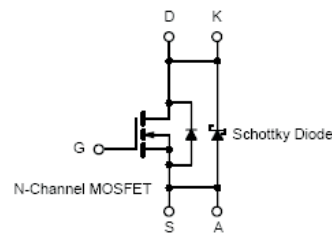
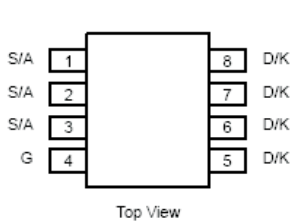
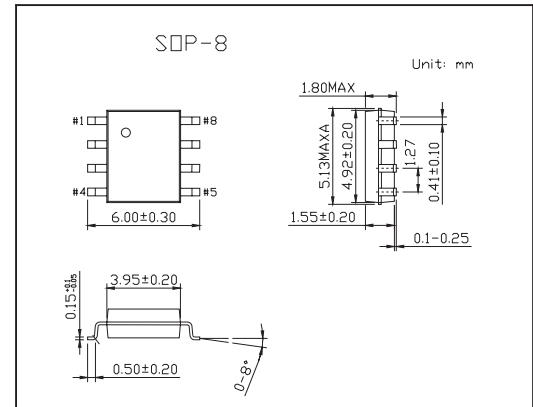


N-Channel 30-V (D-S), Reduced Qg Fast Switching MOSFET with Schottky Diode KI4300DY

■ 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 ($T_J = 150^\circ\text{C}$) $T_A = 25^\circ\text{C}$ (MOSFET)* $T_A = 70^\circ\text{C}$ | I_D | 9 | 6.4 | A |
| Pulsed Drain Current (MOSFET) | I_{DM} | 40 | | |
| Continuous Source Current (MOSFET Diode Conduction)* | I_S | 2.3 | 1.25 | |
| Average Forward Current (Schottky) | I_F | 2.3 | 1.25 | |
| Pulsed Forward Current (Schottky) | I_{FM} | 20 | | |
| Maximum Power Dissipation (MOSFET)* $T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$ | P_D | 2.5 | 1.38 | W |
| Maximum Power Dissipation (Schottky)* $T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$ | | 1.6 | 0.88 | |
| | | 2.2 | 1.25 | |
| | | 1.4 | 0.8 | |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | | $^\circ\text{C}$ |

*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 | Testconditons | Min | Typ | Max | Unit |
|------------------------------------|---------------------|--|-----|--------|--------|------|
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μ A | 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 | μ A |
| | | 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,RL=15Ω, I _D =1A,V _{GEN} =10V,R _G =6Ω | | 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/μ s | | 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 μ s,duty cycle≤2%