

# IRF7473

International  
IR Rectifier

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

|                                 | Parameter                            | Min. | Typ. | Max. | Units | Conditions                                           |
|---------------------------------|--------------------------------------|------|------|------|-------|------------------------------------------------------|
| $V_{(BR)DSS}$                   | Drain-to-Source Breakdown Voltage    | 100  | —    | —    | V     | $V_{GS} = 0V, I_D = 250\mu A$                        |
| $\Delta V_{(BR)DSS}/\Delta T_J$ | Breakdown Voltage Temp. Coefficient  | —    | 0.11 | —    | V/°C  | Reference to $25^\circ\text{C}$ , $I_D = 1mA$ ③      |
| $R_{DS(on)}$                    | Static Drain-to-Source On-Resistance | —    | 22   | 26   | mΩ    | $V_{GS} = 10V, I_D = 4.1A$ ③                         |
| $V_{GS(th)}$                    | Gate Threshold Voltage               | 3.5  | —    | 5.5  | V     | $V_{DS} = V_{GS}, I_D = 250\mu A$                    |
| $I_{DSS}$                       | Drain-to-Source Leakage Current      | —    | —    | 1.0  | μA    | $V_{DS} = 95V, V_{GS} = 0V$                          |
|                                 |                                      | —    | —    | 250  |       | $V_{DS} = 80V, V_{GS} = 0V, T_J = 150^\circ\text{C}$ |
| $I_{GSS}$                       | Gate-to-Source Forward Leakage       | —    | —    | 100  | nA    | $V_{GS} = 20V$                                       |
|                                 | Gate-to-Source Reverse Leakage       | —    | —    | -100 |       | $V_{GS} = -20V$                                      |

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

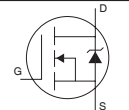
|                        | Parameter                       | Min. | Typ. | Max. | Units | Conditions                                   |
|------------------------|---------------------------------|------|------|------|-------|----------------------------------------------|
| $g_{fs}$               | Forward Transconductance        | 10   | —    | —    | S     | $V_{DS} = 50V, I_D = 4.1A$                   |
| $Q_g$                  | Total Gate Charge               | —    | 61   | —    | nC    | $I_D = 4.1A$                                 |
| $Q_{gs}$               | Gate-to-Source Charge           | —    | 21   | —    |       | $V_{DS} = 50V$                               |
| $Q_{gd}$               | Gate-to-Drain ("Miller") Charge | —    | 19   | —    |       | $V_{GS} = 10V,$                              |
| $t_{d(on)}$            | Turn-On Delay Time              | —    | 24   | —    | ns    | $V_{DD} = 50V$                               |
| $t_r$                  | Rise Time                       | —    | 20   | —    |       | $I_D = 4.1A$                                 |
| $t_{d(off)}$           | Turn-Off Delay Time             | —    | 29   | —    |       | $R_G = 6.0\Omega$                            |
| $t_f$                  | Fall Time                       | —    | 11   | —    |       | $V_{GS} = 10V$ ③                             |
| $C_{iss}$              | Input Capacitance               | —    | 3180 | —    | pF    | $V_{GS} = 0V$                                |
| $C_{oss}$              | Output Capacitance              | —    | 230  | —    |       | $V_{DS} = 25V$                               |
| $C_{rss}$              | Reverse Transfer Capacitance    | —    | 120  | —    |       | $f = 1.0MHz$                                 |
| $C_{oss}$              | Output Capacitance              | —    | 830  | —    |       | $V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHz$     |
| $C_{oss}$              | Output Capacitance              | —    | 150  | —    |       | $V_{GS} = 0V, V_{DS} = 80V, f = 1.0MHz$      |
| $C_{oss \text{ eff.}}$ | Effective Output Capacitance    | —    | 230  | —    |       | $V_{GS} = 0V, V_{DS} = 0V \text{ to } 80V$ ⑤ |

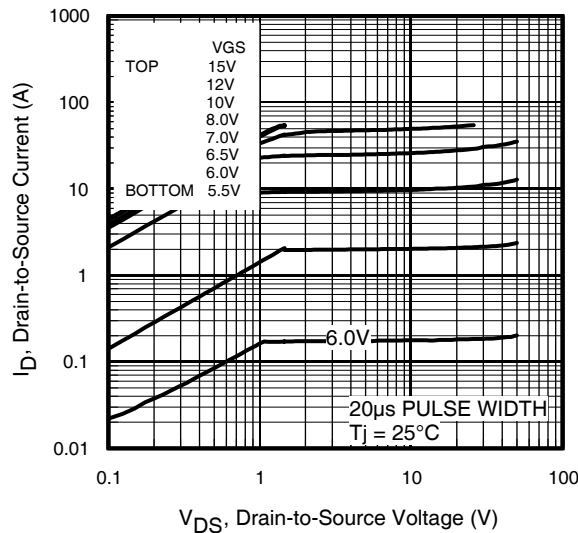
## Avalanche Characteristics

|          | Parameter                      | Typ. | Max. | Units |
|----------|--------------------------------|------|------|-------|
| $E_{AS}$ | Single Pulse Avalanche Energy② | —    | 140  | mJ    |
| $I_{AR}$ | Avalanche Current①             | —    | 4.1  | A     |

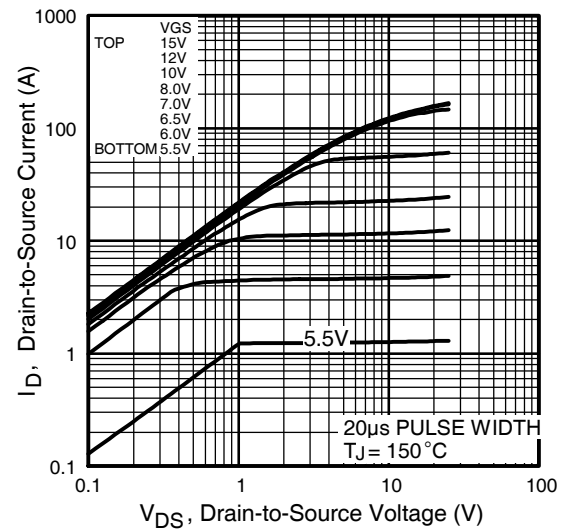
## Diode Characteristics

|          | Parameter                                 | Min. | Typ. | Max. | Units | Conditions                                                              |
|----------|-------------------------------------------|------|------|------|-------|-------------------------------------------------------------------------|
| $I_S$    | Continuous Source Current<br>(Body Diode) | —    | —    | 2.3  | A     | MOSFET symbol<br>showing the<br>integral reverse<br>p-n junction diode. |
| $I_{SM}$ | Pulsed Source Current<br>(Body Diode) ①   | —    | —    | 55   |       |                                                                         |
| $V_{SD}$ | Diode Forward Voltage                     | —    | —    | 1.3  | V     | $T_J = 25^\circ\text{C}, I_S = 4.1A, V_{GS} = 0V$ ③                     |
| $t_{rr}$ | Reverse Recovery Time                     | —    | 55   | —    | ns    | $T_J = 25^\circ\text{C}, I_F = 4.1A$                                    |
| $Q_{rr}$ | Reverse Recovery Charge                   | —    | 140  | —    | nC    | $di/dt = 100A/\mu s$ ③                                                  |

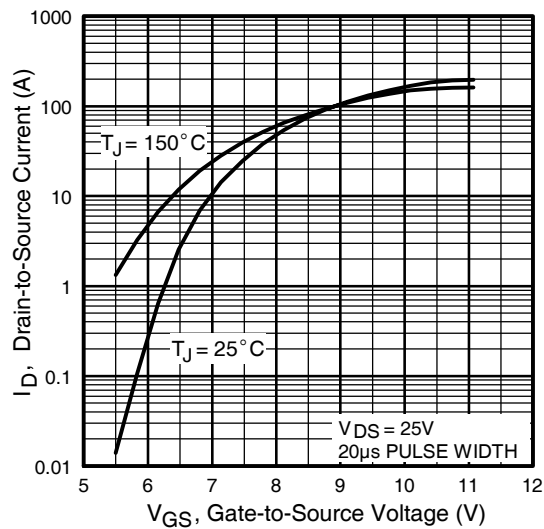




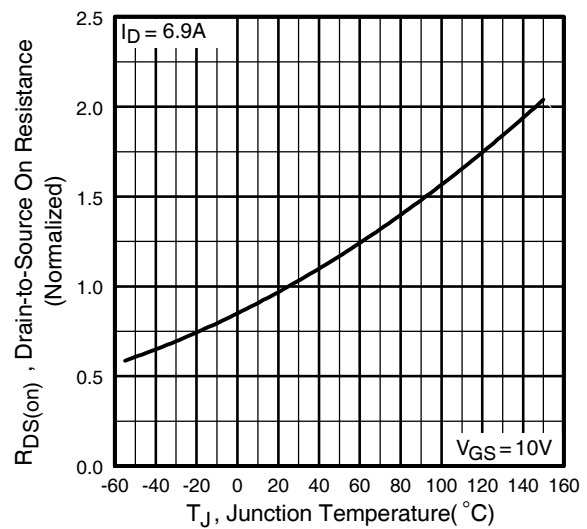
**Fig 1.** Typical Output Characteristics



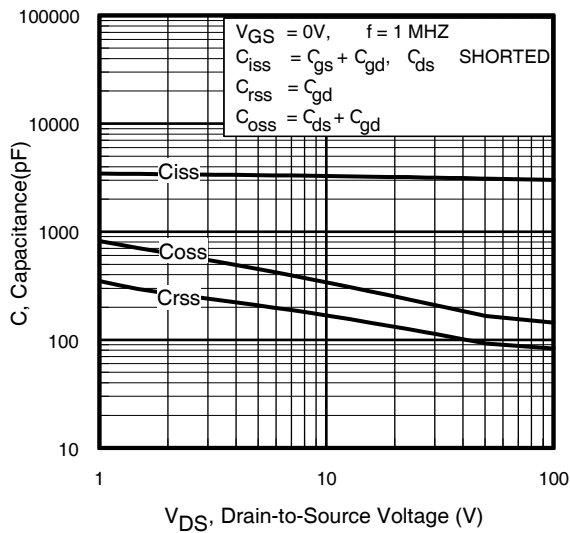
**Fig 2.** Typical Output Characteristics



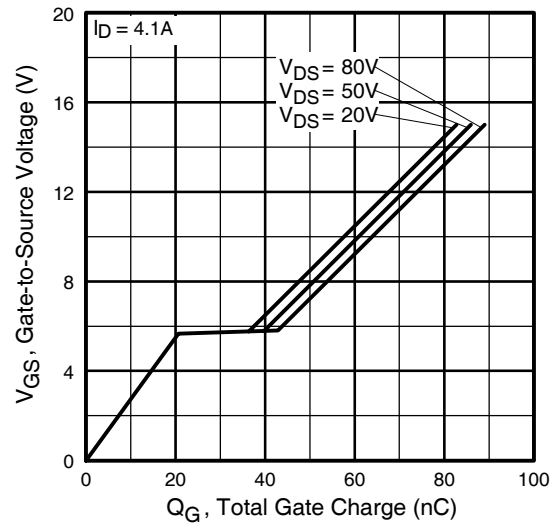
**Fig 3.** Typical Transfer Characteristics



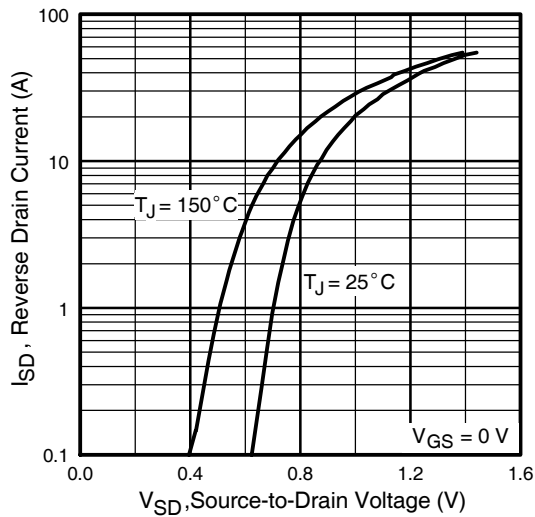
**Fig 4.** Normalized On-Resistance  
Vs. Temperature



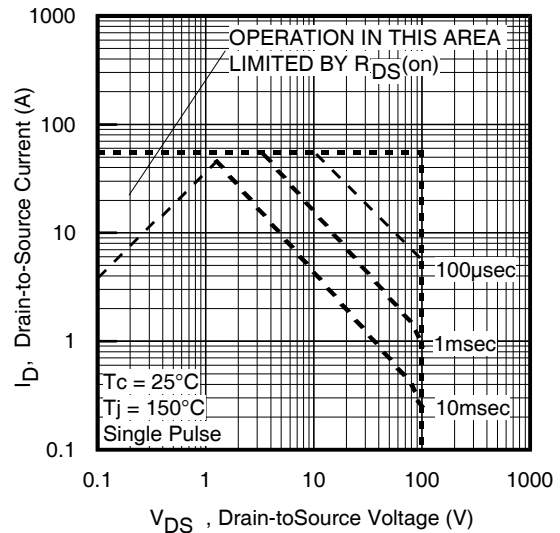
**Fig 5.** Typical Capacitance Vs. Drain-to-Source Voltage



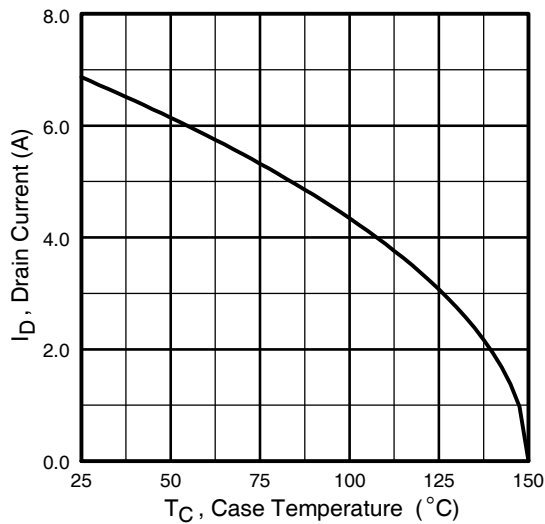
**Fig 6.** Typical Gate Charge Vs. Gate-to-Source Voltage



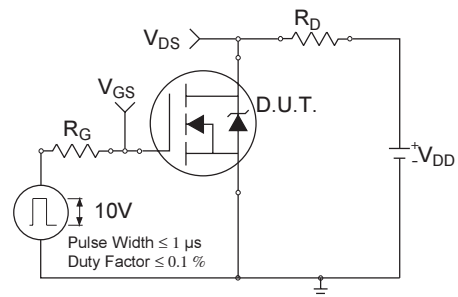
**Fig 7.** Typical Source-Drain Diode Forward Voltage



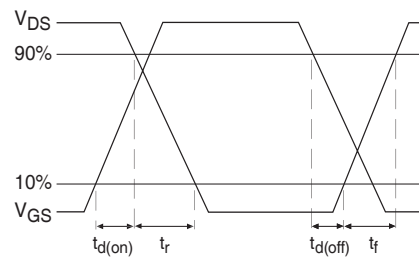
**Fig 8.** Maximum Safe Operating Area



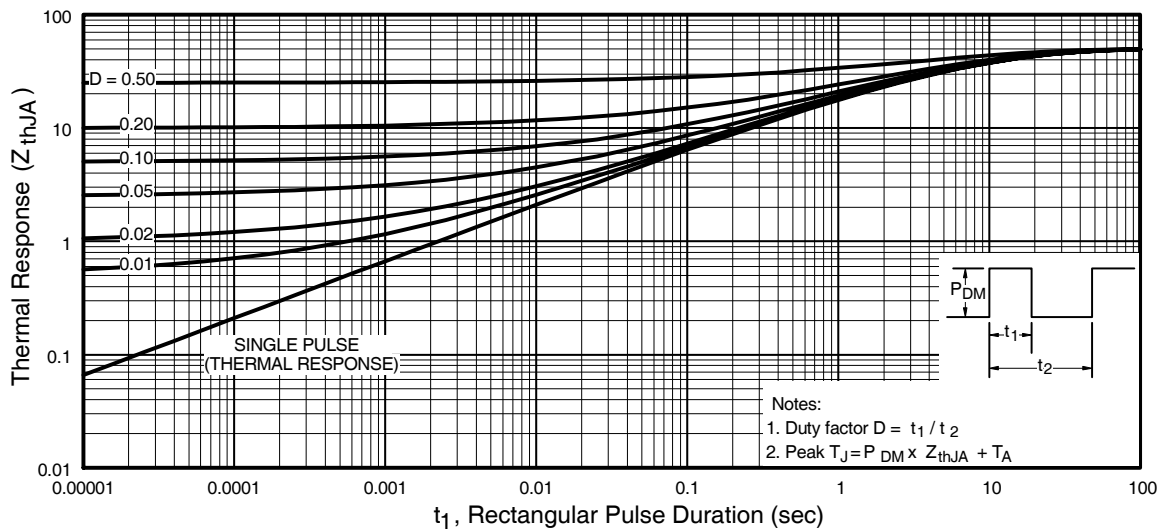
**Fig 9.** Maximum Drain Current Vs. Ambient Temperature



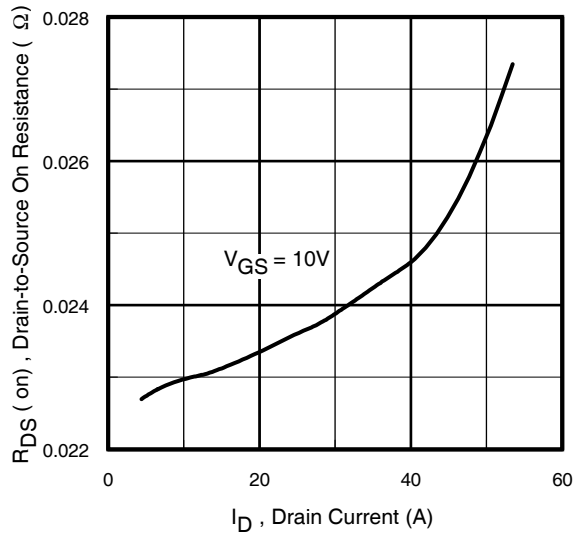
**Fig 10a.** Switching Time Test Circuit



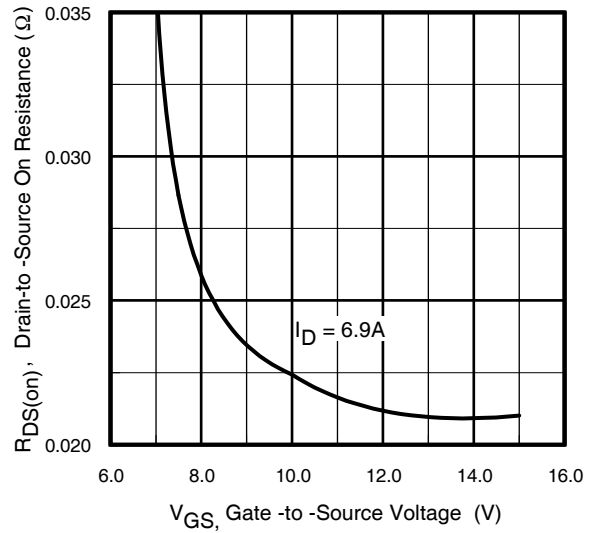
**Fig 10b.** Switching Time Waveforms



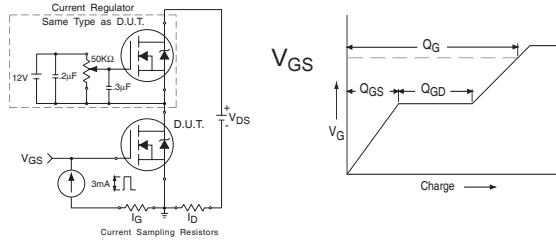
**Fig 11.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



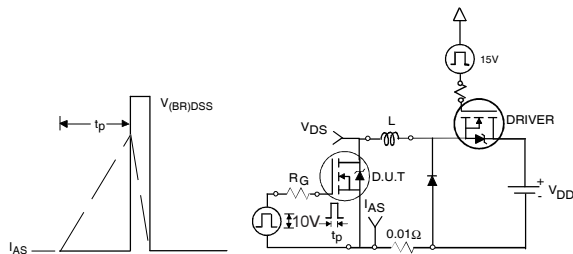
**Fig 12.** On-Resistance Vs. Drain Current



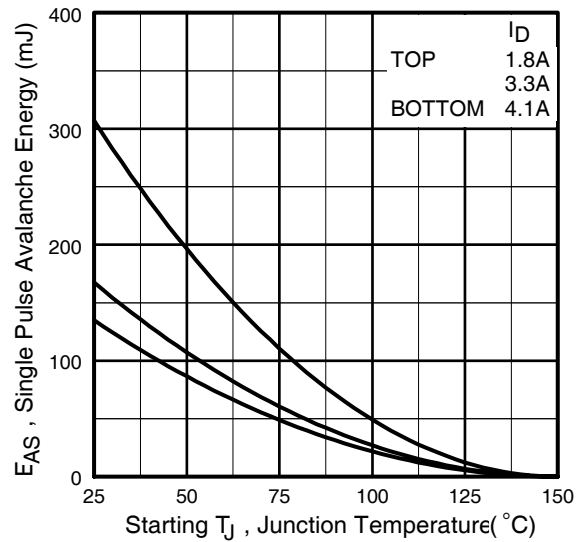
**Fig 13.** On-Resistance Vs. Gate Voltage



**Fig 14a&b.** Basic Gate Charge Test Circuit and Waveform

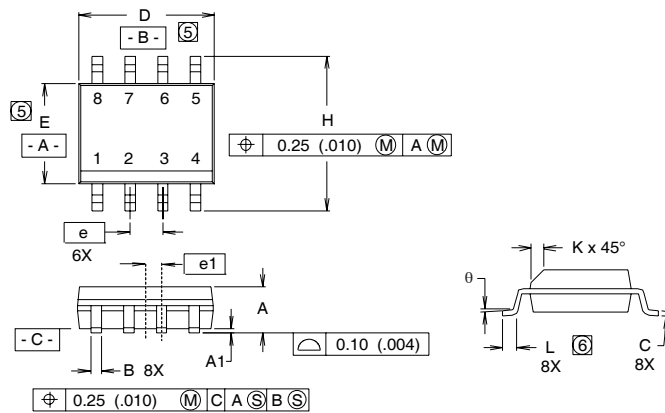


**Fig 15a&b.** Unclamped Inductive Test circuit and Waveforms



**Fig 15c.** Maximum Avalanche Energy Vs. Drain Current

## SO-8 Package Details

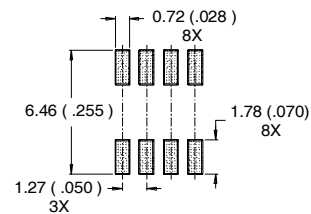


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION : INCH.
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 0.25 (.006).
- ⑥ DIMENSIONS IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE..

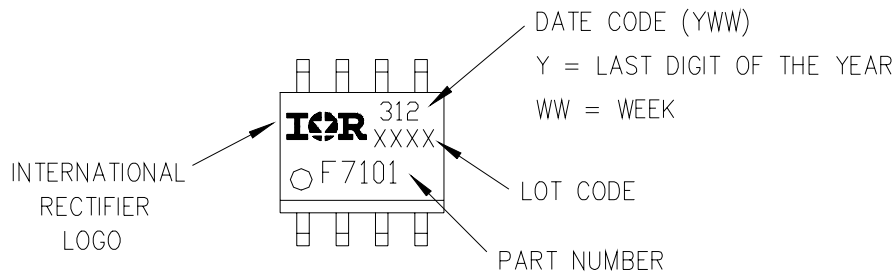
| DIM | INCHES     |       | MILLIMETERS |      |
|-----|------------|-------|-------------|------|
|     | MIN        | MAX   | MIN         | MAX  |
| A   | .0532      | .0688 | 1.35        | 1.75 |
| A1  | .0040      | .0098 | 0.10        | 0.25 |
| B   | .014       | .018  | 0.36        | 0.46 |
| C   | .0075      | .0098 | 0.19        | 0.25 |
| D   | .189       | .196  | 4.80        | 4.98 |
| E   | .150       | .157  | 3.81        | 3.99 |
| e   | .050 BASIC |       | 1.27 BASIC  |      |
| e1  | .025 BASIC |       | 0.635 BASIC |      |
| H   | .2284      | .2440 | 5.80        | 6.20 |
| K   | .011       | .019  | 0.28        | 0.48 |
| L   | 0.16       | .050  | 0.41        | 1.27 |
| θ   | 0°         | 8°    | 0°          | 8°   |

**RECOMMENDED FOOTPRINT**



## SO-8 Part Marking

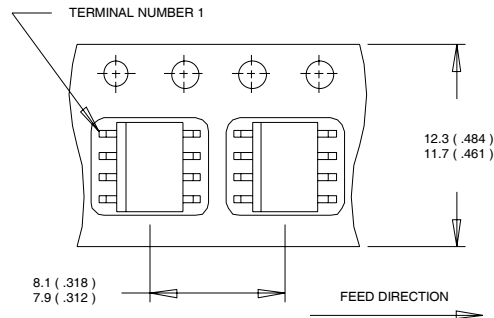
EXAMPLE: THIS IS AN IRF7101



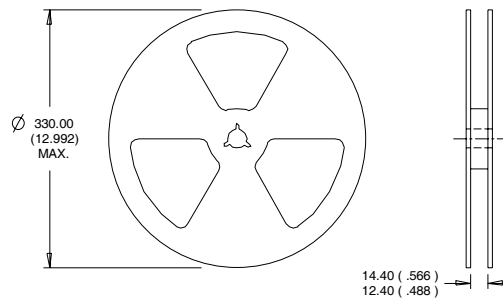
# IRF7473

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**IR** Rectifier

## SO-8 Tape and Reel



- 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  $T_J = 25^\circ\text{C}$ ,  $L = 16\text{mH}$ ,  $R_G = 25\Omega$ ,  $I_{AS} = 4.1\text{A}$ .
- ③ Pulse width  $\leq 400\mu\text{s}$ ; duty cycle  $\leq 2\%$ .
- ④ When mounted on 1 inch square copper board
- ⑤  $C_{OSS}$  eff. is a fixed capacitance that gives the same charging time as  $C_{OSS}$  while  $V_{DS}$  is rising from 0 to 80%  $V_{DSS}$
- ⑥  $I_{SD} \leq 4.1\text{A}$ ,  $di/dt \leq 210\text{A}/\mu\text{s}$ ,  $V_{DD} \leq V_{(BR)DSS}$ ,  $T_J \leq 150^\circ\text{C}$

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

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