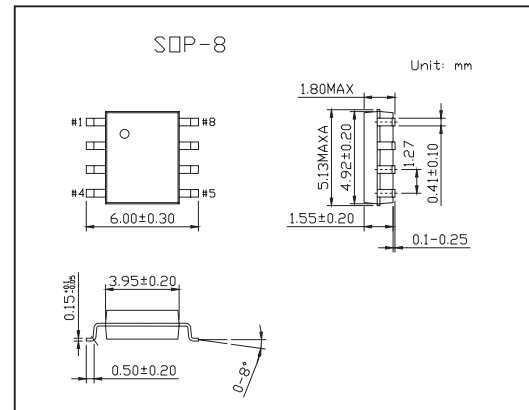
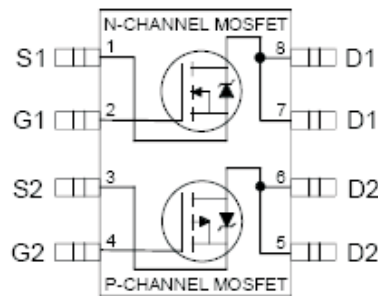


HEXFET[®] Power MOSFET

KRF7309

■ Features

- Generation V Technology
- Ultra Low On-Resistance
- Dual N and P Channel Mosfet
- Surface Mount
- Available in Tape & Reel
- Dynamic dv/dt Rating
- Fast Switching



■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	N-Channel	P-Channel	Unit
10 Sec. Pulse Drain Current, V _{GS} @ 10V Ta = 25°C	I _D	4.7	-3.5	A
Continuous Drain Current V _{GS} @ 10V Ta = 25°C	I _D	4.0	-3.0	
Continuous Drain Current V _{GS} @ 10V Ta = 70°C	I _D	3.2	-2.4	
Pulsed Drain Current *1	I _{DM}	16	-12	
Power Dissipation @Ta= 25°C *3	P _D	1.4		W
Linear Derating Factor (PCB Mount)*4		0.011		W/°C
Peak Diode Recovery dv/dt *2	dv/dt	6.9	-6.0	V/ ns
Gate-to-Source Voltage	V _{GS}	±20		V
Junction and Storage Temperature Range	T _J , T _{STG}	-55 to + 150		°C
Junction-to-Amb. (PCB Mount, steady state)*4	R _{θJA}	90		°C/W

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

*2 N-Channel I_{SD} ≤ 2.4A, di/dt ≤ 73A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C

P-Channel I_{SD} ≤ -1.8A, di/dt ≤ 90A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C

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

*4 When mounted on 1" square PCB (FR-4 or G-10 Material).

KRF7309

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250 μA	N-Ch	30		V
		V _{GS} = 0V, I _D = -250 μA	P-Ch	-30		
Breakdown Voltage Temp. Coefficient	$\frac{\Delta V_{(BR)DSS}}{\Delta T_J}$	I _D = 1mA, Reference to 25°C	N-Ch	0.032		V/°C
		I _D = -1mA, Reference to 25°C	P-Ch	-0.037		
Static Drain-to-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 2.4A*1	N-Ch		0.050	Ω
		V _{GS} = 4.5V, I _D = 2.0A*1			0.080	
		V _{GS} = -10V, I _D = -1.8A*1	P-Ch		0.10	
		V _{GS} = -4.5V, I _D = -1.5A*1			0.16	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	1.0		V
		V _{DS} = V _{GS} , I _D = -250 μA	P-Ch	-1.0		
Forward Transconductance	g _{fs}	V _{DS} = 15V, I _D = 2.4A*1	N-Ch	5.2		S
		V _{DS} = -24V, I _D = -1.8A*1	P-Ch	2.5		
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 = 125°C	N-Ch		25	
		V _{DS} = -24V, V _{GS} = 0V, T _J = 125°C	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 = 2.6A, V _{DS} = 16V, V _{GS} = 4.5V	N-Ch		25	nC
Gate-to-Source Charge	Q _{gs}	P-Channel	P-Ch		25	
			N-Ch		2.9	
			P-Ch		2.9	
Gate-to-Drain ("Miller") Charge	Q _{gd}	I _D = -2.2A, V _{DS} = -16V, V _{GS} = -4.5V	N-Ch		7.9	
			P-Ch		9.0	
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 10V, I _D = 2.6A, R _G = 6.0 Ω	N-Ch	6.8		ns
Rise Time	t _r		P-Ch	11		
Turn-Off Delay Time	t _{d(off)}	P-Channel V _{DD} = -10V, I _D = -2.2A, R _G = 6.0 Ω	N-Ch	21		
			P-Ch	17		
Fall Time	t _f	RD = 4.5 Ω	N-Ch	22		
			P-Ch	25		
Internal Drain Inductance	L _D	Between lead tip and center of die contact	N-Ch	7.7		
			P-Ch	18		
Internal Source Inductance	L _S		N-Ch	4.0		nH
			P-Ch	4.0		
Input Capacitance	C _{iss}	N-Channel V _{GS} = 0V, V _{DS} = 15V, f = 1.0MHz	N-Ch	6.0		pF
			P-Ch	6.0		
Output Capacitance	C _{oss}	P-Channel	N-Ch	520		
			P-Ch	440		
Reverse Transfer Capacitance	C _{rss}	V _{GS} = 0V, V _{DS} = -15V, f = 1.0MHz	N-Ch	180		
			P-Ch	200		
			N-Ch	72		
			P-Ch	93		

KRF7309

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Continuous Source Current （Body Diode）	Is		N-Ch			1.8	A
			P-Ch			-1.8	
Pulsed Source Current （Body Diode） *2	ISM		N-Ch			16	
			P-Ch			-12	
Diode Forward Voltage	VSD	TJ = 25℃，Is = 1.8A，VGS = 0V*1	N-Ch			1.0	V
		TJ = 25℃，Is = -1.8A，VGS = 0V*1	P-Ch			-1.0	
Reverse Recovery Time	trr	N-Channel	N-Ch		47	71	ns
		TJ = 25℃，IF =2.6A,di/dt = 100A/ μ s*1	P-Ch		53	80	
Reverse RecoveryCharge	Qrr	P-Channel	N-Ch		56	84	nC
		TJ=25℃,IF=-2.2A,di/dt=-100A/ μ s*1	P-Ch		66	99	
Forward Turn-On Time	ton	Intrinsic turn-on time is neglegible (turn-on is dominated by Ls+Ld)	N-Ch				
			P-Ch				

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

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