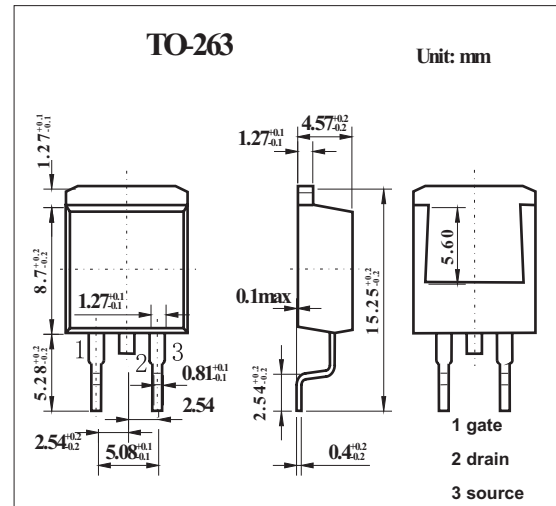
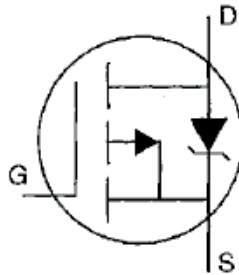


# HEXFET<sup>®</sup> Power MOSFET

## KRF9640S

### ■ Features

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



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

Parameter	Symbol	Rating	Unit
Continuous Drain Current, $V_{GS} @ -10V, T_c = 25^\circ\text{C}$	$I_D$	-11	A
Continuous Drain Current, $V_{GS} @ -10V, T_c = 100^\circ\text{C}$	$I_D$	-6.8	
Pulsed Drain Current*1	$I_{DM}$	-44	
Power Dissipation $T_c = 25^\circ\text{C}$	$P_D$	125	W
Power Dissipation (PCB Mount) $T_a = 25^\circ\text{C} *3$		3	
Linear Derating Factor		1	$W/^\circ\text{C}$
Linear Derating Factor (PCB Mount) *3		0.025	
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Single Pulse Avalanche Energy *4	$E_{AS}$	700	mJ
Avalanche Current	$I_{AR}$	-11	A
Repetitive Avalanche Energy	$E_{AR}$	13	mJ
Peak Diode Recovery $dv/dt$ *2	$dv/dt$	-5	V/ns
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to + 150	$^\circ\text{C}$
Junction-to-Case	$R_{\theta JC}$	1	$^\circ\text{C/W}$
Junction-to-Ambient ( PCB Mounted) *3	$R_{\theta JA}$	40	$^\circ\text{C/W}$
Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C/W}$

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


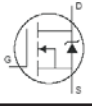
\*2  $I_{SD} \leq -11A, di/dt \leq 150A/\mu s, V_{DD} \leq V_{(BR)DSS}, T_J \leq 150^\circ\text{C}$

\*3 When mounted on 1" square PCB

\*4  $V_{DD} = -50V, startin T_J = 25^\circ\text{C}, L = 8.7mH, R_G = 25\Omega, I_{AS} = -11A$

## KRF9640S

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250 \mu A$	-200			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS}/\Delta T_J$	$I_D = -1mA, \text{Reference to } 25^\circ C$		-0.20		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -6.6A^{*1}$			0.5	$\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-2.0		-4.0	V
Forward Transconductance	$g_{fs}$	$V_{DS} = -50V, I_D = -6.6A^{*1}$	4.1			S
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS} = -200V, V_{GS} = 0V$			-100	$\mu A$
		$V_{DS} = -160V, V_{GS} = 0V, T_J = 125^\circ C$			-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	$Q_g$	$I_D = -11A$			44	nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS} = -160V$			7.1	
Gate-to-Drain ("Miller") Charge	$Q_{gd}$	$V_{GS} = -10V,^{*1}$			27	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -100V$		14		ns
Rise Time	$t_r$	$I_D = -11A$		43		
Turn-Off Delay Time	$t_{d(off)}$	$R_G = 9.1 \Omega$		39		
Fall Time	$t_f$	$R_D = 8.6 \Omega^{*1}$		38		
Internal Drain Inductance	$L_D$	Between lead, 6 mm (0.25in.) from package and center of die contact 		4.5		nH
Internal Source Inductance	$L_S$				7.5	
Input Capacitance	$C_{iss}$	$V_{GS} = 0V$		1200		pF
Output Capacitance	$C_{oss}$	$V_{DS} = -25V$		370		
Reverse Transfer Capacitance	$C_{rss}$	$f = 1.0MHz$		81		
Continuous Source Current (Body Diode)	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode. 			-11	A
Pulsed Source Current (Body Diode) *2	$I_{SM}$				-44	
Diode Forward Voltage	$V_{SD}$	$T_J = 25^\circ C, I_S = -1.1A, V_{GS} = 0V^{*1}$			-5.0	V
Reverse Recovery Time	$t_{rr}$	$T_J = 25^\circ C, I_F = -1.1A$		250	300	ns
Reverse Recovery Charge	$Q_{rr}$	$di/dt = 100A/\mu s^{*1}$		2.9	3.6	$\mu C$
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