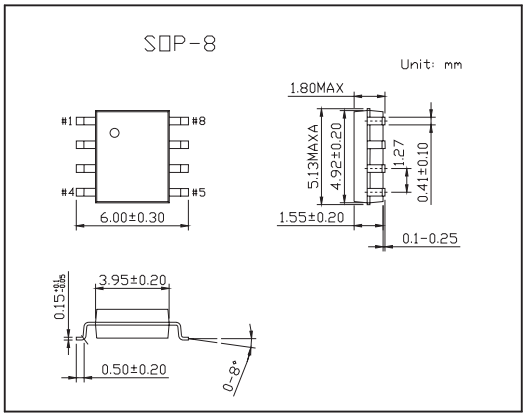
TY Semicondutor®

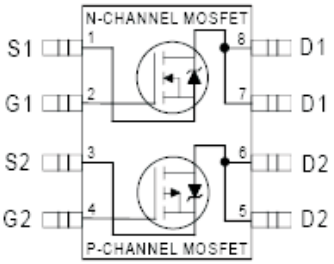
Product specification

KRF7317



■ Features

- Generation V Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Surface Mount
- Fully Avalanche Rated



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	20	-20	V
Continuous Drain Current Ta = 25℃	I_D	6.6	-5.3	A
Continuous Drain Current Ta = 70℃	I_D	5.3	-4.3	
Pulsed Drain Current	I_{DM}	26	-21	
Continuous Source Current (Diode Conduction)	I_S	2.5	-2.5	
Power Dissipation @Ta= 25℃ *2	P_D	2.0		W
Power Dissipation @Ta= 70℃ *2		1.3		
Single Pulse Avalanche Energy	E_{AS}	100	150	mJ
Avalanche Current	I_{AR}	4.1	-2.9	A
Repetitive Avalanche Energy	E_{AR}	0.20		mJ
Peak Diode Recovery dv/dt *1	dv/dt	5.0	-5	V/ ns
Gate-to-Source Voltage	V_{GS}	±12		V
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150		℃
Maximum Junction-to-Ambient *2	$R_{\theta JA}$	62.5		℃/W

*1 N-Channel $I_{SD} \leqslant$ 4.1A, $di/dt \leqslant$ 92A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

P-Channel $I_{SD} \leqslant$ -2.9A, $di/dt \leqslant$ -77A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

*2 Surface mounted on FR-4 board, t ≤ 10sec.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	N-Ch	20			V
		V_{GS} = 0V, I_D = -250μA	P-Ch	-20			
Breakdown Voltage Temp. Coefficient	$\triangle V_{(BR)DSS}/\triangle T_J$	I_D = 1mA,Reference to 25℃	N-Ch		0.027		V/℃
		I_D = -1mA,Reference to 25℃	P-Ch		0.031		
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 6.0A*1	N-Ch		0.023	0.029	Ω
		V_{GS} = 2.7V, I_D = 5.2A*1			0.030	0.046	
		V_{GS} = -4.5V, I_D = -2.9A*1	P-Ch		0.049	0.058	
		V_{GS} = -2.7V, I_D = -1.5A*1			0.082	0.098	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N-Ch	0.7			V
		V_{DS} = V_{GS}, I_D = -250μA	P-Ch	-0.7			
Forward Transconductance	g_{fs}	V_{DS} =10V, I_D = 6.0A*1	N-Ch		20		S
		V_{DS} = -10V, I_D = -1.5A*1	P-Ch		5.9		
Drain-to-Source Leakage Current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V	N-Ch			1.0	μA
		V_{DS} = -16V, V_{GS} = 0V	P-Ch			-1.0	
		V_{DS} = 16V, V_{GS} = 0V, T_J = 55℃	N-Ch			5.0	
		V_{DS} = -16V, V_{GS} = 0V, T_J = 55℃	P-Ch			-25	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS} = ±12V	N-Ch			±100	nA
			P-Ch			±100	
Total Gate Charge	Q_g	N-Channel I_D =6.0A,V_{DS} = 10V,V_{GS} =4.5V	N-Ch		18	27	nC
			P-Ch		19	29	
Gate-to-Source Charge	Q_{gs}	P-Channel I_D = -2.9A,V_{DS} = -16V,V_{GS} = -4.5V	N-Ch		2.2	3.3	
			P-Ch		4.0	6.1	
Gate-to-Drain ("Miller") Charge	Q_{gd}		N-Ch		6.2	9.3	
			P-Ch		7.7	12	
Turn-On Delay Time	$t_{d(on)}$	N-Channel V_{DD} = 10V,I_D = 1.0A,R_G = 6.0Ω R_D = 10Ω P-Channel V_{DD} = -10V,I_D = -2.9A,R_G = 6.0Ω RD = 3.4Ω	N-Ch		8.1	12	ns
			P-Ch		15	22	
Rise Time	t_r		N-Ch		17	25	
			P-Ch		40	60	
Turn-Off Delay Time	$t_{d(off)}$		N-Ch		38	57	
			P-Ch		42	63	
Fall Time	t_f		N-Ch		31	47	
			P-Ch		49	73	
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V,V_{DS} = 15V,f = 1.0MHz P-Channel V_{GS} = 0V,V_{DS} = -15V,f = 1.0MHz	N-Ch		900		pF
			P-Ch		780		
Output Capacitance	C_{oss}		N-Ch		430		
			P-Ch		470		
Reverse Transfer Capacitance	C_{rss}		N-Ch		200		
			P-Ch		240		

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Continuous Source Current（Body Diode)	I_S		N-Ch			2.5	A
			P-Ch			-2.5	
Pulsed Source Current （Body Diode) *2	I_{SM}		N-Ch			26	
			P-Ch			-21	
Diode Forward Voltage	V_{SD}	T_J = 25℃, I_S = 1.7A, V_{GS} = 0V*3	N-Ch		0.72	1.0	V
		T_J = 25℃, I_S = -2.9A, V_{GS} = 0V*3	P-Ch		-0.78	-1.0	
Reverse Recovery Time	t_{rr}	N-Channel	N-Ch		52	77	ns
		T_J = 25℃, I_F =1.7A,di/dt = 100A/μs*1	P-Ch		47	71	
Reverse RecoveryCharge	Q_{rr}	P-Channel	N-Ch		58	86	nC
		T_J=25℃,I_F =-2.9A,di/dt=-100A/μs*1	P-Ch		49	73	

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

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

*3 N-Channel Starting T_J = 25℃, L = 12mH R_G = 25Ω, I_{AS} = 4.1A.

P-Channel Starting T_J = 25℃, L = 35mH R_G = 25Ω, I_{AS} = -2.9A.