

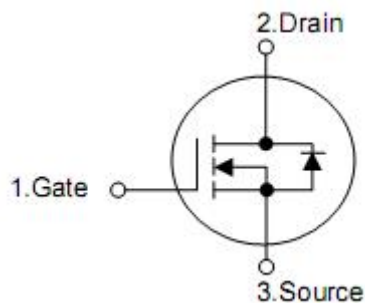
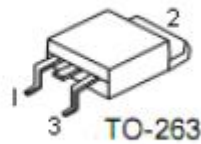
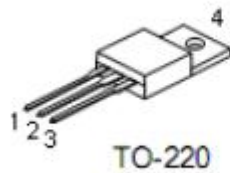
1. Features

- n $R_{DS(on)}=2.7m\Omega$ (typ.) @ $V_{GS}=10V$
- n Lead free and green device available
- n Low R_{DS-on} to minimize conductive loss
- n High avalanche current

2. Applications

- n Power supply
- n UPS
- n Battery management system

3.Symbol



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Ordering Information

Part Number	Package	Brand
KNB1906B	TO-263	KIA
KNP1906B	TO-220	KIA

5. Absolute maximum ratings

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Rating	Units	
Drain-source voltage	V_{DSS}	60	V	
Gate-source voltage	V_{GSS}	± 25	V	
Maximum junction temperature	T_J	175	$^{\circ}\text{C}$	
Storage temperature range	T_{STG}	-55 to 175	$^{\circ}\text{C}$	
Continuous drain current	$T_C=25^{\circ}\text{C}$	I_D^3	230	A
	$T_C=100^{\circ}\text{C}$		150	A
Pulse drain current	$T_C=25^{\circ}\text{C}$	I_{DM}^4	880	A
Avalanche current		I_{AS}^5	40	A
Avalanche energy		E_{AS}^5	800	mJ
Maximum power dissipation	$T_C=25^{\circ}\text{C}$	P_D	200	W
	$T_C=100^{\circ}\text{C}$		100	W

6. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance, Junction-ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C}/\text{W}$
Thermal resistance, Junction-case	$R_{\theta JC}$	0.75	$^{\circ}\text{C}/\text{W}$

7. Electrical characteristics

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	60	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^{\circ}\text{C}$	-	-	20	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
Gate leakage current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	± 100	nA
Drain-source on-state resistance	$R_{DS(on)}^1$	$V_{GS}=10V, I_D=50A$	-	2.7	3.5	m Ω
Gate resistance	R_g^2	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.6	-	Ω
Diode forward voltage	V_{SD}^1	$I_{SD}=60A, V_{GS}=0V$	-	0.9	1.3	V
Diode continuous forward current	I_S^3		-	-	50	A
Reverse recovery time	t_{rr}	$I_F=60A, di_{SD}/dt=100A/\mu s$	-	70	-	nS
Reverse recovery charge	Q_{rr}		-	150	-	nC
Input capacitance	C_{iss}^2	$V_{DS}=30V, V_{GS}=0V, f=1\text{MHz}$	-	6110	-	μF
Output capacitance	C_{oss}^2		-	1020	-	
Reverse transfer capacitance	C_{rss}^2		-	771	-	
Turn-on delay time	$t_{d(on)}^2$	$V_{DD}=30V, I_D=60A, R_G=6\Omega, V_{GS}=10V$	-	20	-	ns
Rise time	t_r^2		-	11	-	
Turn-off delay time	$t_{d(off)}^2$		-	75	-	
Fall time	t_f^2		-	65	-	
Total gate charge	Q_g^2	$V_{DS}=30V, V_{GS}=15V, I_D=10A$	-	742	-	nC
Gate-source charge	Q_{gs}^2		-	97.9	--	
Gate-drain charge	Q_{gd}^2		-	227	--	

Note: 1: Pulse test; pulse width $\leq 300\mu s$ duty cycle $\leq 2\%$.

2. Guaranteed by design, not subject to production testing.

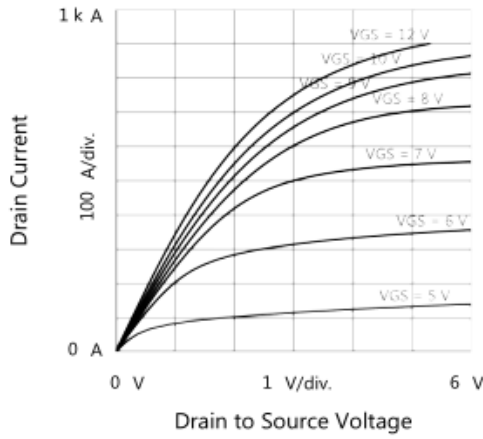
3. Package limitation current is 50A, Calculated continuous current based on maximum allowable junction temperature.

4. Repetitive rating, pulse width limited by max junction temperature.

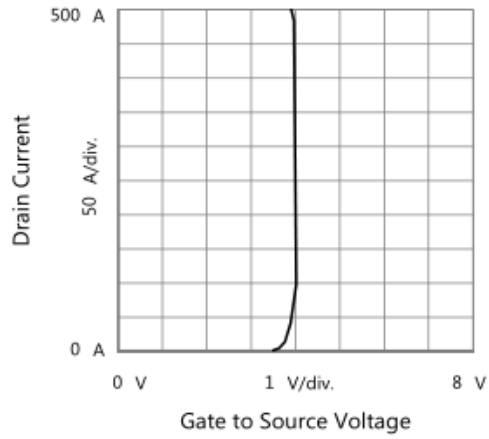
5. Starting $T_J=25^{\circ}\text{C}$, $L=0.5\text{mH}$, $I_{AS}=60A$.

8. typical Operating Characteristics

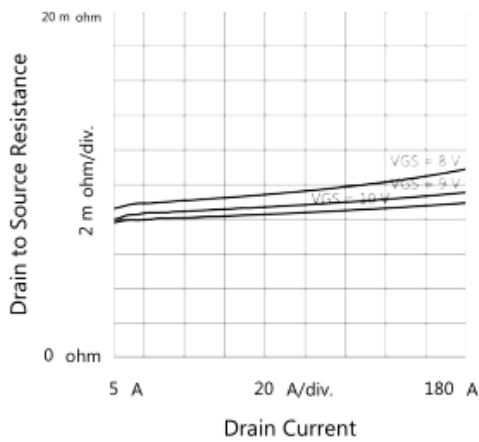
Output Characteristics



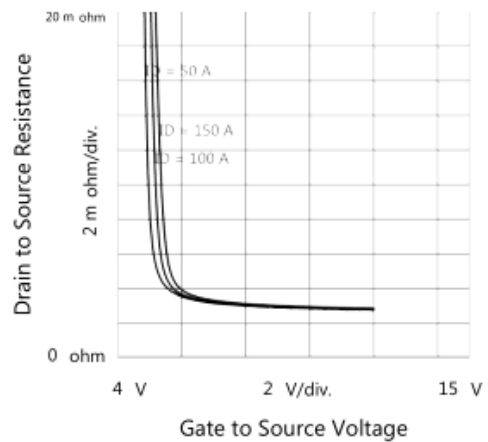
Transfer Characteristics



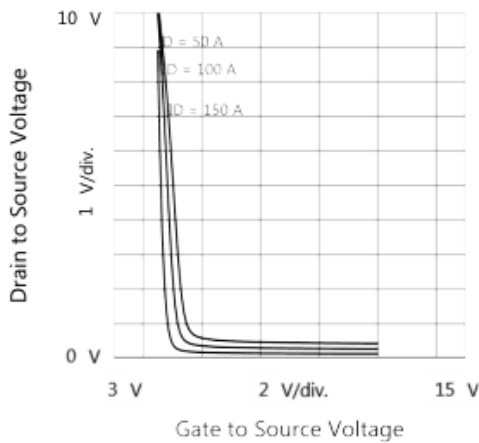
Drain to Source Resistance vs. Drain Current



Drain to Source Resistance vs. Gate to Source Voltage



Drain to Source Voltage vs. Gate to Source Voltage



Body Diode Forward Characteristics

