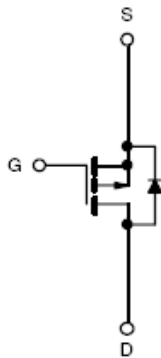


## P-Channel 12-V (D-S) MOSFET

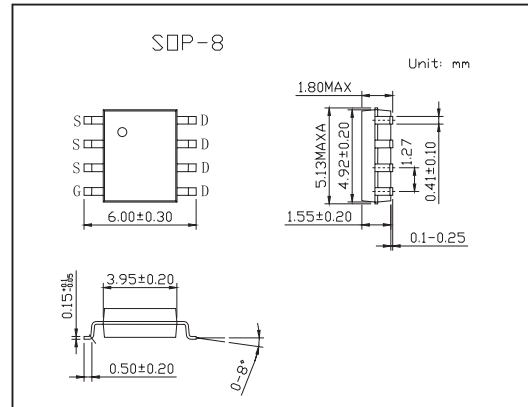
### KI4453DY

#### ■ Features

- TrenchFET Power MOSFETS



P-Channel MOSFET



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

Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		$V_{DS}$	-12		V
Gate-Source Voltage		$V_{GS}$	$\pm 8$		
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) *	$T_A = 25^\circ\text{C}$	$I_D$	-14	-10	A
	$T_A = 70^\circ\text{C}$		-11.5	-8	
Pulsed Drain Current		$I_{DM}$	-50		
Continuous Source Current *		$I_S$	-2.7	-1.36	A
Maximum Power Dissipation *	$T_A = 25^\circ\text{C}$	$P_D$	3.0	1.5	W
	$T_A = 70^\circ\text{C}$		1.9	0.95	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$

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

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

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient *	$t \leq 10$ sec	$R_{thJA}$	33	42	$^\circ\text{C}/\text{W}$
	Steady State		70	84	
Maximum Junction-to-Foot(Drain)	Steady State	$R_{thJF}$	16	21	

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

## KI4453DY

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -600 μA	-0.4		-0.9	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -12 V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 70°C			-10	μA
On-State Drain Current*	I <sub>D(on)</sub>	V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -4.5 V	-30			A
Drain-Source On-State Resistance	r <sub>DSON</sub>	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -14A		0.0051	0.0065	Ω
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -13A		0.0062	0.00775	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -12A		0.0082	0.01025	
Forward Transconductance *	g <sub>fs</sub>	V <sub>DS</sub> = -6 V, I <sub>D</sub> = -14 A		80		S
Schottky Diode Forward Voltage *	V <sub>SD</sub>	I <sub>S</sub> = -2.7A, V <sub>GS</sub> = 0 V		-0.6	-1.1	V
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -6 V, V <sub>GS</sub> = -5 V, I <sub>D</sub> = -14A		110	165	nC
Gate-Source Charge	Q <sub>gs</sub>			15		nC
Gate-Drain Charge	Q <sub>gd</sub>			27.5		nC
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -6 V, R <sub>L</sub> = 6 Ω I <sub>D</sub> = -1 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω		110	170	ns
Rise Time	t <sub>r</sub>			235	350	ns
Turn-Off Delay Time	t <sub>d(off)</sub>			410	620	ns
Fall Time	t <sub>f</sub>			285	430	ns
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = -2.1A, di/dt = 100 A/μs		180	270	ns
Gate Resistance	R <sub>g</sub>			3.6		Ω

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