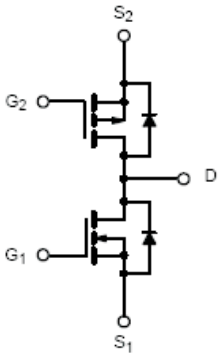
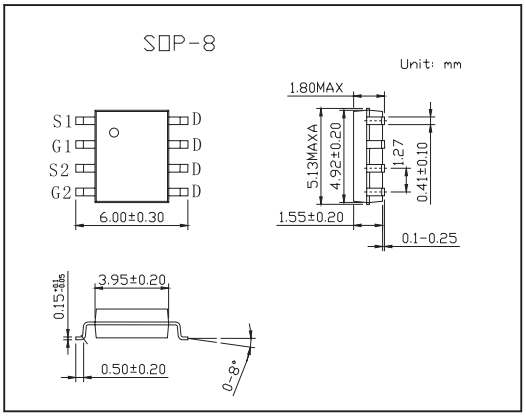
N- and P-Channel 30-V (D-S) MOSFET

KI4558DY

■ PIN Configuration





■ Absolute Maximum Ratings T_A = 25℃

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current (T_J = 150℃)* T_A = 25℃	I_D	±6	±6	A
T_A = 70℃		±4.7	±4.7	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℃		1.5		W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		℃
Maximum Junction-to-Ambient *	R_{thJA}	52		℃/W

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

KI4558DY

■ 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} = 30V, V_{GS} = 0 V	N-Ch			1	
		V_{DS} = -30V, V_{GS} = 0 V	P-Ch			-1	
		V_{DS} = 24 V, V_{GS} = 0 V, T_J = 70℃	N-Ch			5	μA
		V_{DS} = -24V, V_{GS} = 0 V, T_J = 70℃	P-Ch			-5	
On State Drain Currenta	$I_{D(on)}$	V_{DS} =5 V, V_{GS} = 10 V	N-Ch	30			A
		V_{DS} =-5 V, V_{GS} = -10 V	P-Ch	-30			
		V_{DS} =5 V, V_{GS} =4.5 V	N-Ch	8			A
		V_{DS} =-5 V, V_{GS} = -4.5 V	P-Ch	-8			
Drain Source On State Resistance*	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 6A	N-Ch		0.032	0.040	Ω
		V_{GS} = -10 V, I_D = -6A	P-Ch		0.032	0.040	
		V_{GS} = 4.5 V, I_D = 4.8A	N-Ch		0.045	0.060	
		V_{GS} = -4.5 V, I_D = -4.4A	P-Ch		0.056	0.070	
Forward Transconductance*	g_{fs}	V_{DS} = 15 V, I_D = 6A	N-Ch		13		S
		V_{DS} = -15 V, I_D = -6A	P-Ch		10.6		
Diode Forward Voltage*	V_{SD}	I_S = 2A, V_{GS} = 0 V	N-Ch		0.77	1.2	V
		I_S = -2A, V_{GS} = 0 V	P-Ch		0.77	-1.2	
Total Gate Charge	Q_g	N-Channel	N-Ch		16	30	nC
		V_{DS} = 15 V, V_{GS} = 10V, I_D = 6A	P-Ch		22	35	
Gate Source Charge	Q_{gs}		N-Ch		3.4		
		P-Channel	P-Ch		5.4		
Gate Drain Charge	Q_{gd}	V_{DS} = -15 V, V_{GS} = -10 V, I_D = -6A	N-Ch		2.3		
			P-Ch		3.6		
Turn On Time	$t_{d(on)}$	N Channel	N-Ch		12	25	ns
		V_{DD} = 15 V, R_L = 15Ω	P-Ch		12	25	
Rise Time	t_r	I_D= 1A, V_{GEN} = 10V, R_g = 6 Ω	N-Ch		12	25	
			P-Ch		12	25	
Turn Off Delay Time	$t_{d(off)}$	P-Channel	N-Ch		27	55	
		V_{DD} = -15 V, R_L = 15Ω	P-Ch		38	55	
Fall Time	t_f	I_D= -1 A, V_{GEN} = -10 V, R_g = 6 Ω	N-Ch		24	50	
			P-Ch		25	50	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 2 A, di/dt = 100 A/μs	N-Ch		45	80	
		I_F = -2 A, di/dt = 100 A/μs	P-Ch		50	80	

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