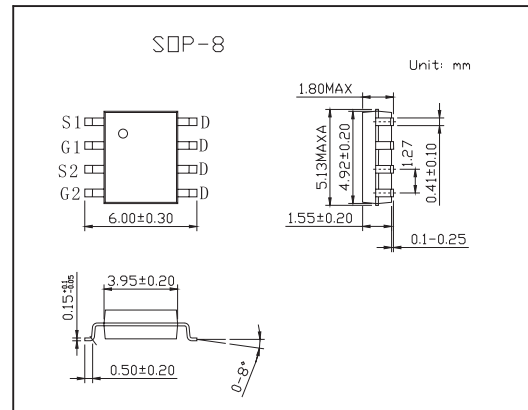
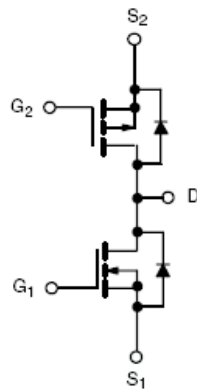


Complementary (N- and P-Channel) MOSFET Half-Bridge

KI4501ADY

■ Features

- TrenchFET Power MOSFET

■ Absolute Maximum Ratings $T_A = 25^\circ\text{C}$

Parameter	Symbol	N-Channel		P-Channel		Unit	
		10 sec	Steady State	10 sec	Steady State		
Drain-Source Voltage	V_{DS}	30		-8		V	
Gate-Source Voltage	V_{GS}	± 20		± 8		V	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)* $T_A = 25^\circ\text{C}$	I_D	8.8	6.3	-5.7	-4.1	A	
		$T_A = 70^\circ\text{C}$	7	5.2	-4.5	-3.3	A
Pulsed Drain Current	I_{DM}	30		-30		A	
Continuous Source Current (Diode Conduction)*	I_S	1.8	1	-1.8	1	A	
Maximum Power Dissipation*	P_D	$T_A = 25^\circ\text{C}$	2.5	1.3	2.5	1.3	W
		$T_A = 70^\circ\text{C}$	1.6	0.84	1.6	0.84	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150				$^\circ\text{C}$	

*Surface Mounted on FR4 Board; $t \leq 10$ sec.

■ Thermal Resistance Ratings $T_A = 25^\circ\text{C}$

Parameter	Symbol	N-Channel		P-Channel		Unit	
		Typ	Max	Typ	Max		
Maximum Junction-to-Ambient*	R_{thJA}	$t \leq 10$ sec	40	50	42	50	$^\circ\text{C}/\text{W}$
		Steady State	75	95	76	95	
Maximum Junction-to-Foot	R_{thJc}	18	23	21	26		

*Surface Mounted on FR4 Board.

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions		Min	Typ	Max	Unit
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	N-Ch	0.8		1.8	V
		V _{BS} = V _{GS} , I _D = -250 μA	P-Ch	-0.45		1.0	
Gate Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V	N-Ch			±100	nA
		V _{DS} = 0 V, V _{GS} = ±8 V	P-Ch			±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0 V	N-Ch			1	
		V _{DS} = -8V, V _{GS} = 0 V	P-Ch			-1	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55°C	N-Ch			5	μA
		V _{DS} = -8V, V _{GS} = 0 V, T _J = 55°C	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} = -4.5 V	P-Ch	-20			
Drain Source On State Resistance*	r _{DS(on)}	V _{GS} = 10 V, I _D = 8.8A	N-Ch		0.015	0.018	Ω
		V _{GS} = -4.5 V, I _D = -5.7A	P-Ch		0.030	0.042	
		V _{GS} = 4.5 V, I _D = 7.0A	N-Ch		0.022	0.027	
		V _{GS} = -2.5 V, I _D = -4.8A	P-Ch		0.048	0.060	
Forward Transconductance*	g _{fs}	V _{DS} = 15 V, I _D = 8.8A	N-Ch		18		S
		V _{DS} = -15 V, I _D = -5.7A	P-Ch		12		
Diode Forward Voltage*	V _{SD}	I _S = 1.8A, V _{GS} = 0 V	N-Ch		0.73	1.1	V
		I _S = -1.8A, V _{GS} = 0 V	P-Ch		-0.75	-1.1	
Total Gate Charge	Q _g	N-Channel V _{DS} = 15 V, V _{GS} = 5V, I _D = 8.8A	N-Ch		11.5	20	nC
Gate Source Charge	Q _{gs}		N-Ch		3		
		P-Channel	P-Ch		2.2		
Gate Drain Charge	Q _{gd}	V _{DS} = -4 V, V _{GS} = -5 V, I _D = -5.7A	N-Ch		4		
			P-Ch		3		
Turn On Time	t _{d(on)}	N Channel V _{DD} = 15 V, R _L = 15 Ω	N-Ch		15	22	ns
			P-Ch		21	40	
Rise Time	t _r	I _D = 1A, V _{GEN} = 10V, R _g = 6 Ω	N-Ch		8	15	
			P-Ch		45	70	
Turn Off Delay Time	t _{d(off)}	P-Channel V _{DD} = -4 V, R _L = 4 Ω	N-Ch		35	50	
			P-Ch		60	100	
Fall Time	t _f	I _D = -1 A, V _{GEN} = -4.5 V, R _g = 6 Ω	N-Ch		10	20	
			P-Ch		55	85	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.8 A, di/dt = 100 A/μs	N-Ch		30	60	
			P-Ch		50	100	

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