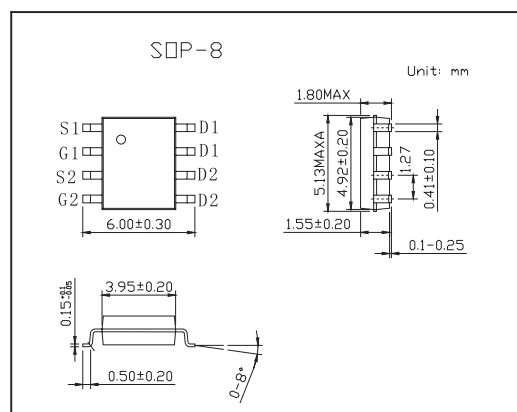
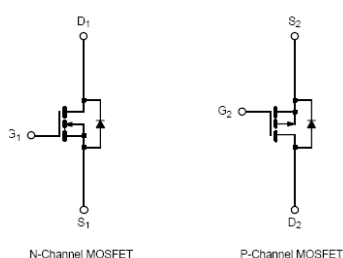


N- and P-Channel 30-V (D-S) MOSFET

KI4539ADY

■ PIN Configuration

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

Parameter	Symbol	N-Channel		P-Channel		Unit
		10 secs	Steady State	10 secs	Steady State	
Drain-Source Voltage	V_{DS}	30		-30		V
Gate-Source Voltage	V_{GS}	± 20		± 20		V
Continuous Drain Current ($T_J = 150^\circ\text{C}$)* $T_A = 25^\circ\text{C}$	I_D	5.9	4.4	-4.9	-3.7	A
$T_A = 70^\circ\text{C}$		4.7	3.6	-3.9	-2.9	A
Pulsed Drain Current	I_{DM}	30				A
Continuous Source Current (Diode Conduction)*	I_S	1.7	0.9	-1.7	-0.9	A
Maximum Power Dissipation* $T_A = 25^\circ\text{C}$	P_D	2	1.1	2	1.1	W
$T_A = 70^\circ\text{C}$		1.3	0.7	1.3	0.7	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150				$^\circ\text{C}$

*Surface Mounted on 1" X 1" FR4 Board.

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

Parameter		Symbol	N-Channel		P-Channel		Unit
			Typ	Max	Typ	Max	
Maximum Junction-to-Ambient *	$t \leq 10 \text{ sec}$	R_{thJA}	50	62.5	52	62.5	$^\circ\text{C/W}$
	Steady State		90	110	90	110	
Maximum Junction-to-Foot(Drain)	Steady State	R_{thJF}	40	40	32	40	

*Surface Mounted on 1" X 1" FR4 Board.

KI4539ADY

■ Electrical Characteristics $T_J = 25^\circ\text{C}$

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	N-Ch	1		V
		$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	P-Ch	-1		
Gate Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	N-Ch		± 100	nA
		$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	P-Ch		± 100	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$	N-Ch		1	nA
		$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$	P-Ch		-1	
		$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$	N-Ch		5	μA
		$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$	P-Ch		-5	
On State Drain Currenta	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	N-Ch	30		A
		$V_{DS} \leq -5\text{ V}, V_{GS} = -10\text{ V}$	P-Ch	-30		
Drain Source On State Resistance*	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 5.9\text{ A}$	N-Ch	0.032	0.036	Ω
		$V_{GS} = -10\text{ V}, I_D = -4.9\text{ A}$	P-Ch	0.043	0.053	
		$V_{GS} = 4.5\text{ V}, I_D = 4.9\text{ A}$	N-Ch	0.042	0.053	
		$V_{GS} = -4.5\text{ V}, I_D = -3.7\text{ A}$	P-Ch	0.075	0.090	
Forward Transconductance*	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 5.9\text{ A}$	N-Ch	15		S
		$V_{DS} = -15\text{ V}, I_D = -4.9\text{ A}$	P-Ch	9		
Diode Forward Voltage*	V_{SD}	$I_S = 1.7\text{ A}, V_{GS} = 0\text{ V}$	N-Ch	0.80	1.2	V
		$I_S = -1.7\text{ A}, V_{GS} = 0\text{ V}$	P-Ch	-0.80	-1.2	
Total Gate Charge	Q_g	N-Channel $V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 5.9\text{ A}$	N-Ch	13	20	nC
Gate Source Charge	Q_{gs}	P-Channel $V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}, I_D = -4.9\text{ A}$	N-Ch	2.3		
			P-Ch	4		
Gate Drain Charge	Q_{gd}		N-Ch	2		
Gate Resistance	R_g		N-Ch	0.5	2.2	Ω
			P-Ch	5	12.6	
Turn On Time	$t_{d(on)}$	N Channel $V_{DD} = 15\text{ V}, R_L = 15\ \Omega$	N-Ch	6	12	ns
Rise Time	t_r	$I_D = 1\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\ \Omega$	P-Ch	7	15	
			N-Ch	14	25	
Turn Off Delay Time	$t_{d(off)}$	P-Channel $V_{DD} = -15\text{ V}, R_L = 15\ \Omega$	N-Ch	30	60	
			P-Ch	40	80	
Fall Time	t_f	$I_D = -1\text{ A}, V_{GEN} = -10\text{ V}, R_g = 6\ \Omega$	N-Ch	5	10	
			P-Ch	20	40	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 1.7\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$	N-Ch	30	60	
		$I_F = -1.7\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$	P-Ch	30	60	

* Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.