

1. Features

- RoHS Compliant
- $R_{DS(ON),typ.}=2.2\Omega@V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

2. Applications

- Adaptor
- Charger
- SMPS Standby Power

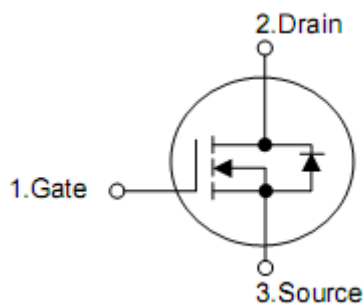
3. Pin configuration



TO-220



TO-220F



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KNP43100A	TO-220	KIA
KNF43100A	TO-220F	KIA

5. Absolute maximum ratings

(T_c= 25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-to-Source Voltage T _J =25 °C	V _{DSS}	1000	V
Gate-to-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current @ T _c =25 °C	I _D	4.0	A
Pulsed Drain Current at V _{GS} =10V Limited by T _{Jmax}	I _{DM}	16	A
Single Pulse Avalanche Energy(V _{DD} =50V)	EAS	450	mJ
Maximum Power Dissipation	P _D	33	W
Max. Junction Temperature	T _{Jmax}	150	°C
Storage Temperature Range	T _{STG}	-55 to 150	°C

6. Thermal characteristics

Parameter	Symbol	Ratings	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	3.78	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	100	°C/W

7. Electrical characteristics

(T_J=25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	1000	--	--	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =1000V, V _{GS} =0V	--	--	1	uA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-100	--	100	nA
Drain-to-Source ON Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =2.0A		2.2	2.5	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250uA	3.0	--	5.0	V
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1.0MHZ	--	1470	--	pF
Reverse Transfer Capacitance	C _{rss}		--	21	--	
Output Capacitance	C _{oss}		--	155	--	
Total Gate Charge	Q _g	V _{DD} =500V, I _D =4.0A, V _{GS} =10V	--	36	--	nC
Gate-to-Source Charge	Q _{gs}		--	7.5	--	
Gate-to-Drain (Miller) Charge	Q _{gd}		--	14	--	
Turn-on Delay Time	t _{d(ON)}	V _{DD} =500V, I _D =4.0A, R _G =4.7Ω V _{GS} = 10V (Resistive Load)	--	20	--	nS
Rise Time	t _{rise}		--	23	--	
Turn-Off Delay Time	t _{d(OFF)}		--	28	--	
Fall Time	t _{fall}		--	26	--	
Continuous Source Current	I _{SD}		--	--	4	A
Forward Voltage	V _{SD}	I _S =4.0A, V _{GS} =0V	--	-	1.5	V
Reverse recovery time	t _{rr}	V _{GS} =0V, I _F =4.0A, diF/dt=-100A/μs	--	320	--	ns
Reverse recovery charge	Q _{rr}		--	1.0	--	uC

8. Test circuits and waveforms

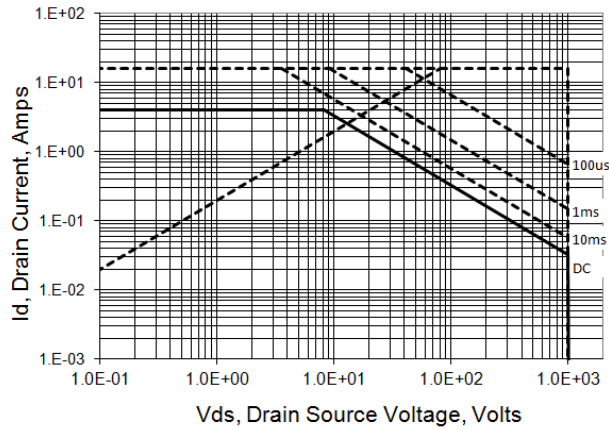


Figure 1 . Maximum Safe Operating Area

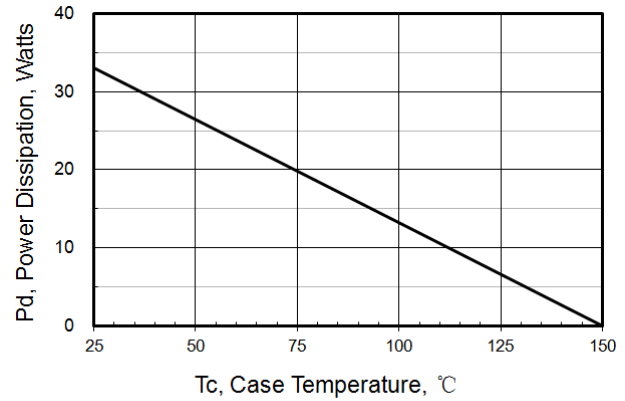


Figure 2 . Maximum Power Dissipation vs Tc

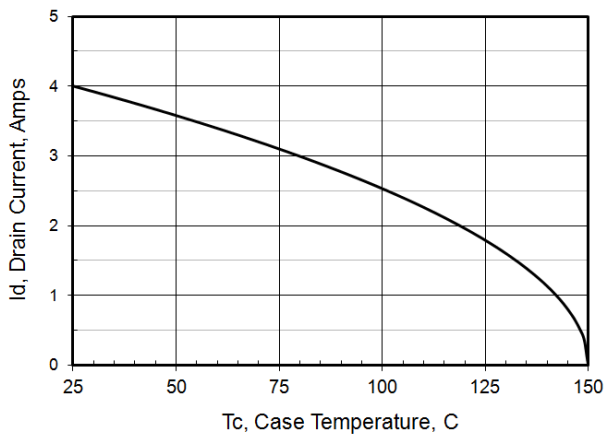


Figure 3 .Id vs Case Temperature

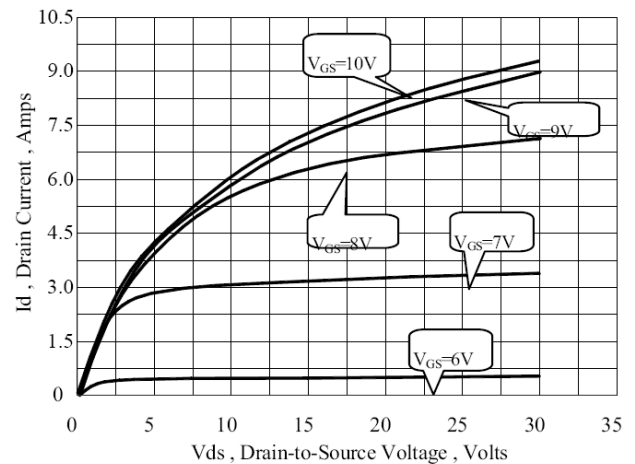


Figure 4 Typical Output Characteristics

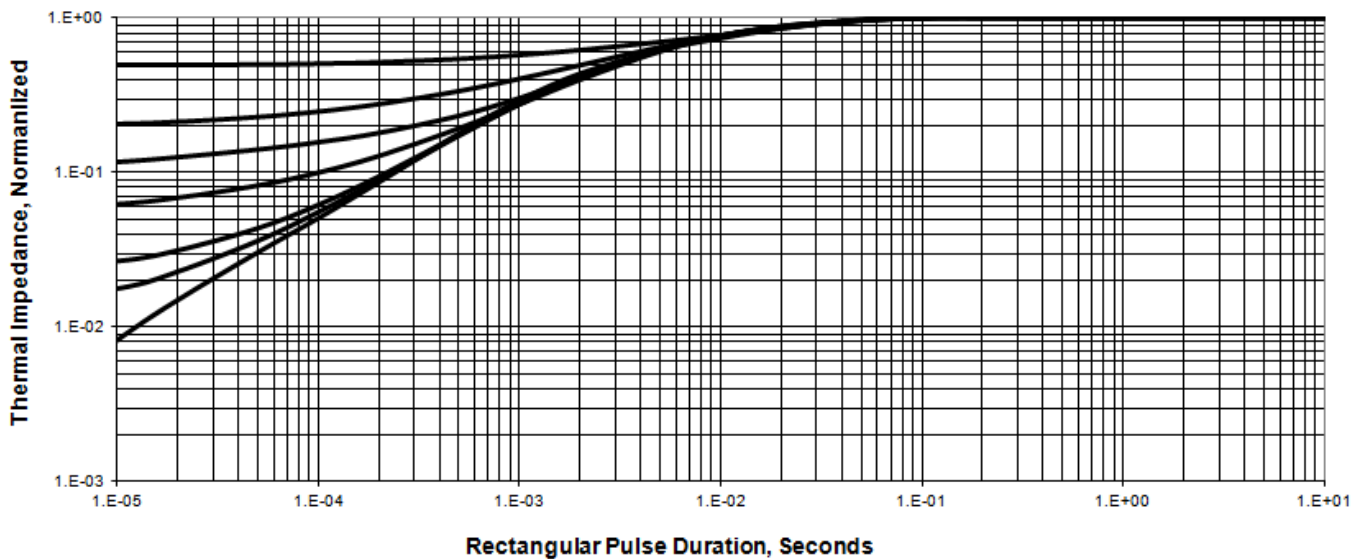


Figure 5. Maximum Transient Thermal Impedance

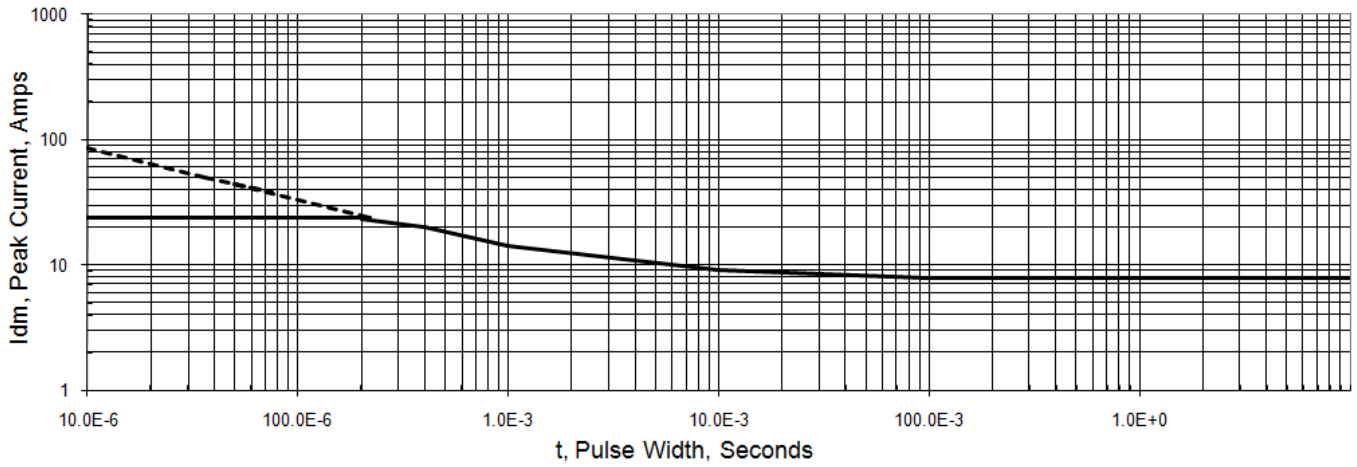


Figure 6. Peak Current Capability

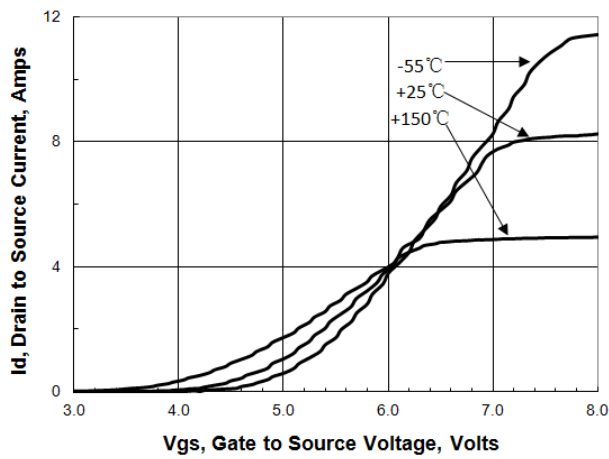


Figure 7. Transfer Characteristics

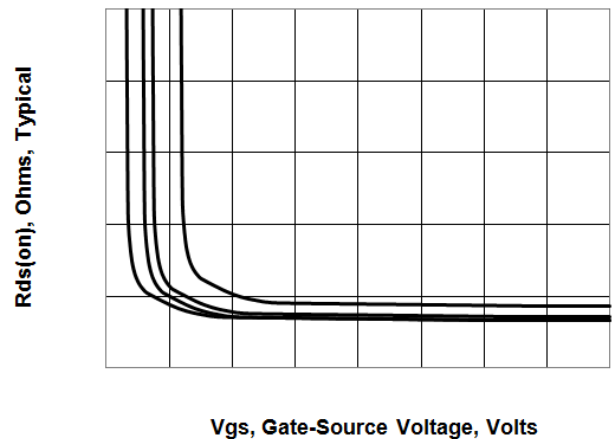


Figure 8. RDSON vs Gate Voltage

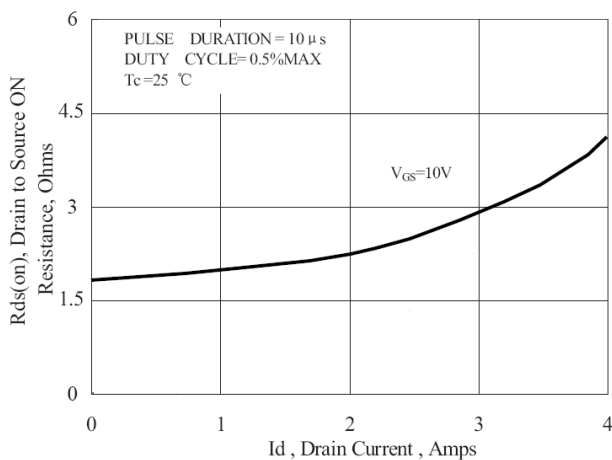


Figure 9 Typical Drain to Source ON Resistance vs Drain Current

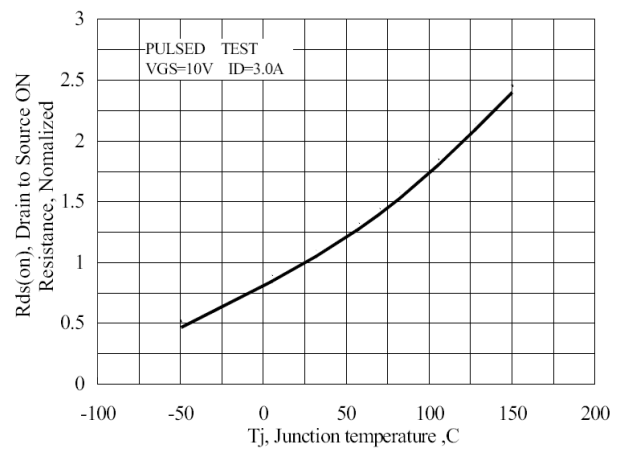


Figure 10 Typical Drain to Source on Resistance vs Junction Temperature

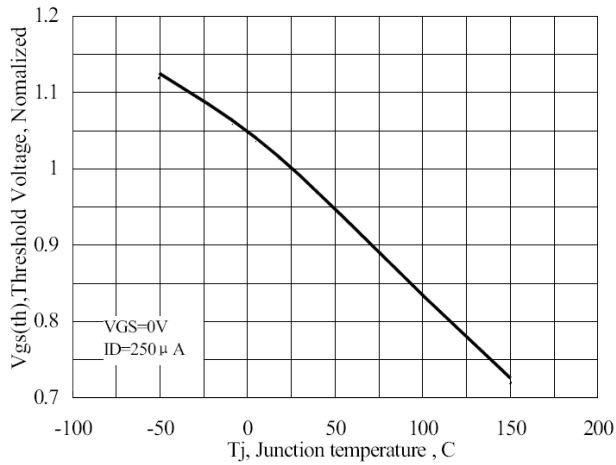


Figure 11 Typical Theshold Voltage vs Junction Temperature

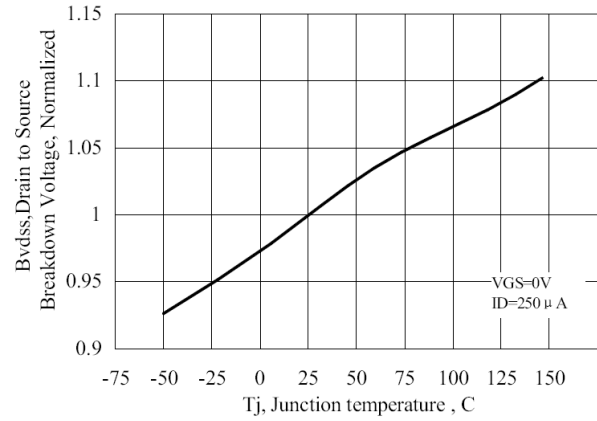


Figure 12 Typical Breakdown Voltage vs Junction Temperature

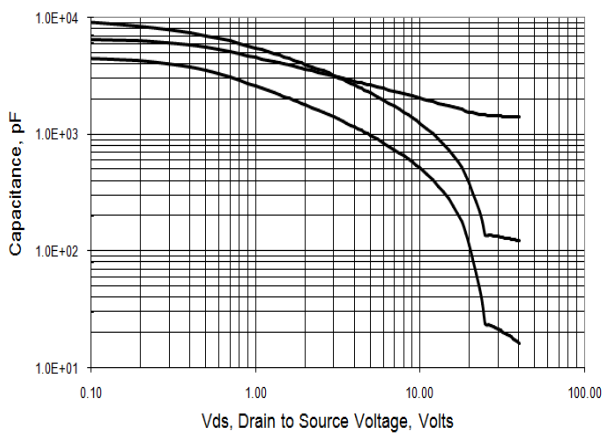


Figure 13. Capacitance vs Vds

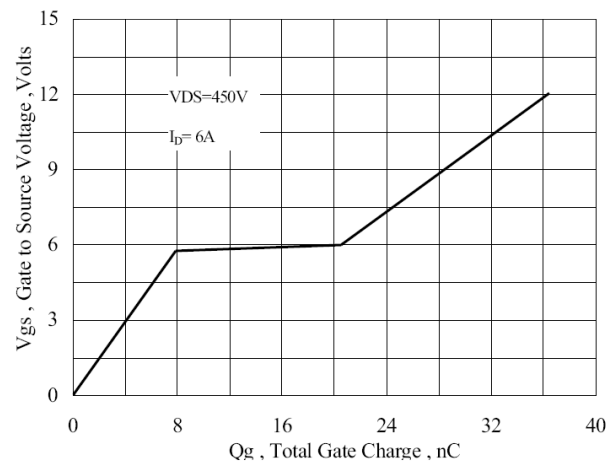


Figure 14 Typical Gate Charge vs Gate to Source Voltage

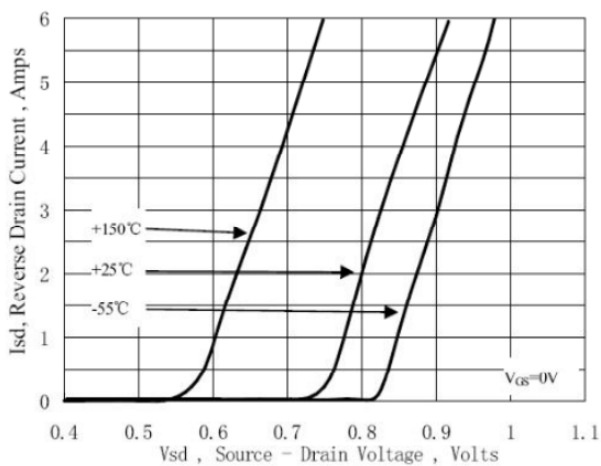


Figure 15 Typical Body Diode Transfer Characteristics

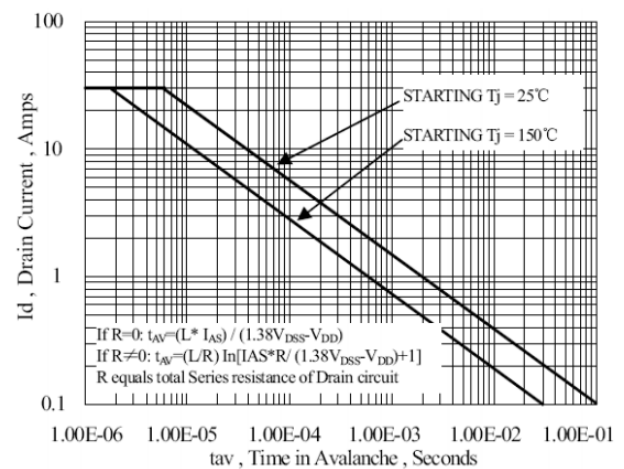


Figure 16 Unclamped Inductive Switching Capability