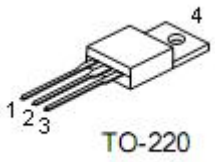
1. Features

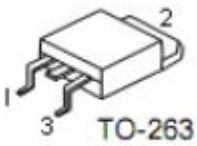
- $R_{DS(on)}$=2.2mΩ（typ.）@ V_{GS}=10V
- Lead free and green device available
- Low R_{DS}-on to minimize conductive loss
- High avalanche current

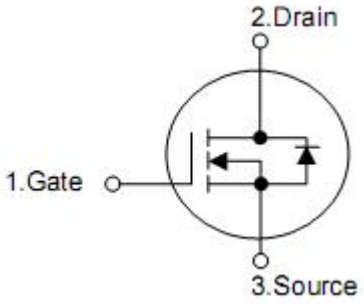
2. Applications

- Power supply
- UPS
- Battery management system

3.Symbol







Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Ordering Information

Part Number	Package	Brand
KNP1906A	TO-220	KIA
KNB1906A	TO-263	KIA

5. Absolute maximum ratings

(T_A=25°C,unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-source voltage		V_{DSS}	60	V
Gate-source voltage		V_{GSS}	±25	V
Maximum junction temperature		T_J	150	ºC
Storage temperature range		T_{STG}	-55 to150	ºC
Continuous drain current	T_C=25ºC(Silicon limit)	I_D	230	A
	T_C=25ºC(package limit)		160	A
	T_C=100ºC(Silicon limit)		139	A
Pulse drain current	T_C=25ºC,Tp limited by $T_{jmax)}$	$I_{D\ Pulse}$	640	A
Avalanche energy		E_{AS}	2112	mJ
Maximum power dissipation（T_C=25 ºC）		P_D	254	W
Soldering temperature， wave soldering only allowed at leads1.6mm from case for 10s)		T_{sold}	260	ºC

6. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance,Junction-ambient	$R_{\theta JA}$	84	ºC/W
Thermal resistance,Junction-case	$R_{\theta JC}$	0.49	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_{DS}=250μA	60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
		T_J=125°C	-	-	20	
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	3.0	4.0	V
Gate leakage current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
Drain-source on-state resistance	$R_{DS(on)}$[1]	V_{GS}=10V,I_D=80A	-	2.2	3.5	mΩ
Gate resistance	R_g	V_{DS}=0V, V_{GS}=0V,f=1MHz	-	1.5	-	Ω
Diode forward voltage	V_{SD}	I_{SD}=80A, V_{GS}=0V	-	0.9	1.4	V
Diode continuous forward current	I_S		-	-	230	A
Reverse recovery time	t_{rr}	I_F=80A,	-	54	-	nS
Reverse recovery charge	Q_{rr}	dI_{SD}/dt=100A/μs	-	115	-	nC
Input capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,	-	7850	-	pF
Output capacitance	C_{oss}	f=1MHz	-	1240	-	
Reverse transfer capacitance	C_{rss}		-	565	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, I_{DS}=80A,	-	28	-	ns
Rise time	t_r	R_G=3Ω,V_{GS}=10V	-	120	-	
Turn-off delay time	$t_{d(off)}$		-	73	-	
Fall time	t_f		-	152	-	
Total gate charge	Q_g	V_{DS}=30V, V_{GS}=10V	-	182	-	nC
Gate-source charge	Q_{gs}	I_D=80A	-	46	--	
Gate-drain charge	Q_{gd}		-	74	--	

Note:1:Pulse test;pulse width≤300us duty cycle≤2%.

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

3.Package limitation current is 160A,Calculated continuous current based on maximum allowable junction temperature.

4.Starting TJ=25ºC,VDD=50V,VGS=10V,L=1mH.I_{AS}=65A.

8. Electrical characteristics

Fig 1: Output Characteristics

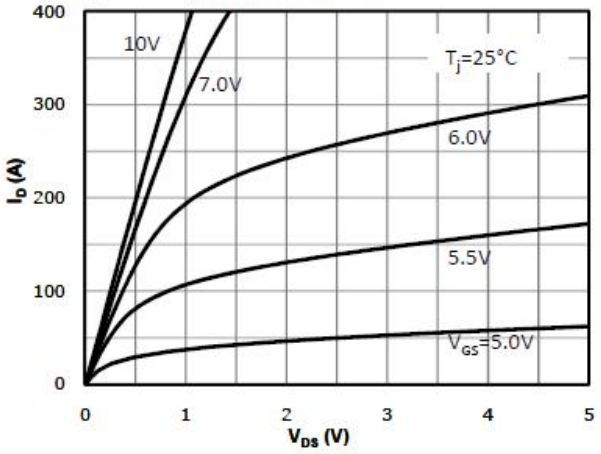


Fig 2: Transfer Characteristics

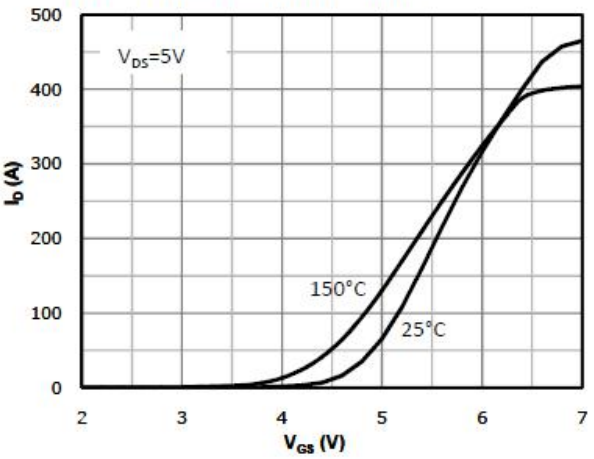


Fig 3: Rds(on) vs Drain Current and Gate Voltage

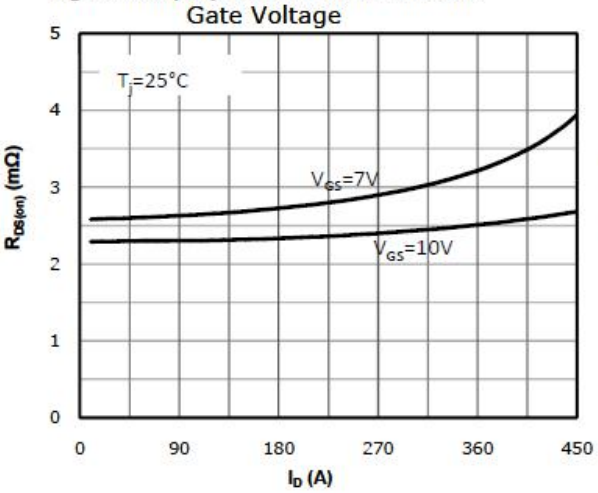


Fig 4: Rds(on) vs Gate Voltage

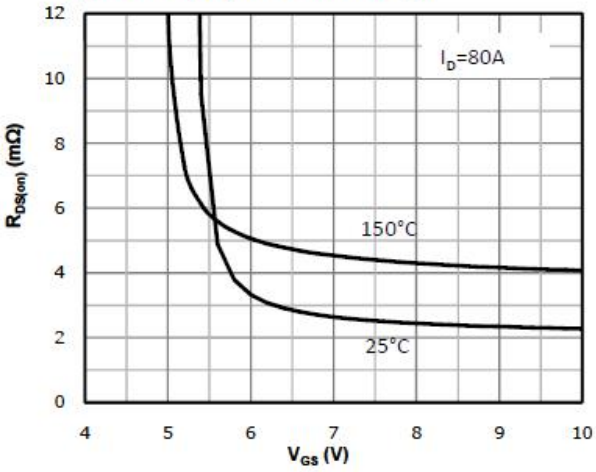


Fig 5: Rds(on) vs. Temperature

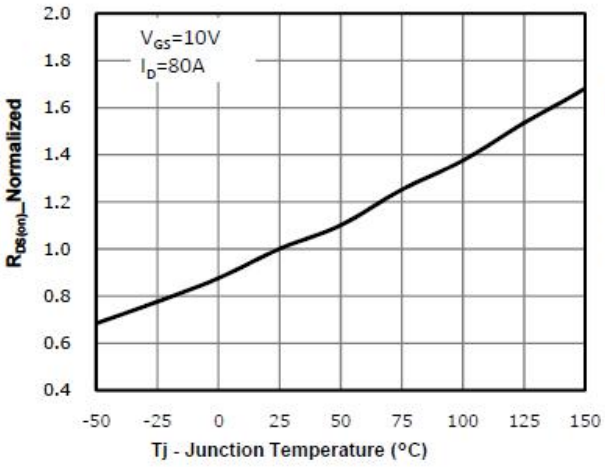


Fig 6: Capacitance Characteristics

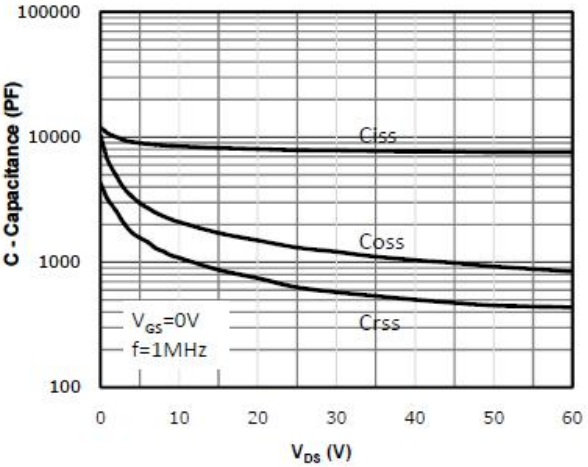


Fig 7: Gate Charge Characteristics

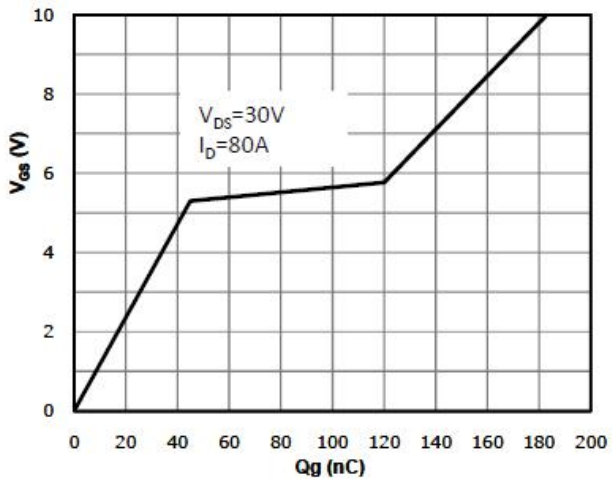


Fig 8: Body-diode Forward Characteristics

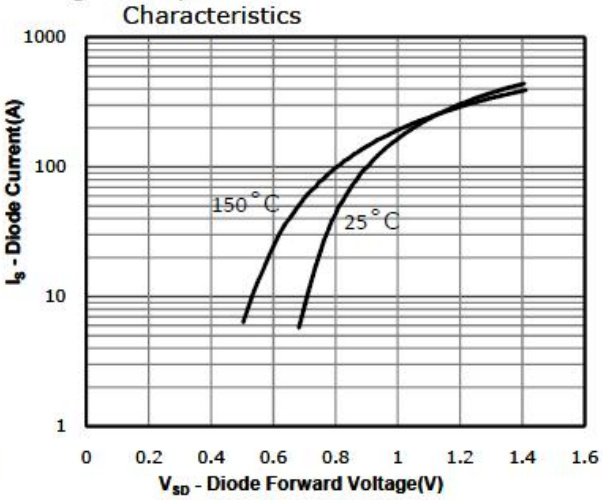


Fig 9: Power Dissipation

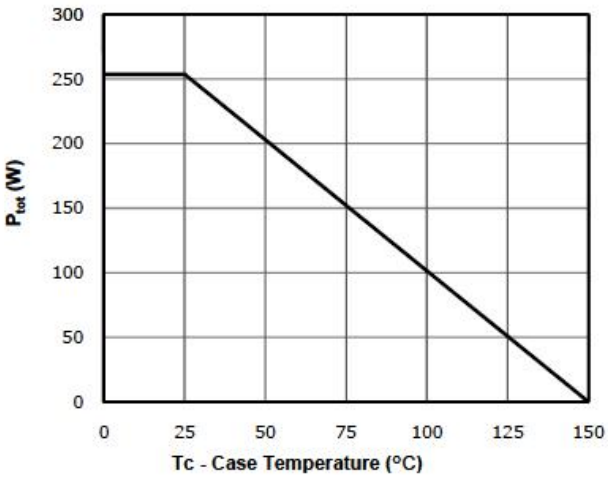


Fig 10: Drain Current Derating

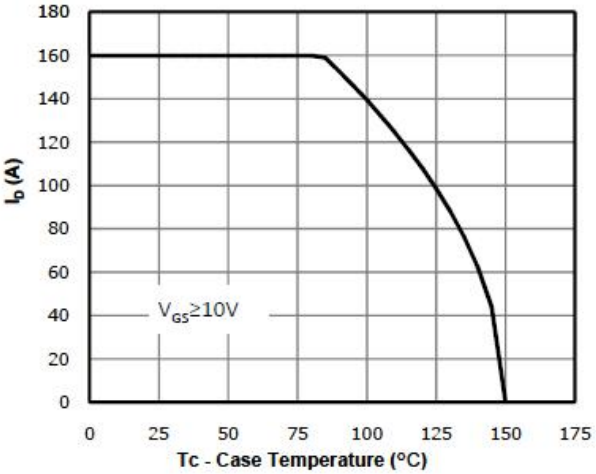


Fig 11: Safe Operating Area

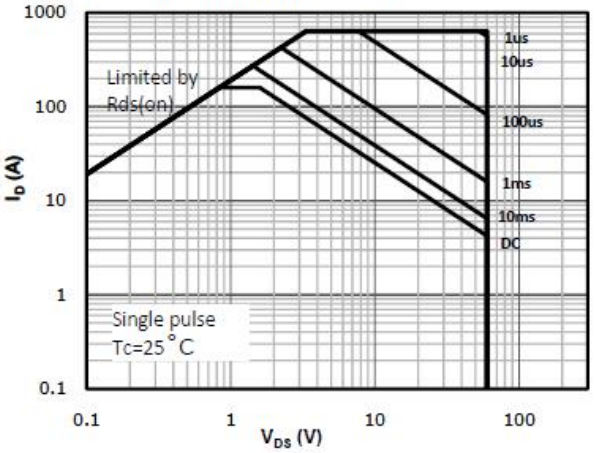
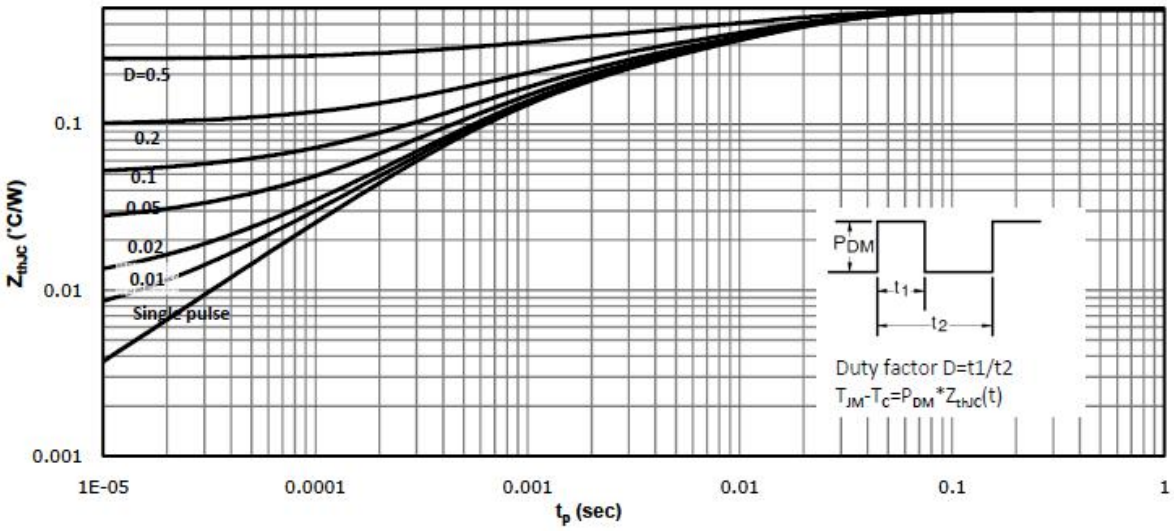


Fig 12: Max. Transient Thermal Impedance



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