

# IRF7811W

International  
**IR** Rectifier

## Electrical Characteristics

| Parameter                         |              | Min | Typ  | Max       | Units      | Conditions                                                             |
|-----------------------------------|--------------|-----|------|-----------|------------|------------------------------------------------------------------------|
| Drain-to-Source Breakdown Voltage | $BV_{DSS}$   | 30  | —    | —         | V          | $V_{GS} = 0V, I_D = 250\mu A$                                          |
| Static Drain-Source on Resistance | $R_{DS(on)}$ |     | 9.0  | 12        | m $\Omega$ | $V_{GS} = 4.5V, I_D = 15A$ ②                                           |
| Gate Threshold Voltage            | $V_{GS(th)}$ | 1.0 |      |           | V          | $V_{DS} = V_{GS}, I_D = 250\mu A$                                      |
| Drain-Source Leakage Current      | $I_{DSS}$    |     |      | 30        | $\mu A$    | $V_{DS} = 24V, V_{GS} = 0$                                             |
|                                   |              |     |      | 150       |            | $V_{DS} = 24V, V_{GS} = 0,$<br>$T_J = 100^\circ C$                     |
| Gate-Source Leakage Current       | $I_{GSS}$    |     |      | $\pm 100$ | nA         | $V_{GS} = \pm 12V$                                                     |
| Total Gate Chg Cont FET           | $Q_G$        |     | 22   | 33        | nC         | $V_{GS}=5.0V, I_D=15A, V_{DS}=16V$                                     |
| Total Gate Chg Sync FET           | $Q_G$        |     | 16.3 |           |            | $V_{GS} = 5V, V_{DS} < 100mV$                                          |
| Pre-Vth Gate-Source Charge        | $Q_{GS1}$    |     | 3.5  |           |            | $V_{DS} = 16V, I_D = 15A, V_{GS} = 5.0V$                               |
| Post-Vth Gate-Source Charge       | $Q_{GS2}$    |     | 1.2  |           |            |                                                                        |
| Gate to Drain Charge              | $Q_{GD}$     |     | 8.8  |           |            |                                                                        |
| Switch Chg( $Q_{GS2} + Q_{GD}$ )  | $Q_{SW}$     |     | 10.1 |           |            |                                                                        |
| Output Charge                     | $Q_{OSS}$    |     | 12   |           |            | $V_{DS} = 16V, V_{GS} = 0$                                             |
| Gate Resistance                   | $R_G$        |     | 2.0  | 4.0       | $\Omega$   |                                                                        |
| Turn-on Delay Time                | $t_{d(on)}$  |     | 11   |           | ns         | $V_{DD} = 16V, I_D = 15A$<br>$V_{GS} = 5.0V$<br>Clamped Inductive Load |
| Rise Time                         | $t_r$        |     | 11   |           |            |                                                                        |
| Turn-off Delay Time               | $t_{d(off)}$ |     | 29   |           |            |                                                                        |
| Fall Time                         | $t_f$        |     | 9.9  |           |            |                                                                        |
| Input Capacitance                 | $C_{iss}$    | —   | 2335 | —         | pF         | $V_{DS} = 16V, V_{GS} = 0$                                             |
| Output Capacitance                | $C_{oss}$    | —   | 400  | —         |            |                                                                        |
| Reverse Transfer Capacitance      | $C_{rss}$    | —   | 119  | —         |            |                                                                        |

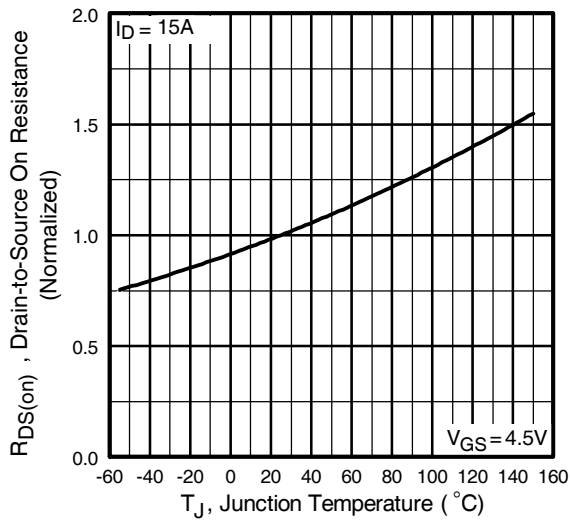
## Source-Drain Rating & Characteristics

| Parameter                                         |             | Min | Typ | Max  | Units | Conditions                                                                       |
|---------------------------------------------------|-------------|-----|-----|------|-------|----------------------------------------------------------------------------------|
| Diode Forward Voltage*                            | $V_{SD}$    |     |     | 1.25 | V     | $I_S = 15A$ ②, $V_{GS} = 0V$                                                     |
| Reverse Recovery Charge④                          | $Q_{rr}$    |     | 45  |      | nC    | $di/dt \sim 700A/\mu s$<br>$V_{DS} = 16V, V_{GS} = 0V, I_S = 15A$                |
| Reverse Recovery Charge (with Parallel Schottky)④ | $Q_{rr(s)}$ |     | 41  |      | nC    | $di/dt = 700A/\mu s$<br>(with 10BQ040)<br>$V_{DS} = 16V, V_{GS} = 0V, I_S = 15A$ |

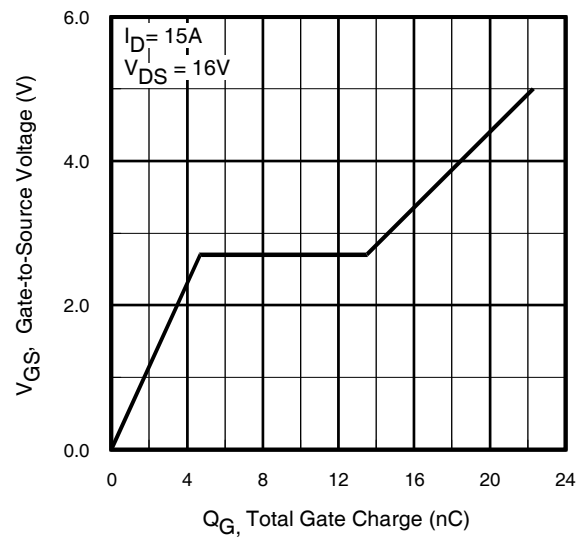
**Notes:** ① Repetitive rating; pulse width limited by max. junction temperature.  
 ② Pulse width  $\leq 400\mu s$ ; duty cycle  $\leq 2\%$ .  
 ③ When mounted on 1 inch square copper board  
 ④ Typ = measured -  $Q_{OSS}$   
 ⑤ Typical values of  $R_{DS(on)}$  measured at  $V_{GS} = 4.5V, Q_G, Q_{SW}$  and  $Q_{OSS}$  measured at  $V_{GS} = 5.0V, I_F = 15A$ .

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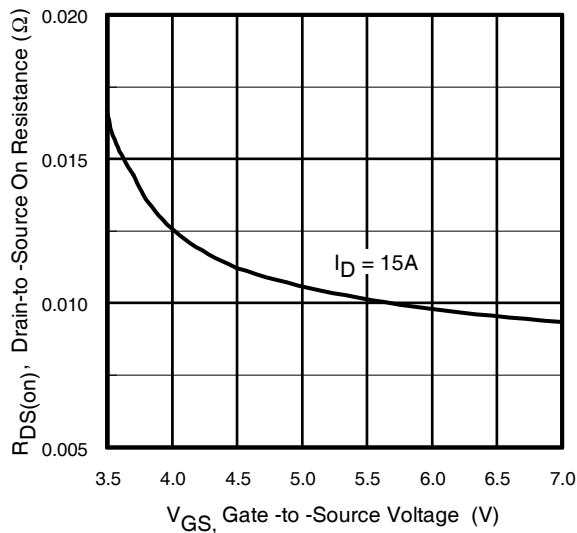
2



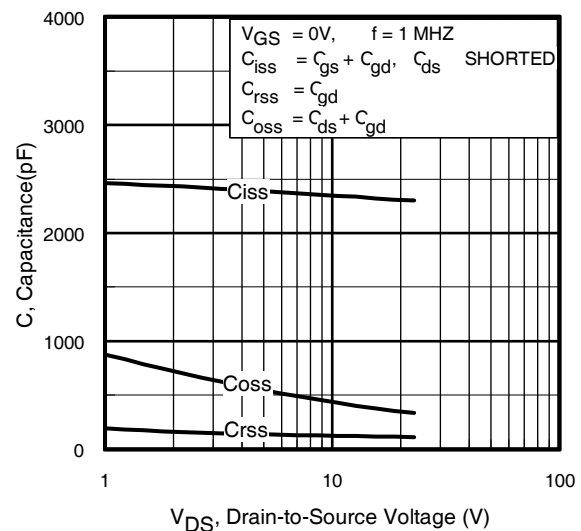
**Fig 1.** Normalized On-Resistance Vs. Temperature



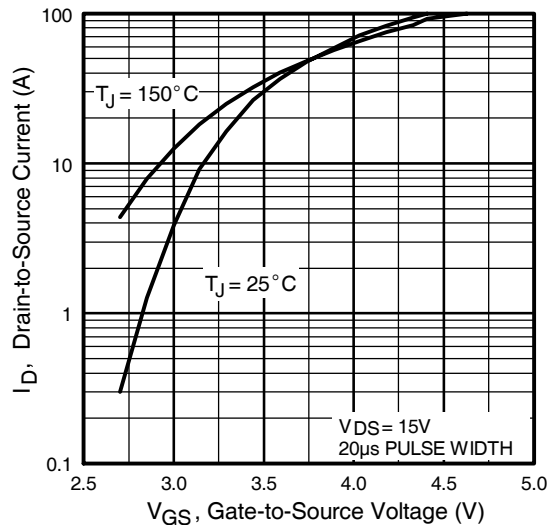
**Fig 2.** Typical Gate Charge Vs. Gate-to-Source Voltage



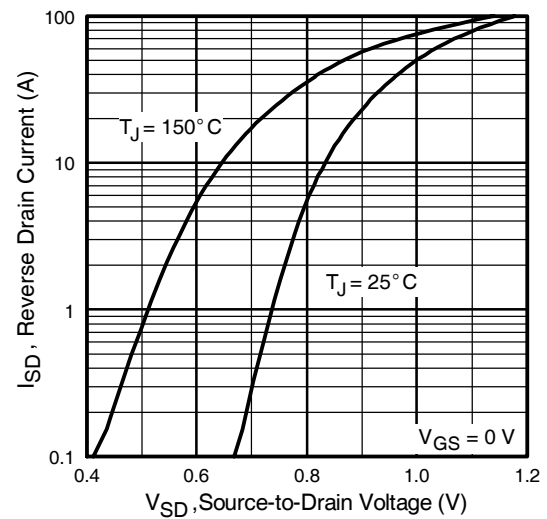
**Fig 3.** On-Resistance Vs. Gate Voltage



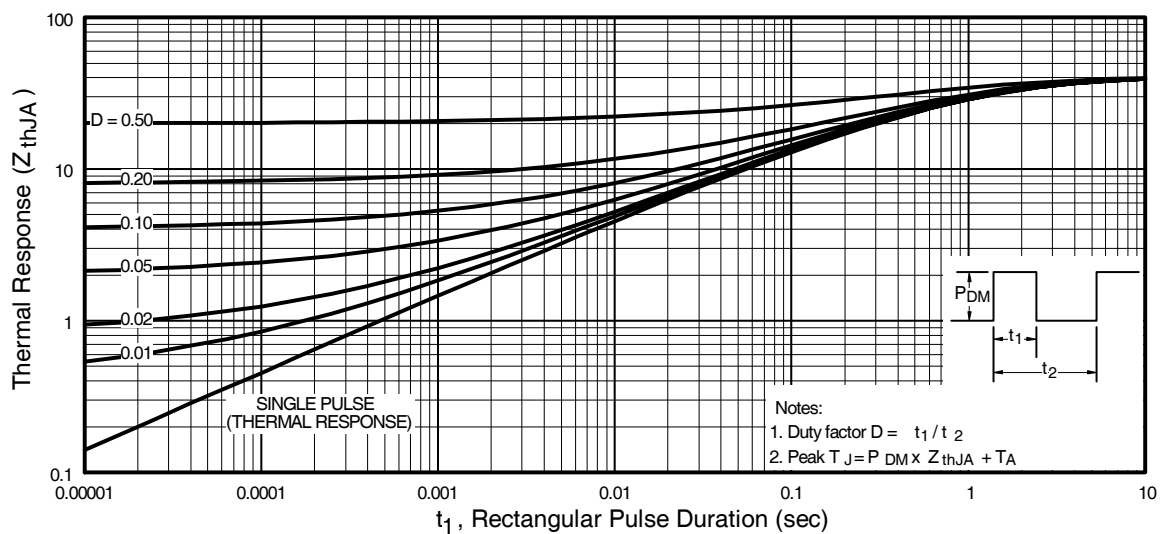
**Fig 4.** Typical Capacitance Vs. Drain-to-Source Voltage



**Fig 5.** Typical Transfer Characteristics



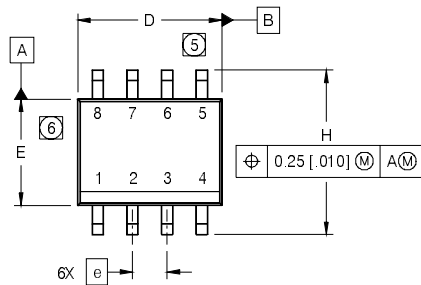
**Fig 6.** Typical Source-Drain Diode Forward Voltage



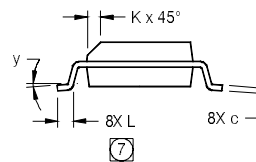
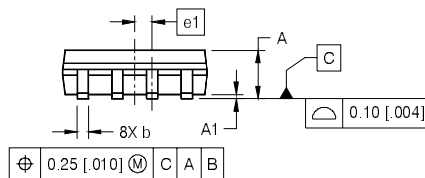
**Figure 7.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

## SO-8 Package Outline (Mosfet & Fetky)

Dimensions are shown in millimeters (inches)



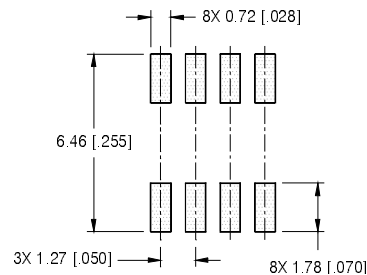
| DIM | INCHES     |       | MILLIMETERS |      |
|-----|------------|-------|-------------|------|
|     | MIN        | MAX   | MIN         | MAX  |
| A   | .0532      | .0688 | 1.35        | 1.75 |
| A1  | .0040      | .0098 | 0.10        | 0.25 |
| b   | .013       | .020  | 0.33        | 0.51 |
| 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  |      |
| e1  | .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:

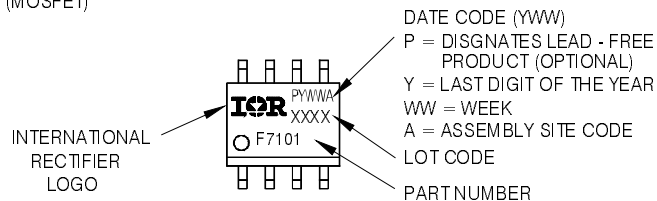
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.010].
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

### FOOTPRINT



## SO-8 Part Marking Information

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



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

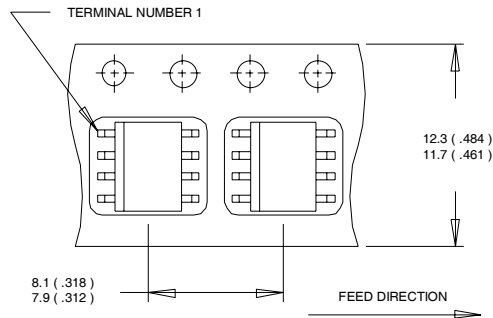
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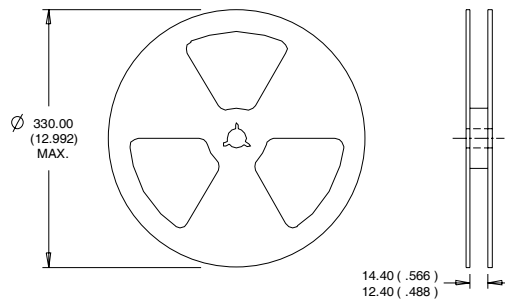
## SO-8 Tape and Reel

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 Consumer market.  
Qualification Standards can be found on IR's Web site.

International  
**IR** Rectifier

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