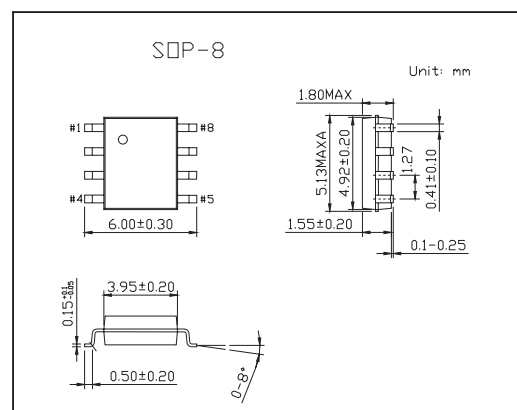
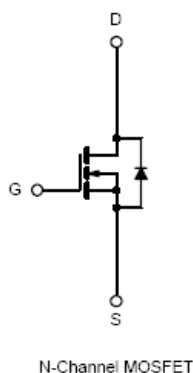
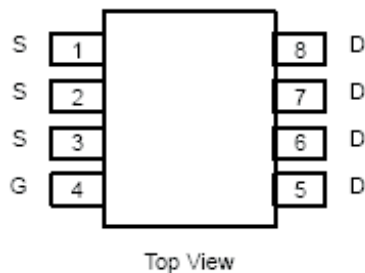


N-Channel Qg, Fast Switching WFET™ KI4390DY

■ Features

- Extremely Low Q_{gd} WFET Technology for Switching Losses
- TrenchFET™ Power MOSFET



■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	10 secs	Steady State	Unit
Drain-Source Voltage	V _{DS}	30		V
Gate-Source Voltage	V _{GS}	±20		
Continuous Drain Current (T _J = 150 °C) T _A = 25°C T _A = 70°C	I _D	12.5	8.5	A
		10	6.8	
Pulsed Drain Current	I _{DM}	20		
Continuous Source Current (Diode Conduction)*	I _S	2.7	1.3	W
Maximum Power Dissipation * T _A = 25°C T _A = 70°C	P _D	3	1.4	
		1.9	0.9	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150		°C

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

KI4390DY

■ Thermal Resistance Ratings

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient *	$t \leq 10 \text{ sec}$	R_{thJA}	32	42	$^{\circ}\text{C/W}$
	Steady-State		68	90	
Maximum Junction-to-Foot (Drain)	Steady-State	R_{thJF}	15	20	

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

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

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	0.8		2.8	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$			1	μA
		$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^{\circ}\text{C}$			5	
On-State Drain Current*	$I_{D(on)}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	30			A
Drain Source On State Resistance*	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 12.5 \text{ A}$		0.0075	0.0095	Ω
		$V_{GS} = 4.5 \text{ V}, I_D = 10.5 \text{ A}$		0.0105	0.0135	
Forward Transconductance	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 12.5 \text{ A}$		38		S
Schottky Diode Forward Voltage*	V_{SD}	$I_S = 2.7 \text{ A}, V_{GS} = 0 \text{ V}$		0.7		V
Total Gate Charge	Q_g	$V_{DS} = 15 \text{ V}, V_{GS} = 4.5 \text{ V}, I_D = 12.5 \text{ A}$		10	15	nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			2.1		
Gate Resistance	R_g			0.8		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15\text{V}, R_L=15 \Omega, I_D=1\text{A}, V_{GEN}=10\text{V}, R_G=6 \Omega$		16	30	ns
Rise Time	t_r			6	12	
Turn-Off Delay Time	$t_{d(off)}$			43	70	
Fall Time	t_f			14	25	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 2.7 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		35	60	ns

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