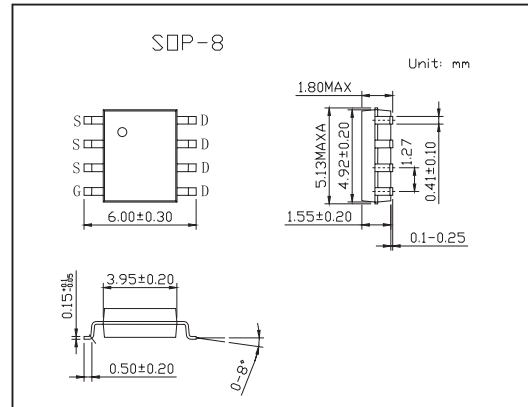
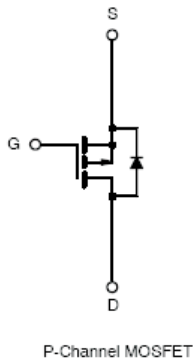


## P-Channel 1.8-V (G-S) MOSFET

## KI4433DY

## ■ Features

- TrenchFET Power MOSFETS
- Fast Switching
- 100% R<sub>g</sub> Tested



## ■ Absolute Maximum Ratings Ta = 25°C

| Parameter  |                       | Symbol                            | 10 secs    | Steady State | Unit |
|--|-----------------------|-----------------------------------|------------|--------------|------|
| Drain-Source Voltage                                 |                       | V <sub>DS</sub>                   | -20        |              | V    |
| Gate-Source Voltage                                  |                       | V <sub>GS</sub>                   | ±8         |              |      |
| Continuous Drain Current (T <sub>J</sub> = 150 °C) * | T <sub>A</sub> = 25°C | I <sub>D</sub>                    | -3.9       | -2.9         | A    |
|  | T <sub>A</sub> = 85°C |                                   | -2.8       | -2.1         |      |
| Pulsed Drain Current                                 |                       | I <sub>DM</sub>                   | -10        |              | A    |
| Continuous Source Current *                          |                       | I <sub>S</sub>                    | -2.1       | -1.2         |      |
| Maximum Power Dissipation *                          | T <sub>A</sub> = 25°C | P <sub>D</sub>                    | 2.5        | 1.4          | W    |
|  | T <sub>A</sub> = 85°C |                                   | 1.3        | 0.7          |      |
| Operating Junction and Storage Temperature Range     |                       | T <sub>J</sub> , T <sub>stg</sub> | -55 to 150 |              | °C   |

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

## ■ Thermal Resistance Ratings Ta = 25°C

| Parameter                       |              | Symbol            | Typical | Maximum | Unit |
|---------------------------------|--------------|-------------------|---------|---------|------|
| Maximum Junction-to-Ambient *   | t ≤ 10 sec   | R <sub>thJA</sub> | 40      | 50      | °C/W |
|                                 | Steady State |                   | 75      | 90      |      |
| Maximum Junction-to-Foot(Drain) | Steady State | R <sub>thJF</sub> | 19      | 25      |      |

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

## KI4433DY

## ■ 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> = -250 μA   | -0.45                                     |       | -1.0  | 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> = -20 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> = 85°C  |   |       | -5    | μA   |
| On-State Drain Current*            | I <sub>D(on)</sub>  | V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V   | -10                                       |       |       | A    |
| Drain-Source On-State Resistance   | r <sub>Ds(on)</sub> | V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -2.7 A  |   | 0.095 | 0.110 | Ω    |
|                                    |                     | V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -2.2A   |   | 0.137 | 0.160 |      |
|                                    |                     | V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1 A   |   | 0.205 | 0.24  |      |
| Forward Transconductance *         | g <sub>fs</sub>     | V <sub>DS</sub> = -10 V, I <sub>D</sub> = -2.7 A   |   | 7     |       | S    |
| Schottky Diode Forward Voltage *   | V <sub>SD</sub>     | I <sub>S</sub> = -0.9A, V <sub>GS</sub> = 0 V  |   | -0.8  | -1.2  | V    |
| Total Gate Charge                  | Q <sub>g</sub>      | V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -2.7A  |   | 5.1   | 7.7   | nC   |
| Gate-Source Charge                 | Q <sub>gs</sub>     |  |   | 1.2   |       | nC   |
| Gate-Drain Charge                  | Q <sub>gd</sub>     |  |   | 1.0   |       | nC   |
| Gate Resistance                    | R <sub>g</sub>      |  | 3   | 6     | 9.7   | Ω    |
| Turn-On Delay Time                 | t <sub>d(on)</sub>  | V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω<br>I <sub>D</sub> = -1 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω |   | 16    | 25    | ns   |
| Rise Time                          | t <sub>r</sub>      |  |   | 30    | 45    | ns   |
| Turn-Off Delay Time                | t <sub>d(off)</sub> |  |   | 30    | 45    | ns   |
| Fall Time                          | t <sub>f</sub>      |  |   | 27    | 40    | ns   |
| Source-Drain Reverse Recovery Time | t <sub>rr</sub>     |  | I <sub>F</sub> = -0.9 A, di/dt = 100 A/μs |       | 20    | 40   |

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