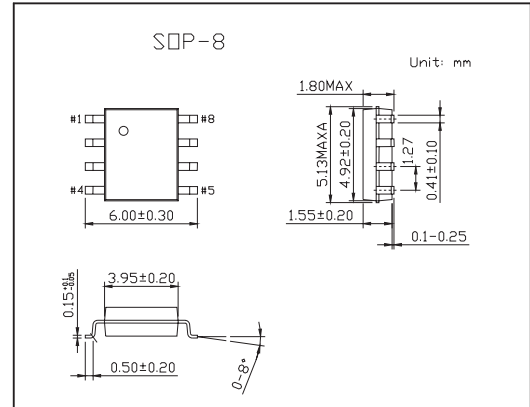
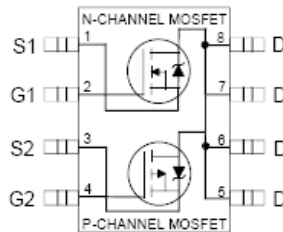


# HEXFET<sup>®</sup> Power MOSFET

## KRF7389

### ■ Features

- Generation V Technology
- Ultra Low On-Resistance
- Complimentary Half Bridge
- Surface Mount
- Fully Avalanche Rated



### ■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	-30	V
Continuous Drain Current Ta = 25°C	I <sub>D</sub>	7.3	-5.3	A
Continuous Drain Current Ta = 70°C	I <sub>D</sub>	5.9	-4.2	
Pulsed Drain Current *1	I <sub>DM</sub>	30	-30	
Continuous Source Current (Diode Conduction)	I <sub>S</sub>	2.5	-2.5	
Power Dissipation @Ta= 25°C	P <sub>D</sub>	2.5		W
@Ta= 70°C		1.6		
Gate-to-Source Voltage	V <sub>GS</sub>	±20		V
Single Pulse Avalanche Energy	E <sub>AS</sub>	82	140	mJ
	I <sub>AR</sub>	4.0	-2.8	A
Repetitive Avalanche Energy	E <sub>AR</sub>	0.20		mJ
Peak Diode Recovery dv/dt *2	dv/dt	3.8	-2.2	V/ns
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150		°C
Maximum Junction-to-Ambient *3	R <sub>θJA</sub>	50		°C/W

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

\*2 N-Channel I<sub>SD</sub> ≤ 4.0A, di/dt ≤ 74A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>, T<sub>J</sub> ≤ 150°C

P-Channel I<sub>SD</sub> ≤ -2.8A, di/dt ≤ 1500A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>, T<sub>J</sub> ≤ 150°C

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

## KRF7389

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250 \mu A$	N-Ch	30		V	
		$V_{GS} = 0V, I_D = 250 \mu A$	P-Ch	-30			
Breakdown Voltage Temp. Coefficient	$\frac{\Delta V_{(BR)DSS}}{\Delta T_J}$	$I_D = 1mA, \text{Reference to } 25^\circ C$	N-Ch		0.022	V/°C	
		$I_D = 1mA, \text{Reference to } 25^\circ C$	P-Ch		0.022		
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 5.8A^*1$	N-Ch		0.023	0.029	
		$V_{GS} = 4.5V, I_D = 4.7A^*1$			0.032	0.046	
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -4.9A^*1$	P-Ch		0.042	0.058	
		$V_{GS} = -4.5V, I_D = -3.6A^*1$			.076	0.098	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	N-Ch	1		V	
		$V_{DS} = V_{GS}, I_D = -250 \mu A$	P-Ch	-1.0			
Forward Transconductance	$g_{fs}$	$V_{DS} = 15V, I_D = 5.8A^*1$	N-Ch		14	S	
		$V_{DS} = -15V, I_D = -4.9A^*1$	P-Ch		7.7		
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$	N-Ch			1.0	
		$V_{DS} = -24V, V_{GS} = 0V$	P-Ch			-1.0	
		$V_{DS} = 24V, V_{GS} = 0V, T_J = 55^\circ C$	N-Ch				25
		$V_{DS} = -24V, V_{GS} = 0V, T_J = 55^\circ C$	P-Ch				-25
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{GS} = \pm 20V$	N-Ch			$\pm 100$	
			P-Ch			$\pm 100$	
Total Gate Charge	$Q_g$	N-Channel $I_D = 5.8A, V_{DS} = 15V, V_{GS} = 10V$	N-Ch		22	33	
Gate-to-Source Charge	$Q_{gs}$		P-Ch		23	34	
Gate-to-Drain ("Miller") Charge	$Q_{gd}$	P-Channel $I_D = -4.9A, V_{DS} = -15V, V_{GS} = -10V$	N-Ch		2.6	3.9	
			P-Ch		3.8	5.7	
Turn-On Delay Time	$t_{d(on)}$	N-Channel $V_{DD} = 15V, I_D = 1A, R_G = 6.0 \Omega$	N-Ch		8.1	12	
			P-Ch		13	19	
Rise Time	$t_r$	P-Channel $R_D = 15 \Omega$	N-Ch		8.9	13	
			P-Ch		13	20	
Turn-Off Delay Time	$t_{d(off)}$	N-Channel $V_{DD} = -15V, I_D = -1.8A, R_G = 6.0 \Omega$	N-Ch		26	39	
			P-Ch		34	51	
Fall Time	$t_f$	P-Channel $R_D = 15 \Omega$	N-Ch		17	26	
			P-Ch		32	48	
Input Capacitance	$C_{iss}$	N-Channel $V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz$	N-Ch		650		
			P-Ch		710		
Output Capacitance	$C_{oss}$	P-Channel $V_{GS} = 0V, V_{DS} = -25V, f = 1.0MHz$	N-Ch		320		
			P-Ch		380		
Reverse Transfer Capacitance	$C_{rss}$		N-Ch		130		
			P-Ch		180		
Continuous Source Current (Body Diode)	$I_S$		N-Ch			2.5	
			P-Ch			-2.5	
Pulsed Source Current (Body Diode) *2	$I_{SM}$		N-Ch			30	
			P-Ch			-30	

## KRF7389

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Diode Forward Voltage	V <sub>SD</sub>	T <sub>J</sub> = 25°C, I <sub>S</sub> = 1.7A, V <sub>GS</sub> = 0V*1	N-Ch	0.78	1.0	V
		T <sub>J</sub> = 25°C, I <sub>S</sub> = -1.7A, V <sub>GS</sub> = 0V*1	P-Ch	-0.78	-1.0	
Reverse Recovery Time	t <sub>rr</sub>	N-Channel T <sub>J</sub> = 25°C, I <sub>F</sub> = 1.7A, di/dt = 100A/μs*1	N-Ch	45	68	ns
			P-Ch	44	66	
Reverse RecoveryCharge	Q <sub>rr</sub>	P-Channel T <sub>J</sub> = 25°C, I <sub>F</sub> = -1.7A, di/dt = -100A/μs*1	N-Ch	58	87	nC
			P-Ch	42	63	

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

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