

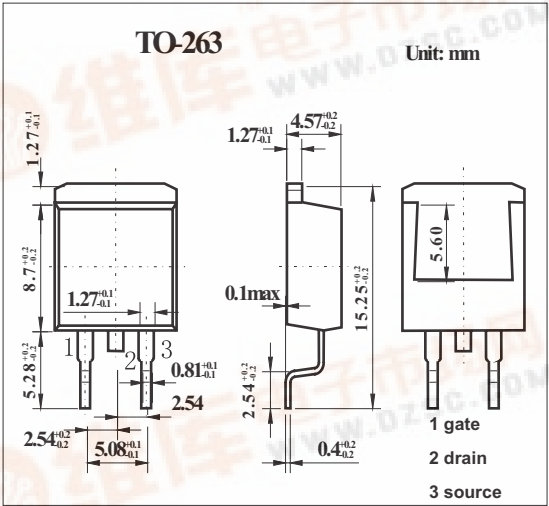
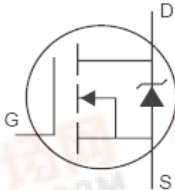
SMD Type

Transistors

HEXFET[®] Power MOSFET
KRF1302S

■ Features

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



■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Continuous Drain Current, Vgs @ 10V, Tc = 25°C	Id	174	A
Continuous Drain Current, Vgs @ 10V, Tc = 100°C	Id	120	
Pulsed Drain Current	IdM	700	
Power Dissipation Tc = 25°C	Pd	200	W
Linear Derating Factor		1.4	W/°C
Gate-to-Source Voltage	VGS	±20	V
Single Pulse Avalanche Energy	EAS	350	mJ
Avalanche Current*1	IAR	Fig.1.2	A
Repetitive Avalanche Energy	EAR		mJ
Peak Diode Recovery dv/dt	dv/dt	TBD	V/ns
Operating Junction and Storage Temperature Range	TJ, TSTG	-55 to + 175	°C
Soldering Temperature, for 10 seconds		300	°C
Junction-to-Case	R θ JC	0.74	°C/W
Junction-to-Ambient (PCB mount)	R θ JA	40	

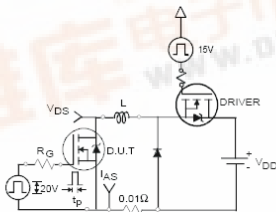


Fig1. Unclamped Inductive Test Circuit

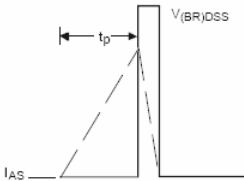


Fig 2. Unclamped Inductive Waveforms

KRF1302S

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS} / \Delta T_J$	Reference to 25°C, $I_D = 1mA$		0.021		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 104A$		3.3	4.0	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	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
		$V_{DS} = 16V, V_{GS} = 0V, T_J = 150^\circ C$			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	$t_{d(off)}$	$R_G = 4.5\Omega$		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}	$T_J = 25^\circ C, I_S = 104A, V_{GS} = 0V$			1.3	V
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ C, I_F = 104A$		66	100	ns
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s$		130	200	μC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

