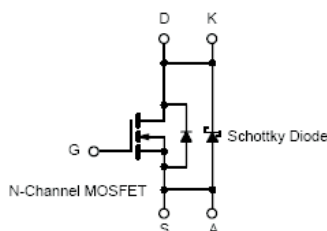
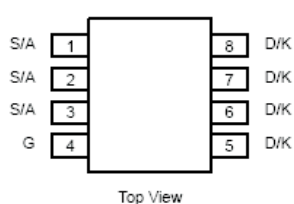
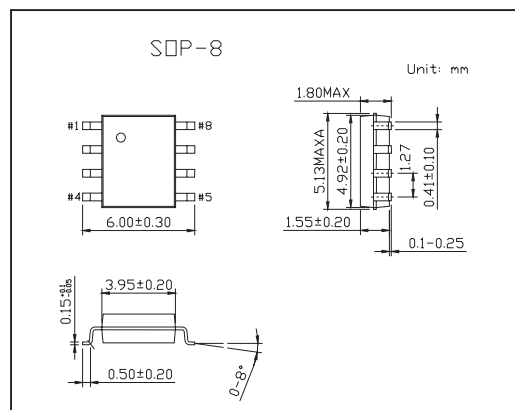


N-Channel 30-V (D-S), Reduced Q_g Fast Switching MOSFET with Schottky Diode KI4300DY

■ Features

- TrenchFET Power MOSFET
- LITTLE FOOT Plus™ Integrated Schottky
- PWM Optimized



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

Parameter	Symbol	10 secs	Steady State	Unit
Drain-Source Voltage (MOSFET)	V _{DS}	30		V
Reverse Voltage (Schottky)	V _{DA}	30		
Gate-Source Voltage	V _{GS}	± 20		
Continuous Drain Current (T _J = 150 °C) T _A = 25 °C (MOSFET)* T _A = 70 °C	I _D	9	6.4	A
		7	5.1	
Pulsed Drain Current (MOSFET)	I _{DM}	40		
Continuous Source Current (MOSFET Diode Conduction)*	I _S	2.3	1.25	
Average Foward Current (Schottky)	I _F	2.3	1.25	
Pulsed Foward Current (Schottky)	I _{FM}	20		
Maximum Power Dissipation (MOSFET)* T _A = 25 °C T _A = 70 °C	P _D	2.5	1.38	W
		1.6	0.88	
Maximum Power Dissipation (Schottky)* T _A = 25 °C T _A = 70 °C		2.2	1.25	
		1.4	0.8	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150		°C

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

KI4300DY

■ Thermal Resistance Ratings

Parameter		Symbol	MOSFET		Schottky		Unit
			Typ	Max	Typ	Max	
Maximum Junction-to-Ambient *	t ≤ 10 sec	R _{thJA}	40	50	45	55	°C/W
	Steady-State		70	90	78	100	
Maximum Junction-to-Foot (Drain)	Steady-State	R _{thJF}	18	23	25	30	

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

■ 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	0.8			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			100	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 85°C			2000	
On-State Drain Current*	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	30			A
Drain Source On State Resistance*	r _{DS(on)}	V _{GS} = 10 V, I _D = 9 A		0.0155	0.0185	Ω
		V _{GS} = 4.5 V, I _D = 7 A		0.0275	0.033	
Forward Transconductance	g _{fs}	V _{DS} = 15 V, I _D = 9 A		16		S
Schottky Diode Forward Voltage*	V _{SD}	I _S = 1.0 A, V _{GS} = 0 V		0.47	0.5	V
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 9 A		8.7	13	nC
Gate-Source Charge	Q _{gs}			2.25		
Gate-Drain Charge	Q _{gd}			4.2		
Gate Resistance	R _g		0.5		2.7	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} =15V, R _L =15 Ω, I _D =1A, V _{GEN} =10V, R _G =6 Ω		11	16	ns
Rise Time	t _r			8	15	
Turn-Off Delay Time	t _{d(off)}			22	30	
Fall Time	t _f			9	15	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 2.3 A, di/dt = 100 A/μs		32	60	ns
Forward Voltage Drop	V _F	I _F = 1.0 A		0.47	0.5	V
		I _F = 1.0 A, T _J = 125°C		0.36	0.42	V
Maximum Reverse Leakage Current	I _{rm}	V _r = 24 V		0.004	0.100	mA
		V _r = 24 V, T _J = 100°C		0.7	10	
		V _r = -24 V, T _J = 125°C		3.0	20	
Junction Capacitance	C _T	V _r = 10 V		50		pF

* Pulse test :Pulse width ≤ 300 μs, duty cycle ≤ 2%