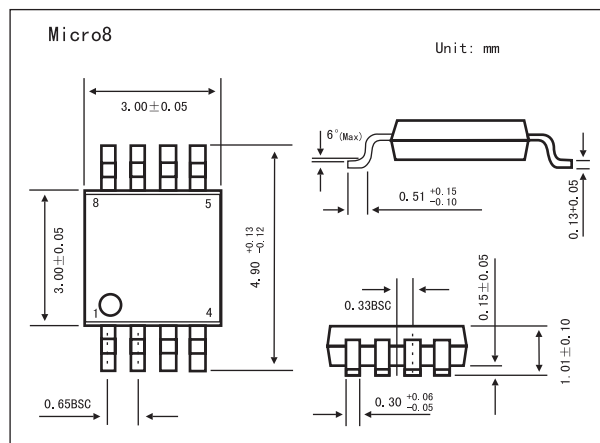
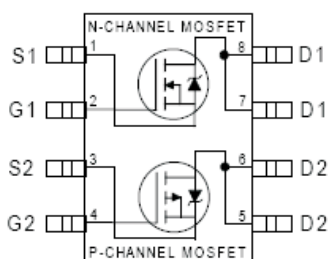


HEXFET[®] Power MOSFET

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

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 θ JA	100		℃/W

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

*2 N-Channel $I_{SD} \leq 1.7\text{A}$, $di/dt \leq 120\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$

P-Channel $I_{SD} \leq -1.2\text{A}$, $di/dt \leq 160\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$

*3 Surface mounted on FR-4 board, $t \leq 10\text{sec}$.

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■ Electrical Characteristics $T_J = 25^\circ\text{C}$

Parameter	Symbol	Testconditions		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		0.059		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 = 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} = 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				μ A
		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 P-Channel I _D = -1.2A,V _{DS} = -24V,V _{GS} = -10V	N-Ch		7.8	12	nC
Gate-to-Source Charge	Q _{gs}		P-Ch		7.5	11	
			N-Ch		1.2	1.8	
Gate-to-Drain ("Miller") Charge	Q _{gd}		P-Ch		1.3	1.9	
		N-Ch		2.5	3.8		
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 15V,I _D = 1.7A,R _G = 6.1 Ω P-Channel R _D =8.7 Ω V _{DD} = -15V,I _D = -1.2A,R _G = 6.2 Ω R _D =12 Ω	P-Ch		2.5	3.7	
			N-Ch		4.7		
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	

KRF7509■ Electrical Characteristics $T_J = 25^\circ\text{C}$

Parameter	Symbol	Testconditions		Min	Typ	Max	Unit
Diode Forward Voltage	V_{SD}	$T_J = 25^\circ\text{C}$, $I_S = 1.7\text{A}$, $V_{GS} = 0\text{V}^{*1}$	N-Ch			1.2	V
		$T_J = 25^\circ\text{C}$, $I_S = -1.8\text{A}$, $V_{GS} = 0\text{V}^{*1}$	P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	N-Channel $T_J = 25^\circ\text{C}$, $I_F = 1.7\text{A}$, $di/dt = 100\text{A}/\mu\text{s}^{*1}$	N-Ch		40	60	ns
			P-Ch		30	45	
Reverse Recovery Charge	Q_{rr}	P-Channel $T_J = 25^\circ\text{C}$, $I_F = -1.2\text{A}$, $di/dt = -100\text{A}/\mu\text{s}^{*1}$	N-Ch		48	72	nC
			P-Ch		37	55	

*1 Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

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