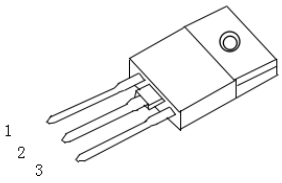
1. Product Features

- High speed switching
- $R_{DS(ON),typ.}$=6.5Ω@V_{GS}=10V
- Full isolated plastic package

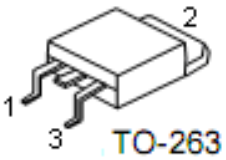
2. Applications

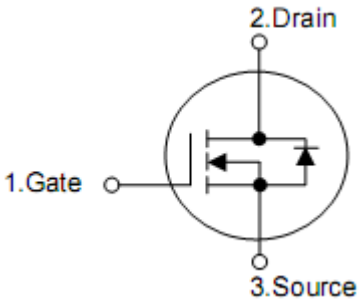
- Switching applications

3. Pin configuration



TO-3PF





Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KNL42150A	TO-3PF	KIA
KNB42150A	TO-263	KIA

5. Absolute maximum ratings

(T_C= 25 ºC , unless otherwise specified)

Symbol	Parameter	KNL42150A	Unit
V_{DSS}	Drain-to-Source Voltage T_J=25 ºC	1500	V
V_{GSS}	Gate-to-Source Voltage	±30	
I_D	Continuous Drain Current @ Tc=25 ºC	3.0	A
	Continuous Drain Current@ Tc=100 ºC	1.6	
I_{DM}	Pulsed Drain Current at V_{GS}=10V Limited by T_{Jmax}	10	
E_{AS}	Single Pulse Avalanche Energy(V_{DD}=50V)	450	mJ
P_D	Maximum Power Dissipation	63	W
T_{Jmax}	Max. Junction Temperature	150	ºC
T_{STG}	Storage Temperature Range	-55 to 150	

6. Thermal characteristics

Symbol	Parameter	KNL42150	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2	ºC /W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	

7. Electrical characteristics

(TJ=25°C,unless otherwise specified)						
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-to-Source Breakdown Voltage	V_{GS}=0V, I_D=1mA	1500	--	--	V
$R_{DS(ON)}$	Drain-to-Source ON Resistance	V_{GS}=10V, I_D=1.3A		6.5	9	Ω
I_{DSS}	Drain-to-Source Leakage Current	V_{DS}=1500V, V_{GS}=0V	--	--	20	uA
I_{GSS}	Gate-to-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	-100	--	100	nA
R_{gint}	Integrated Gate Resistor		--	2	--	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	3	4	5	V
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, f=1.0MHZ	--	1500	--	pF
C_{rss}	Reverse Transfer Capacitance		--	11	--	
C_{oss}	Output Capacitance		--	88	--	
Q_g	Total Gate Charge	V_{DD}=1200V, I_D=2.5A, V_{GS}=10V	--	35	--	nC
Q_{gs}	Gate-to-Source Charge		--	6	--	
Q_{gd}	Gate-to-Drain (Miller) Charge		--	20	--	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=750V, I_D=1.25A, R_G=4.7Ω V_{GS}= 10V (Resistive Load) T_J=25ºC	--	30	--	nS
t_{rise}	Rise Time		--	65	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	45	--	
t_{fall}	Fall Time		--	60	--	
I_{SD}	Continuous Source Current		--	--	2.8	A
V_{SD}	Forward Voltage	I_S=2.5A, V_{GS}=0V	--	-	1.6	V
t_{rr}	Reverse recovery time	V_{GS}=0V ,I_F=2.5A, diF/dt=-100A/μs	--	410	--	ns
Q_{rr}	Reverse recovery charge		--	2280	--	nC

8. Test circuits and waveforms

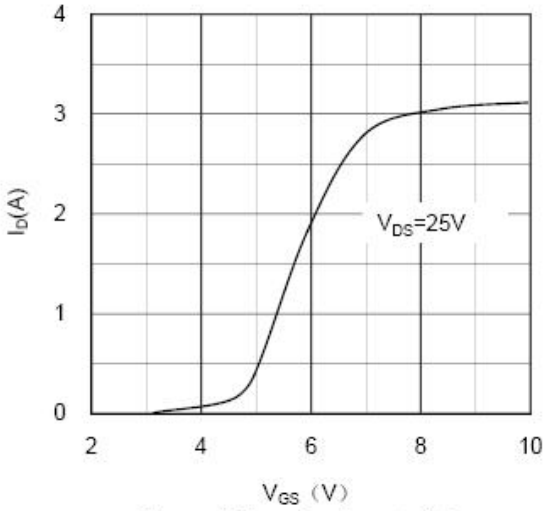


Figure 1. Transfer characteristics

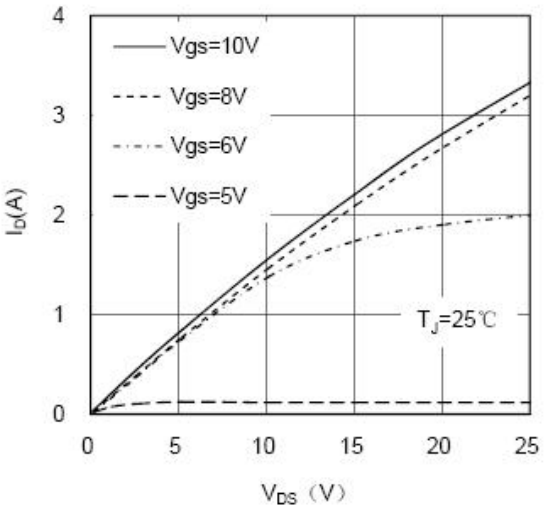


Figure 2. Typical Output Characteristics

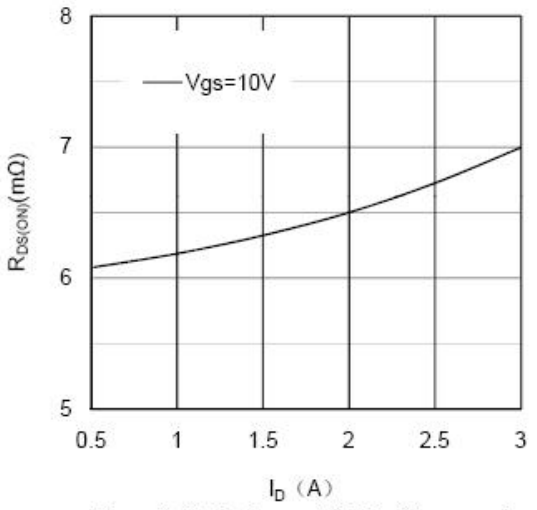


Figure 3. Drain-Source ON Resistance vs I_D

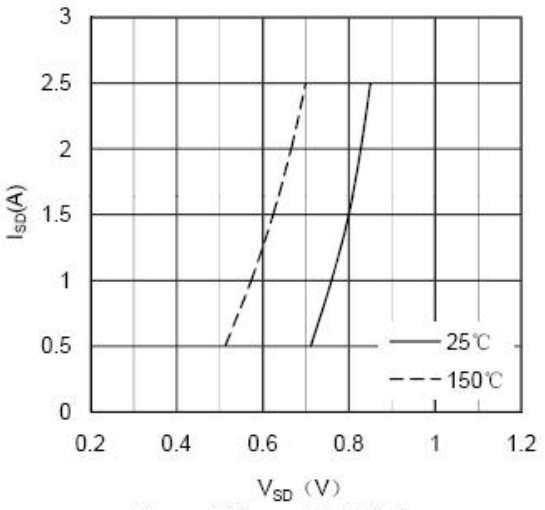


Figure 4. Source-Drain Voltage

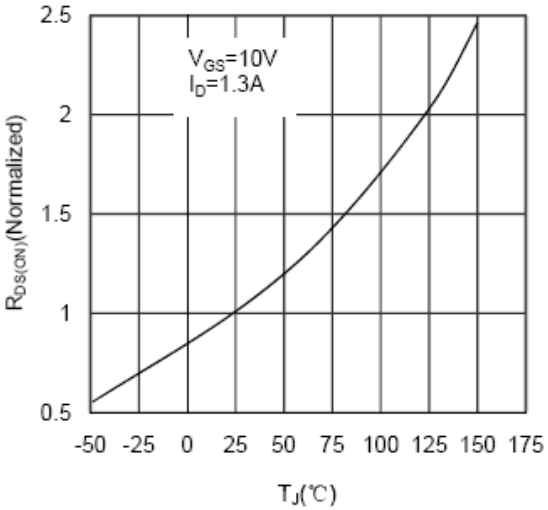


Figure 5. Drain-Source ON Resistance vs Junction Temperature

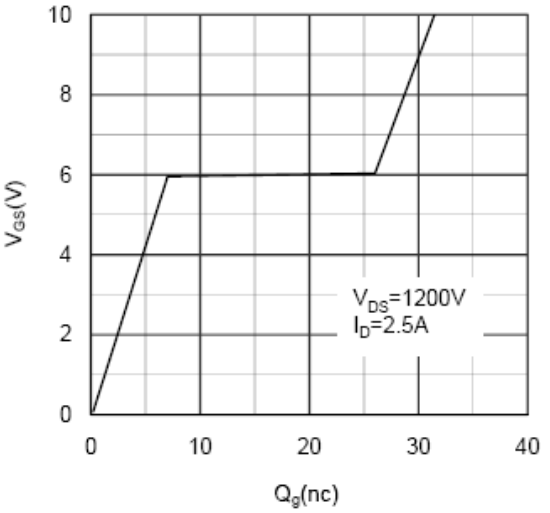


Figure 6. Gate Charge characteristics

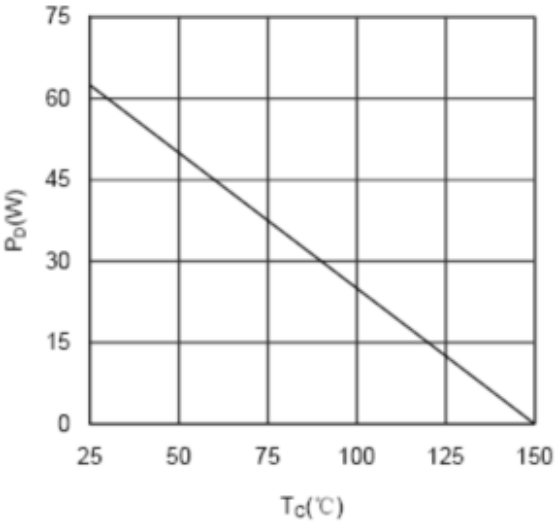


Figure 7. Maximum Power Dissipation vs Case Temperature

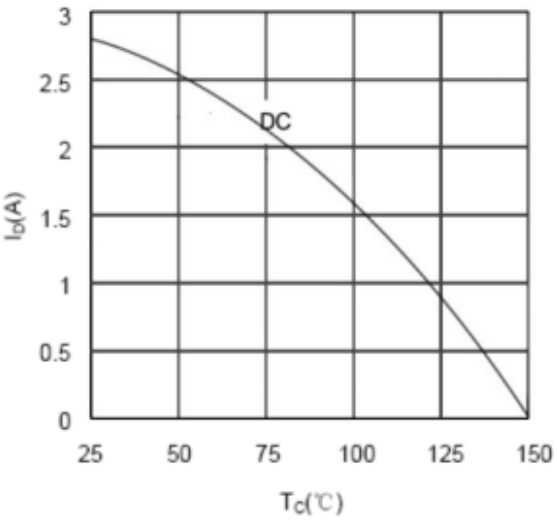


Figure 8. Maximum Continuous Drain Current vs Case Temperature

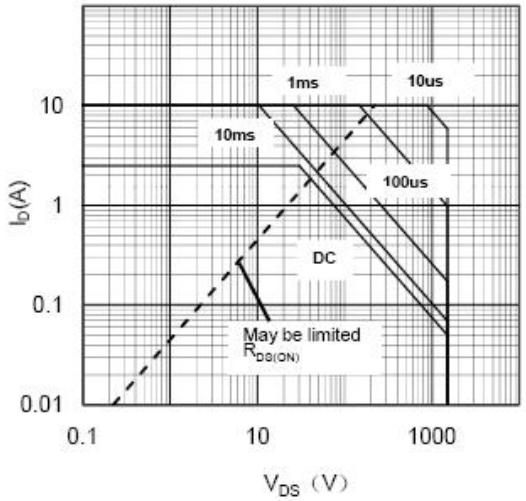


Figure 9. Maximum Forward Safe Operation Area

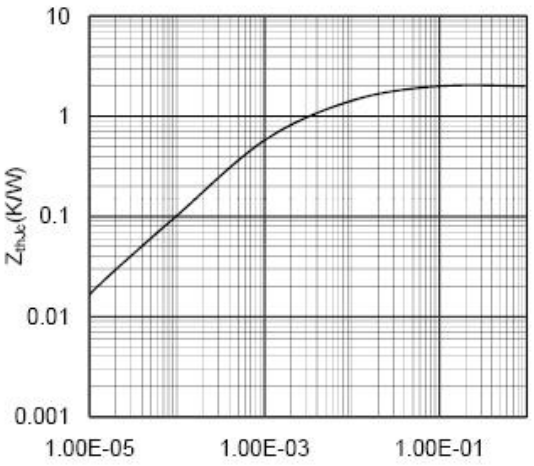


Figure 10. Transient Thermal Impedance