PD - 96319

International
IOR Rectifier

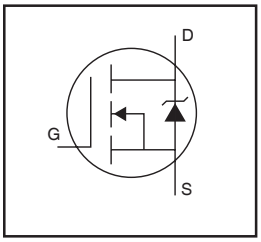
**AUTOMOTIVE GRADE**

# AUIRF3805
# AUIRF3805S
# AUIRF3805L

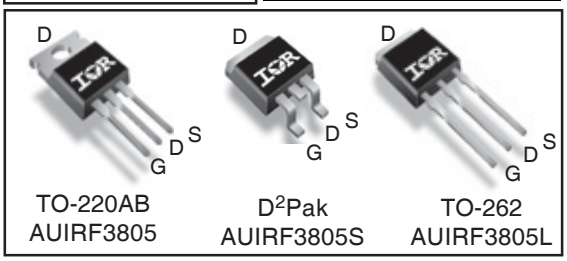
HEXFET® Power MOSFET

### Features

- Advanced Process Technology
- Ultra Low On-Resistance
- 175°C Operating Temperature
- Fast Switching
- Repetitive Avalanche Allowed up to Tjmax
- Lead-Free, RoHS Compliant
- Automotive Qualified *




| | |
|---|---|
| $V_{(BR)DSS}$ | 55V |
| $R_{DS(on)}$ typ. | 2.6mΩ |
| max. | 3.3mΩ |
| $I_{D\ (Silicon\ Limited)}$ | 210A ① |
| $I_{D\ (Package\ Limited)}$ | 160A |




TO-220AB AUIRF3805 | $D^2$Pak AUIRF3805S | TO-262 AUIRF3805L

| G | D | S |
|---|---|---|
| Gate | Drain | Source |

### Description

Specifically designed for Automotive applications, this HEXFET® Power MOSFET utilizes the latest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of this design are a 175°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in Automotive applications and a wide variety of other applications.

### Absolute Maximum Ratings

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied.Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature ($T_A$) is 25°C, unless otherwise specified.

| | Parameter | Max. | Units |
|---|---|---|---|
| $I_D$ @ $T_C$ = 25°C | Continuous Drain Current, $V_{GS}$ @ 10V (Silicon Limited) | 210① | A |
| $I_D$ @ $T_C$ = 100°C | Continuous Drain Current, $V_{GS}$ @ 10V (Silicon Limited) | 150① | |
| $I_D$ @ $T_C$ = 25°C | Continuous Drain Current, $V_{GS}$ @ 10V (Package limited) | 160 | |
| $I_{DM}$ | Pulsed Drain Current ② | 890 | |
| $P_D$ @$T_C$ = 25°C | Power Dissipation | 300 | W |
| | Linear Derating Factor | 2.0 | W/°C |
| $V_{GS}$ | Gate-to-Source Voltage | ± 20 | V |
| $E_{AS}$ | Single Pulse Avalanche Energy (Thermally limited) ③ | 650 | mJ |
| $E_{AS}$ (Tested ) | Single Pulse Avalanche Energy Tested Value ③ | 940 | |
| $I_{AR}$ | Avalanche Current ② | See Fig.12a, 12b, 15, 16 | A |
| $E_{AR}$ | Repetitive Avalanche Energy ⑥ | | mJ |
| $T_J$<br>$T_{STG}$ | Operating Junction and<br>Storage Temperature Range | -55 to + 175 | °C |
| | Soldering Temperature, for 10 seconds (1.6mm from case ) | 300 | |
| | Mounting Torque, 6-32 or M3 screw ⑦ | 10 lbf•in (1.1N•m) | |

### Thermal Resistance

| | Parameter | Typ. | Max. | Units |
|---|---|---|---|---|
| $R_{\theta JC}$ | Junction-to-Case ⑨ | — | 0.5 ⑩ | °C/W |
| $R_{\theta CS}$ | Case-to-Sink, Flat Greased Surface ⑦ | 0.50 | — | |
| $R_{\theta JA}$ | Junction-to-Ambient ⑦ | — | 62 | |
| $R_{\theta JA}$ | Junction-to-Ambient (PCB Mount) ⑧ | — | 40 | |

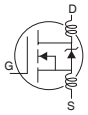
HEXFET® is a registered trademark of International Rectifier.

*Qualification standards can be found at http://www.irf.com/

**Static Electrical Characteristics @ $T_J$ = 25°C (unless otherwise specified)**

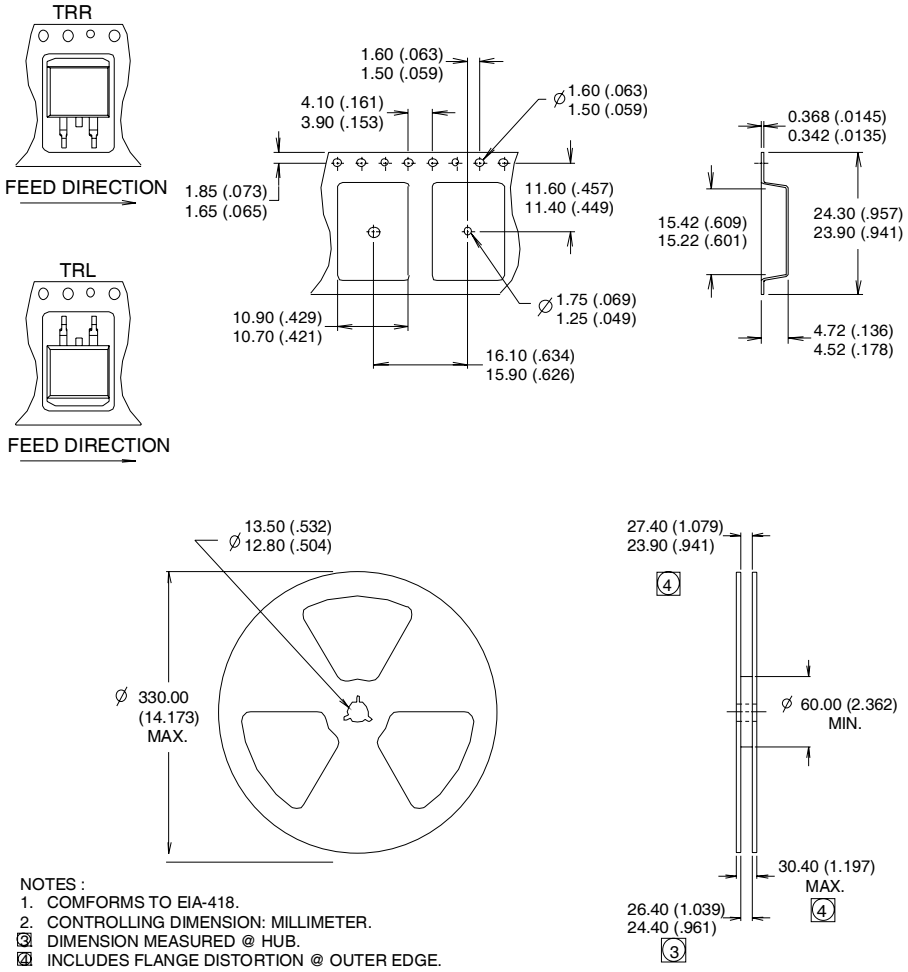
| | Parameter | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-to-Source Breakdown Voltage | 55 | — | — | V |
| $\Delta V_{(BR)DSS}/\Delta T_J$ | Breakdown Voltage Temp. Coefficient | — | 0.051 | — | V/°C |
| $R_{DS(on)}$ | Static Drain-to-Source On-Resistance | — | 2.6 | 3.3 | mΩ |
| $V_{GS(th)}$ | Gate Threshold Voltage | 2.0 | — | 4.0 | V |
| gfs | Forward Transconductance | 75 | — | — | V |
| $I_{DSS}$ | Drain-to-Source Leakage Current | — | — | 20 | |
| | | — | — | 250 | |
| $I_{GSS}$ | Gate-to-Source Forward Leakage | — | — | 200 | |
| | Gate-to-Source Reverse Leakage | — | — | -200 | |

**Dynamic Electrical Characteristics @ $T_J$ = 25°C (unless otherwise specified)**




Note through ,,* * are on page 3

## D²Pak Tape & Reel Infomation




NOTES :
1. COMFORMS TO EIA-418.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION MEASURED @ HUB.
4. INCLUDES FLANGE DISTORTION @ OUTER EDGE.

## Ordering Information

| Base part | Package Type | Standard Pack | | Complete Part Number |
|---|---|---|---|---|
| | | Form | Quantity | |
| AUIRF3805 | TO-220 | Tube | 50 | AUIRF3805 |
| AUIRF3805L | TO-262 | Tube | 50 | AUIRF3805L |
| AUIRF3805S | D2Pak | Tube | 50 | AUIRF3805S |
| | | Tape and Reel Left | 800 | AUIRF3805STRL |
| | | Tape and Reel Right | 800 | AUIRF3805STRR |

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