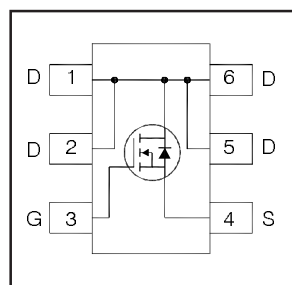


# IRFTS8342PbF

HEXFET® Power MOSFET

|                                                  |            |           |
|--------------------------------------------------|------------|-----------|
| $V_{DS}$                                         | <b>30</b>  | <b>V</b>  |
| $V_{GS}$                                         | <b>±20</b> | <b>V</b>  |
| $R_{DS(on) \text{ max}}$<br>(@ $V_{GS} = 10V$ )  | <b>19</b>  | <b>mΩ</b> |
| $R_{DS(on) \text{ max}}$<br>(@ $V_{GS} = 4.5V$ ) | <b>29</b>  | <b>mΩ</b> |
| $Q_g$ (typical)                                  | <b>4.8</b> | <b>nC</b> |
| $I_D$<br>(@ $T_A = 25^\circ C$ )                 | <b>8.2</b> | <b>A</b>  |



## Applications

- System/Load Switch

## Features and Benefits

### Features

|                                                              |
|--------------------------------------------------------------|
| Industry-Standard TSOP-6 Package                             |
| RoHS Compliant Containing no Lead, no Bromide and no Halogen |
| MSL1, Consumer Qualification                                 |



### Resulting Benefits

|                            |
|----------------------------|
| Multi-Vendor Compatibility |
| Environmentally Friendlier |
| Increased Reliability      |

| Orderable part number | Package Type | Standard Pack |          | Note |
|-----------------------|--------------|---------------|----------|------|
|                       |              | Form          | Quantity |      |
| IRFTS8342TRPBF        | TSOP-6       | Tape and Reel | 3000     |      |

## Absolute Maximum Ratings

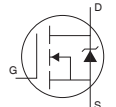
|                            | Parameter                                | Max.         | Units |
|----------------------------|------------------------------------------|--------------|-------|
| $V_{DS}$                   | Drain-to-Source Voltage                  | 30           | V     |
| $V_{GS}$                   | Gate-to-Source Voltage                   | ±20          |       |
| $I_D$ @ $T_A = 25^\circ C$ | Continuous Drain Current, $V_{GS}$ @ 10V | 8.2          | A     |
| $I_D$ @ $T_A = 70^\circ C$ | Continuous Drain Current, $V_{GS}$ @ 10V | 6.6          |       |
| $I_{DM}$                   | Pulsed Drain Current ①                   | 80           | W     |
| $P_D$ @ $T_A = 25^\circ C$ | Power Dissipation ③                      | 2.0          |       |
| $P_D$ @ $T_A = 70^\circ C$ | Power Dissipation ③                      | 1.3          |       |
|                            | Linear Derating Factor                   | 0.02         | W/°C  |
| $T_J$                      | Operating Junction and                   | -55 to + 150 | °C    |
| $T_{STG}$                  | Storage Temperature Range                |              |       |

Notes ① through ④ are on page 2

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

|                              | Parameter                            | Min. | Typ. | Max. | Units                | Conditions                                                           |
|------------------------------|--------------------------------------|------|------|------|----------------------|----------------------------------------------------------------------|
| $BV_{DSS}$                   | Drain-to-Source Breakdown Voltage    | 30   | —    | —    | V                    | $V_{GS} = 0V, I_D = 250\mu A$                                        |
| $\Delta BV_{DSS}/\Delta T_J$ | Breakdown Voltage Temp. Coefficient  | —    | 18   | —    | mV/ $^\circ\text{C}$ | Reference to $25^\circ\text{C}, I_D = 1mA$                           |
| $R_{DS(on)}$                 | Static Drain-to-Source On-Resistance | —    | 15   | 19   | m $\Omega$           | $V_{GS} = 10V, I_D = 8.2A$ ②                                         |
|                              |                                      | —    | 22   | 29   |                      | $V_{GS} = 4.5V, I_D = 6.6A$ ②                                        |
| $V_{GS(th)}$                 | Gate Threshold Voltage               | 1.35 | 1.80 | 2.35 | V                    | $V_{DS} = V_{GS}, I_D = 25\mu A$                                     |
| $\Delta V_{GS(th)}$          | Gate Threshold Voltage Coefficient   | —    | -5.7 | —    | mV/ $^\circ\text{C}$ |                                                                      |
| $I_{DSS}$                    | Drain-to-Source Leakage Current      | —    | —    | 1.0  | $\mu A$              | $V_{DS} = 24V, V_{GS} = 0V$                                          |
|                              |                                      | —    | —    | 150  |                      | $V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$                 |
| $I_{GSS}$                    | Gate-to-Source Forward Leakage       | —    | —    | 100  | nA                   | $V_{GS} = 20V$                                                       |
|                              | Gate-to-Source Reverse Leakage       | —    | —    | -100 |                      | $V_{GS} = -20V$                                                      |
| $g_{fs}$                     | Forward Transconductance             | 12   | —    | —    | S                    | $V_{DS} = 10V, I_D = 6.6A$                                           |
| $Q_g$                        | Total Gate Charge                    | —    | 4.8  | —    | nC                   | $V_{GS} = 4.5V$                                                      |
| $Q_{gs}$                     | Gate-to-Source Charge                | —    | 2.1  | —    |                      | $V_{DS} = 15V$                                                       |
| $Q_{gd}$                     | Gate-to-Drain Charge                 | —    | 1.6  | —    |                      | $I_D = 6.6A$                                                         |
| $R_G$                        | Gate Resistance                      | —    | 2.6  | —    | $\Omega$             |                                                                      |
| $t_{d(on)}$                  | Turn-On Delay Time                   | —    | 7.3  | —    | ns                   | $V_{DD} = 15V, V_{GS} = 4.5V$ ③<br>$I_D = 6.6A$<br>$R_G = 6.8\Omega$ |
| $t_r$                        | Rise Time                            | —    | 15   | —    |                      |                                                                      |
| $t_{d(off)}$                 | Turn-Off Delay Time                  | —    | 9.1  | —    |                      |                                                                      |
| $t_f$                        | Fall Time                            | —    | 8.2  | —    |                      |                                                                      |
| $C_{iss}$                    | Input Capacitance                    | —    | 560  | —    | pF                   | $V_{GS} = 0V$                                                        |
| $C_{oss}$                    | Output Capacitance                   | —    | 102  | —    |                      | $V_{DS} = 25V$                                                       |
| $C_{rss}$                    | Reverse Transfer Capacitance         | —    | 48   | —    |                      | $f = 1.0MHz$                                                         |

## Diode Characteristics

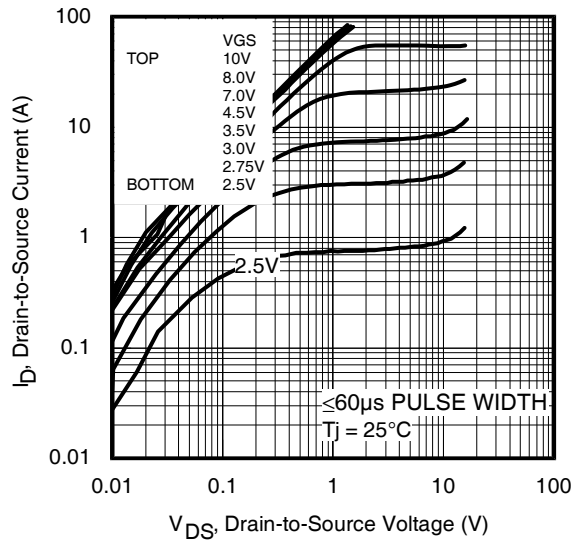
|          | Parameter                                 | Min. | Typ. | Max. | Units | Conditions                                                                                                                                                       |
|----------|-------------------------------------------|------|------|------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $I_S$    | Continuous Source Current<br>(Body Diode) | —    | —    | 2.5  | A     | MOSFET symbol<br>showing the<br>integral reverse<br>p-n junction diode.<br> |
| $I_{SM}$ | Pulsed Source Current<br>(Body Diode) ①   | —    | —    | 80   |       |                                                                                                                                                                  |
| $V_{SD}$ | Diode Forward Voltage                     | —    | —    | 1.0  | V     | $T_J = 25^\circ\text{C}, I_S = 6.6A, V_{GS} = 0V$ ②                                                                                                              |
| $t_{rr}$ | Reverse Recovery Time                     | —    | 8.2  | 12   | ns    | $T_J = 25^\circ\text{C}, I_F = 6.6A, V_{DD} = 24V$                                                                                                               |
| $Q_{rr}$ | Reverse Recovery Charge                   | —    | 4.5  | 5.4  | nC    | $di/dt = 100/\mu s$ ②                                                                                                                                            |

## Thermal Resistance

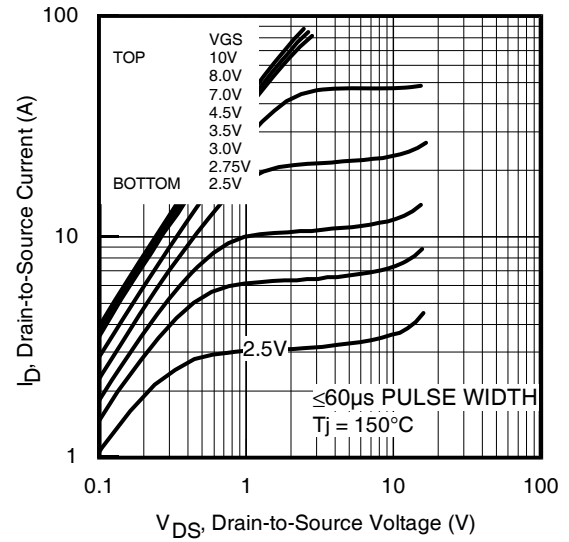
|                 | Parameter             | Typ. | Max. | Units              |
|-----------------|-----------------------|------|------|--------------------|
| $R_{\theta JA}$ | Junction-to-Ambient ③ | —    | 62.5 | $^\circ\text{C/W}$ |

### Notes:

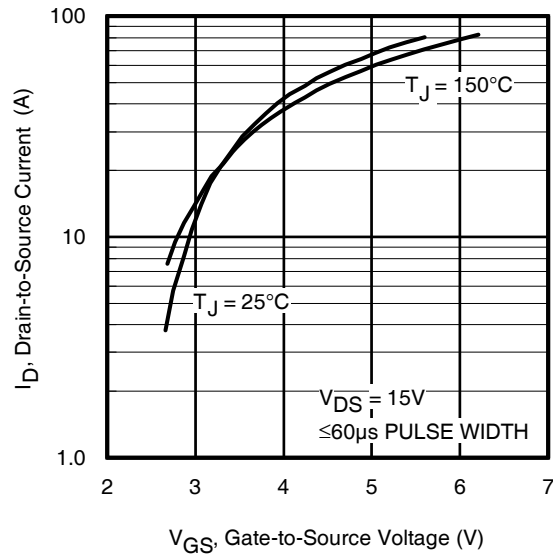
- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width  $\leq 400\mu s$ ; duty cycle  $\leq 2\%$ .
- ③ When mounted on 1 inch square copper board.



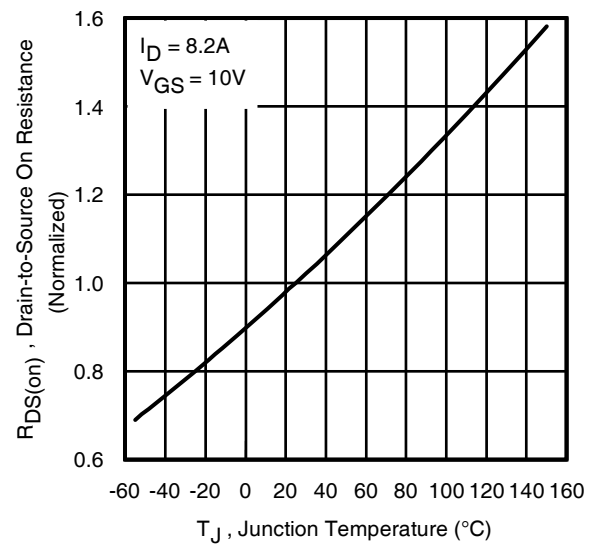
**Fig 1.** Typical Output Characteristics



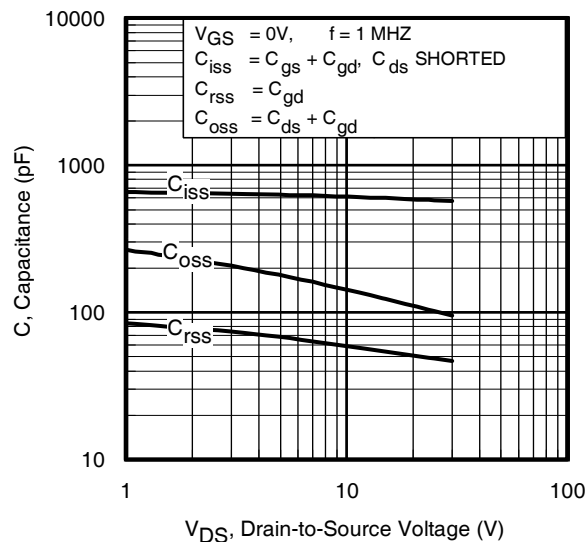
**Fig 2.** Typical Output Characteristics



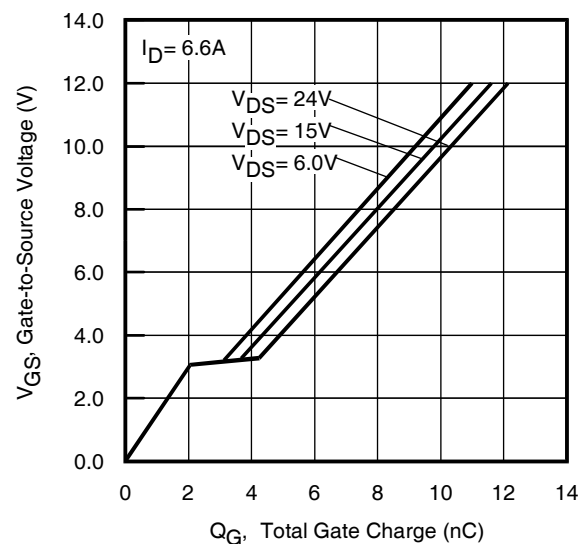
**Fig 3.** Typical Transfer Characteristics



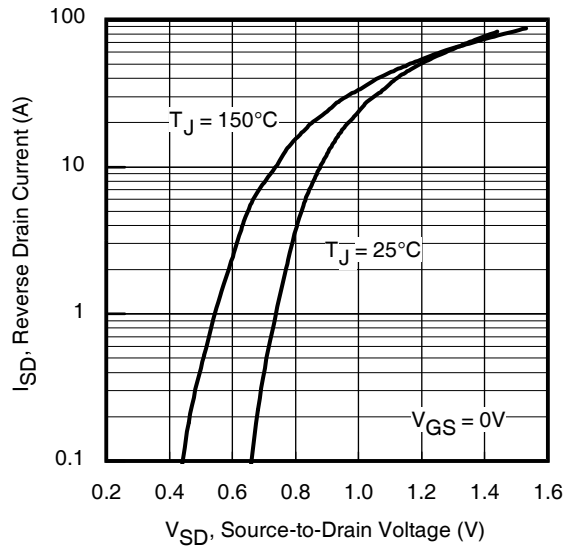
**Fig 4.** Normalized On-Resistance vs. Temperature



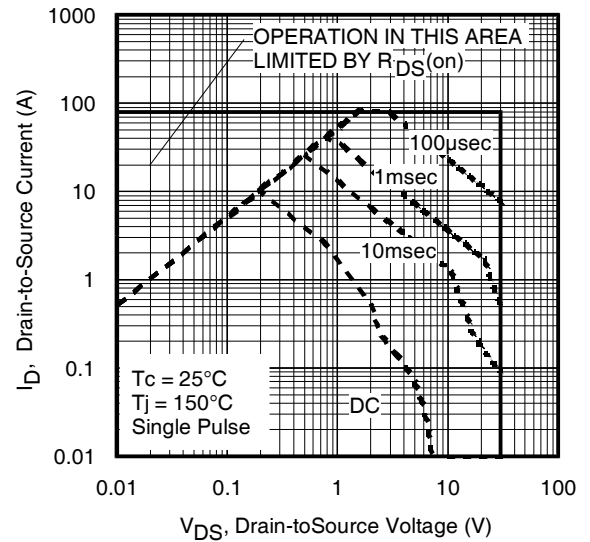
**Fig 5.** Typical Capacitance vs. Drain-to-Source Voltage  
www.irf.com



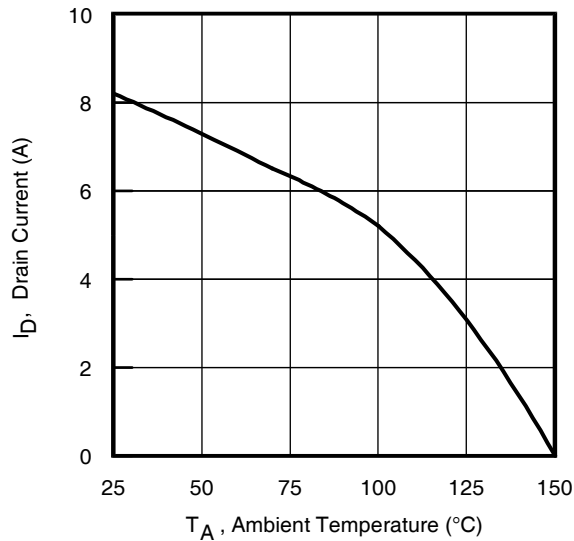
**Fig 6.** Typical Gate Charge vs. Gate-to-Source Voltage



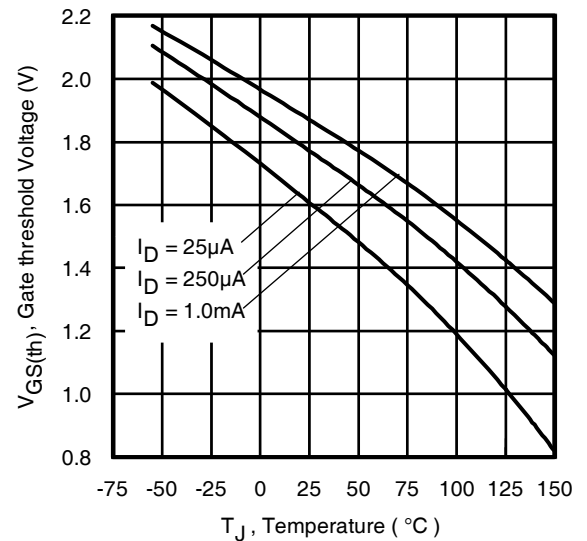
**Fig 7.** Typical Source-Drain Diode Forward Voltage



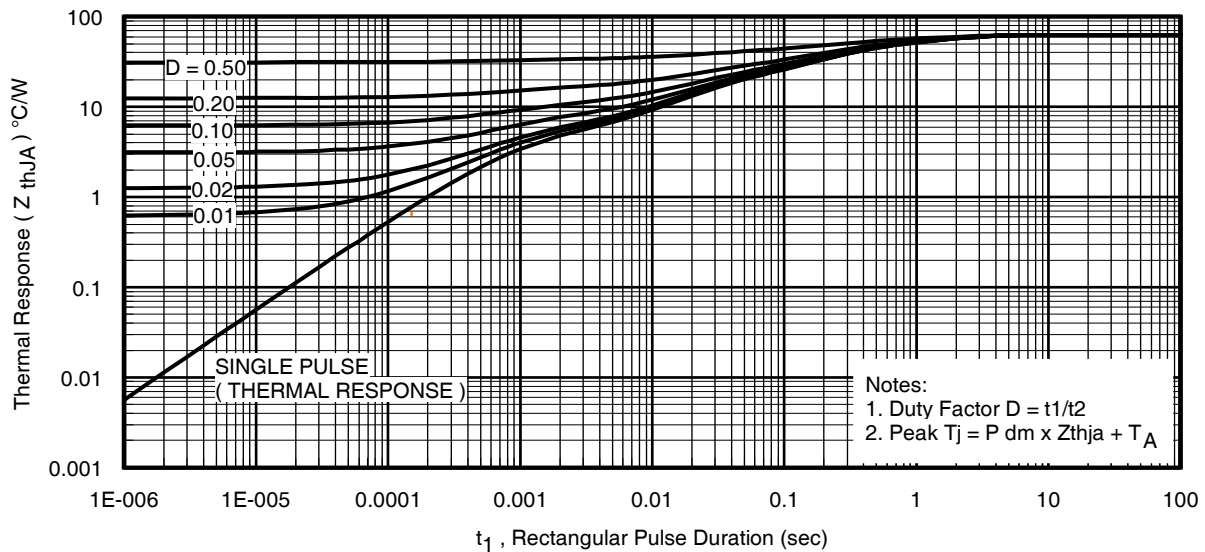
**Fig 8.** Maximum Safe Operating Area



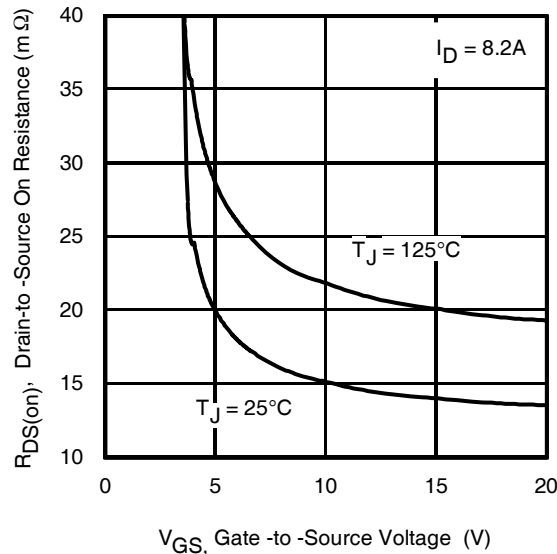
**Fig 9.** Maximum Drain Current vs. Ambient Temperature



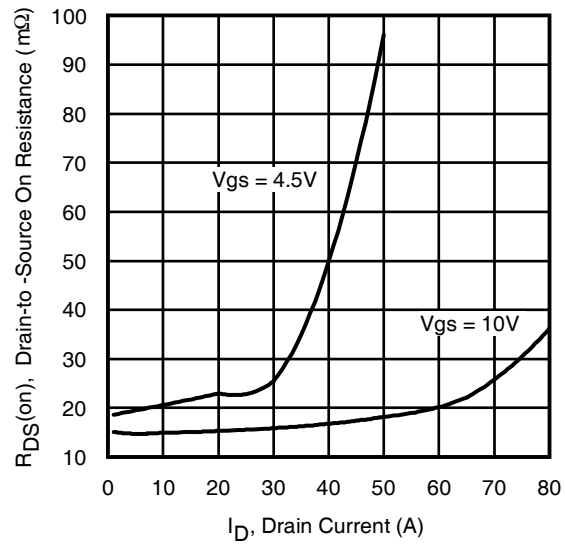
**Fig 10.** Threshold Voltage vs. Temperature



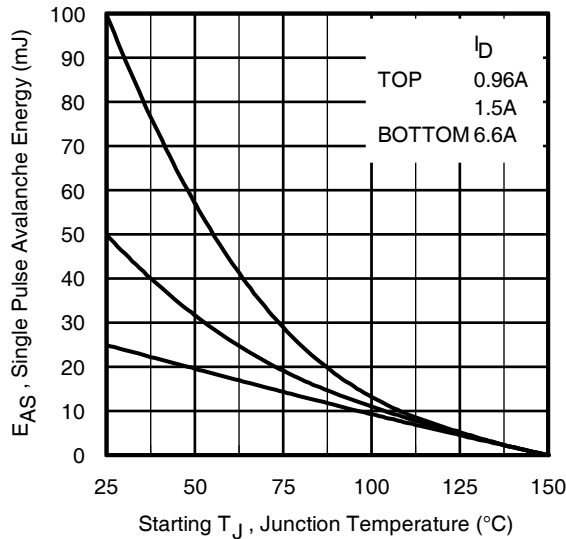
**Fig 11.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



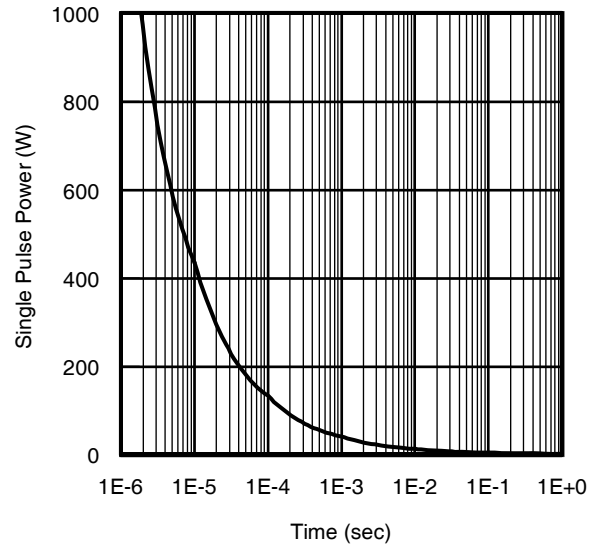
**Fig 12.** On-Resistance vs. Gate Voltage



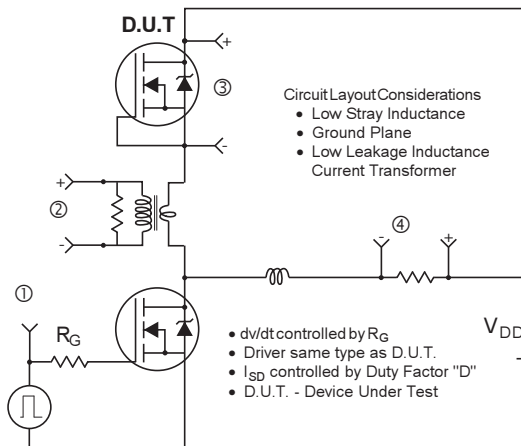
**Fig 13.** Typical On-Resistance vs. Drain Current



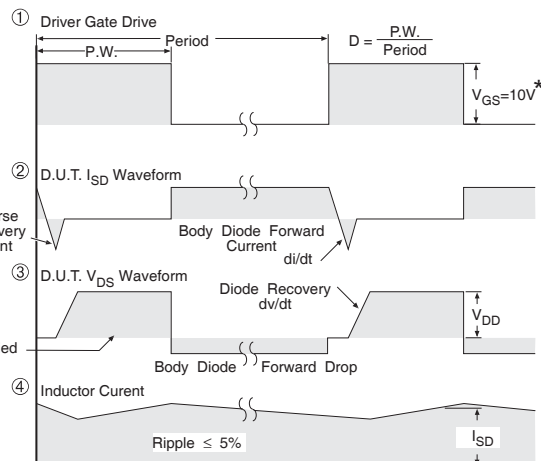
**Fig 14.** Maximum Avalanche Energy vs. Drain Current



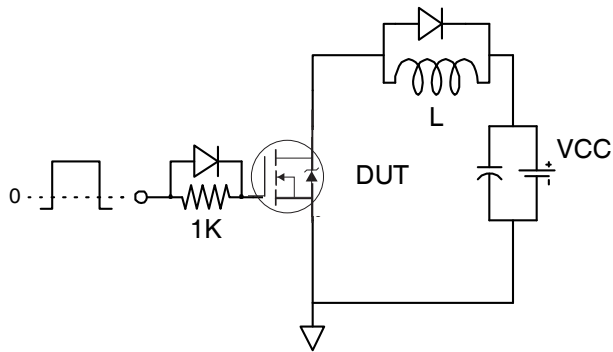
**Fig 15.** Typical Power vs. Time



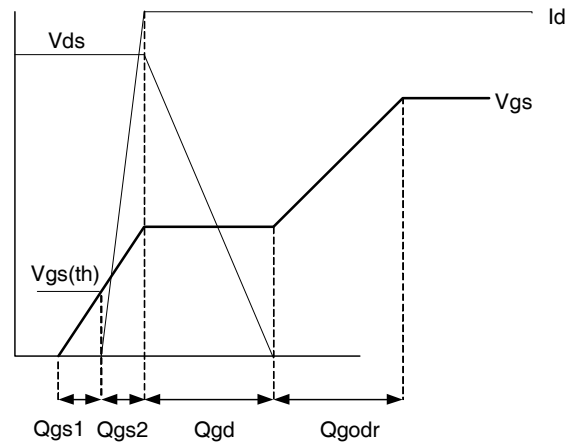
**Fig 16.** Peak Diode Recovery dv/dt Test Circuit for N-Channel  
HEXFET® Power MOSFETs



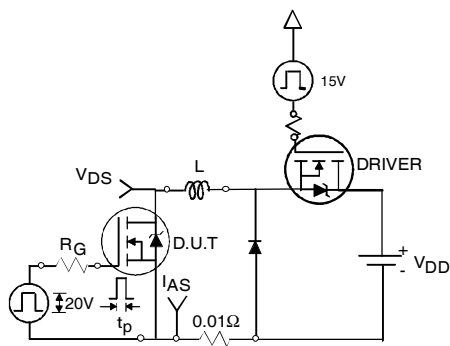
\*  $V_{GS} = 5V$  for Logic Level Devices



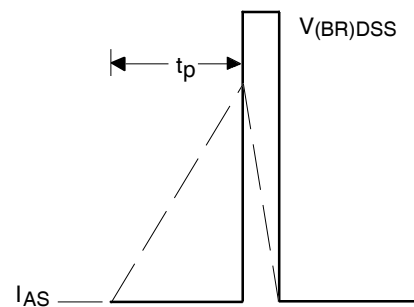
**Fig 17a.** Gate Charge Test Circuit



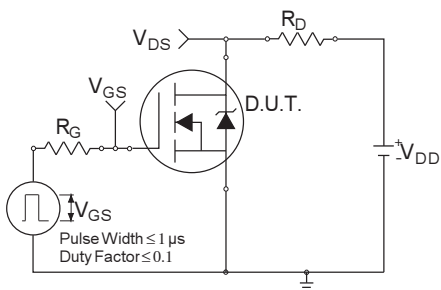
**Fig 17b.** Gate Charge Waveform



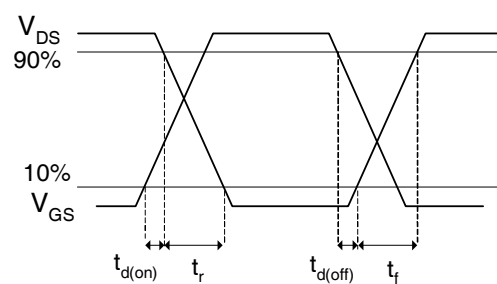
**Fig 18a.** Unclamped Inductive Test Circuit



**Fig 18b.** Unclamped Inductive Waveforms

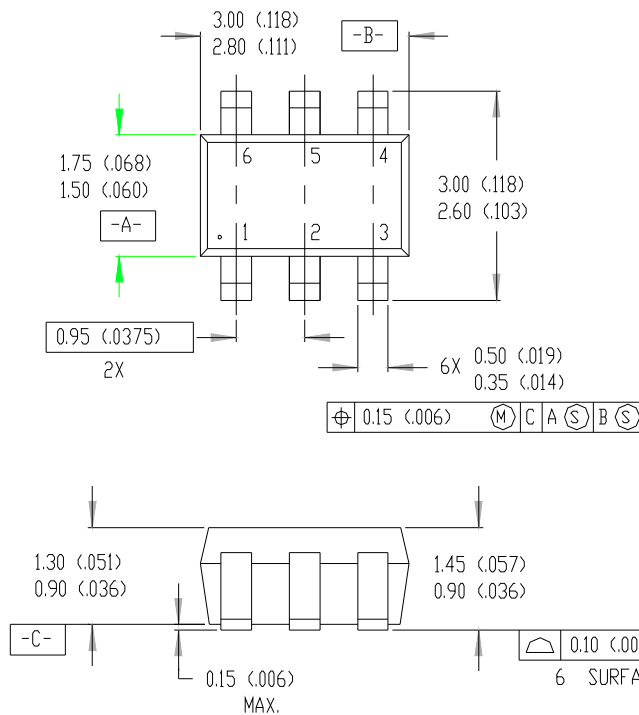


**Fig 19a.** Switching Time Test Circuit

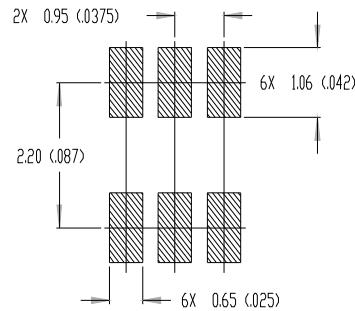


**Fig 19b.** Switching Time Waveforms

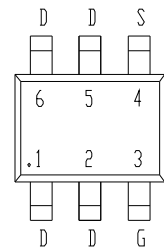
## TSOP-6 Package Outline



### MINIMUM RECOMMENDED FOOTPRINT

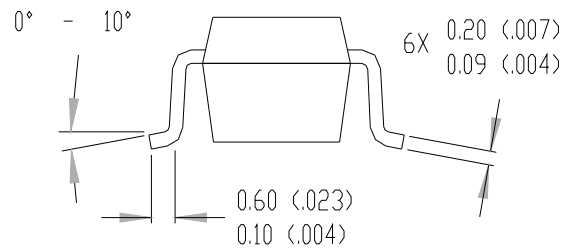


### LEAD ASSIGNMENTS

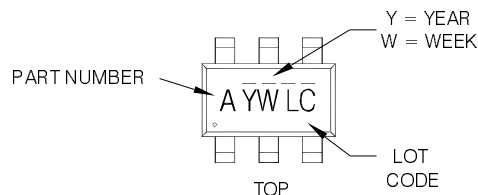


### NOTES:

1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).



## TSOP-6 Part Marking Information



### PART NUMBER CODE REFERENCE:

|              |                    |
|--------------|--------------------|
| A = SI3443DV | O = IRLTS6342TRPBF |
| B = IRF5800  | P = IRF8342TRPBF   |
| C = IRF5850  | R = IRF8342TRPBF   |
| D = IRF5851  | S = Not applicable |
| E = IRF5852  | T = IRLTS2242TRPBF |
| F = IRF5801  |                    |
| G = IRF5803  |                    |
| H = IRF5804  |                    |
| I = IRF5805  |                    |
| J = IRF5806  |                    |
| K = IRF5810  |                    |
| N = IRF5802  |                    |

Note: A line above the work week (as shown here) indicates Lead-Free.

### DATE CODE MARKING INSTRUCTIONS

WW = (1-26) IF PRECEDED BY LAST DIGIT OF CALENDAR YEAR

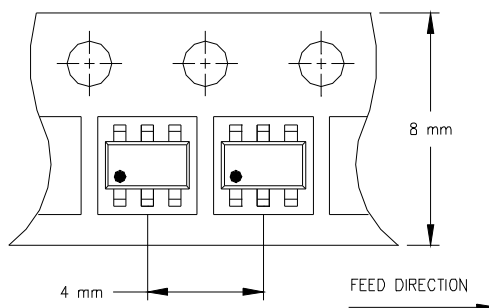
| YEAR | Y    | WORK WEEK | W  |
|------|------|-----------|----|
| 2011 | 2001 | 1         | 01 |
| 2012 | 2002 | 2         | 02 |
| 2013 | 2003 | 3         | 03 |
| 2014 | 2004 | 4         | 04 |
| 2015 | 2005 | 5         |    |
| 2016 | 2006 | 6         |    |
| 2017 | 2007 | 7         |    |
| 2018 | 2008 | 8         |    |
| 2019 | 2009 | 9         |    |
| 2020 | 2010 | 0         |    |
|      |      | 24        | X  |
|      |      | 25        | Y  |
|      |      | 26        | Z  |

WW = (27-52) IF PRECEDED BY A LETTER

| YEAR | Y    | WORK WEEK | W  |
|------|------|-----------|----|
| 2011 | 2001 | A         | 27 |
| 2012 | 2002 | B         | 28 |
| 2013 | 2003 | C         | 29 |
| 2014 | 2004 | D         | 30 |
| 2015 | 2005 | E         |    |
| 2016 | 2006 | F         |    |
| 2017 | 2007 | G         |    |
| 2018 | 2008 | H         |    |
| 2019 | 2009 | J         |    |
| 2020 | 2010 | K         |    |
|      |      | 50        | X  |
|      |      | 51        | Y  |
|      |      | 52        | Z  |

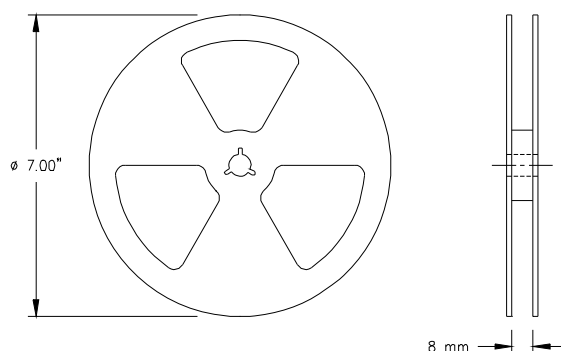
Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

## TSOP-6 Tape &amp; Reel Information



## NOTES:

1. OUTLINE CONFORMS TO EIA-481 & EIA-541.



## NOTES:

1. OUTLINE CONFORMS TO EIA-481 & EIA-541.

Qualification information<sup>†</sup>

|                            |                                                                         |                                                |
|----------------------------|-------------------------------------------------------------------------|------------------------------------------------|
| Qualification level        | Consumer <sup>††</sup><br>(per JEDEC JESD47F <sup>†††</sup> guidelines) |                                                |
| Moisture Sensitivity Level | TSOP-6                                                                  | MSL1<br>(per JEDEC J-STD-020D <sup>†††</sup> ) |
| RoHS compliant             | Yes                                                                     |                                                |

<sup>†</sup> Qualification standards can be found at International Rectifier's web site  
<http://www.irf.com/product-info/reliability>

<sup>††</sup> Higher qualification ratings may be available should the user have such requirements.  
 Please contact your International Rectifier sales representative for further information:  
<http://www.irf.com/whoto-call/salesrep/>

<sup>†††</sup> Applicable version of JEDEC standard at the time of product release.

Data and specifications subject to change without notice.

International  
IOR Rectifier

IR WORLD HEADQUARTERS: 101 N. Sepulveda Blvd., El Segundo, California 90245, USA Tel: (310) 252-7105  
 TAC Fax: (310) 252-7903

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