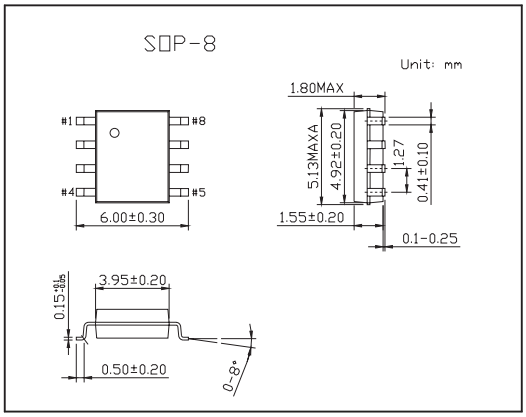
TY Semicondutor®

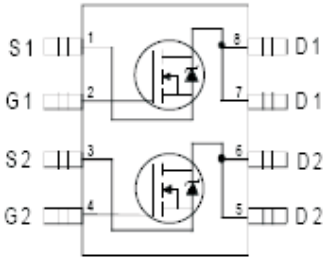
Product specification

KRF7105

■ Features

- Advanced Process Technology
- Ultra Low On-Resistance
- Dual N and P Channel Mosfet
- Surface Mount
- Available in Tape & Reel
- Dynamic dv/dt Rating
- Fast Switching





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	N-Channel	P-Channel	Unit
Continuous Drain Current V_{GS} @ 10V Ta = 25℃	I_D	3.5	-2.3	A
Continuous Drain Current V_{GS} @ 10V Ta = 70℃	I_D	2.8	-1.8	
Pulsed Drain Current *1	I_{DM}	14	-10	
Power Dissipation @T_C= 25℃	P_D	2.0		W
Linear Derating Factor		0.016		W/℃
Peak Diode Recovery dv/dt *2	dv/dt	3.0	-3.0	V/ ns
Gate-to-Source Voltage	V_{GS}	±20		V
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150		℃
Maximum Junction-to-Ambient*3	$R_{\theta JA}$	62.5		℃/W

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

*2 N-Channel $I_{SD} \leqslant$ 3.5A, $di/dt \leqslant$ 90A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

P-Channel $I_{SD} \leqslant$ -2.3A, $di/dt \leqslant$ 90A/μs, $V_{DD} \leqslant V_{(BR)DSS}$, $T_J \leqslant$ 150℃

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

KRF7105

■ 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	25			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		0.030		V/℃
		I_D = -1mA,Reference to 25℃	P-Ch		-0.015		
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 1.0A*1	N-Ch		0.083	0.10	Ω
		V_{GS} = 4.5V, I_D = 0.5A*1			0.14	0.16	
		V_{GS} = -10V, I_D = -1.0A*1	P-Ch		0.16	0.25	
		V_{GS} = -4.5V, I_D = -0.50A*1			0.30	0.40	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N-Ch	1.0		3.0	V
		V_{DS} = V_{GS}, I_D = -250μA	P-Ch	-1.0		-3.0	
Forward Transconductance	g_{fs}	V_{DS} =15V, I_D = 3.5A*1	N-Ch		4.3		S
		V_{DS} = -15V, I_D = -3.5A*1	P-Ch		3.1		
Drain-to-Source Leakage Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V	N-Ch			2.0	μA
		V_{DS} = -20V, V_{GS} = 0V	P-Ch			-2.0	
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55℃	N-Ch			25	
		V_{DS} = -20V, V_{GS} = 0V, T_J = 55℃	P-Ch			-25	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS} = ±20V	N-Ch			±100	nA
			P-Ch			±100	
Total Gate Charge	Q_g	N-Channel I_D =2.3A,V_{DS} = 12.5V,V_{GS} =10V *1	N-Ch		9.4	27	nC
			P-Ch		10	25	
Gate-to-Source Charge	Q_{gs}	P-Channel I_D = -2.3A,V_{DS} = -12.5V,V_{GS} = -10V *1	N-Ch		1.7		
			P-Ch		1.9		
Gate-to-Drain ("Miller") Charge	Q_{gd}		N-Ch		3.1		
			P-Ch		2.8		
Turn-On Delay Time	$t_{d(on)}$	N-Channel V_{DD} = 25V,I_D = 1.0A,R_G = 6.0Ω	N-Ch		7.0		ns
			P-Ch		12		
Rise Time	t_r	R_D = 25Ω *1 P-Channel	N-Ch		9.0		
			P-Ch		13		
Turn-Off Delay Time	$t_{d(off)}$	V_{DD} = -25V,I_D = -1.0A,R_G = 6.0Ω RD = 25Ω1*1	N-Ch		45		
			P-Ch		45		
Fall Time	t_f		N-Ch		25		
			P-Ch		37		
Internal Drain Inductace	L_D	Between lead,6mm(0.25in.)from packing and center of die contact	N-Ch		4.0		nH
			P-Ch		4.0		
Internal Source Inductance	L_S		N-Ch		6.0		
			P-Ch		6.0		
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V,V_{DS} = 15V,f = 1.0MHz *1	N-Ch		330		pF
			P-Ch		290		
Output Capacitance	C_{oss}	P-Channel V_{GS} = 0V,V_{DS} = -15V,f = 1.0MHz *1	N-Ch		250		
			P-Ch		210		
Reverse Transfer Capacitance	C_{rss}		N-Ch		61		
			P-Ch		67		

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Continuous Source Current（Body Diode)	I_S		N-Ch			2.0	A
			P-Ch			-2.0	
Pulsed Source Current （Body Diode) *2	I_{SM}		N-Ch			14	
			P-Ch			-9.2	
Diode Forward Voltage	V_{SD}	T_J = 25℃, I_S = 1.3A, V_{GS} = 0V*1	N-Ch			1.2	V
		T_J = 25℃, I_S = -1.3A, V_{GS} = 0V*1	P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	N-Channel	N-Ch		36	54	ns
		T_J = 25℃, I_F =1.3A,di/dt = 100A/μs*1	P-Ch		69	100	
Reverse RecoveryCharge	Q_{rr}	P-Channel	N-Ch		41	75	nC
		T_J=25℃,I_F=-1.3A,di/dt=-100A/μs*1	P-Ch		90	180	
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is neglegible (turn-on is dominated by L_S+L_D)	N-Ch				
			P-Ch				

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

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