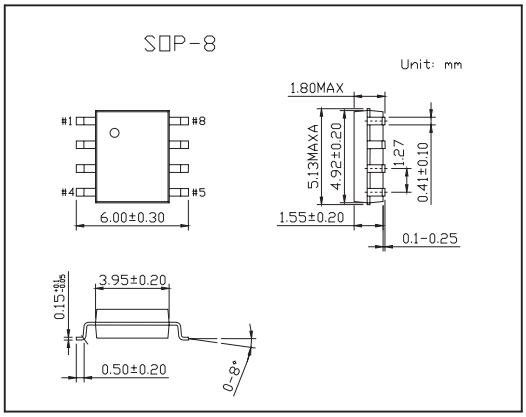
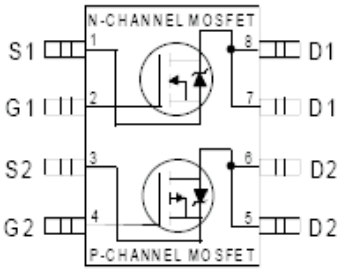
HEXFET®Power MOSFET

KRF7319



Features

- Generation V Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Surface Mount
- Fully Avalanche Rated



Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30	-30	V
Continuous Drain Current *5 Ta = 25℃	I_D	6.5	-4.9	A
Continuous Drain Current *5 Ta = 70℃	I_D	5.2	-3.9	
Pulsed Drain Current	I_{DM}	30	-30	
Continuous Source Current (Diode Conduction)	I_S	2.5	-2.5	
Power Dissipation @Ta= 25℃ *4	P_D	2.0		W
Power Dissipation @Ta= 70℃ *4		1.3		
Single Pulse Avalanche Energy	E_{AS}	82	140	mJ
Avalanche Current	I_{AR}	4.0	-2.8	A
Repetitive Avalanche Energy	E_{AR}	0.20		mJ
Peak Diode Recovery dv/dt *2	dv/dt	5.0	-5	V/ ns
Gate-to-Source Voltage	V_{GS}	±20		V
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150		℃
Maximum Junction-to-Ambient *4	$R_{\theta JA}$	62.5		℃/W

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

*2 N-Channel $I_{SD} \leqslant$ 4.0A, $di/dt \leqslant$ 74A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

P-Channel $I_{SD} \leqslant$ -2.8A, $di/dt \leqslant$ 150A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

*3 N-Channel Starting T_J = 25℃, L = 10mH R_G = 25Ω, I_{AS} = 4.0A.

P-Channel Starting T_J = 25℃, L = 35mH R_G = 25Ω, I_{AS} = -2.8A.

*4 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		0.022		V/℃
		I_D = -1mA,Reference to 25℃	P-Ch		0.022		
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 5.8A*1	N-Ch		0.023	0.029	Ω
		V_{GS} = 4.5V, I_D = 4.7A*1			0.032	0.046	
		V_{GS} = -10V, I_D = -4.9A*1	P-Ch		0.042	0.058	
		V_{GS} = -4.5V, I_D = -3.6A*1			0.076	0.098	
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 = 5.8A*1	N-Ch		14		S
		V_{DS} = -15V, I_D = -4.9A*1	P-Ch		7.7		
Drain-to-Source Leakage Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	N-Ch			1.0	μA
		V_{DS} = -24V, V_{GS} = 0V	P-Ch			-1.0	
		V_{DS} = 24V, V_{GS} = 0V, T_J = 55℃	N-Ch			25	
		V_{DS} = -24V, V_{GS} = 0V, T_J = 55℃	P-Ch			-25	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS} = ±20V	N-Ch			±100	nA
			P-Ch			±100	
Total Gate Charge	Q_g	N-Channel I_D =5.8A,V_{DS} = 15V,V_{GS} =10V	N-Ch		22	33	nC
			P-Ch		23	34	
Gate-to-Source Charge	Q_{gs}		N-Ch		2.6	3.9	
		P-Channel	P-Ch		3.8	5.7	
Gate-to-Drain ("Miller") Charge	Q_{gd}	I_D = -4.9A,V_{DS} = -15V,V_{GS} = -10V	N-Ch		6.4	9.6	
			P-Ch		5.9	8.9	
Turn-On Delay Time	$t_{d(on)}$	N-Channel V_{DD} = 15V,I_D = 1.0A,R_G = 6.0Ω	N-Ch		8.1	12	ns
			P-Ch		13	19	
Rise Time	t_r	R_D = 15Ω	N-Ch		8.9	13	
		P-Channel	P-Ch		13	20	
Turn-Off Delay Time	$t_{d(off)}$	V_{DD} = -28V,I_D = -1.0A,R_G = 6.0Ω RD = 15Ω	N-Ch		26	39	
			P-Ch		34	51	
Fall Time	t_f		N-Ch		17	26	
			P-Ch		32	48	
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V,V_{DS} = 25V,f = 1.0MHz	N-Ch		650		pF
			P-Ch		710		
Output Capacitance	C_{oss}		N-Ch		320		
		P-Channel	P-Ch		380		
Reverse Transfer Capacitance	C_{rss}	V_{GS} = 0V,V_{DS} = -25V,f = 1.0MHz	N-Ch		130		
			P-Ch		180		

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Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Continuous Source Current（Body Diode)	I_S		N-Ch			2.5	A
			P-Ch			-2.5	
Pulsed Source Current （Body Diode) *2	I_{SM}		N-Ch			30	
			P-Ch			-30	
Diode Forward Voltage	V_{SD}	T_J = 25℃, I_S = 1.7A, V_{GS} = 0V*1	N-Ch		0.78	1.0	V
		T_J = 25℃, I_S = -1.7A, V_{GS} = 0V*1	P-Ch		-0.78	-1.0	
Reverse Recovery Time	t_{rr}	N-Channel	N-Ch		45	68	ns
		T_J = 25℃, I_F =1.7A,di/dt = 100A/μs*1	P-Ch		44	66	
Reverse RecoveryCharge	Q_{rr}	P-Channel	N-Ch		58	87	nC
		T_J=25℃,I_F=-1.7A,di/dt=-100A/μs*1	P-Ch		42	63	

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

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