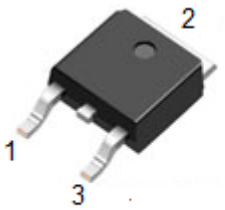
1. Features

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

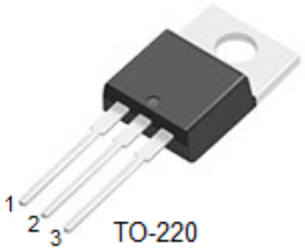
2. Applications

- Adaptor
- Charger
- SMPS Standby Power

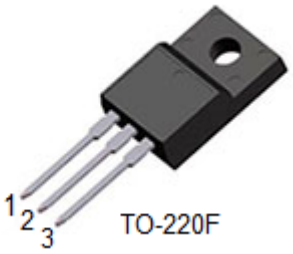
3. Pin configuration



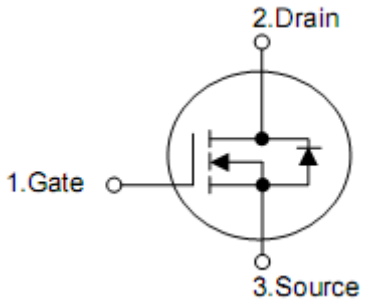
TO-252



TO-220



TO-220F



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KND43100A	TO-252	KIA
KNP43100A	TO-220	KIA
KNF43100A	TO-220F	KIA

5. Absolute maximum ratings

(T_C= 25 ºC , unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-to-Source Voltage T_J=25 ºC	V_{DSS}	1000	V
Gate-to-Source Voltage	V_{GSS}	±30	
Continuous Drain Current @ Tc=25 ºC	I_D	4.0	A
Pulsed Drain Current at V_{GS}=10V Limited by T_{Jmax}	I_{DM}	16	
Single Pulse Avalanche Energy(V_{DD}=50V)	EAS	450	mJ
Maximum Power Dissipation	P_D	33	W
Max. Junction Temperature	T_{Jmax}	150	ºC
Storage Temperature Range	T_{STG}	-55 to 150	

6. Thermal characteristics

Parameter	Symbol	Ratings	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.78	ºC /W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	100	

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

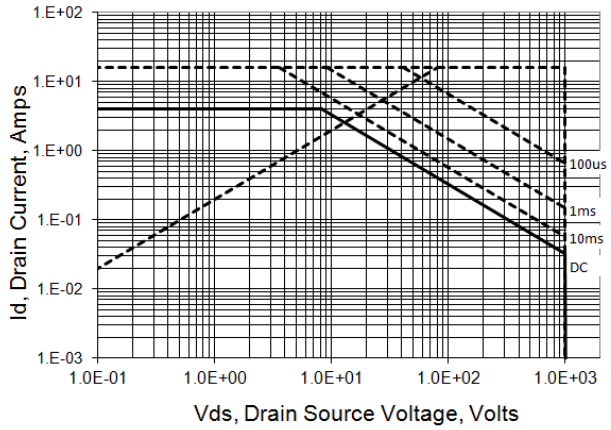


Figure 1 . Maximum Safe Operating Area

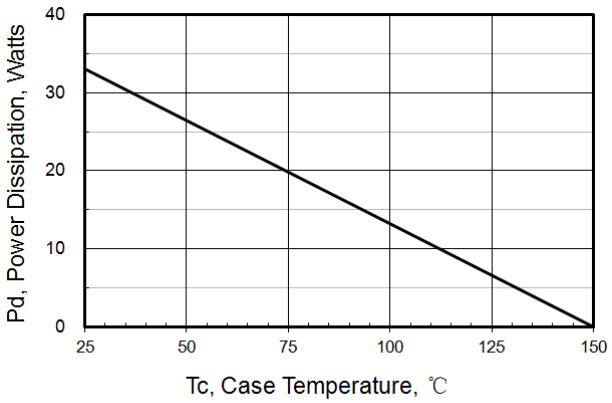


Figure 2 . Maximum Power Dissipation vs Tc

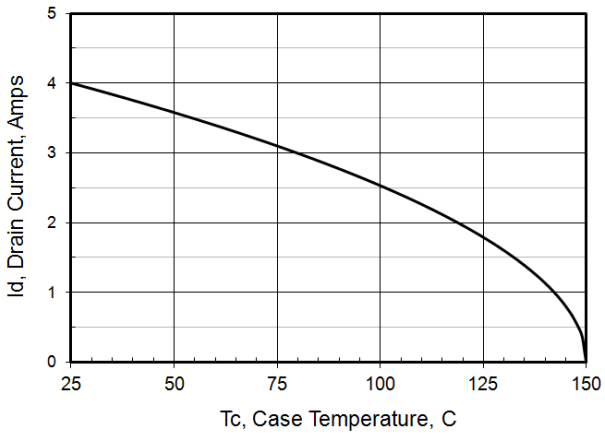


Figure 3 .Id vs Case Temperature

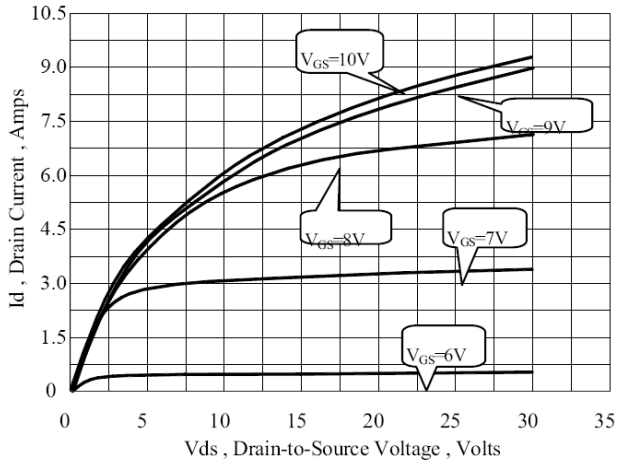


Figure 4 Typical Output Characteristics

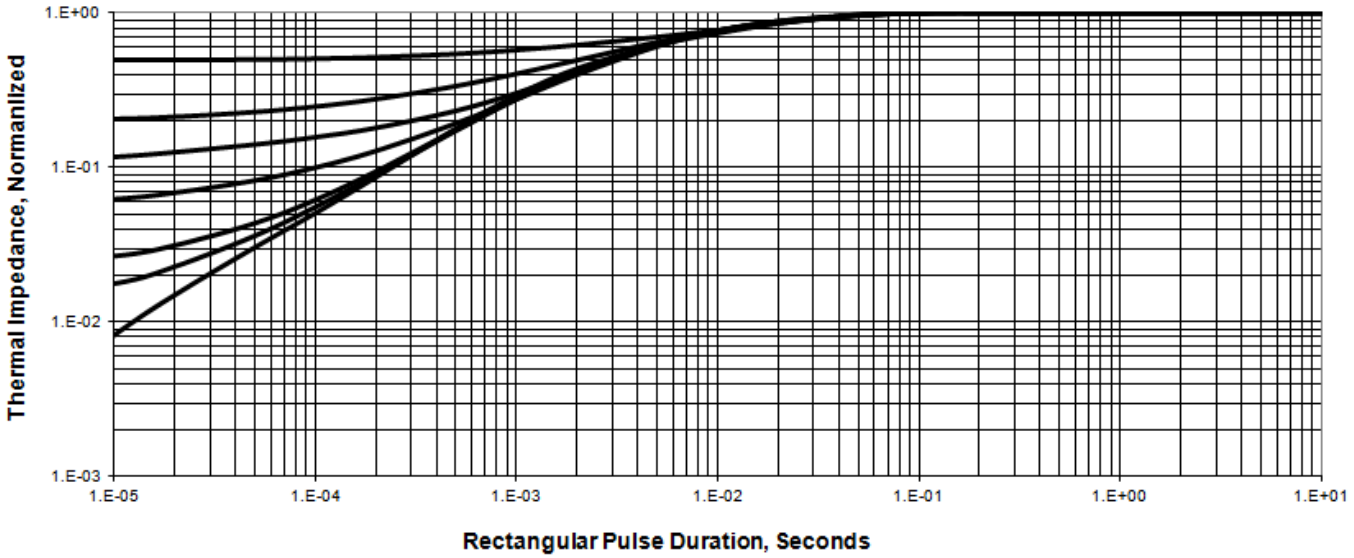


Figure 5. Maximum Transient Thermal Impedance

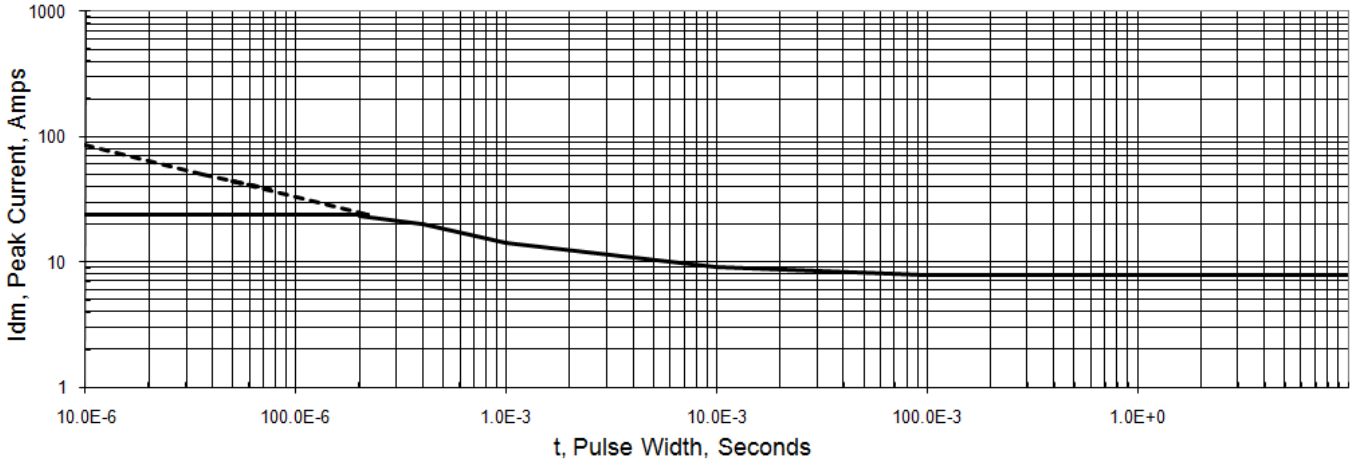


Figure 6. Peak Current Capability

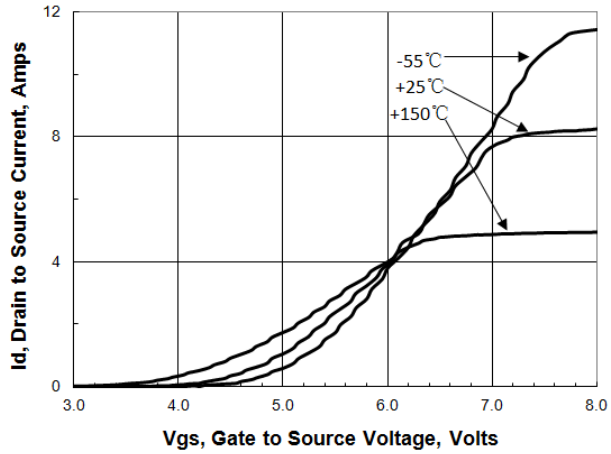


Figure 7. Transfer Characteristics

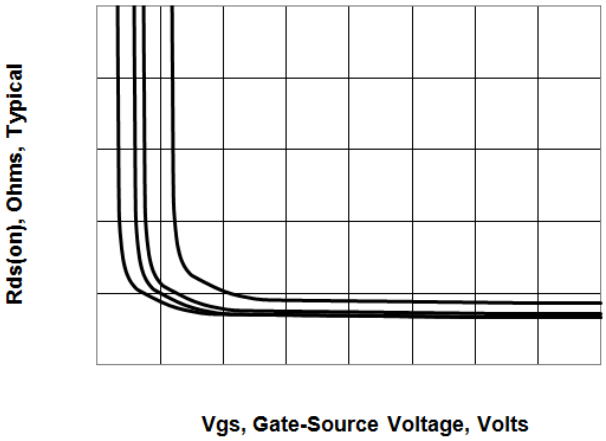


Figure 8. RDSONvs Gate Voltage

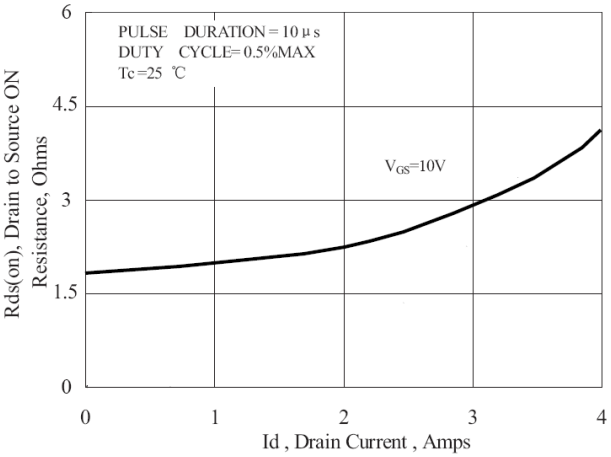


Figure 9 Typical Drain to Source ON Resistance vs Drain Current

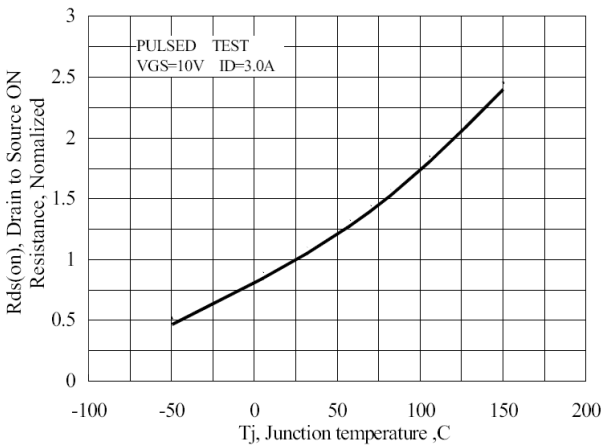


Figure 10 Typical Drian to Source on Resistance vs Junction Temperature

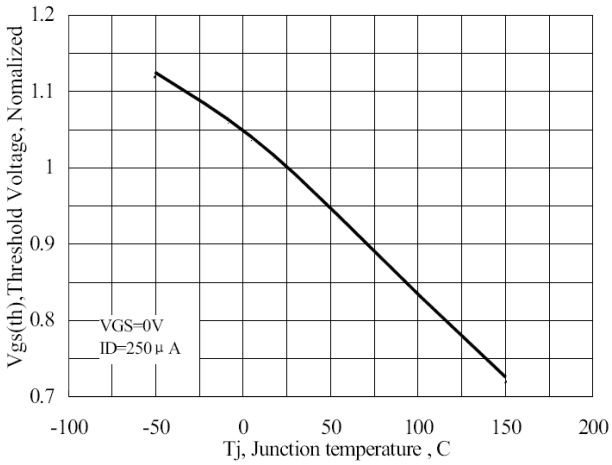


Figure 11 Typical Theshold Voltage vs Junction Temperature

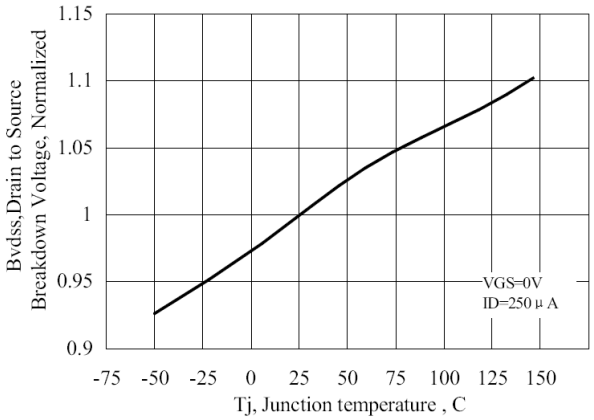


Figure 12 Typical Breakdown Voltage vs Junction Temperature

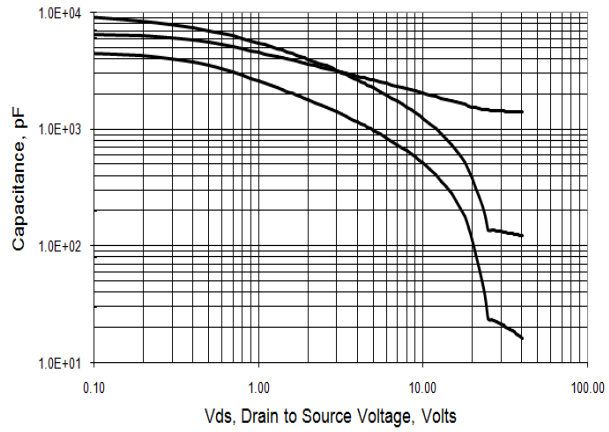


Figure 13. Capacitance vs Vds

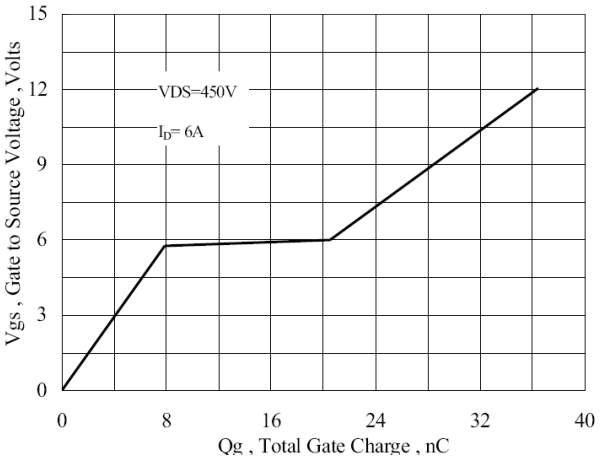


Figure 14 Typical Gate Charge vs Gate to Source Voltage

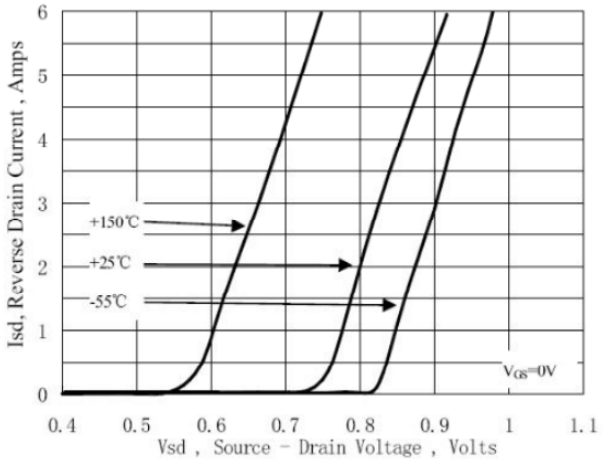


Figure 15 Typical Body Diode Transfer Characteristics

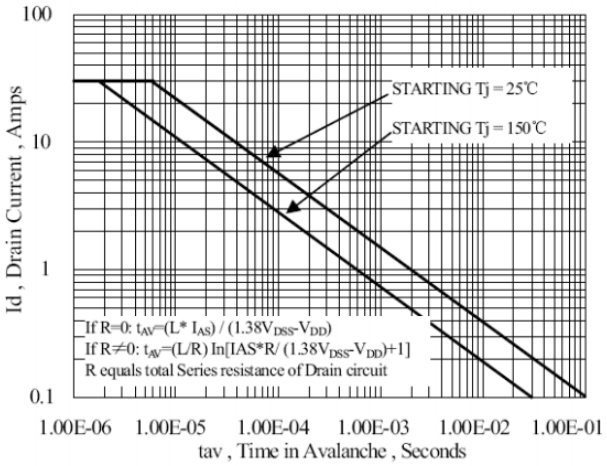


Figure 16 Unclamped Inductive Switching Capability