

IRF7726PbF

HEXFET[®] Power MOSFET

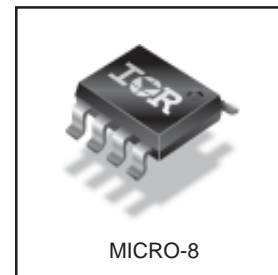
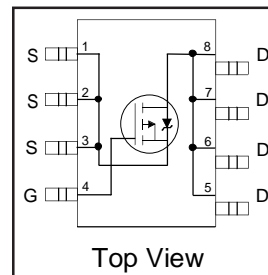
- Ultra Low On-Resistance
- P-Channel MOSFET
- Very Small SOIC Package
- Low Profile (< 1.2mm)
- Available in Tape & Reel
- Lead-Free

| V_{DS} | $R_{DS(on) \max}$ | I_D |
|-------------|-------------------------|-------|
| -30V | 0.026@ $V_{GS} = -10V$ | -7.0A |
| | 0.040@ $V_{GS} = -4.5V$ | -6.0A |

Description

HEXFET[®] Power MOSFETs from International Rectifier utilize advanced processing techniques to achieve extremely low on-resistance per silicon area. This benefit, combined with the ruggedized device design, that International Rectifier is well known for, provides the designer with an extremely efficient and reliable device for battery and load management.

The new Micro8 package, with half the footprint area of the standard SO-8, provides the smallest footprint available in an SOIC outline. This makes the Micro8 an ideal device for applications where printed circuit board space is at a premium. The low profile (<1.2mm) of the Micro8 will allow it to fit easily into extremely thin application environments such as portable electronics and PCMCIA cards.



Absolute Maximum Ratings

| | Parameter | Max. | Units |
|--------------------------|---|-------------|---------------|
| V_{DS} | Drain-Source Voltage | -30 | V |
| $I_D @ T_A = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ -10V$ | -7.0 | A |
| $I_D @ T_A = 70^\circ C$ | Continuous Drain Current, $V_{GS} @ -10V$ | -5.7 | |
| I_{DM} | Pulsed Drain Current ^① | -28 | |
| $P_D @ T_A = 25^\circ C$ | Maximum Power Dissipation ^③ | 1.79 | W |
| $P_D @ T_A = 70^\circ C$ | Maximum Power Dissipation ^③ | 1.14 | W |
| | Linear Derating Factor | 0.01 | W/ $^\circ C$ |
| V_{GS} | Gate-to-Source Voltage | ± 20 | V |
| T_J, T_{STG} | Junction and Storage Temperature Range | -55 to +150 | $^\circ C$ |

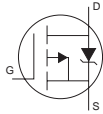
Thermal Resistance

| | Parameter | Max. | Units |
|-----------------|--|------|--------------|
| $R_{\theta JA}$ | Maximum Junction-to-Ambient ^③ | 70 | $^\circ C/W$ |

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|--|--------------------------------------|------|-------|-------|-------|---|
| V _{(BR)DSS} | Drain-to-Source Breakdown Voltage | -30 | — | — | V | V _{GS} = 0V, I _D = -250μA |
| ΔV _{(BR)DSS} /ΔT _J | Breakdown Voltage Temp. Coefficient | — | 0.016 | — | V/°C | Reference to 25°C, I _D = -1mA |
| R _{DSON} | Static Drain-to-Source On-Resistance | — | — | 0.026 | Ω | V _{GS} = -10V, I _D = -7.0A ② |
| | | — | — | 0.040 | | V _{GS} = -4.5V, I _D = -6.0A ② |
| V _{GS(th)} | Gate Threshold Voltage | -1.0 | — | -2.5 | V | V _{DS} = V _{GS} , I _D = -250μA |
| g _{fs} | Forward Transconductance | 10 | — | — | S | V _{DS} = -10V, I _D = -7.0A |
| I _{DSS} | Drain-to-Source Leakage Current | — | — | -15 | μA | V _{DS} = -24V, V _{GS} = 0V |
| | | — | — | -25 | | V _{DS} = -24V, V _{GS} = 0V, T _J = 70°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 | — | 46 | 69 | nC | I _D = -7.0A |
| Q _{gs} | Gate-to-Source Charge | — | 8.0 | — | | V _{DS} = -15V |
| Q _{gd} | Gate-to-Drain ("Miller") Charge | — | 8.1 | — | | V _{GS} = -10V |
| t _{d(on)} | Turn-On Delay Time | — | 15 | 23 | ns | V _{DD} = -15V, V _{GS} = -10V |
| t _r | Rise Time | — | 25 | 38 | | I _D = -1.0A |
| t _{d(off)} | Turn-Off Delay Time | — | 227 | 341 | | R _G = 6.0Ω |
| t _f | Fall Time | — | 107 | 161 | | R _D = 15Ω ② |
| C _{iss} | Input Capacitance | — | 2204 | — | pF | V _{GS} = 0V |
| C _{oss} | Output Capacitance | — | 341 | — | | V _{DS} = -25V |
| C _{rss} | Reverse Transfer Capacitance | — | 220 | — | | f = 1.0MHz |

Source-Drain Ratings and Characteristics

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|-----------------|---|------|------|------|-------|--|
| I _S | Continuous Source Current (Body Diode) | — | — | -1.8 | A | MOSFET symbol showing the integral reverse p-n junction diode.  |
| I _{SM} | Pulsed Source Current (Body Diode) ① | — | — | -28 | | |
| V _{SD} | Diode Forward Voltage | — | — | -1.2 | V | T _J = 25°C, I _S = -1.8A, V _{GS} = 0V ② |
| t _{rr} | Reverse Recovery Time | — | 35 | 53 | ns | T _J = 25°C, I _F = -1.8A |
| Q _{rr} | Reverse Recovery Charge | — | 32 | 48 | μC | di/dt = -100A/μs ② |

Notes:

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

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

③ When mounted on 1 inch square copper board, t < 10 sec.

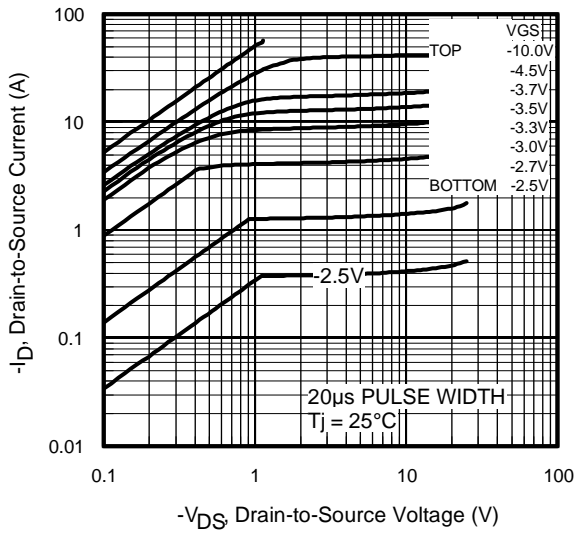


Fig 1. Typical Output Characteristics

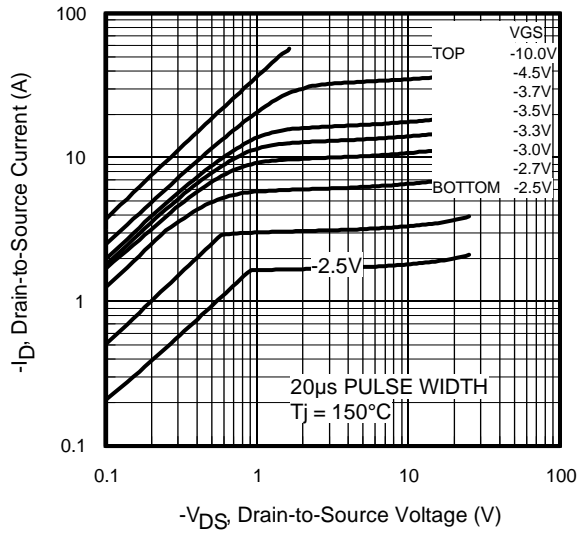


Fig 2. Typical Output Characteristics

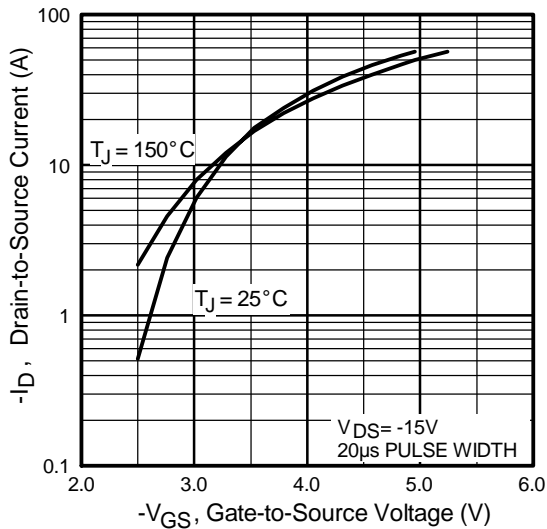


Fig 3. Typical Transfer Characteristics

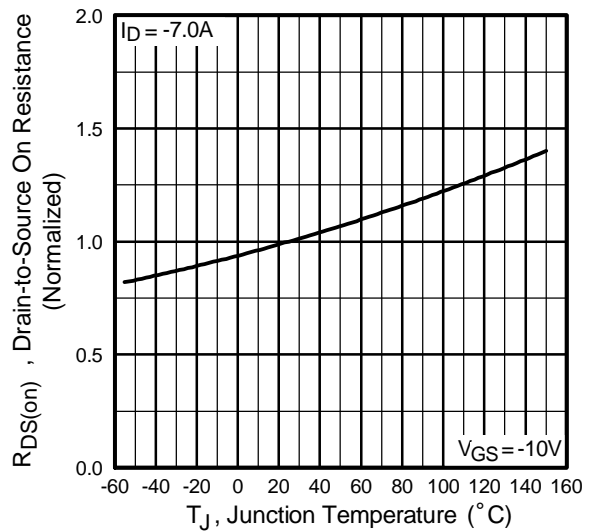


Fig 4. Normalized On-Resistance Vs. Temperature

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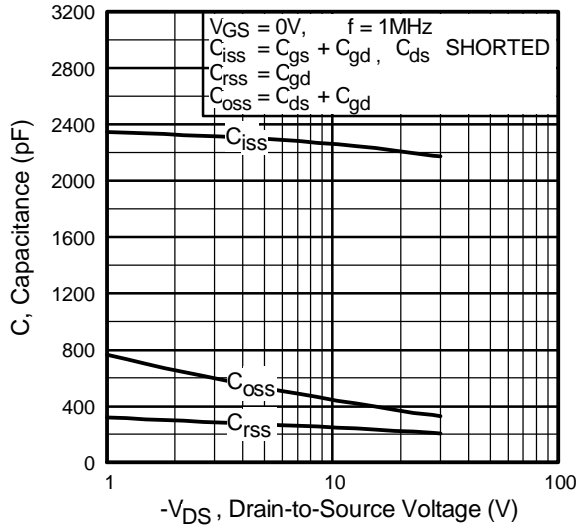


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

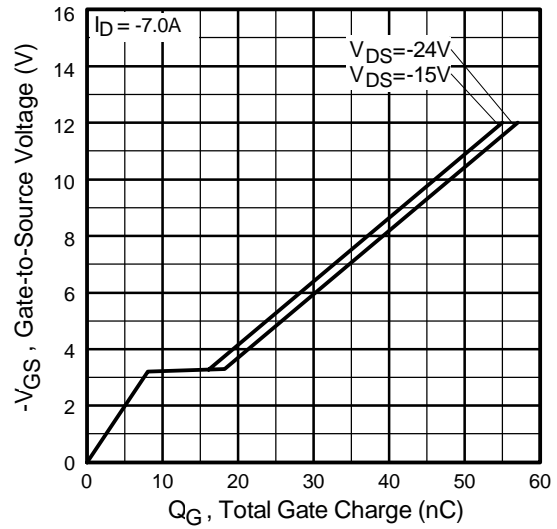


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

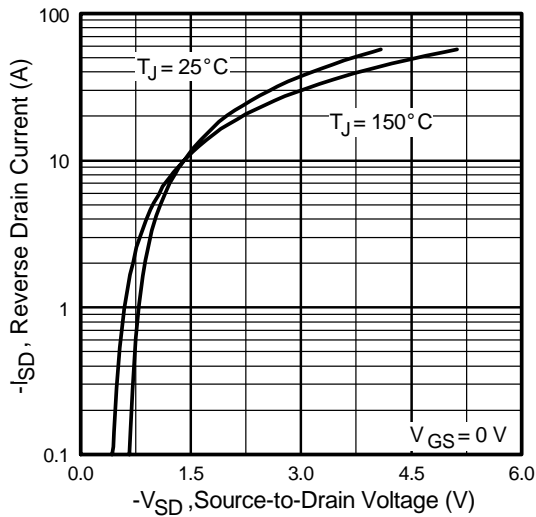


Fig 7. Typical Source-Drain Diode Forward Voltage

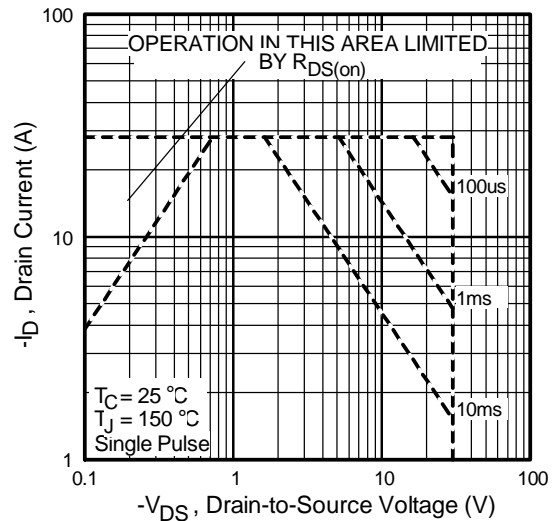


Fig 8. Maximum Safe Operating Area

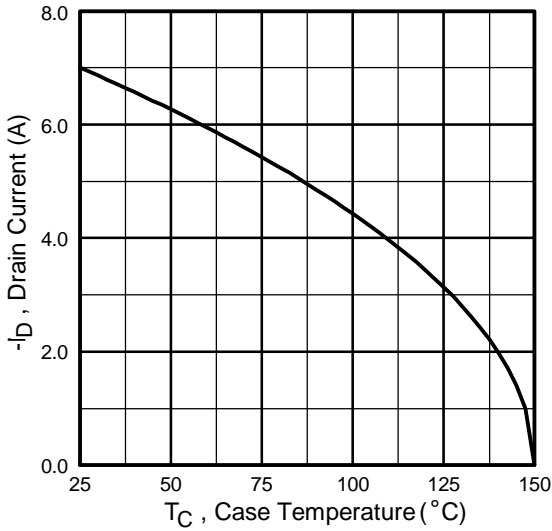


Fig 9. Maximum Drain Current Vs. Case Temperature

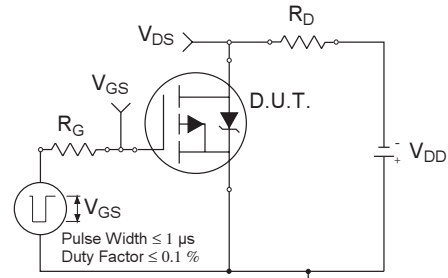


Fig 10a. Switching Time Test Circuit

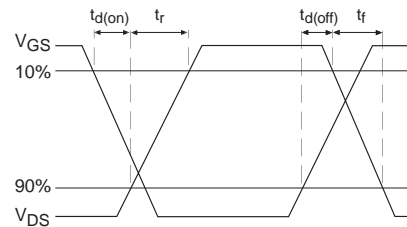


Fig 10b. Switching Time Waveforms

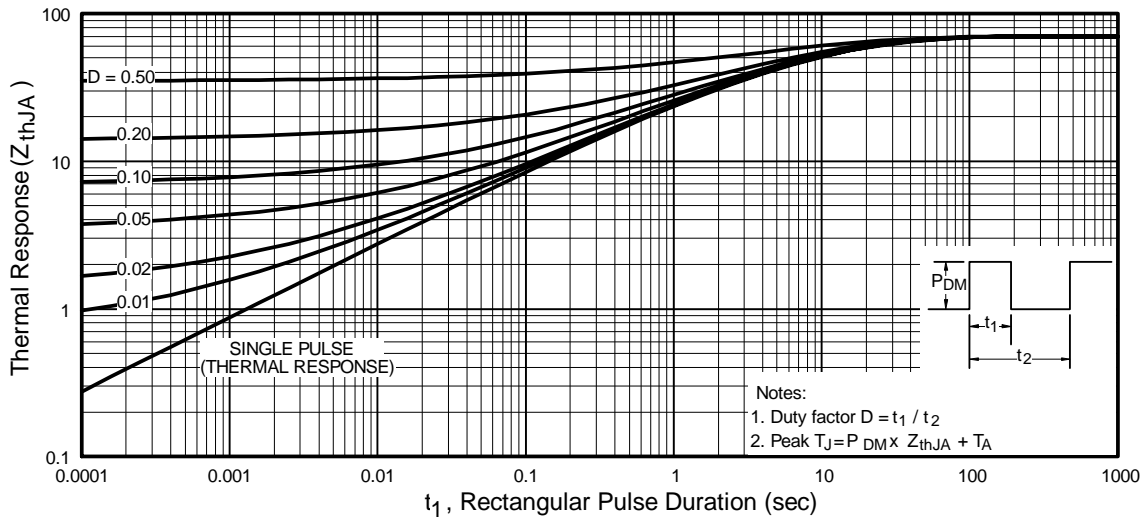


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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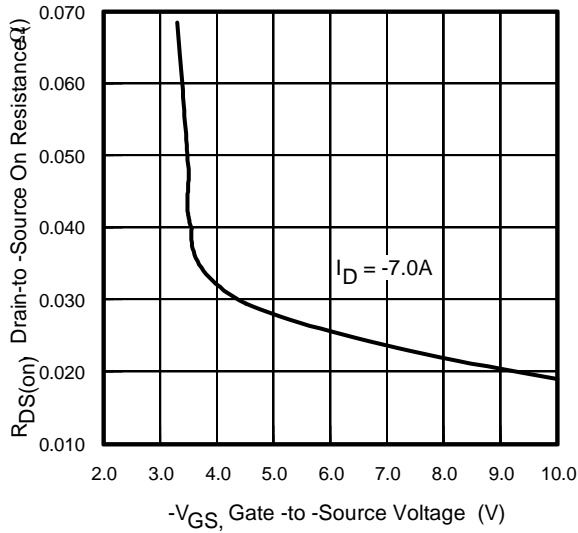


Fig 12. Typical On-Resistance Vs. Gate Voltage

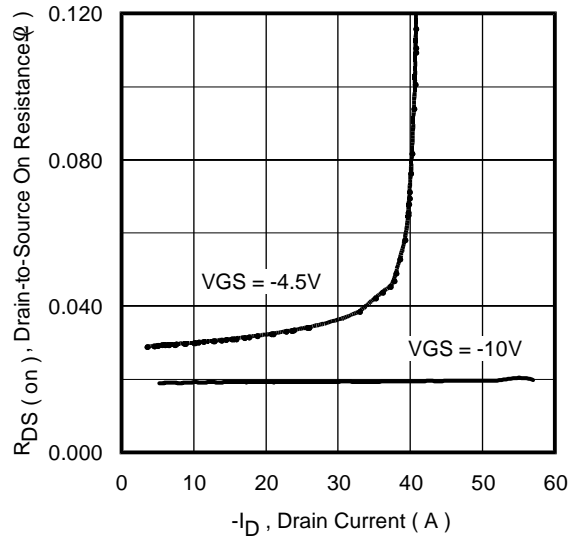


Fig 13. Typical On-Resistance Vs. Drain Current

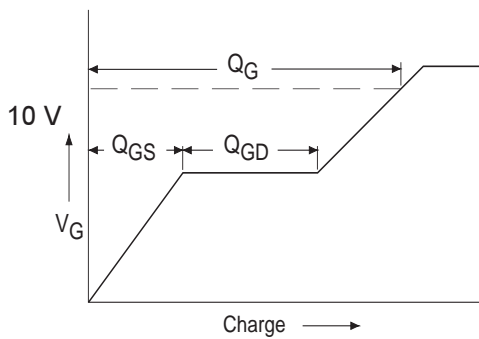


Fig 14a. Basic Gate Charge Waveform

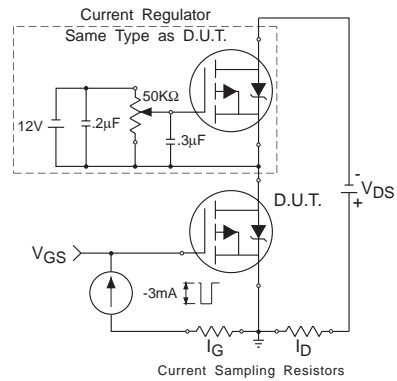


Fig 14b. Gate Charge Test Circuit

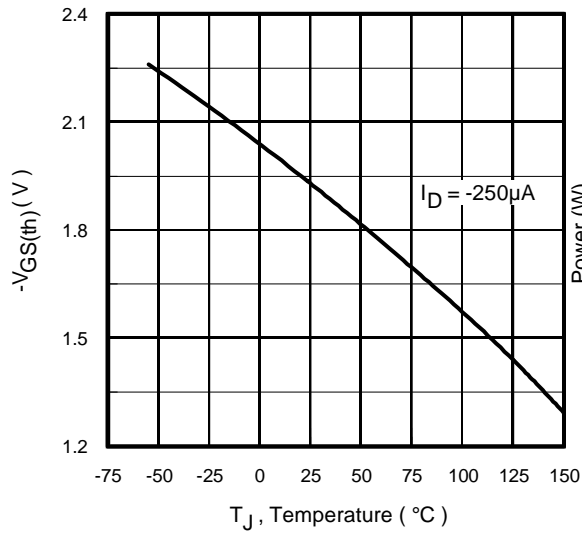


Fig 15. Typical $V_{GS(th)}$ Vs. Junction Temperature

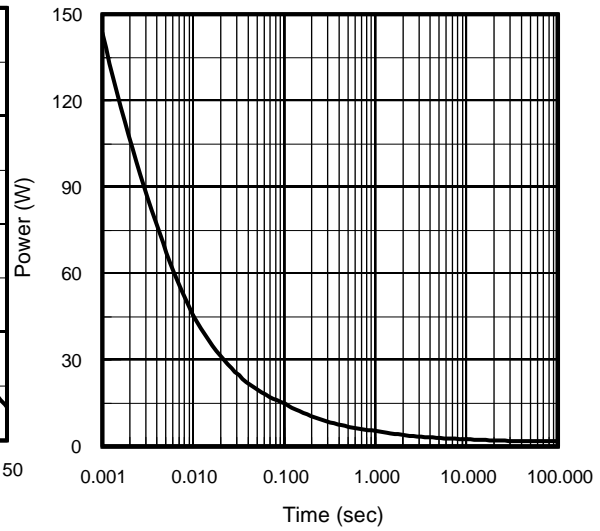
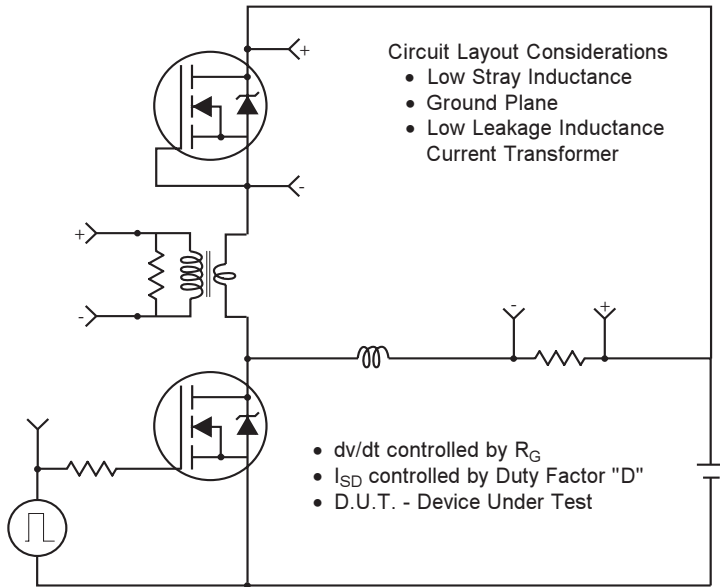


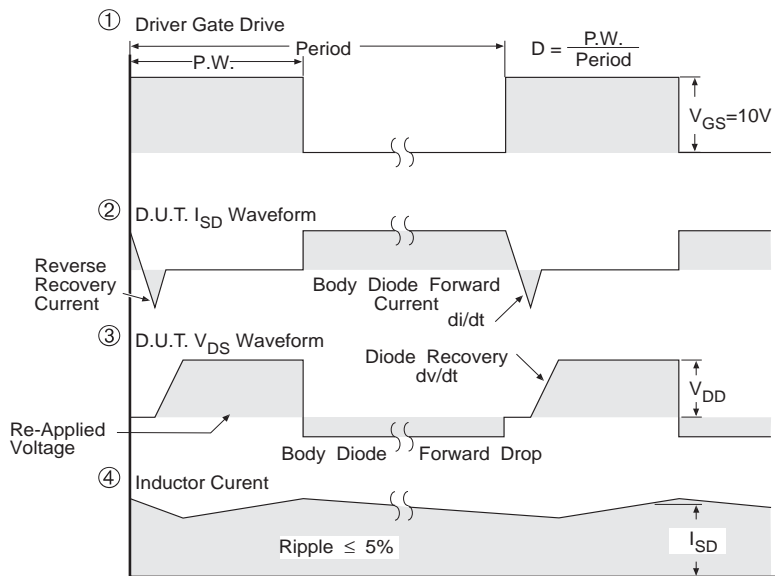
Fig 16. Typical Power Vs. Time

Peak Diode Recovery dv/dt Test Circuit



* Reverse Polarity for P-Channel

** Use P-Channel Driver for P-Channel Measurements

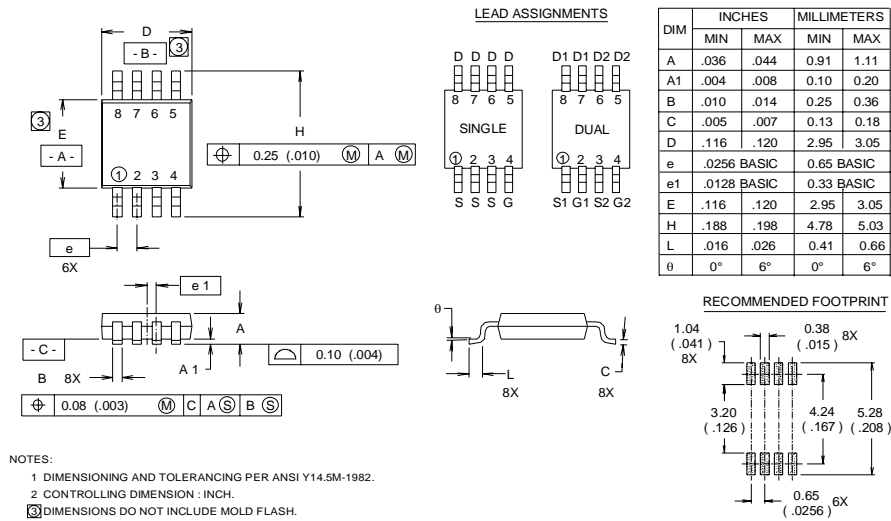


*** $V_{GS} = 5.0V$ for Logic Level and 3V Drive Devices

Fig 17 For P Channel HEXFETS

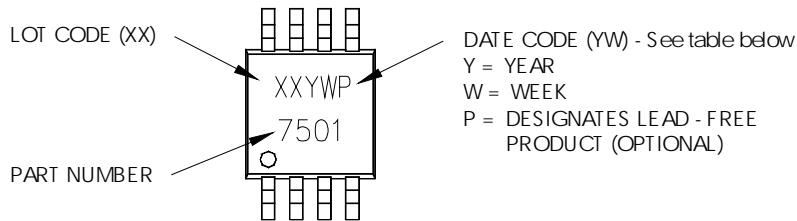
Micro8 Package Outline

Dimensions are shown in millimeters (inches)



Micro8 Part Marking Information

EXAMPLE: THIS IS AN IRF 7501



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

| YEAR | Y | WORK WEEK | W |
|------|---|-----------|---|
| 2001 | 1 | 01 | A |
| 2002 | 2 | 02 | B |
| 2003 | 3 | 03 | C |
| 2004 | 4 | 04 | D |
| 2005 | 5 | | |
| 2006 | 6 | | |
| 2007 | 7 | | |
| 2008 | 8 | | |
| 2009 | 9 | | |
| 2010 | 0 | 24 | X |
| | | 25 | Y |
| | | 26 | Z |

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

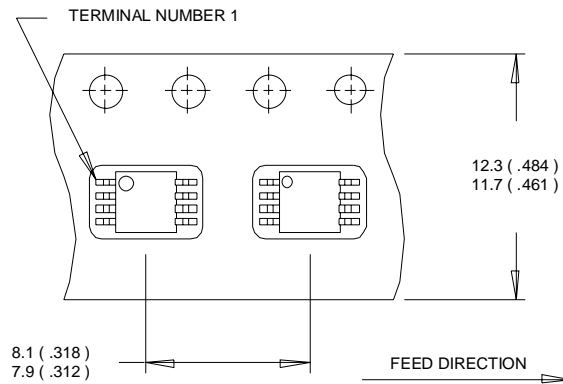
| YEAR | Y | WORK WEEK | W |
|------|---|-----------|---|
| 2001 | A | 27 | A |
| 2002 | B | 28 | B |
| 2003 | C | 29 | C |
| 2004 | D | 30 | D |
| 2005 | E | | |
| 2006 | F | | |
| 2007 | G | | |
| 2008 | H | | |
| 2009 | J | | |
| 2010 | K | 50 | X |
| | | 51 | Y |
| | | 52 | Z |

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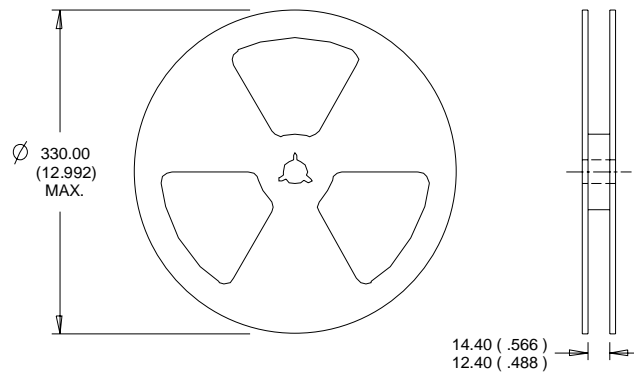
Micro8 Tape & Reel Information

Dimensions are shown in millimeters (inches)



NOTES:

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



NOTES:

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

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

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