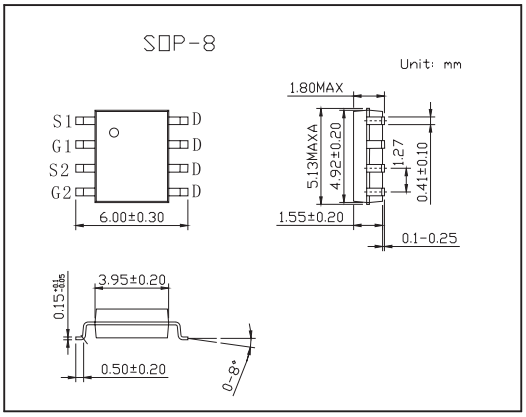
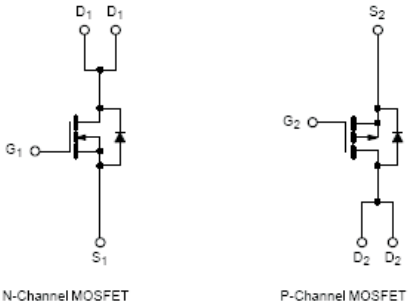
N-Channel 60-V (D-S), 175℃ MOSFET

KI4559EY



■ PIN Configuration



N-Channel MOSFET P-Channel MOSFET

■ Absolute Maximum Ratings T_A = 25℃

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	60	-60	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current (T_J = 150℃)* T_A = 25℃	I_D	±4.5	±3.1	A
T_A = 70℃		±3.8	±2.6	A
Pulsed Drain Current	I_{DM}	±30	±30	A
Continuous Source Current (Diode Conduction)*	I_S	2	-2	A
Maximum Power Dissipation* T_A = 25℃	P_D	2.4		W
T_A = 70℃		1.7		W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175		℃
Maximum Junction-to-Ambient *	R_{thJA}	62.5		℃/W

*Surface Mounted on FR4 Board, t≤10 sec.

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■ Electrical Characteristics T_J = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N-Ch	1			V
		V_{DS} = V_{GS}, I_D = -250 μA	P-Ch	-1			
Gate Body Leakage	I_{GSS}	V_{DS} = 0 V V_{GS} = ±20 V	N-Ch			±100	nA
		V_{DS} = 0 V V_{GS} = ±20 V	P-Ch			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0 V	N-Ch			2	μA
		V_{DS} = -60V, V_{GS} = 0 V	P-Ch			-2	
		V_{DS} = 60 V, V_{GS} = 0 V, T_J = 55℃	N-Ch			25	μA
		V_{DS} = -60V, V_{GS} = 0 V, T_J =55℃	P-Ch			-25	
On State Drain Currenta	$I_{D(on)}$	V_{DS} ≥5 V, V_{GS} = 10 V	N-Ch	20			A
		V_{DS} ≤-5 V, V_{GS} = -10 V	P-Ch	-20			
Drain Source On State Resistance*	$r_{DS(on)}$	V_{GS} = 10 V, I_D =4.5A	N-Ch		0.045	0.055	Ω
		V_{GS} = -10 V, I_D = -3.1A	P-Ch		0.100	0.120	
		V_{GS} = 4.5 V, I_D = 3.9A	N-Ch		0.055	0.075	
		V_{GS} = -4.5 V, I_D = -2.8A	P-Ch		0.125	0.150	
Forward Transconductance*	g_{fs}	V_{DS} = 15 V, I_D = 4.5A	N-Ch		13		S
		V_{DS} = -15 V, I_D = -3.1A	P-Ch		7.5		
Diode Forward Voltage*	V_{SD}	I_S = 2A, V_{GS} = 0 V	N-Ch		0.9	1.2	V
		I_S = -2A, V_{GS} = 0 V	P-Ch		-0.8	-1.2	
Total Gate Charge	Q_g	N-Channel	N-Ch		19	30	nC
		V_{DS} = 30 V, V_{GS} = 10V, I_D =4.5A	P-Ch		16	25	
Gate Source Charge	Q_{gs}		N-Ch		4		
		P-Channel	P-Ch		4		
Gate Drain Charge	Q_{gd}	V_{DS} = -30 V, V_{GS} = -10 V, I_D = -3.1A	N-Ch		3		
			P-Ch		1.6		
Turn On Time	$t_{d(on)}$	N Channel	N-Ch		13	20	ns
		V_{DD} = 30 V, R_L = 30Ω	P-Ch		8	15	
Rise Time	t_r	I_D= 1A, V_{GEN} = 10V, R_g = 6 Ω	N-Ch		11	20	
			P-Ch		10	20	
Turn Off Delay Time	$t_{d(off)}$	P-Channel	N-Ch		36	60	
		V_{DD} = -30 V, R_L = 30Ω	P-Ch		12	25	
Fall Time	t_f	I_D= -1 A, V_{GEN} = -10 V, R_g = 6 Ω	N-Ch		11	20	
			P-Ch		35	50	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 2 A, di/dt = 100 A/μs	N-Ch		35	60	
		I_F = -2 A, di/dt = 100 A/μs	P-Ch		60	90	

* Pulse test; pulse width ≤300μs, duty cycle≤2%.