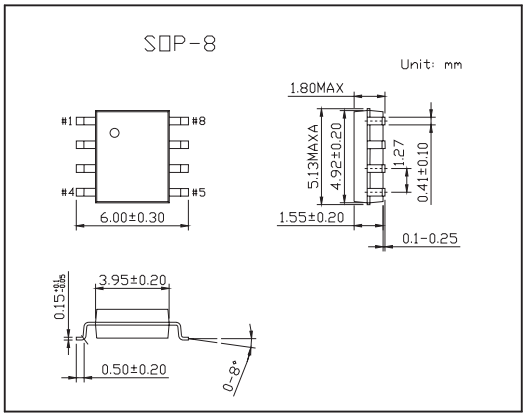
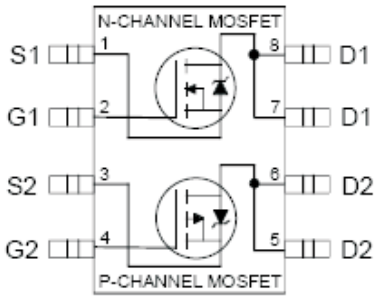
HEXFET®Power MOSFET

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℃

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

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

*2 N-Channel $I_{SD} \leqslant$ 2.4A, $di/dt \leqslant$ 73A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

P-Channel $I_{SD} \leqslant$ -1.8A, $di/dt \leqslant$ 90A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

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

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

KRF7309

■ 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		0.032		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 = 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 = 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℃	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
			P-Ch			25	
Gate-to-Source Charge	Q_{gs}		N-Ch			2.9	
		P-Channel	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	N-Ch		6.8		ns
		V_{DD} = 10V,I_D = 2.6A,R_G = 6.0Ω	P-Ch		11		
Rise Time	t_r	R_D = 3.8Ω	N-Ch		21		
		P-Channel	P-Ch		17		
Turn-Off Delay Time	$t_{d(off)}$	V_{DD} = -10V,I_D = -2.2A,R_G = 6.0Ω	N-Ch		22		
		RD = 4.5Ω	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	N-Ch		520		pF
			P-Ch		440		
Output Capacitance	C_{oss}	P-Channel V_{GS} = 0V,V_{DS} = -15V,f = 1.0MHz	N-Ch		180		
			P-Ch		200		
Reverse Transfer Capacitance	C_{rss}		N-Ch		72		
			P-Ch		93		

KRF7309

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Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Continuous Source Current（Body Diode)	I_S		N-Ch			1.8	A
			P-Ch			-1.8	
Pulsed Source Current （Body Diode) *2	I_{SM}		N-Ch			16	
			P-Ch			-12	
Diode Forward Voltage	V_{SD}	T_J = 25℃, I_S = 1.8A, V_{GS} = 0V*1	N-Ch			1.0	V
		T_J = 25℃, I_S = -1.8A, V_{GS} = 0V*1	P-Ch			-1.0	
Reverse Recovery Time	t_{rr}	N-Channel	N-Ch		47	71	ns
		T_J = 25℃, I_F =2.6A,di/dt = 100A/μs*1	P-Ch		53	80	
Reverse RecoveryCharge	Q_{rr}	P-Channel	N-Ch		56	84	nC
		T_J=25℃,I_F=-2.2A,di/dt=-100A/μs*1	P-Ch		66	99	
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is neglegible (turn-on is dominated by L_S+L_D)	N-Ch				
			P-Ch				

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

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