

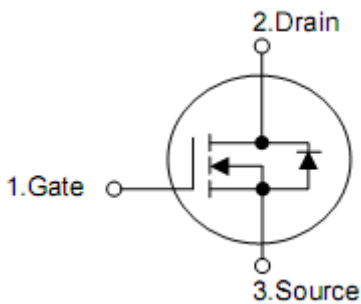
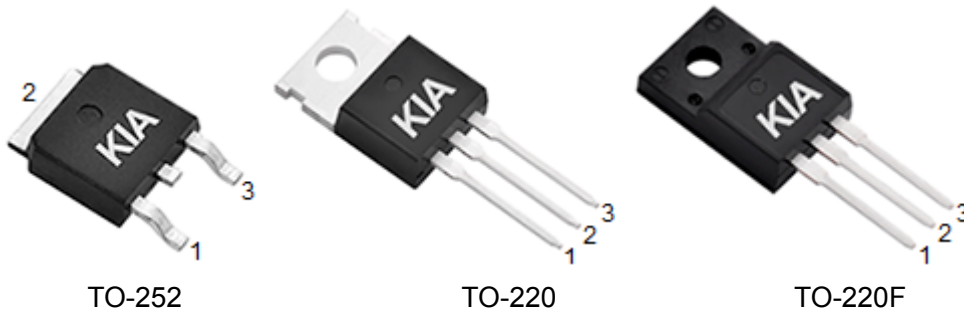
1. Product Features

- RoHS Compliant
- $R_{DS(ON)}=7.0\Omega(\text{typ.}) @ V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

2. Applications

- Adaptor
- Charger
- SMPS Standby Power

3. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KND42120A	TO-252	KIA
KNP42120A	TO-220	KIA
KNF42120A	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}	1200	V
Gate-to-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current @ T _c =25 °C	I _D	3.0	A
Pulsed Drain Current at V _{GS} =10V Limited by T _{Jmax}	I _{DM}	12	A
Single Pulse Avalanche Energy(V _{DD} =50V)	EAS	100	mJ
Maximum Power Dissipation	P _D	75	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}	1.67	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	75	°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	1200	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =1200V, 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 =1.5A	-	7.0	9.0	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250uA	2.5	-	4.5	V
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1.0MHZ	-	860	-	pF
Reverse Transfer Capacitance	C _{rss}		-	22	-	
Output Capacitance	C _{oss}		-	60	-	
Total Gate Charge	Q _g	V _{DD} =600V, I _D =3.0A, V _{GS} =10V	-	17.5	-	nC
Gate-to-Source Charge	Q _{gs}		-	5.0	-	
Gate-to-Drain (Miller) Charge	Q _{gd}		-	5.5	-	
Turn-on Delay Time	t _{d(ON)}	V _{DD} =600V, I _D =3.0A, R _G =4.7Ω V _{GS} = 10V (Resistive Load)	-	17	-	nS
Rise Time	t _{rise}		-	6.0	-	
Turn-Off Delay Time	t _{d(OFF)}		-	23	-	
Fall Time	t _{fall}		-	11	-	
Continuous Source Current	I _{SD}	--	-	-	3.0	A
Forward Voltage	V _{SD}	I _S =3.0A, V _{GS} =0V	-	-	1.5	V
Reverse recovery time	t _{rr}	V _{GS} =0V, I _F =3.0A, diF/dt=-100A/μs	-	200	-	ns
Reverse recovery charge	Q _{rr}		-	760	-	nC

8. Test circuits and waveforms

Fig. 1. Output Characteristics @ 25°C

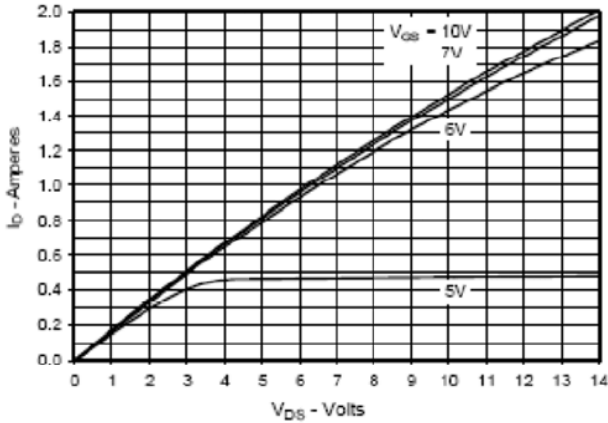


Fig. 2. Extended Output Characteristics @ 25°C

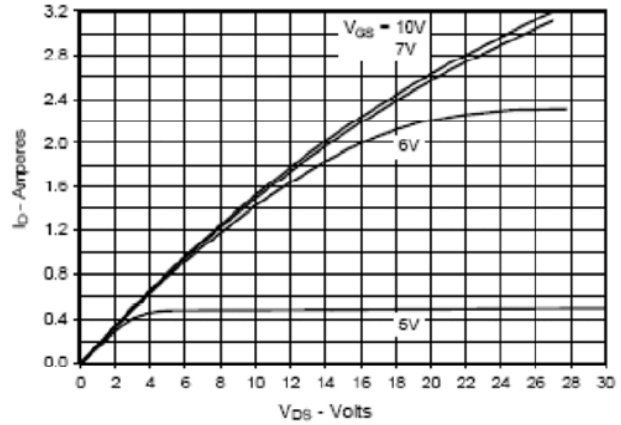


Fig. 3. Output Characteristics @ 125°C

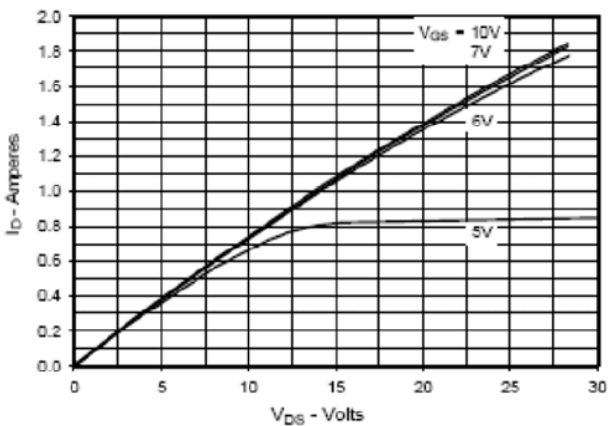


Fig. 4. RDS(on) Normalized to Id = 1A Value vs. Junction Temperature

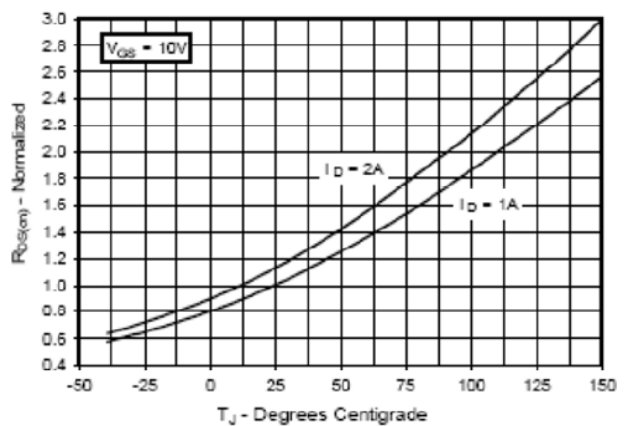


Fig. 5. RDS(on) Normalized to Id = 1A Value vs. Drain Current

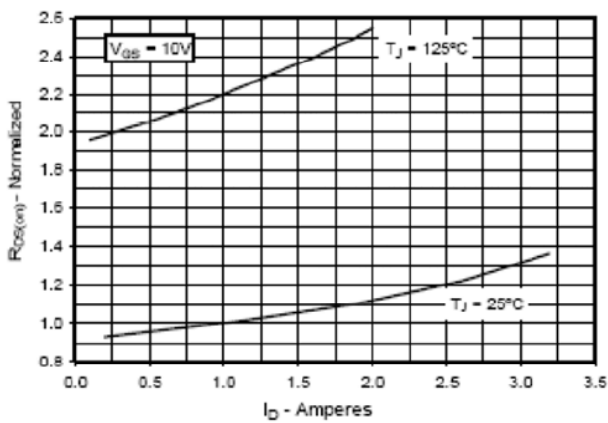


Fig. 6. Maximum Drain Current vs. Case Temperature

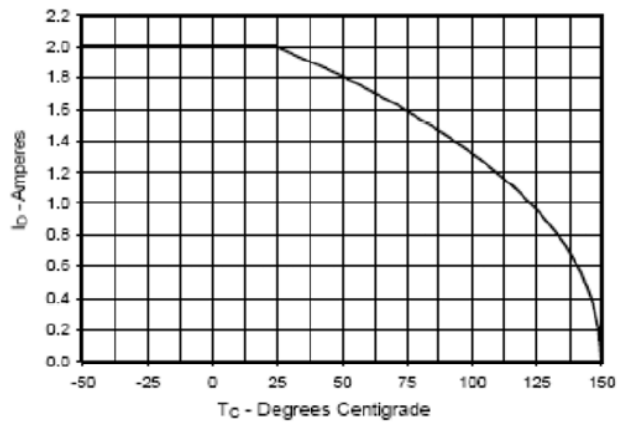


Fig. 7. Input Admittance

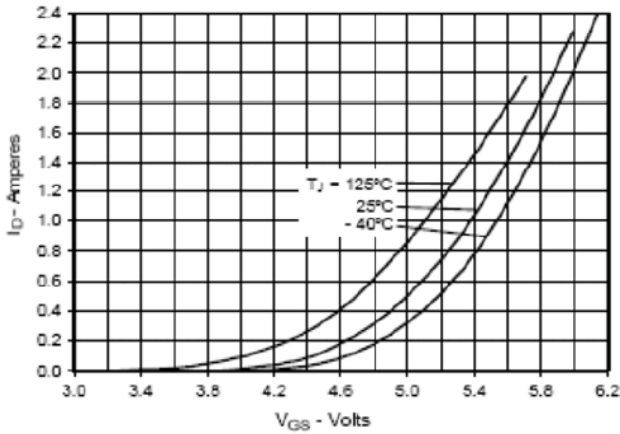


Fig. 8. Transconductance

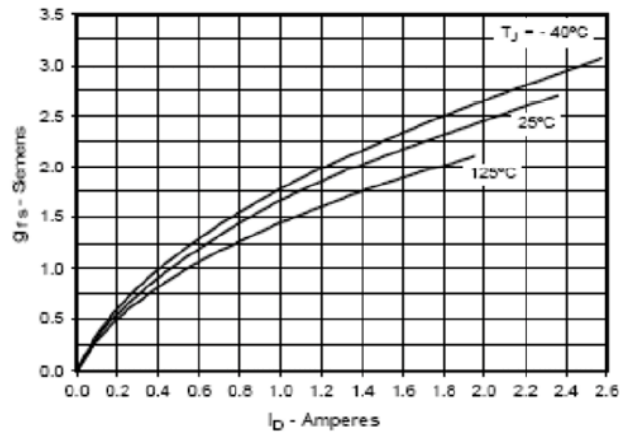


Fig. 9. Forward Voltage Drop of Intrinsic Diode

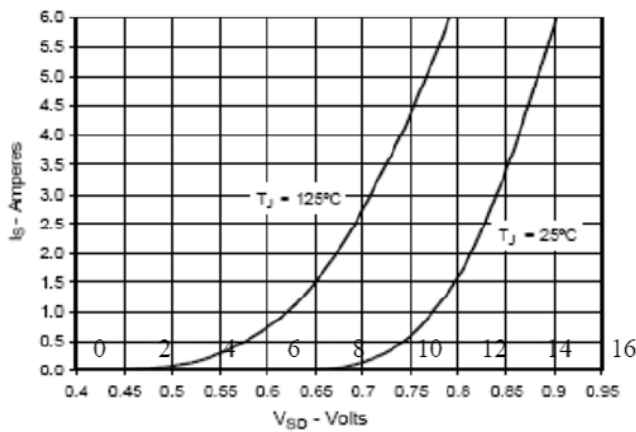


Fig. 10. Gate Charge

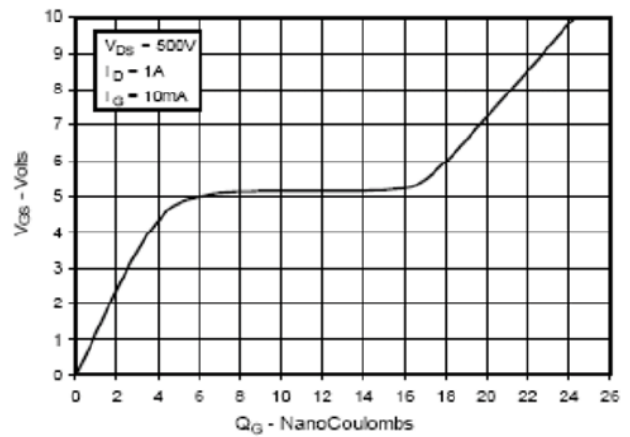


Fig. 11. Capacitance

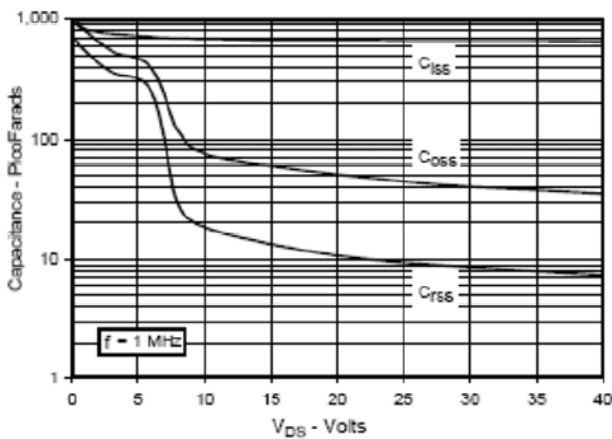


Fig. 12. Maximum Transient Thermal Impedance

