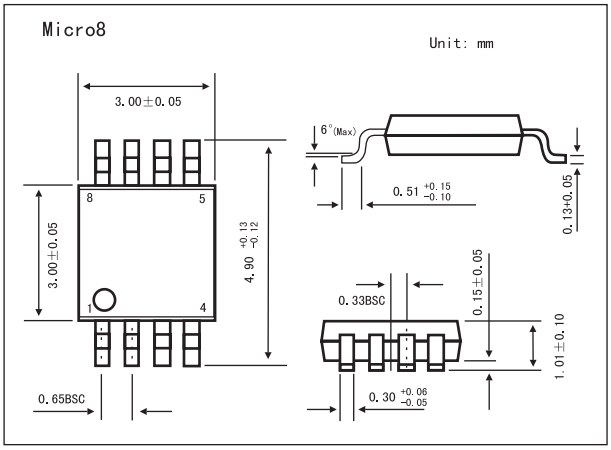
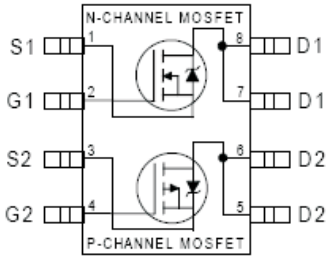
HEXFET®Power MOSFET

KRF7509



Features

- Generation V Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Very Small SOIC Package
- Low Profile (<1.1mm)
- Available in Tape & Reel
- Fast Switching



Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30	-30	V
Continuous Drain Current, V_{GS} @ 10V @ T_a = 25℃	I_D	2.7	-2	A
Continuous Drain Current, V_{GS} @ 10V @ T_a = 70℃	I_D	2.1	-1.6	
Pulsed Drain Current *1	I_{DM}	21	-16	
Power Dissipation @T_a= 25℃	P_D	1.25		W
Power Dissipation @T_a= 70℃		0.8		
Linear Derating Factor		10		m W/℃
Gate-to-Source Voltage	V_{GS}	±20		V
Gate-to-Source Voltage Single Pulse tp<10 μ S	V_{GSM}	30		
Peak Diode Recovery dv/dt *2	dv/dt	5.0		V/ns
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150		℃
Maximum Junction-to-Ambient *3	$R_{\theta JA}$	100		℃/W

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

*2 N-Channel I_{SD} ≤ 1.7A, di/dt ≤ 120A/ μ s, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150℃

P-Channel I_{SD} ≤ -1.2A, di/dt ≤ 160A/ μ s, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150℃

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

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■ Electrical Characteristics T_J = 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		0.059		V/℃
		I_D = -1mA,Reference to 25℃	P-Ch		0.039		
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D = 1.7A*1	N-Ch		0.09	0.110	Ω
		V_{GS} = 4.5V, I_D = 0.85A*1			0.14	0.175	
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -1.2A*1	P-Ch		0.17	0.20	
		V_{GS} = -4.5V, I_D = -0.6A*1			0.30	0.40	
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} = 10V, I_D = 0.85A*1	N-Ch	1.9			S
		V_{DS} = -10V, I_D = -0.6A*1	P-Ch	0.92			
Drain-to-Source Leakage Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	N-Ch				μA
		V_{DS} = -24V, V_{GS} = 0V	P-Ch			1.0	
		V_{DS} = 24V, V_{GS} = 0V, T_J = 125℃	N-Ch			-1.0	
		V_{DS} = -24V, V_{GS} = 0V, T_J = 125℃	P-Ch			25	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS} = ±20V	N-Ch			-25	
			P-Ch			±100	
Total Gate Charge	Q_g	N-Channel I_D = 1.7A,V_{DS} = 24V,V_{GS} =10V	N-Ch		7.8	12	nC
			P-Ch		7.5	11	
Gate-to-Source Charge	Q_{gs}	P-Channel I_D = -1.2A,V_{DS} = -24V,V_{GS} = -10V	N-Ch		1.2	1.8	
			P-Ch		1.3	1.9	
Gate-to-Drain ("Miller") Charge	Q_{gd}		N-Ch		2.5	3.8	
			P-Ch		2.5	3.7	
Turn-On Delay Time	$t_{d(on)}$	N-Channel V_{DD} = 15V,I_D = 1.7A,R_G = 6.1Ω R_D=8.7Ω P-Channel V_{DD} = -15V,I_D = -1.2A,R_G = 6.2Ω R_D=12Ω	N-Ch		4.7		ns
			P-Ch		9.7		
Rise Time	t_r		N-Ch		10		
			P-Ch		12		
Turn-Off Delay Time	$t_{d(off)}$		N-Ch		12		
			P-Ch		19		
Fall Time	t_f		N-Ch		5.3		
			P-Ch		9.3		
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V,V_{DS} = 25V,f = 1.0MHz P-Channel V_{GS} = 0V,V_{DS} = -25V,f = 1.0MHz	N-Ch		210		pF
			P-Ch		180		
Output Capacitance	C_{oss}		N-Ch		80		
			P-Ch		87		
Reverse Transfer Capacitance	C_{rss}		N-Ch		32		
			P-Ch		42		
Continuous Source Current（Body Diode)	I_S		N-Ch			1.25	A
			P-Ch			-1.25	
Pulsed Source Current （Body Diode) *2	I_{SM}		N-Ch			21	
			P-Ch			-16	

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Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Diode Forward Voltage	V_{SD}	T_J = 25℃, I_S = 1.7A, V_{GS} = 0V*1	N-Ch			1.2	V
		T_J = 25℃, I_S = -1.8A, V_{GS} = 0V*1	P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	N-Channel	N-Ch		40	60	ns
		T_J = 25℃, I_F =1.7A,di/dt = 100A/μs*1	P-Ch		30	45	
Reverse RecoveryCharge	Q_{rr}	P-Channel	N-Ch		48	72	nC
		T_J=25℃, I_F=-1.2A,di/dt=-100A/μs*1	P-Ch		37	55	

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

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