

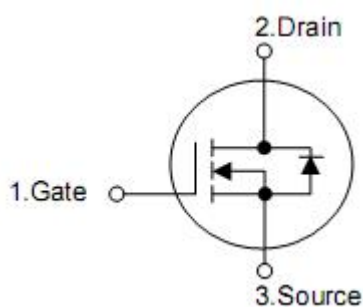
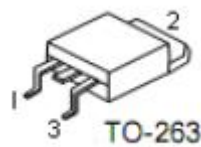
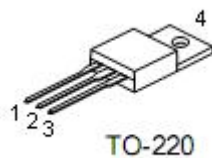
1. Features

- $R_{DS(on)}=2.2m\Omega$ (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

($T_A=25^{\circ}\text{C}$, 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	$^{\circ}\text{C}$
Storage temperature range		T_{STG}	-55 to 150	$^{\circ}\text{C}$
Continuous drain current	$T_C=25^{\circ}\text{C}$ (Silicon limit)	I_D	230	A
	$T_C=25^{\circ}\text{C}$ (package limit)		160	A
	$T_C=100^{\circ}\text{C}$ (Silicon limit)		139	A
Pulse drain current	$T_C=25^{\circ}\text{C}$, T_p limited by T_{Jmax}	$I_{D\ Pulse}$	640	A
Avalanche energy		E_{AS}	2112	mJ
Maximum power dissipation ($T_C=25^{\circ}\text{C}$)		P_D	254	W
Soldering temperature , wave soldering only allowed at leads 1.6mm from case for 10s)		T_{sold}	260	$^{\circ}\text{C}$

6. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance, Junction-ambient	$R_{\theta JA}$	84	$^{\circ}\text{C}/\text{W}$
Thermal resistance, Junction-case	$R_{\theta JC}$	0.49	$^{\circ}\text{C}/\text{W}$

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 T _J =125°C	-	-	1	μA
			-	-	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, dI _{SD} /dt=100A/μs	-	54	-	nS
Reverse recovery charge	Q _{rr}		-	115	-	nC
Input capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHz	-	7850	-	pF
Output capacitance	C _{oss}		-	1240	-	
Reverse transfer capacitance	C _{rss}		-	565	-	
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _{DS} =80A, R _G =3Ω, V _{GS} =10V	-	28	-	ns
Rise time	t _r		-	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 I _D =80A	-	182	-	nC
Gate-source charge	Q _{gs}		-	46	--	
Gate-drain charge	Q _{gd}		-	74	--	

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

2.The Value of R_{thJA} 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 T_J=25°C, V_{DD}=50V, V_{GS}=10V, L=1mH. I_{AS}=65A.

8. Electrical characteristics

Fig 1: Output Characteristics

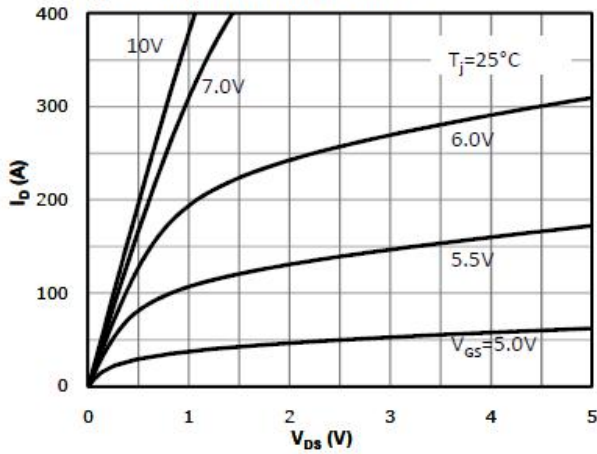


Fig 2: Transfer Characteristics

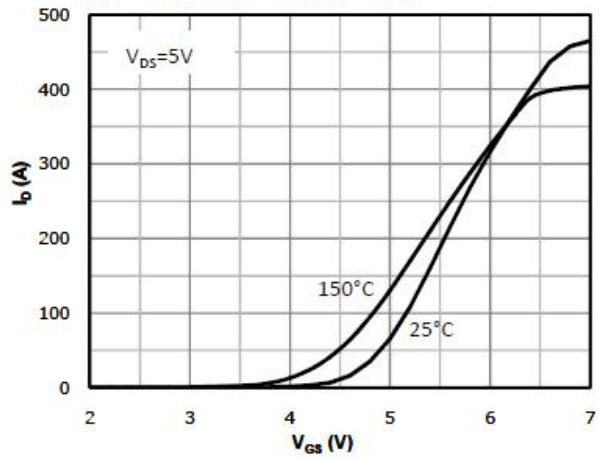


Fig 3: Rds(on) vs Drain Current and Gate Voltage

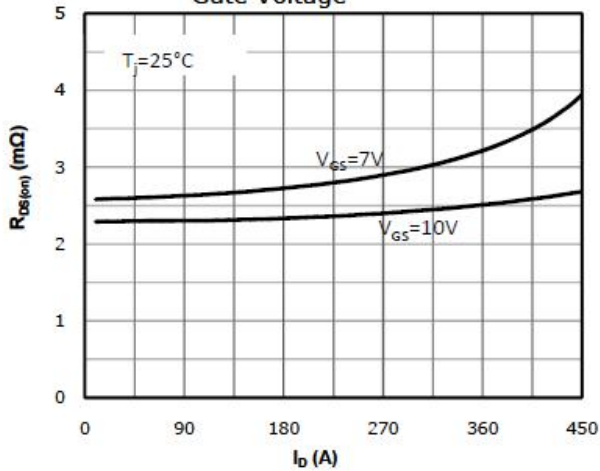


Fig 4: Rds(on) vs Gate Voltage

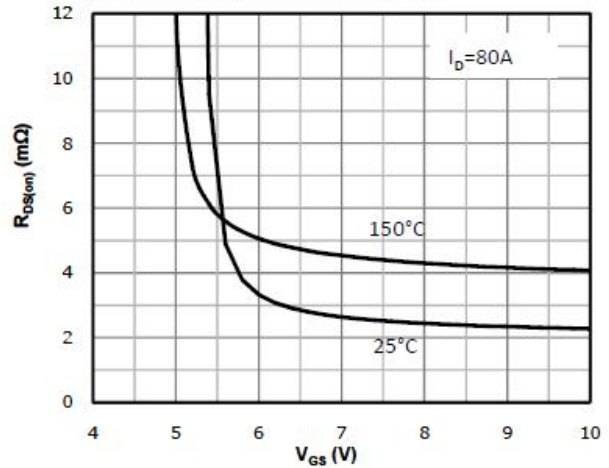


Fig 5: Rds(on) vs. Temperature

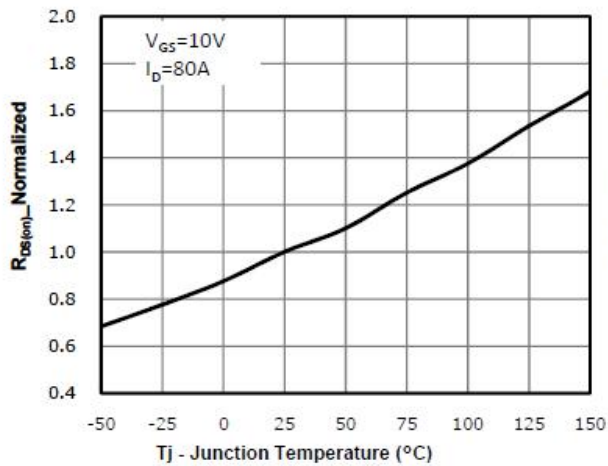


Fig 6: Capacitance Characteristics

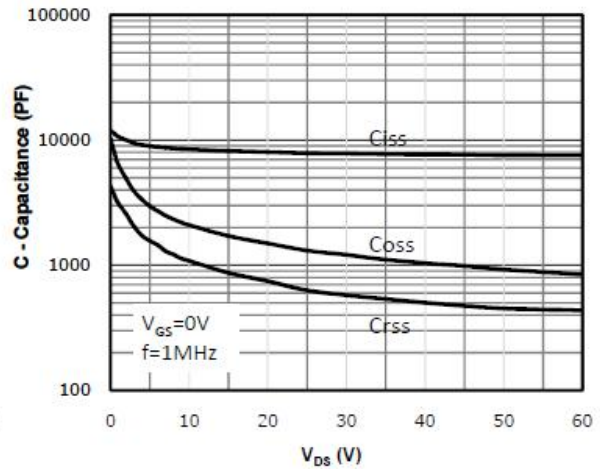


Fig 7: Gate Charge Characteristics

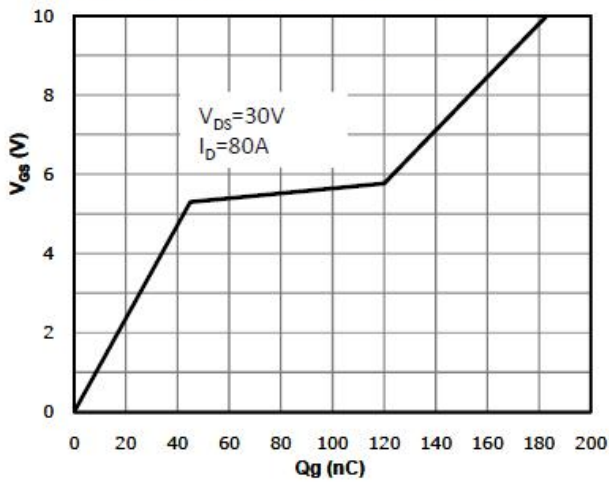


Fig 8: Body-diode Forward Characteristics

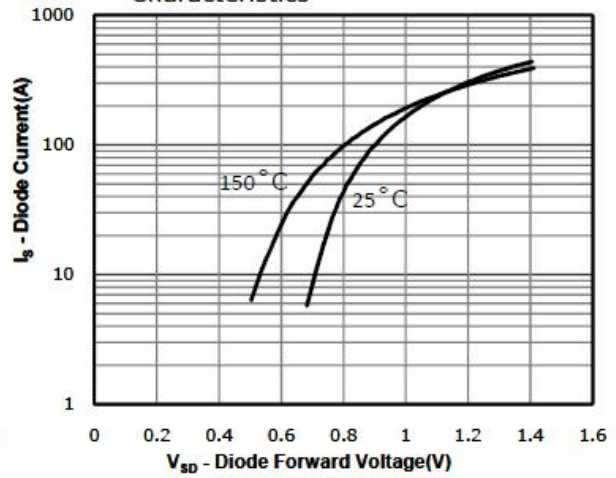


Fig 9: Power Dissipation

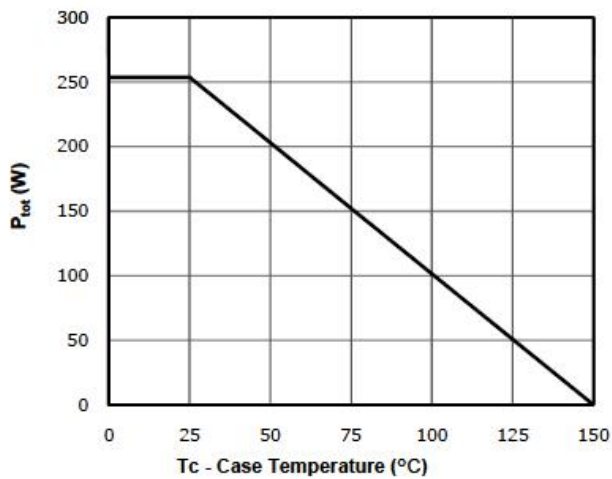


Fig 10: Drain Current Derating

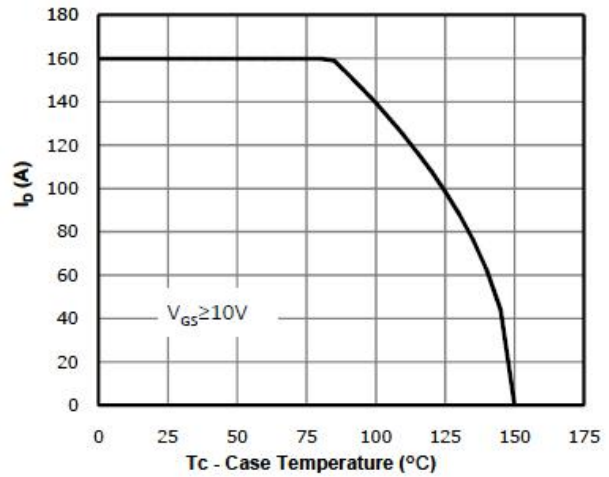


Fig 11: Safe Operating Area

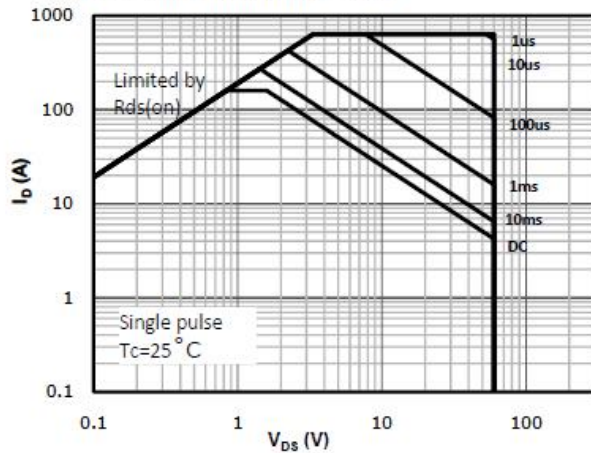


Fig 12: Max. Transient Thermal Impedance

