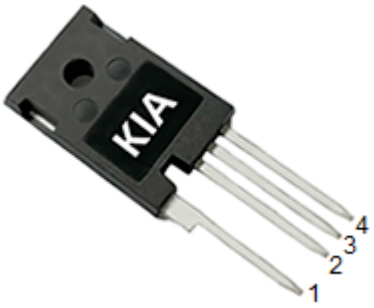
1. Features

- $R_{DS(ON)}$=80mΩ(typ.)@V_{GS}=20V,T_J=25ºC
- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Avalanche Ruggednes

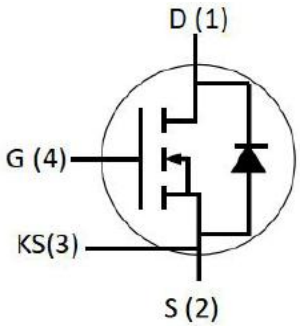
2. Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC-DC Converters
- Batterry Chargers

3. Pin configuration



TO-247-4



Pin	Function
1	Drain
2	Source
3	KS
4	Gate

4. Ordering Information

Part Number	Package	Brand
KSZ080N120A	TO-247-4	KIA

5. Absolute maximum ratings

(T_C= 25ºC , unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-to-Source Voltage	V_{DSS}	1200	V
Gate-to-Source Operation Voltage	V_{GSS}	-5~+20	V
Continuous Drain Current	I_D	28	A
Continuous Drain Current @T_C=100°C		20	A
Pulsed Drain Current (T_C=25°C, tp limited by Tjmax)	I_D pulse	60	A
Single Pulse Avalanche Energy(L=10mH)	E_{AS}	720	mJ
Power Dissipation	P_D	166	W
Operating and Storage Temperature Range	T_J&T_{STG}	-55 to 150	°C

Caution: Stresses greater than those listed in the “Absolute Maximum Ratings” may cause permanent damage to the device.

6. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.75	ºC/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	35	ºC/W

7. Electrical characteristics

(T_J=25°C,unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	1200	-	-	V
Drain-source leakage current	I_{DSS}	V_{DS}=1200V,V_{GS}=0V, T_C=25°C	-	1	100	uA
		V_{DS}=1200V,V_{GS}=0V, T_C=150°C	-	5	-	uA
Gate-source leakage current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	-	20	200	nA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS}=20V,I_D=20A,T_J=25°C	-	80	98	mΩ
		V_{GS}=20V,I_D=20A,T_J=150°C	-	120	-	mΩ
Gate threshold voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=5mA	2.0	2.4	4.0	V
Transconductance	g_{FS}	V_{DS}=20V,I_D=20A	-	7.0	-	S
Gate Resistance	R_g	V_{GS}=0V,V_{AC}=25mV, f=1MHz,	-	2.8	-	Ω
Input capacitance	C_{iss}	V_{DS}=1000V,V_{GS}=0V f=1MHz,V_{AC}=25mV	-	2025	-	pF
Reverse transfer capacitance	C_{rss}		-	17.5	-	pF
Output capacitance	C_{oss}		-	71.9	-	pF
Total gate charge	Q_g	V_{DD}=800V, I_D=20A V_{GS}=-5 to +20V	-	86	-	nC
Gate-source charge	Q_{gs}		-	20	-	nC
Gate-drain charge	Q_{gd}		-	25	-	nC
Turn-on delay time	$t_{d(on)}$	V_{DS}=800V,V_{GS}=-5 to +20V, R_G=5Ω, I_D=20A,T_J=25°C, inductive load		22	-	ns
Rise time	t_r			62	-	ns
Turn-off delay time	$t_{d(off)}$			18	-	ns
Fall time	t_f			12	-	ns
Turn-On Switching Energy	E_{ON}	V_{DS}=800V,V_{GS}=-5 to +20V, R_G=5Ω,I_D=20A, T_J=25°C,L=142uH	-	180	-	uJ
Turn-Off Switching Energy	E_{OFF}		-	70	-	uJ
Diode forward voltage	V_{SD}	I_{SD}=10A,V_{GS}=-5V,T_J=25°C	-	3.5	-	V
		I_{SD}=10A,V_{GS}=-5V,T_J=150°C	-	3.3	-	V
Reverse Recovery Time	t_{rr}	I_{SD}=20A,V_{GS}=-5V, dI/dt=2000A/us, V_{DS}=800V	-	18	-	ns
Reverse Recovery Charge	Q_{rr}		-	80	-	nC
Peak Reverse Recovery Current	I_{rrm}		-	8	-	A

8. Test circuits and waveforms

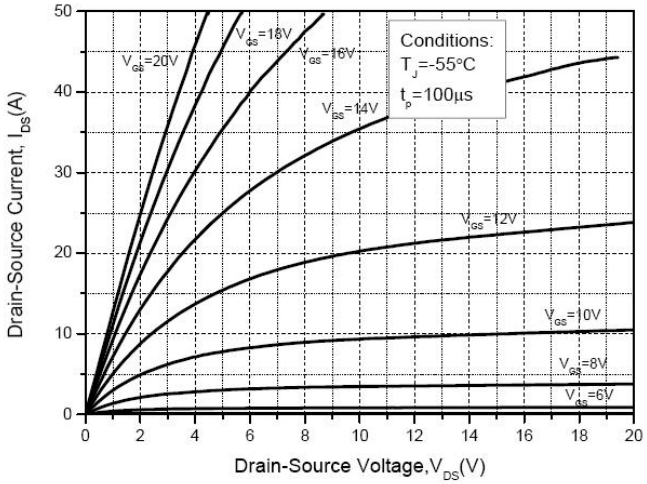


Figure 1. Output Characteristics T_J = -55 °C

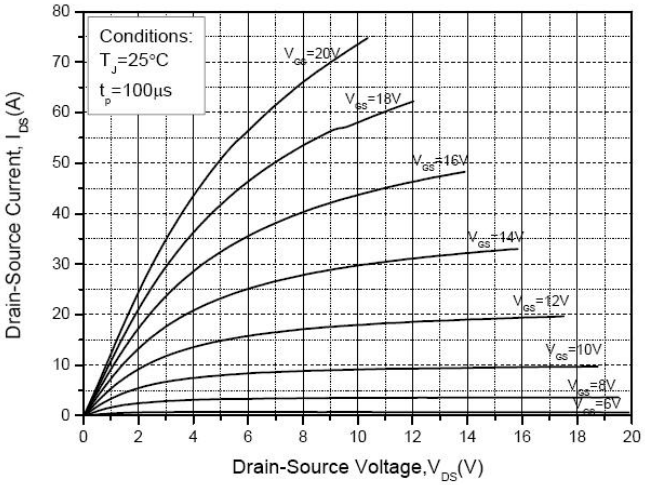


Figure 2. Output Characteristics T_J = 25 °C

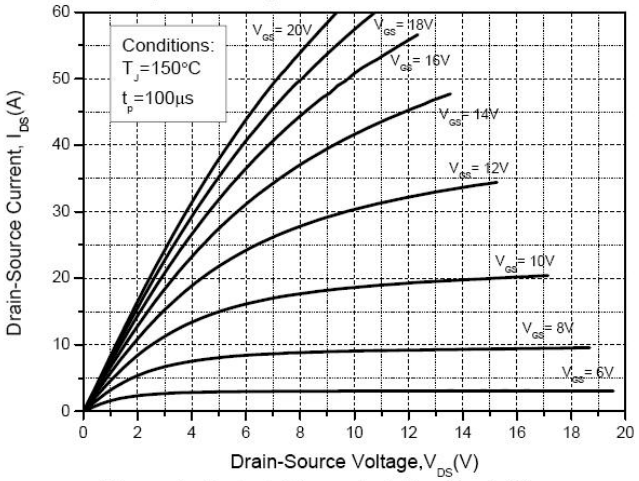


Figure 3. Output Characteristics T_J =150 °C

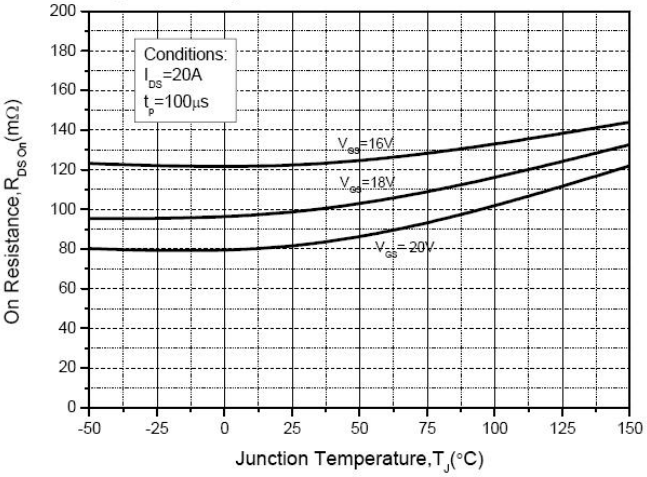


Figure 4. On-Resistance For Various Gate Voltage

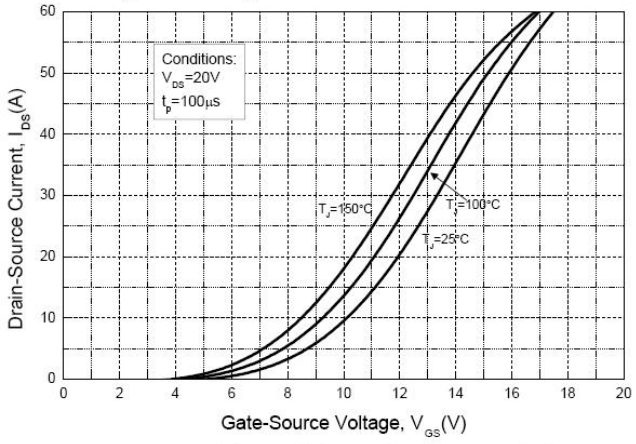


Figure 5. Transfer Characteristic for Various Junction Temperatures

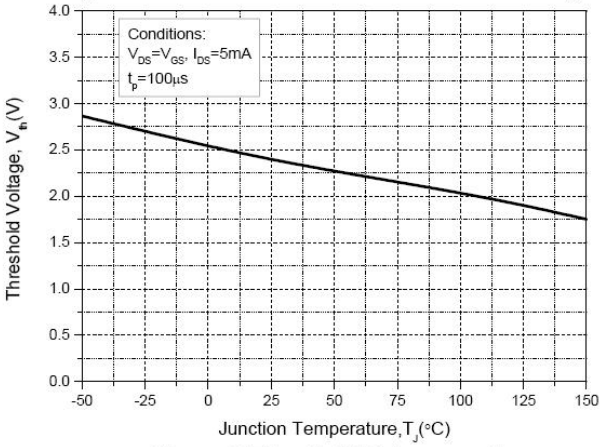


Figure 6. Threshold Voltage vs. Temperature

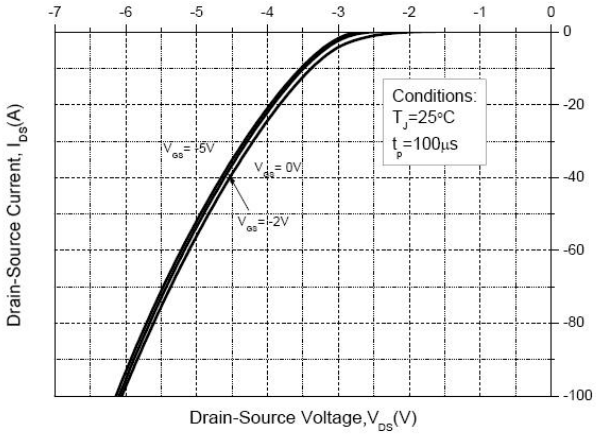


Figure 7. Body Diode Characteristics

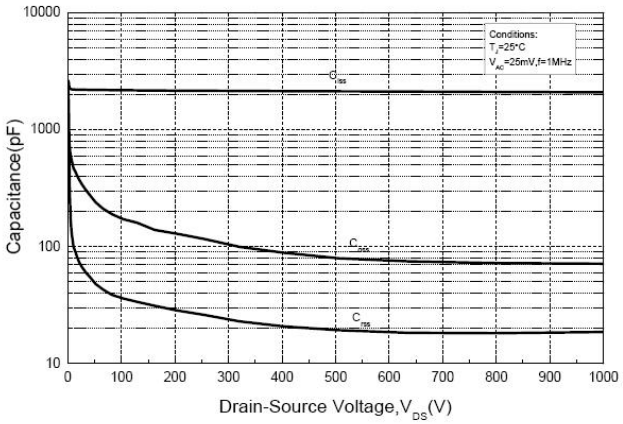


Figure 8. Capacitances vs. Drain-Source Voltage

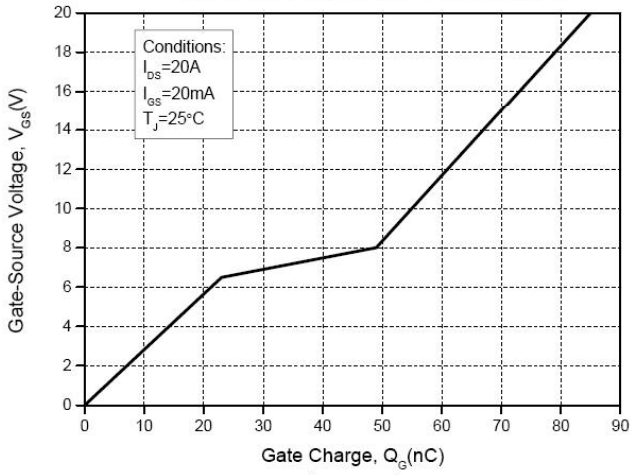


Figure 9. Gate Charge Characteristics

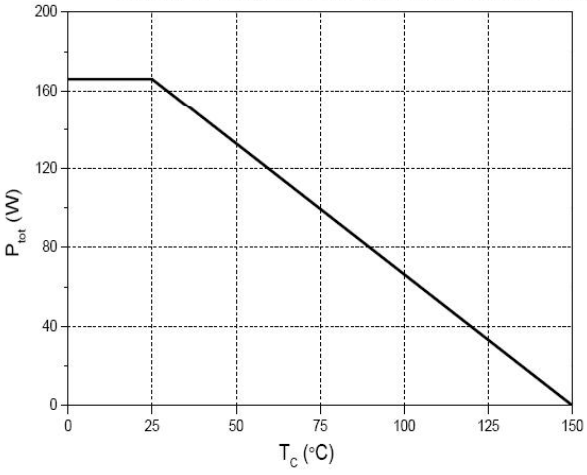


Figure 10. Power Dissipation Derating

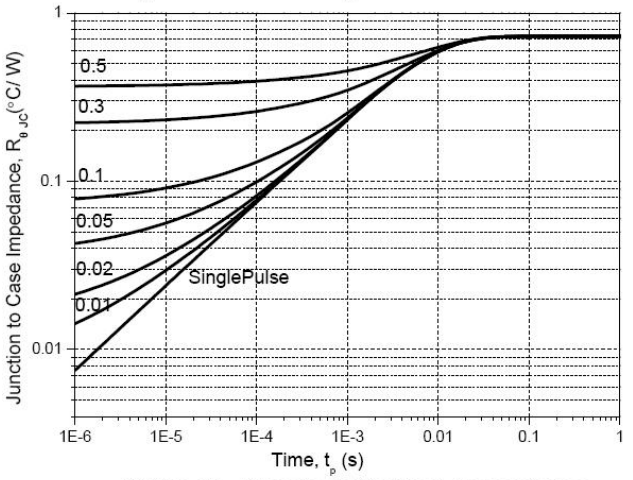
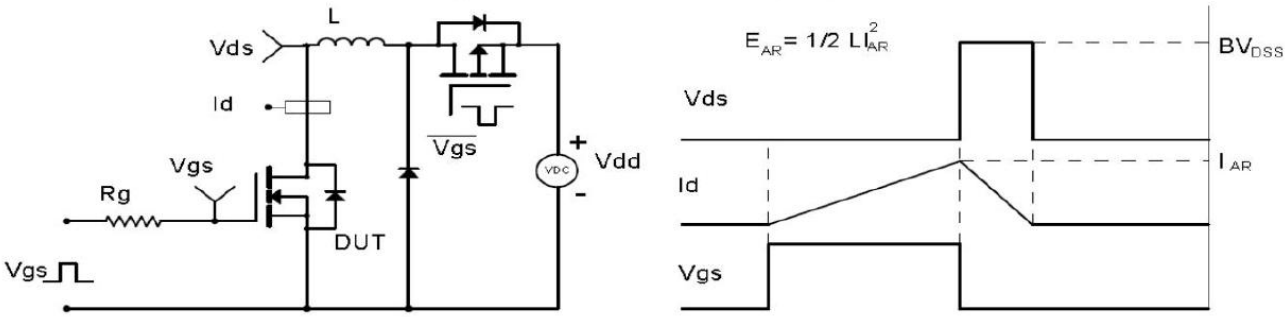


Figure 11. Transient Thermal Impendance

9. Test Circuits and Waveform

Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms