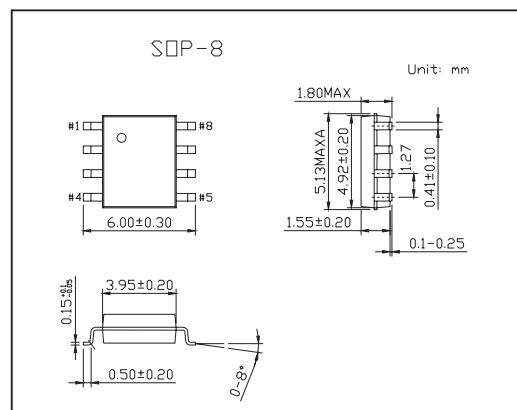
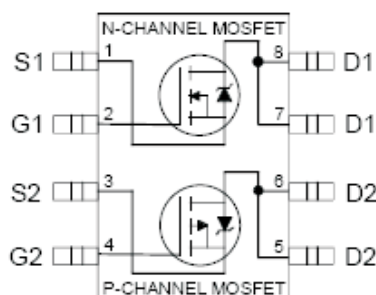


HEXFET[®] Power MOSFET

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 $T_a = 25^\circ\text{C}$

Parameter	Symbol	N-Channel	P-Channel	Unit
10 Sec. Pulse Drain Current, $V_{GS} @ 10V$ $T_a = 25^\circ\text{C}$	I_D	4.7	-3.5	A
Continuous Drain Current $V_{GS} @ 10V$ $T_a = 25^\circ\text{C}$	I_D	4.0	-3.0	
Continuous Drain Current $V_{GS} @ 10V$ $T_a = 70^\circ\text{C}$	I_D	3.2	-2.4	
Pulsed Drain Current *1	I_{DM}	16	-12	
Power Dissipation @ $T_a = 25^\circ\text{C}$ *3	P_D	1.4		W
Linear Derating Factor (PCB Mount)*4		0.011		W/ $^\circ\text{C}$
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		$^\circ\text{C}$
Junction-to-Amb. (PCB Mount, steady state)*4	$R_{\theta JA}$	90		$^\circ\text{C}/\text{W}$

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

*2 N-Channel $I_{SD} \leq 2.4A$, $di/dt \leq 73A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$

P-Channel $I_{SD} \leq -1.8A$, $di/dt \leq 90A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$

*3 Pulse width $\leq 300 \mu s$; duty cycle $\leq 2\%$.

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

KRF7309

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit	
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250 μ A	N-Ch	30			V	
		V _{GS} = 0V, I _D = -250 μ A	P-Ch	-30				
Breakdown Voltage Temp. Coefficient	ΔV _{(BR)DSS} / ΔT _J	I _D = 1mA,Reference to 25℃	N-Ch		0.032		V/℃	
		I _D = -1mA,Reference to 25℃	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 μ A	N-Ch	1.0			V	
		V _{DS} = V _{GS} , I _D = -250 μ A	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	μ A	
		V _{DS} = -24V, V _{GS} = 0V	P-Ch			-1.0		
		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			±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 I _D = -2.2A,V _{DS} = -16V,V _{GS} = -4.5V	P-Ch			25		
			N-Ch			2.9		
Gate-to-Drain ("Miller") Charge	Q _{gd}		P-Ch			2.9		
			N-Ch			7.9		
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 10V,I _D = 2.6A,R _G = 6.0 Ω P-Channel V _{DD} = -10V,I _D = -2.2A,R _G = 6.0 Ω RD = 4.5 Ω	N-Ch		6.8		ns	
			P-Ch		11			
	Rise Time		t _r	N-Ch		21		
				P-Ch		17		
	Turn-Off Delay Time		t _{d(off)}	N-Ch		22		
				P-Ch		25		
	Fall Time		t _f	N-Ch		7.7		
				P-Ch		18		
Internal Drain Inductace	L _D	Between lead tip and center of die contact	N-Ch		4.0		nH	
			P-Ch		4.0			
Internal Source Inductance	L _S		N-Ch		6.0			
			P-Ch		6.0			
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		520		pF	
			P-Ch		440			
Output Capacitance	C _{oss}		N-Ch		180			
			P-Ch		200			
Reverse Transfer Capacitance	C _{rss}	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°C, Is = 1.8A, VGS = 0V*1	N-Ch			1.0	V
		TJ = 25°C, Is = -1.8A, VGS = 0V*1	P-Ch			-1.0	
Reverse Recovery Time	trr	N-Channel TJ = 25°C, IF = 2.6A, di/dt = 100A/μs*1	N-Ch		47	71	ns
			P-Ch		53	80	
Reverse Recovery Charge	Qrr	P-Channel TJ = 25°C, IF = -2.2A, di/dt = -100A/μs*1	N-Ch		56	84	nC
			P-Ch		66	99	
Forward Turn-On Time	ton	Intrinsic turn-on time is negligible (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.