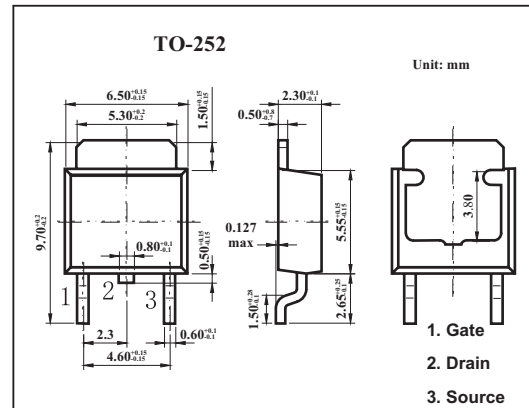
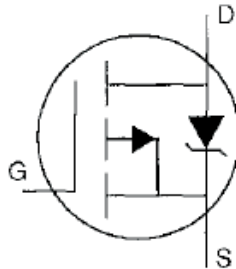


# HEXFET<sup>®</sup> Power MOSFET

## KRFR9210

### ■ Features

- Available in Tape & Reel
- Surface Mount
- Fast Switching
- P-Channel
- Dynamic dv/dt Rating
- Repetitive Avalanche Rated



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

Parameter	Symbol	Rating	Unit
Continuous Drain Current, V <sub>GS</sub> @ -10V, T <sub>c</sub> = 25°C	I <sub>D</sub>	-1.9	A
Continuous Drain Current, V <sub>GS</sub> @ -10V, T <sub>c</sub> = 100°C	I <sub>D</sub>	-1.2	
Pulsed Drain Current*1	I <sub>DM</sub>	-7.6	
Power Dissipation T <sub>c</sub> = 25°C	P <sub>D</sub>	25	W
Power Dissipation (PCB Mount) Ta = 25°C	P <sub>D</sub>	2.5	
Linear Derating Factor		0.2	W/°C
Linear Derating Factor (PCB Mount)		0.02	
Gate-to-Source Voltage	V <sub>GS</sub>	±20	V
Single Pulse Avalanche Energy*3	E <sub>AS</sub>	300	mJ
Avalanche Current *1	I <sub>AR</sub>	-1.9	A
Repetitive Avalanche Energy *1	E <sub>AR</sub>	2.5	mJ
Peak Diode Recovery dv/dt *2	dv/dt	-5	V/ns
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150	°C
Junction-to-Case	R <sub>θJC</sub>	5	°C/W
Junction-to-Ambient	R <sub>θJA</sub>	50	°C/W
Junction-to-Ambient	R <sub>θJA</sub>	110	°C/W

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

\*2 I<sub>SD</sub> ≤ -1.9A, di/dt ≤ 70A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>, T<sub>J</sub> ≤ 150°C

\*3 V<sub>DD</sub> = -50V, Starting T<sub>J</sub> = 25°C, L = 124 mH, R<sub>G</sub> = 25 Ω, I<sub>AS</sub> = -1.9A.

## KRFR9210

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	V(BR)DSS	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250 μA	-200			V
Breakdown Voltage Temp. Coefficient	ΔV(BR)DSS/ΔT <sub>J</sub>	I <sub>D</sub> = -1mA, Reference to 25°C		-0.23		V/°C
Static Drain-to-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -1.1A*1			3.0	Ω
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-2.0		-4.0	V
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> = -50V, I <sub>D</sub> = -1.1A*1	0.98			S
Drain-to-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> = -200V, V <sub>GS</sub> = 0V			-100	μA
		V <sub>DS</sub> = -200V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 150°C			-500	
Gate-to-Source Forward Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = 20V			-100	nA
Gate-to-Source Reverse Leakage		V <sub>GS</sub> = -20V			100	
Total Gate Charge	Q <sub>g</sub>	I <sub>D</sub> = -1.3A			8.9	nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> = -160V			2.1	
Gate-to-Drain ("Miller") Charge	Q <sub>gd</sub>	V <sub>GS</sub> = -10V,*1			3.9	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -100V		8.0		ns
Rise Time	t <sub>r</sub>	I <sub>D</sub> = -2.3A		12		
Turn-Off Delay Time	t <sub>d(off)</sub>	R <sub>G</sub> = 24 Ω		11		
Fall Time	t <sub>f</sub>	R <sub>D</sub> = 41 Ω*1		13		
Internal Drain Inductance	L <sub>D</sub>	Between lead, 6 mm (0.25in.) from package and center of die contact		4.5		nH
Internal Source Inductance	L <sub>S</sub>			7.5		nH
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V		170		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> = -25V		54		
Reverse Transfer Capacitance	C <sub>rss</sub>	f = 1.0MHz		16		
Continuous Source Current (Body Diode)	I <sub>S</sub>	MOSFET symbol showing the integral reverse p-n junction diode.			-1.9	A
Pulsed Source Current (Body Diode) *2	I <sub>SM</sub>				-7.6	
Diode Forward Voltage	V <sub>SD</sub>	T <sub>J</sub> = 25°C, I <sub>S</sub> = -1.9A, V <sub>GS</sub> = 0V*1			-5.8	V
Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> = 25°C, I <sub>F</sub> = -2.3A		110	220	ns
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = 100A/μs*1		0.56	1.1	μC
Forward Turn-On Time	t <sub>on</sub>	Intrinsic turn-on time is negligible (turn-on is dominated by L <sub>S</sub> +L <sub>D</sub> )				

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

\*2 Repetitive rating; pulse width limited by max