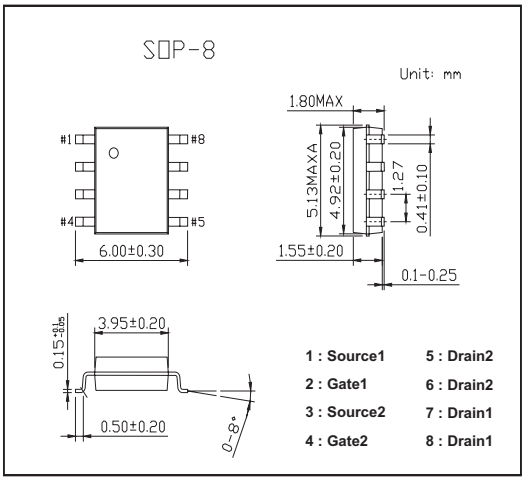
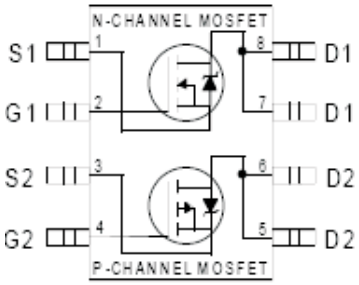
HEXFET®Power MOSFET

KRF9952

Features

- Generation V Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Surface Mount
- Very Low Gate Charge and Switching Losses
- Fully Avalanche Rated





Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30		V
Gate-to-Source Voltage	V_{GS}	±20		V
Continuous Drain Current, V_{GS} @ 10V @ T_a = 25℃	I_D	3.5	-2.3	A
Continuous Drain Current, V_{GS} @ 10V @ T_a = 70℃	I_D	2.8	-1.8	
Pulsed Drain Current *1	I_{DM}	16	-10	
Continuous Source Current (Diode Conduction)	I_S	1.7	-1.3	A
Power Dissipation @T_a= 25℃	P_D	2		W
Power Dissipation @T_a= 70℃		1.3		
Single Pulse Avalanche Energy	E_{AS}	44	57	mJ
Avalanche Current	I_{AR}	2.0	-1.3	A
Repetitive Avalanche Energy	E_{AR}	0.25		mJ
Peak Diode Recovery dv/dt *2	dv/dt	5.0	-5	V/ns
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150		℃
Maximum Junction-to-Ambient *3	$R_{\theta JA}$	62.5		℃/W

*1 Repetitive rating; pulse width limited by max. junction temperature.

*2 N-Channel I_{SD} ≤ 2.0A, di/dt ≤ 100A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150℃

P-Channel I_{SD} ≤ -1.3A, di/dt ≤ 84A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150℃

*3 Surface mounted on FR-4 board, t ≤ 10sec.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	N-Ch	30			V
		V_{GS} = 0V, I_D = -250μA	P-Ch	-30			
Breakdown Voltage Temp. Coefficient	$\triangle V_{(BR)DSS}/\triangle T_J$	I_D = 1mA,Reference to 25℃	N-Ch		0.015		V/℃
		I_D = -1mA,Reference to 25℃	P-Ch		0.015		
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D = 2.2A*1	N-Ch		0.08	0.10	Ω
		V_{GS} = 4.5V, I_D = 1.0A*1			0.12	0.15	
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -1.0A*1	P-Ch		0.165	0.250	
		V_{GS} = -4.5V, I_D = -0.5A*1			0.290	0.400	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N-Ch	1.0			V
		V_{DS} = V_{GS}, I_D = -250μA	P-Ch	-1.0			
Forward Transconductance	g_{fs}	V_{DS} = 15V, I_D = 3.5A*1	N-Ch		12		S
		V_{DS} = -15V, I_D = -2.3A*1	P-Ch		2.4		
Drain-to-Source Leakage Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	N-Ch			2.0	μA
		V_{DS} = -24V, V_{GS} = 0V	P-Ch			-2.0	
		V_{DS} = 24V, V_{GS} = 0V, T_J = 125℃	N-Ch			25	
		V_{DS} = -24V, V_{GS} = 0V, T_J = 125℃	P-Ch			-25	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS} = ±20V	N-Ch			±100	nA
			P-Ch				
Total Gate Charge	Q_g	N-Channel I_D = 1.8A,V_{DS} = 10V,V_{GS} =10V	N-Ch		6.9	14	nC
			P-Ch		6.1	12	
Gate-to-Source Charge	Q_{gs}	P-Channel I_D = -2.3A,V_{DS} = -10V,V_{GS} = -10V	N-Ch		1.0	2.0	
			P-Ch		1.7	3.4	
Gate-to-Drain ("Miller") Charge	Q_{gd}		N-Ch		1.8	3.5	
			P-Ch		1.1	2.2	
Turn-On Delay Time	$t_{d(on)}$	N-Channel V_{DD} = 10V,I_D = 1.0A,R_G = 6.0Ω R_D=10Ω P-Channel V_{DD} = -10V,I_D = -1.0A,R_G = 6.0Ω R_D=10Ω	N-Ch		6.2	12	ns
			P-Ch		9.7	19	
Rise Time	t_r		N-Ch		8.8	18	
			P-Ch		14	28	
Turn-Off Delay Time	$t_{d(off)}$		N-Ch		13	26	
			P-Ch		20	40	
Fall Time	t_f		N-Ch		3.0	6.0	
			P-Ch		6.9	14	
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V,V_{DS} = 15V,f = 1.0MHz P-Channel V_{GS} = 0V,V_{DS} = -15V,f = 1.0MHz	N-Ch		190		pF
			P-Ch		190		
Output Capacitance	C_{oss}		N-Ch		120		
			P-Ch		110		
Reverse Transfer Capacitance	C_{rss}		N-Ch		61		
			P-Ch		54		
Continuous Source Current（Body Diode)	I_S		N-Ch			1.7	A
			P-Ch			-1.3	
Pulsed Source Current （Body Diode) *2	I_{SM}		N-Ch			16	
			P-Ch			16	

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Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Diode Forward Voltage	V_{SD}	T_J = 25℃, I_S = 1.25A, V_{GS} = 0V*3	N-Ch		0.82	1.2	V
		T_J = 25℃, I_S = -1.25A, V_{GS} = 0V*3	P-Ch		-0.82	-1.2	
Reverse Recovery Time	t_{rr}	N-Channel	N-Ch		27	53	ns
		T_J = 25℃, I_F =1.25A,di/dt = 100A/μs*1	P-Ch		27	54	
Reverse RecoveryCharge	Q_{rr}	P-Channel	N-Ch		28	57	nC
		T_J=25℃, I_F=-1.25A,di/dt=-100A/μs*1	P-Ch		31	62	

*1 Pulse width ≤ 300μs; duty cycle ≤ 2%.

*2 Repetitive rating; pulse width limited by max. junction temperature.

*3 N-Channel Starting T_J = 25℃, L = 22mH R_G = 25Ω, I_{AS} = 2.0A.

P-Channel Starting T_J = 25℃, L = 67mH R_G = 25Ω, I_{AS} = -1.3A.