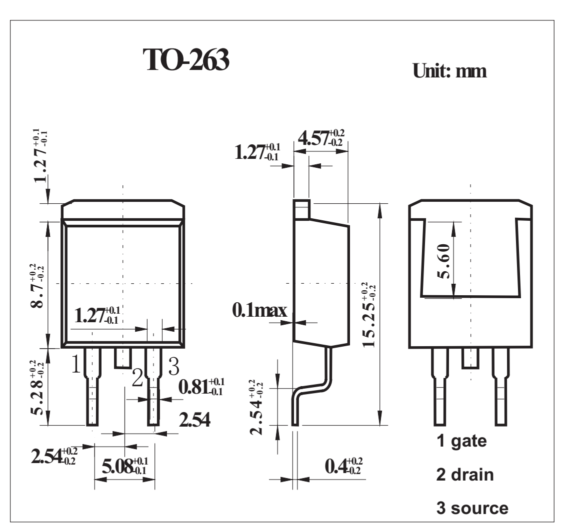
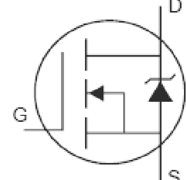
HEXFET® Power MOSFET

KRF1302S



Features

- Advanced Process Technology
- Ultra Low On-Resistance
- Dynamic dv/dt Rating
- 175℃ Operating Temperature
- Fast Switching
- Repetitive Avalanche Allowed up to Tjmax



Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Continuous Drain Current, V_{GS} @ 10V, T_C = 25℃	I_D	174	A
Continuous Drain Current, V_{GS} @ 10V, T_C = 100℃	I_D	120	
Pulsed Drain Current	I_{DM}	700	
Power Dissipation T_C = 25℃	P_D	200	W
Linear Derating Factor		1.4	W/℃
Gate-to-Source Voltage	V_{GS}	±20	V
Single Pulse Avalanche Energy	E_{AS}	350	mJ
Avalanche Current*1	I_{AR}	Fig.1.2	A
Repetitive Avalanche Energy	E_{AR}		mJ
Peak Diode Recovery dv/dt	dv/dt	TBD	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 175	℃
Soldering Temperature, for 10 seconds		300	℃
Junction-to-Case	$R_{\theta JC}$	0.74	℃/W
Junction-to-Ambient (PCB mount)	$R_{\theta JA}$	40	

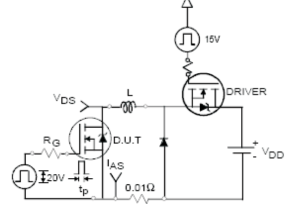


Fig1. Unclamped Inductive Test Circuit

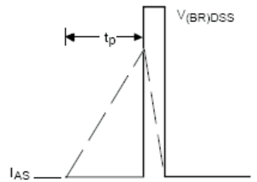


Fig 2. Unclamped Inductive Waveforms

KRF1302S

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250□A	20			V
Breakdown Voltage Temp. Coefficient	$\triangle V_{(BR)DSS}/\triangle T_J$	Reference to 25℃, I_D = 1mA		0.021		V/℃
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 104A		3.3	4.0	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0		4.0	V
Forward Transconductance	g_{fs}	V_{DS} = 15V, I_D = 104A	6.7			S
Drain-to-Source Leakage Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V			20	μA
		V_{DS} = 16V, V_{GS} = 0V, T_J = 150℃			250	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS} = 20V			200	nA
Gate-to-Source Reverse Leakage		V_{GS} = -20V			-200	
Total Gate Charge	Q_g	I_D = 104A		79	120	nC
Gate-to-Source Charge	Q_{gs}	V_{DS} = 16V		18	27	
Gate-to-Drain ("Miller") Charge	Q_{gd}	V_{GS} = 10V		31	46	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 11V		28		ns
Rise Time	t_r	I_D = 104A		130		
Turn-Off Delay Time	$t_{d(off)}$	R_G = 4.5Ω		47		
Fall Time	t_f	V_{GS} = 10V		16		
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		3600		pF
Output Capacitance	C_{oss}	V_{DS} = 25V		2370		
Reverse Transfer Capacitance	C_{rss}	f = 1.0MHz		520		
Output Capacitance	C_{oss}	V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHz		5710		
Output Capacitance	C_{oss}	V_{GS} = 0V, V_{DS} = 16V, f = 1.0MHz		2370		
Effective Output Capacitance	$C_{oss\ eff.}$	V_{GS} = 0V, V_{DS} = 0V to 16V		3540		
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			174	A
Pulsed Source Current (Body Diode)	I_{SM}				700	
Diode Forward Voltage	V_{SD}	T_J = 25℃, I_S = 104A, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	T_J = 25℃, I_F = 104A		66	100	ns
Reverse RecoveryCharge	Q_{rr}	di/dt = 100A/μs		130	200	μC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				