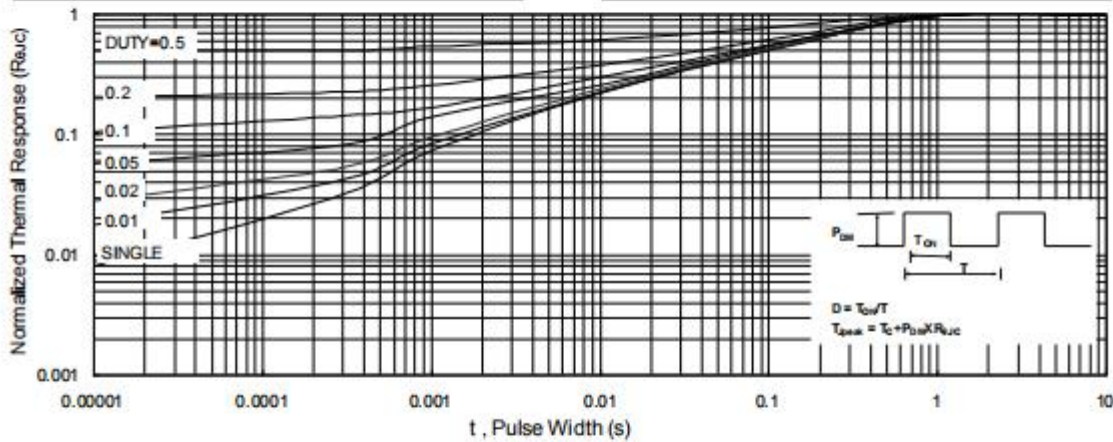


Fig.9 Normalized Maximum Transient Thermal Impedance

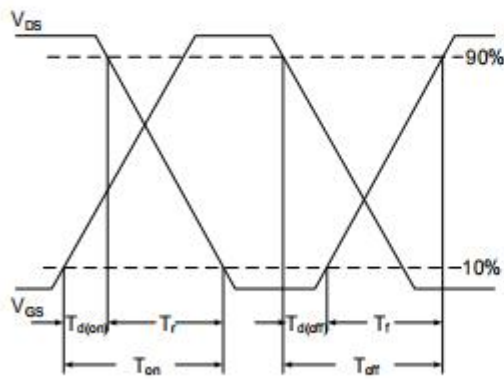


Fig.10 Switching Time Waveform

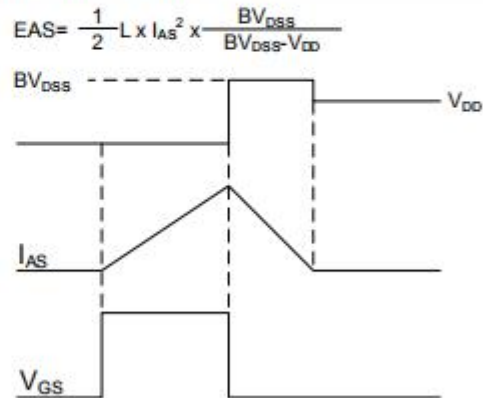


Fig.11 Unclamped Inductive Switching Waveform