International
IOR Rectifier

PD - 95719

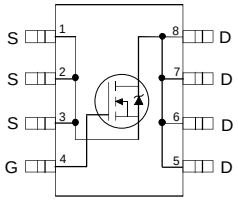
# IRF3717PbF

HEXFET® Power MOSFET

**Applications**

- Synchronous MOSFET for Notebook Processor Power
- Synchronous Rectifier MOSFET for Isolated DC-DC Converters in Networking Systems
- Lead-Free

| $V_{DSS}$ | $R_{DS(on)}$ max | $I_D$ |
|---|---|---|
| 20V | 4.4mΩ@$V_{GS}$ = 10V | 20A |



Top View


SO-8

**Benefits**

- Ultra-Low Gate Impedance
- Very Low $R_{DS(on)}$
- Fully Characterized Avalanche Voltage and Current

## Absolute Maximum Ratings

| | Parameter | Max. | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-to-Source Voltage | 20 | V |
| $V_{GS}$ | Gate-to-Source Voltage | ± 20 | |
| $I_D$ @ $T_A$ = 25°C | Continuous Drain Current, $V_{GS}$ @ 10V | 20 | A |
| $I_D$ @ $T_A$ = 70°C | Continuous Drain Current, $V_{GS}$ @ 10V | 16 | |
| $I_{DM}$ | Pulsed Drain Current ① | 160 | |
| $P_D$ @$T_A$ = 25°C | Power Dissipation | 2.5 | W |
| $P_D$ @$T_A$ = 70°C | Power Dissipation | 1.6 | |
| | Linear Derating Factor | 0.02 | W/°C |
| $T_J$<br>$T_{STG}$ | Operating Junction and<br>Storage Temperature Range | -55 to + 150 | °C |

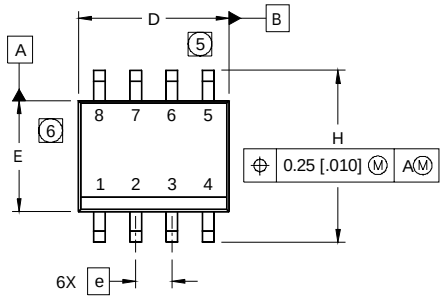
## Thermal Resistance

| | Parameter | Typ. | Max. | Units |
|---|---|---|---|---|
| $R_{\theta JL}$ | Junction-to-Drain Lead | ––– | 20 | °C/W |
| $R_{\theta JA}$ | Junction-to-Ambient ④ | ––– | 50 | |

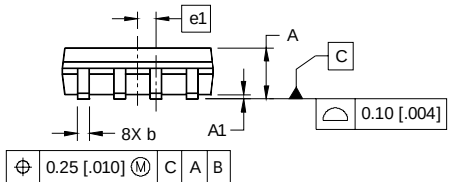
Notes ① through ④ are on page 10

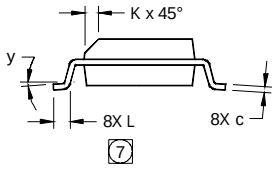
## SO-8 Package Outline

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° |

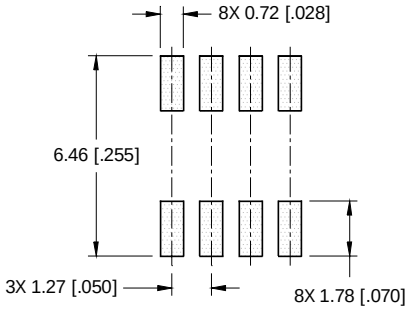



NOTES:

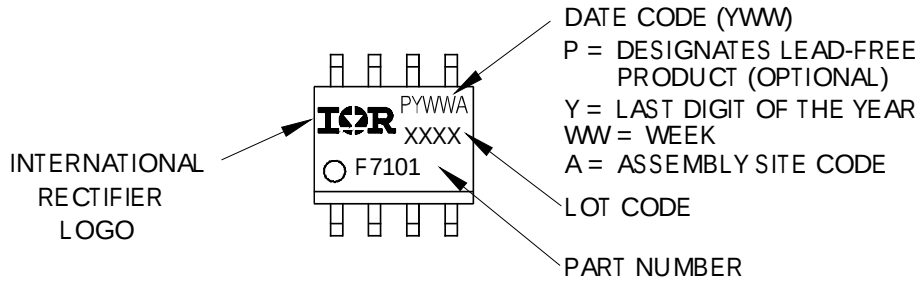
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
6. DIMENSION DOES NOT INCLUDE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

FOOTPRINT




## SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



## Static @ $T_J$ = 25°C (unless otherwise specified)

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-to-Source Breakdown Voltage | 20 | — | — | V | $V_{GS}$ = 0V, $I_D$ = 250µA |
| $\Delta BV_{DSS}/\Delta T_J$ | Breakdown Voltage Temp. Coefficient | — | 0.014 | — | V/°C | Reference to 25°C, $I_D$ = 1mA |
| $R_{DS(on)}$ | Static Drain-to-Source On-Resistance | — | 3.7 | 4.4 | mΩ | $V_{GS}$ = 10V, $I_D$ = 20A ③ |
| | | — | 4.8 | 5.7 | | $V_{GS}$ = 4.5V, $I_D$ = 16A ③ |
| $V_{GS(th)}$ | Gate Threshold Voltage | 1.55 | 2.0 | 2.45 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = 250µA |
| $\Delta V_{GS(th)}/\Delta T_J$ | Gate Threshold Voltage Coefficient | — | -5.4 | — | mV/°C | |
| $I_{DSS}$ | Drain-to-Source Leakage Current | — | — | 1.0 | µA | $V_{DS}$ = 16V, $V_{GS}$ = 0V |
| | | — | — | 150 | | $V_{DS}$ = 16V, $V_{GS}$ = 0V, $T_J$ = 125°C |
| $I_{GSS}$ | Gate-to-Source Forward Leakage | — | — | 100 | nA | $V_{GS}$ = 20V |
| | Gate-to-Source Reverse Leakage | — | — | -100 | | $V_{GS}$ = -20V |
| gfs | Forward Transconductance | 57 | — | — | S | $V_{DS}$ = 10V, $I_D$ = 16A |
| $Q_g$ | Total Gate Charge | — | 22 | 33 | | |
| $Q_{gs1}$ | Pre-Vth Gate-to-Source Charge | — | 6.8 | — | | $V_{DS}$ = 10V |
| $Q_{gs2}$ | Post-Vth Gate-to-Source Charge | — | 2.2 | — | nC | $V_{GS}$ = 4.5V |
| $Q_{gd}$ | Gate-to-Drain Charge | — | 7.3 | — | | $I_D$ = 16A |
| $Q_{godr}$ | Gate Charge Overdrive | — | 5.7 | — | | See Fig. 16 |
| $Q_{sw}$ | Switch Charge ($Q_{gs2}$ + $Q_{gd}$) | — | 9.5 | — | | |
| $Q_{oss}$ | Output Charge | — | 12 | — | nC | $V_{DS}$ = 10V, $V_{GS}$ = 0V |
| $t_{d(on)}$ | Turn-On Delay Time | — | 12 | — | | $V_{DD}$ = 10V, $V_{GS}$ = 4.5V |
| $t_r$ | Rise Time | — | 14 | — | | $I_D$ = 16A |
| $t_{d(off)}$ | Turn-Off Delay Time | — | 15 | — | ns | Clamped Inductive Load |
| $t_f$ | Fall Time | — | 6.0 | — | | |
| $C_{iss}$ | Input Capacitance | — | 2890 | — | | $V_{GS}$ = 0V |
| $C_{oss}$ | Output Capacitance | — | 930 | — | pF | $V_{DS}$ = 10V |
| $C_{rss}$ | Reverse Transfer Capacitance | — | 430 | — | | $f$ = 1.0MHz |

## Avalanche Characteristics

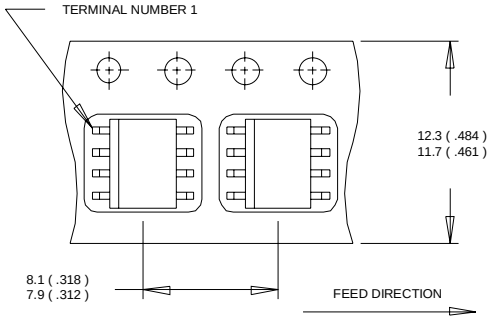
| | Parameter | Typ. | Max. | Units |
|---|---|---|---|---|
| $E_{AS}$ | Single Pulse Avalanche Energy ② | — | 32 | mJ |
| $I_{AR}$ | Avalanche Current ① | — | 16 | A |

## Diode Characteristics

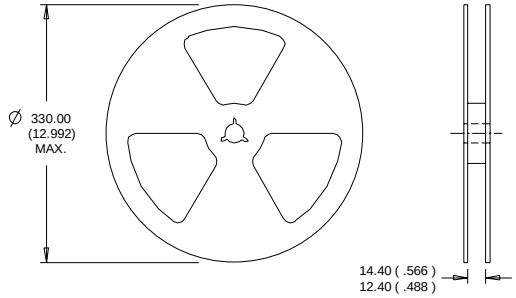
| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|---|---|---|---|---|---|---|
| $I_S$ | Continuous Source Current (Body Diode) | — | — | 20 | A | MOSFET symbol showing the integral reverse p-n junction diode. |
| $I_{SM}$ | Pulsed Source Current (Body Diode) ① | — | — | 160 | | |
| $V_{SD}$ | Diode Forward Voltage | — | — | 1.0 | V | $T_J$ = 25°C, $I_S$ = 16A, $V_{GS}$ = 0V ③ |
| $t_{rr}$ | Reverse Recovery Time | — | 22 | 32 | ns | $T_J$ = 25°C, $I_F$ = 16A, $V_{DD}$ = 10V |
| $Q_{rr}$ | Reverse Recovery Charge | — | 13 | 19 | nC | di/dt = 100A/µs ③ |

## 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.

**Notes:**

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

② Starting $T_J$ = 25°C, L = 0.26mH, $R_G$ = 25Ω, $I_{AS}$ = 16A.

③ Pulse width ≤ 400µs; duty cycle ≤ 2%.

④ When mounted on 1 inch square copper board.

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.

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