

IRF7341QPbF

HEXFET® Power MOSFET

Typical Applications

- Anti-lock Braking Systems (ABS)
- Electronic Fuel Injection
- Air bag

Benefits

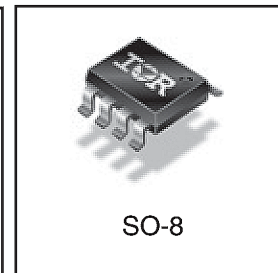
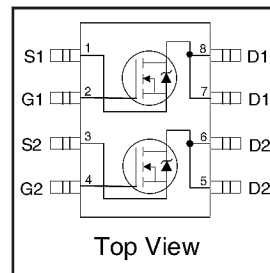
- Advanced Process Technology
- Dual N-Channel MOSFET
- Ultra Low On-Resistance
- 175°C Operating Temperature
- Repetitive Avalanche Allowed up to Tjmax
- Automotive [Q101] Qualified
- Lead-Free

Description

Specifically designed for Automotive applications, these HEXFET® Power MOSFET's in a Dual SO-8 package utilize the latest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of these Automotive qualified HEXFET Power MOSFET's are a 175°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These benefits combine to make this design an extremely efficient and reliable device for use in Automotive applications and a wide variety of other applications.

The 175°C rating for the SO-8 package provides improved thermal performance with increased safe operating area and dual MOSFET die capability make it ideal in a variety of power applications. This dual, surface mount SO-8 can dramatically reduce board space and is also available in Tape & Reel.

| V _{DSS} | R _{DS(on)} max | I _D |
|------------------|--------------------------------|----------------|
| 55V | 0.050 @ V _{GS} = 10V | 5.1A |
| | 0.065 @ V _{GS} = 4.5V | 4.42A |



Absolute Maximum Ratings

| | Parameter | Max. | Units |
|--|---|---------------------|-------|
| V _{DS} | Drain-Source Voltage | 55 | V |
| I _D @ T _A = 25°C | Continuous Drain Current, V _{GS} @ 10V | 5.1 | A |
| I _D @ T _A = 70°C | Continuous Drain Current, V _{GS} @ 10V | 4.2 | |
| I _{DM} | Pulsed Drain Current ^① | 42 | |
| P _D @ T _A = 25°C | Maximum Power Dissipation ^③ | 2.4 | W |
| P _D @ T _A = 70°C | Maximum Power Dissipation ^③ | 1.7 | W |
| | Linear Derating Factor | 16 | mW/°C |
| V _{GS} | Gate-to-Source Voltage | ± 20 | V |
| E _{AS} | Single Pulse Avalanche Energy ^② | 140 | mJ |
| I _{AR} | Avalanche Current ^① | 5.1 | A |
| E _{AR} | Repetitive Avalanche Energy | See Fig. 14, 15, 16 | mJ |
| T _J , T _{STG} | Junction and Storage Temperature Range | -55 to + 175 | °C |

Thermal Resistance

| | Parameter | Max. | Units |
|------------------|--|------|-------|
| R _{θJA} | Maximum Junction-to-Ambient ^③ | 62.5 | °C/W |

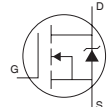
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International
IR Rectifier

Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|---------------------------------|--------------------------------------|------|-------|-------|----------|--|
| $V_{(BR)DSS}$ | Drain-to-Source Breakdown Voltage | 55 | — | — | V | $V_{GS} = 0V, I_D = 250\mu A$ |
| $\Delta V_{(BR)DSS}/\Delta T_J$ | Breakdown Voltage Temp. Coefficient | — | 0.052 | — | V/°C | Reference to $25^\circ\text{C}, I_D = 1\text{mA}$ |
| $R_{DS(on)}$ | Static Drain-to-Source On-Resistance | — | 0.043 | 0.050 | Ω | $V_{GS} = 10V, I_D = 5.1A$ ② |
| | | — | 0.056 | 0.065 | | $V_{GS} = 4.5V, I_D = 4.42A$ ② |
| $V_{GS(th)}$ | Gate Threshold Voltage | 1.0 | — | — | V | $V_{DS} = V_{GS}, I_D = 250\mu A$ |
| g_{fs} | Forward Transconductance | 10.4 | — | — | S | $V_{DS} = 10V, I_D = 5.2A$ |
| I_{DSS} | Drain-to-Source Leakage Current | — | — | 2.0 | μA | $V_{DS} = 44V, V_{GS} = 0V$ |
| | | — | — | 25 | | $V_{DS} = 44V, V_{GS} = 0V, T_J = 150^\circ\text{C}$ |
| I_{GSS} | Gate-to-Source Forward Leakage | — | — | 100 | nA | $V_{GS} = 20V$ |
| | Gate-to-Source Reverse Leakage | — | — | -100 | | $V_{GS} = -20V$ |
| Q_g | Total Gate Charge | — | 29 | 44 | nC | $I_D = 5.2A$ |
| Q_{gs} | Gate-to-Source Charge | — | 2.9 | 4.4 | | $V_{DS} = 44V$ |
| Q_{gd} | Gate-to-Drain ("Miller") Charge | — | 7.3 | 11 | | $V_{GS} = 10V$ |
| $t_{d(on)}$ | Turn-On Delay Time | — | 9.2 | — | ns | $V_{DD} = 28V$ |
| t_r | Rise Time | — | 7.7 | — | | $I_D = 1.0A$ |
| $t_{d(off)}$ | Turn-Off Delay Time | — | 31 | — | | $R_G = 6.0\Omega$ |
| t_f | Fall Time | — | 12.5 | — | | $V_{GS} = 10V$ ② |
| C_{iss} | Input Capacitance | — | 780 | — | pF | $V_{GS} = 0V$ |
| C_{oss} | Output Capacitance | — | 190 | — | | $V_{DS} = 25V$ |
| C_{rss} | Reverse Transfer Capacitance | — | 66 | — | | $f = 1.0\text{MHz}$ |

Source-Drain Ratings and Characteristics

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|----------|--|------|------|------|-------|--|
| I_S | Continuous Source Current (Body Diode) | — | — | 2.4 | A | MOSFET symbol showing the integral reverse p-n junction diode.  |
| I_{SM} | Pulsed Source Current (Body Diode) ① | — | — | 42 | | |
| V_{SD} | Diode Forward Voltage | — | — | 1.2 | V | $T_J = 25^\circ\text{C}, I_S = 2.6A, V_{GS} = 0V$ ② |
| t_{rr} | Reverse Recovery Time | — | 51 | 77 | ns | $T_J = 25^\circ\text{C}, I_F = 2.6A$ |
| Q_{rr} | Reverse Recovery Charge | — | 76 | 114 | nC | $di/dt = 100A/\mu s$ ② |

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.

② Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

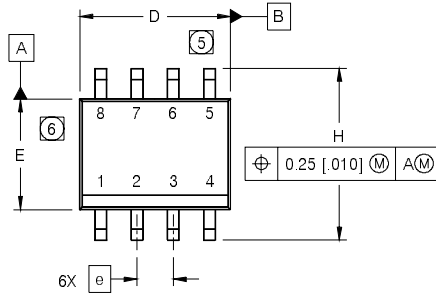
③ Surface mounted on FR-4 board, $t \leq 10\text{sec}$.

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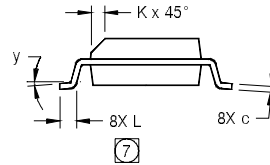
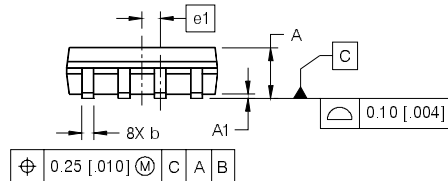
International
IR Rectifier

SO-8 Package Outline

Dimensions are shown in millimeters (inches)



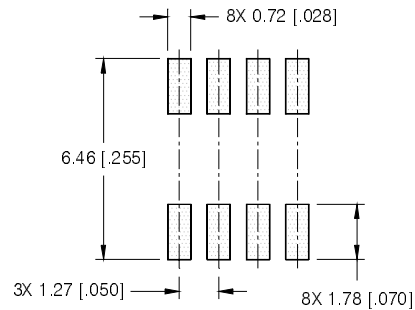
| DIM | INCHES | | MILLIMETERS | |
|-----|------------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | .0532 | .0688 | 1.35 | 1.75 |
| A1 | .0040 | .0098 | 0.10 | 0.25 |
| b | .013 | .020 | 0.33 | 0.51 |
| c | .0075 | .0098 | 0.19 | 0.25 |
| D | .189 | .1968 | 4.80 | 5.00 |
| E | .1497 | .1574 | 3.80 | 4.00 |
| e | .050 BASIC | | 1.27 BASIC | |
| e 1 | .025 BASIC | | 0.635 BASIC | |
| H | .2284 | .2440 | 5.80 | 6.20 |
| K | .0099 | .0196 | 0.25 | 0.50 |
| L | .016 | .050 | 0.40 | 1.27 |
| y | 0° | 8° | 0° | 8° |



NOTES:

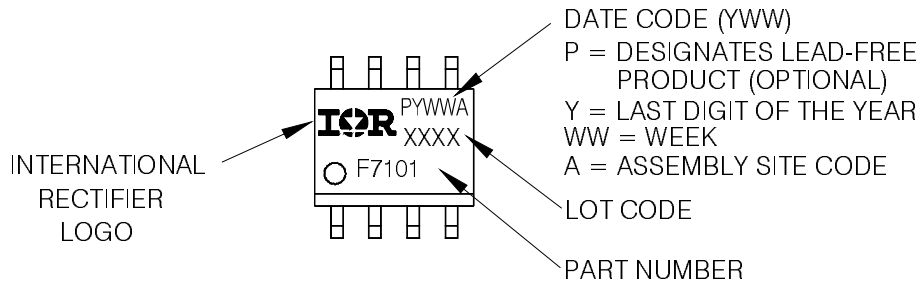
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- CONTROLLING DIMENSION: MILLIMETER
- DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
- OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
- DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].
- DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



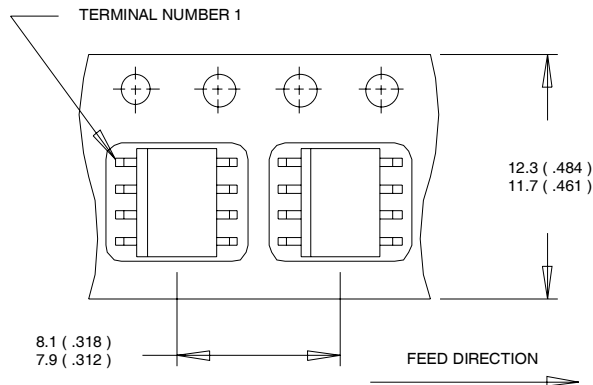
SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



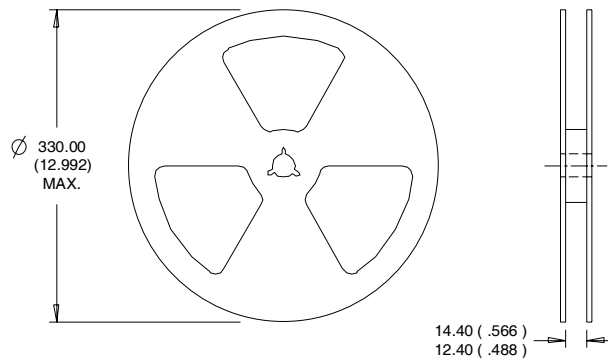
SO-8 Tape and Reel

Dimensions are shown in millimeters (inches)



NOTES:

1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



NOTES :

1. CONTROLLING DIMENSION : MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

Data and specifications subject to change without notice.
 This product has been designed and qualified for the Automotive [Q101] market.
 Qualification Standards can be found on IR's Web site.