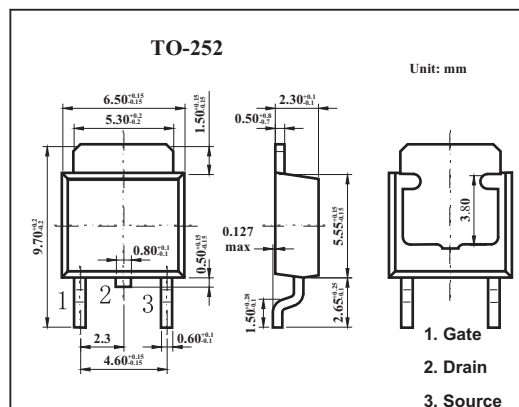
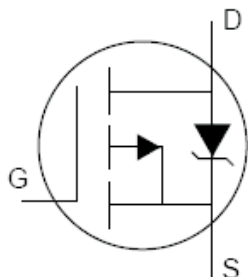


HEXFET[®] Power MOSFET

KRFR9310

■ Features

- Surface Mount
- Fast Switching
- P-Channel
- Advanced Process Technology
- Fully Avalanche Rated

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Continuous Drain Current, $V_{GS} @ -10V, T_c = 25^\circ\text{C}$	I_D	-1.8	A
Continuous Drain Current, $V_{GS} @ -10V, T_c = 100^\circ\text{C}$	I_D	-1.1	
Pulsed Drain Current*1	I_{DM}	-7.2	
Power Dissipation $T_c = 25^\circ\text{C}$	P_D	50	W
Linear Derating Factor		0.4	W/ $^\circ\text{C}$
Gate-to-Source Voltage	V_{GS}	± 20	V
Single Pulse Avalanche Energy*3	E_{AS}	92	mJ
Avalanche Current *1	I_{AR}	-1.8	A
Repetitive Avalanche Energy *1	E_{AR}	5	mJ
Peak Diode Recovery dv/dt *2	dv/dt	-24	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150	$^\circ\text{C}$
Junction-to-Case	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$
Junction-to-Ambient	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Junction-to-Ambient	$R_{\theta JA}$	110	$^\circ\text{C/W}$

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

*2 $I_{SD} \leq -1.1A$, $di/dt \leq 450A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$

*3 Starting $T_J = 25^\circ\text{C}$, $L = 57\text{ mH}$, $R_G = 25\Omega$, $I_{AS} = -1.8A$.

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250 \mu A$	-400			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS} / \Delta T_J$	$I_D = -1mA, \text{Reference to } 25^\circ C$		-0.41		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -1.1A^{*1}$			7.0	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-2.0		-4.0	V
Forward Transconductance	g_{fs}	$V_{DS} = -50V, I_D = -1.1A^{*1}$	0.91			S
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS} = -400V, V_{GS} = 0V$			-100	μA
		$V_{DS} = -320V, V_{GS} = 0V, T_J = 125^\circ C$			-500	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS} = 20V$			-100	nA
Gate-to-Source Reverse Leakage		$V_{GS} = -20V$			100	
Total Gate Charge	Q_g	$I_D = -1.1A$			13	nC
Gate-to-Source Charge	Q_{gs}	$V_{DS} = -320V$			3.2	
Gate-to-Drain ("Miller") Charge	Q_{gd}	$V_{GS} = -10V, ^{*1}$			5.0	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -200V$		11		ns
Rise Time	t_r	$I_D = -1.1A$		10		
Turn-Off Delay Time	$t_{d(off)}$	$R_G = 21 \Omega$		25		
Fall Time	t_f	$R_D = 180 \Omega ^{*1}$		24		
Internal Drain Inductance	L_D	Between lead, 6mm (0.25in.) from package and center of die contact		4.5		nH
Internal Source Inductance	L_S			7.5		nH
Input Capacitance	C_{iss}	$V_{GS} = 0V$		270		pF
Output Capacitance	C_{oss}	$V_{DS} = -25V$		50		
Reverse Transfer Capacitance	C_{rss}	$f = 1.0MHz$		8.0		
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			-1.8	A
Pulsed Source Current (Body Diode) *2	I_{SM}				-7.2	
Diode Forward Voltage	V_{SD}	$T_J = 25^\circ C, I_S = -1.1A, V_{GS} = 0V^{*1}$			-4.0	V
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ C, I_F = -1.1A$		170	260	ns
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s^{*1}$		640	960	μC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

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

*2 Repetitive rating; pulse width limited by max