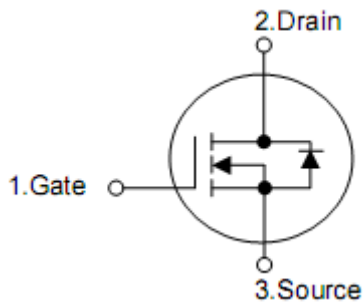


1. Features

- Robust High Voltage Termination
- $R_{DS(ON)}=1.35\Omega(\text{typ.}) @ V_{GS}=10V$ (DFN5*6)
- $R_{DS(ON)}=1.38\Omega(\text{typ.}) @ V_{GS}=10V$ (TO-252)
- Avalanche Energy Specified
- Source-to-Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode
- Diode is Characterized for Use in Bridge Circuits
- I_{DSS} and $V_{DS(on)}$ Specified at Elevated Temperature

2. Pin configuration



Pin		Function
DFN5*6	TO-252	
4	1	Gate
5,6,7,8	2	Drain
1,2,3	3	Source

3. Ordering Information

Part Number	Package	Brand
KIA5N50SY	DFN5*6	KIA
KIA5N50SD	TO-252	KIA

4. Absolute maximum ratings

(T_c= 25 °C , unless otherwise specified)

Parameter	Symbol	Ratings		Unit
		DFN5*6	TO-252	
Drain-to-Source Voltage	V _{DSS}	500		V
Gate-to-Source Voltage	V _{GSS}	±30		V
Continuous Drain Current	I _D	5		A
Pulsed Drain Current	I _{DM}	15		A
Single Pulse Avalanche Energy*	EAS	80		mJ
Power Dissipation	P _D	68	44.6	W
Derating Factor above 25°C	P _D	0.55	0.36	W/°C
Maximum Temperature for Soldering	T _L	260		°C
Operating and Storage Temperature Range	T _J &T _{STG}	-55 to 150		°C

*T_J=25 °C, V_{DD}=100V, V_{GS}=10V, I_L=4A, L=10mH, R_G=25Ω

5. Thermal characteristics

Parameter	Symbol	Ratings		Unit
		DFN5*6	TO-252	
Thermal Resistance, Junction-to-Case	R _{θJC}	1.84	2.8	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	106.2	120	°C/W

6. Electrical characteristics

(T_J=25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.		Max.	Unit
				DFN5*6	TO-252		
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	500	-		-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =500V, V _{GS} =0V	-	-		1	uA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-	-		±100	nA
Drain-to-Source ON Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =2.5A ²⁾	-	1.35	1.38	1.55	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250uA	2.5	3.5		4.5	V
Forward Transconductance	g _{fs}	V _{DS} =30V, I _D =13A	-	15		-	S
Input Capacitance	C _{iSS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHZ	-	525		-	pF
Reverse Transfer Capacitance	C _{oss}		-	50		-	
Output Capacitance	C _{rSS}		-	4		-	
Total Gate Charge	Q _g	V _{DD} =400V, I _D =5A, V _{GS} =10V ²⁾	-	12		-	nC
Gate-to-Source Charge	Q _{gs}		-	2		-	
Gate-to-Drain (Miller) Charge	Q _{gd}		-	6		-	
Turn-on Delay Time	t _{d(ON)}	V _{DD} =250V, I _D =5A, R _G =25Ω ²⁾	-	14		-	nS
Rise Time	t _{rise}		-	14.5		-	
Turn-Off Delay Time	t _{d(OFF)}		-	29		-	
Fall Time	t _{fall}		-	12		-	
Forward Voltage ¹⁾	V _{SD}	I _S =2A, V _{GS} =0V diF/dt=100A/μs,	-	-		1.5	V
Forward Turn-On Time	t _{on}		-	3)		-	ns
Reverse recovery time	t _{rr}		-	213		-	ns

Note:

- 1) Calculation by temperature 100°C.
- 2) Pulse Test: Pulse Width≤300us, Duty Cycle≤2%.
- 3) Negligible, Dominated by circuit inductance.

7. Test circuits and waveforms

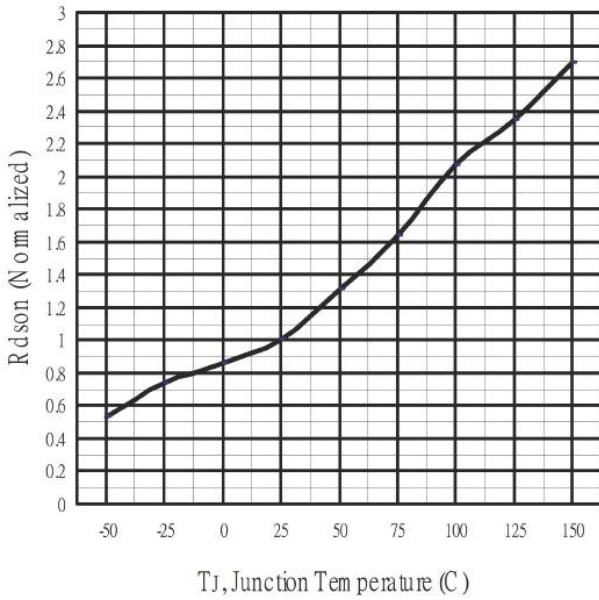


Fig 1. On-Resistance Variation with vs. Temperature

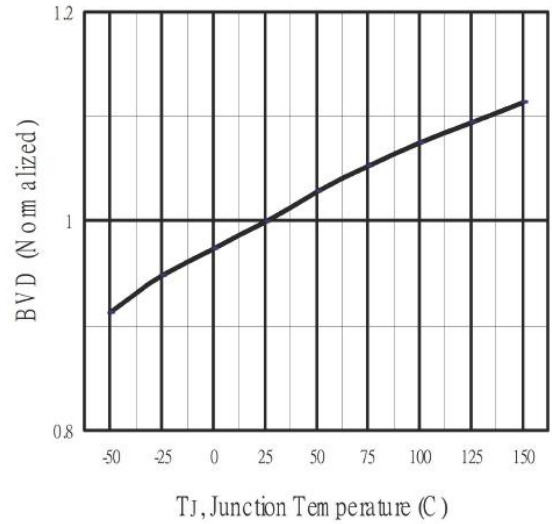


Fig 2. Breakdown Voltage Variation vs. Temperature

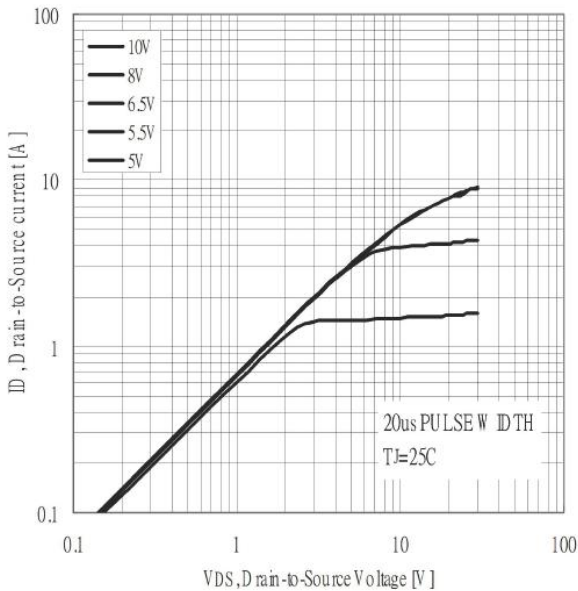


Fig 3. Typical Output Characteristics

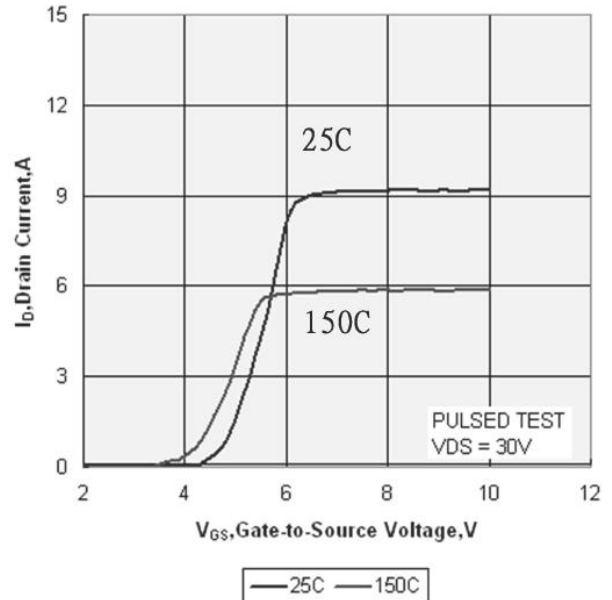


Fig 4. Typical Transfer Characteristics

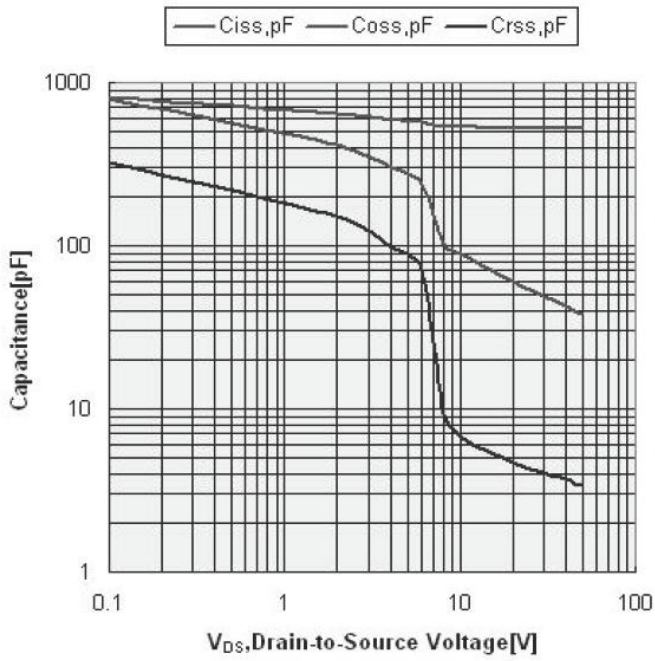


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

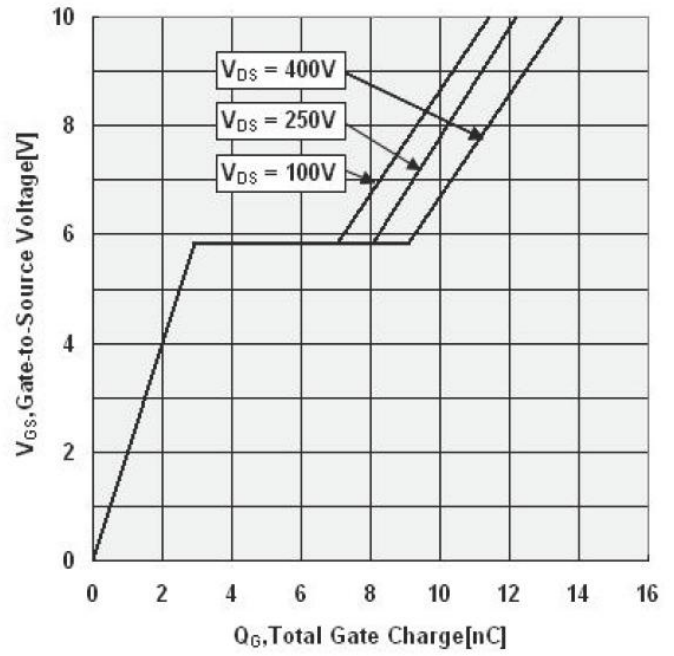


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

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