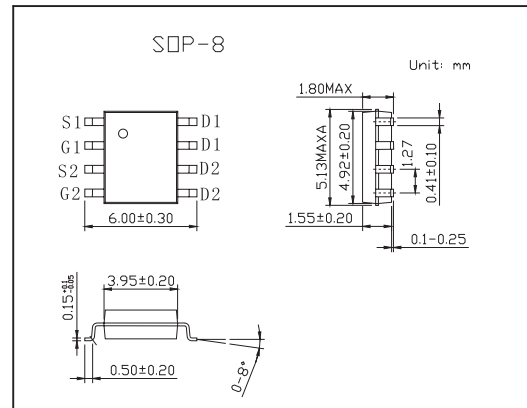
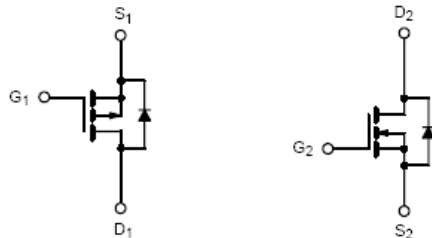


## N- and P-Channel MOSFET

## KI4503DY

## ■ 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	$V_{GS}$	$\pm 20$		$\pm 8$		V	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ )* $T_A = 25^\circ\text{C}$	$I_D$	8.8	6.3	-4.5	-3.8	A	
		$T_A = 70^\circ\text{C}$	7	5.2	-3.6	-3	A
Pulsed Drain Current	$I_{DM}$	30		-20		A	
Continuous Source Current (Diode Conduction)*	$I_S$	2	1.1	-1.2	0.9	A	
Maximum Power Dissipation*	$P_D$	$T_A = 25^\circ\text{C}$	2.27	1.25	1.38	1	W
		$T_A = 70^\circ\text{C}$	1.45	0.8	0.88	0.64	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	45	55	75	90	$^\circ\text{C/W}$
		Steady State	85	100	100	125	
Maximum Junction-to-Foot	$R_{thJc}$	25	30	53	65		

\*Surface Mounted on FR4 Board.

## KI4503DY

■ 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	0.8		V	
		$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	P-Ch	-0.45			
Gate Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$	N-Ch		$\pm 100$	nA	
		$V_{DS} = 0\text{V}, V_{GS} = \pm 8\text{V}$	P-Ch		$\pm 100$		
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24\text{V}, V_{GS} = 0\text{V}$	N-Ch		1		
		$V_{DS} = -6.4\text{V}, V_{GS} = 0\text{V}$	P-Ch		-1		
		$V_{DS} = 24\text{V}, V_{GS} = 0\text{V}, T_J = 55^\circ\text{C}$	N-Ch			5	$\mu\text{A}$
		$V_{DS} = -6.4\text{V}, V_{GS} = 0\text{V}, T_J = 55^\circ\text{C}$	P-Ch			-5	
On State Drain Currenta	$I_{D(on)}$	$V_{DS} = 5\text{V}, V_{GS} = 10\text{V}$	N-Ch	30		A	
		$V_{DS} = -5\text{V}, V_{GS} = -4.5\text{V}$	P-Ch	-20			
Drain Source On State Resistance*	$r_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 8.8\text{A}$	N-Ch		0.015	0.018	$\Omega$
		$V_{GS} = -4.5\text{V}, I_D = -4.5\text{A}$	P-Ch		0.034	0.042	
		$V_{GS} = 4.5\text{V}, I_D = 7.2\text{A}$	N-Ch		0.022	0.027	
		$V_{GS} = -2.5\text{V}, I_D = -3.7\text{A}$	P-Ch		0.048	0.060	
Forward Transconductance*	$g_{fs}$	$V_{DS} = 15\text{V}, I_D = 8.8\text{A}$	N-Ch		20	S	
		$V_{DS} = -15\text{V}, I_D = -4.5\text{A}$	P-Ch		13		
Diode Forward Voltage*	$V_{SD}$	$I_S = 2.0\text{A}, V_{GS} = 0\text{V}$	N-Ch		0.71	1.1	V
		$I_S = -1.2\text{A}, V_{GS} = 0\text{V}$	P-Ch		-0.70	-1.1	
Total Gate Charge	$Q_g$	N-Channel $V_{DS} = 15\text{V}, V_{GS} = 5\text{V}, I_D = 8.8\text{A}$	N-Ch		14.5	20	nC
Gate Source Charge	$Q_{gs}$	P-Channel $V_{DS} = -4\text{V}, V_{GS} = -5\text{V}, I_D = -4.5\text{A}$	N-Ch		3.3		
			P-Ch		3.0		
Gate Drain Charge	$Q_{gd}$		N-Ch		6.6		
			P-Ch		2.0		
Turn On Time	$t_{d(on)}$	N Channel $V_{DD} = 15\text{V}, R_L = 15\Omega$	N-Ch		13	20	ns
Rise Time	$t_r$	$I_D = 1\text{A}, V_{GEN} = 10\text{V}, R_g = 6\Omega$	P-Ch		20	40	
			N-Ch		9	18	
Turn Off Delay Time	$t_{d(off)}$	P-Channel $V_{DD} = -4\text{V}, R_L = 4\Omega$	N-Ch		35	50	
			P-Ch		110	220	
Fall Time	$t_f$	$I_D = -1\text{A}, V_{GEN} = -4.5\text{V}, R_g = 6\Omega$	N-Ch		17	30	
			P-Ch		60	120	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 1.7\text{A}, di/dt = 100\text{A}/\mu\text{s}$	N-Ch		35	70	
			P-Ch		60	100	

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