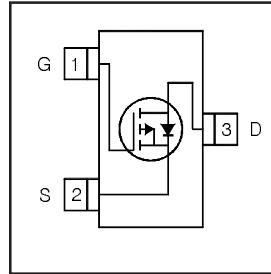


IRLML2246TRPbF

HEXFET® Power MOSFET

| | | |
|--|------------|-----------|
| V_{DS} | -20 | V |
| $V_{GS\ Max}$ | ±12 | V |
| $R_{DS(on)\ max}$ (@ $V_{GS} = -4.5V$) | 135 | mΩ |
| $R_{DS(on)\ max}$ (@ $V_{GS} = -2.5V$) | 236 | mΩ |



Application(s)

- System/Load Switch

Features and Benefits

Features

| |
|--|
| Industry-standard pinout |
| Compatible with existing Surface Mount Techniques |
| RoHS compliant containing no lead, no bromide and no halogen |
| MSL1, Consumer qualification |

results in
⇒

Benefits

| |
|----------------------------|
| Multi-vendor compatibility |
| Easier manufacturing |
| Environmentally friendly |
| Increased reliability |

Absolute Maximum Ratings

| Symbol | Parameter | Max. | Units |
|--------------------------|---|--------------|-------|
| V_{DS} | Drain-Source Voltage | -20 | V |
| $I_D @ T_A = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ -10V$ | -2.6 | A |
| $I_D @ T_A = 70^\circ C$ | Continuous Drain Current, $V_{GS} @ -10V$ | -2.1 | |
| I_{DM} | Pulsed Drain Current | -11 | |
| $P_D @ T_A = 25^\circ C$ | Maximum Power Dissipation | 1.3 | W |
| $P_D @ T_A = 70^\circ C$ | Maximum Power Dissipation | 0.80 | |
| | Linear Derating Factor | 0.01 | W/°C |
| V_{GS} | Gate-to-Source Voltage | ± 12 | V |
| T_J, T_{STG} | Junction and Storage Temperature Range | -55 to + 150 | °C |

Thermal Resistance

| Symbol | Parameter | Typ. | Max. | Units |
|-----------------|-------------------------------|------|------|-------|
| $R_{\theta JA}$ | Junction-to-Ambient ③ | — | 100 | °C/W |
| $R_{\theta JA}$ | Junction-to-Ambient (t<10s) ④ | — | 99 | |

ORDERING INFORMATION:

See detailed ordering and shipping information on the last page of this data sheet.

Notes ① through ④ are on page 10

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

| Symbol | Parameter | Min. | Typ. | Max. | Units | Conditions |
|--|--------------------------------------|------|------|------|-------|--|
| V _{(BR)DSS} | Drain-to-Source Breakdown Voltage | -20 | — | — | V | V _{GS} = 0V, I _D = -250μA |
| ΔV _{(BR)DSS} /ΔT _J | Breakdown Voltage Temp. Coefficient | — | 9.5 | — | mV/°C | Reference to 25°C, I _D = -1mA |
| R _{DS(on)} | Static Drain-to-Source On-Resistance | — | 90 | 135 | mΩ | V _{GS} = -4.5V, I _D = -2.6A ② |
| | | — | 157 | 236 | | V _{GS} = -2.5V, I _D = -2.1A ② |
| V _{GS(th)} | Gate Threshold Voltage | -0.4 | — | -1.1 | V | V _{DS} = V _{GS} , I _D = -10μA |
| 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} = 12V |
| | Gate-to-Source Reverse Leakage | — | — | -100 | | V _{GS} = -12V |
| R _G | Internal Gate Resistance | — | 16 | — | Ω | |
| g _{fs} | Forward Transconductance | 3.4 | — | — | S | V _{DS} = -10V, I _D = -2.6A |
| Q _g | Total Gate Charge | — | 2.9 | — | nC | I _D = -2.6A |
| Q _{gs} | Gate-to-Source Charge | — | 0.52 | — | | V _{DS} = -10V |
| Q _{gd} | Gate-to-Drain ("Miller") Charge | — | 1.2 | — | | V _{GS} = -4.5V ② |
| t _{d(on)} | Turn-On Delay Time | — | 5.3 | — | ns | V _{DD} = -10V ② |
| t _r | Rise Time | — | 7.7 | — | | I _D = -1.0A |
| t _{d(off)} | Turn-Off Delay Time | — | 26 | — | | R _G = 6.8Ω |
| t _f | Fall Time | — | 16 | — | | V _{GS} = -4.5V |
| C _{iss} | Input Capacitance | — | 220 | — | pF | V _{GS} = 0V |
| C _{oss} | Output Capacitance | — | 70 | — | | V _{DS} = -16V |
| C _{rss} | Reverse Transfer Capacitance | — | 48 | — | | f = 1.0KHz |

Source - Drain Ratings and Characteristics

| Symbol | Parameter | Min. | Typ. | Max. | Units | Conditions |
|-----------------|---|------|------|------|-------|---|
| I _S | Continuous Source Current (Body Diode) | — | — | -1.3 | A | MOSFET symbol showing the integral reverse p-n junction diode. |
| I _{SM} | Pulsed Source Current (Body Diode) ① | — | — | -11 | | |
| V _{SD} | Diode Forward Voltage | — | — | -1.2 | V | T _J = 25°C, I _S = -2.6A, V _{GS} = 0V ② |
| t _{rr} | Reverse Recovery Time | — | 17 | 26 | ns | T _J = 25°C, V _R = -15V, I _F = -2.6A |
| Q _{rr} | Reverse Recovery Charge | — | 6.2 | 9.3 | nC | di/dt = 100A/μs ② |

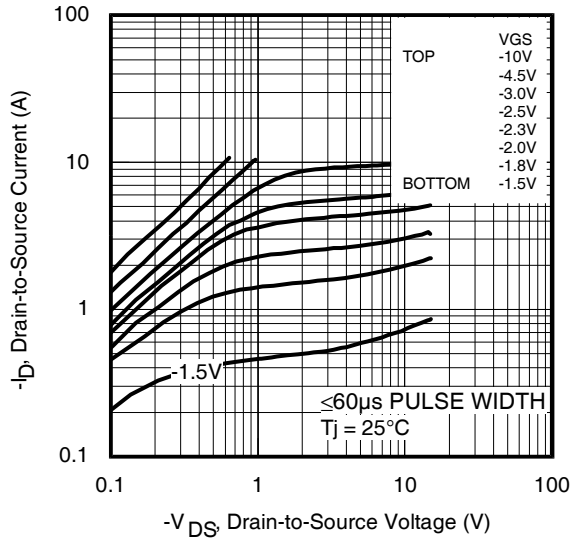


Fig 1. Typical Output Characteristics

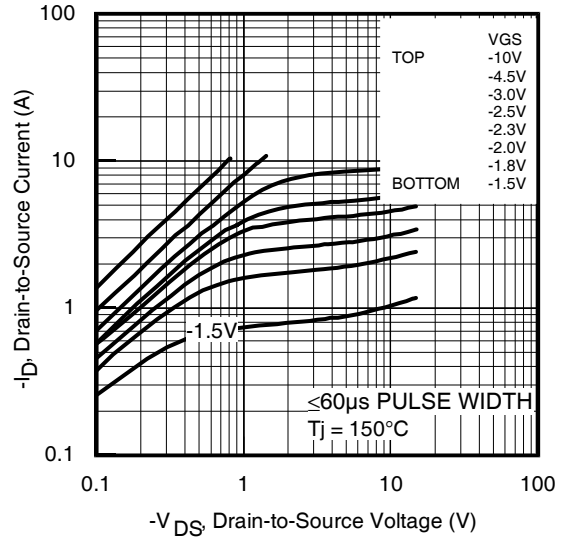


Fig 2. Typical Output Characteristics

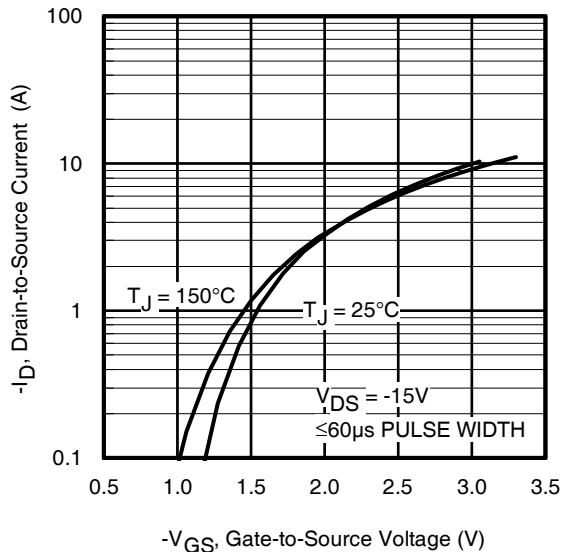


Fig 3. Typical Transfer Characteristics

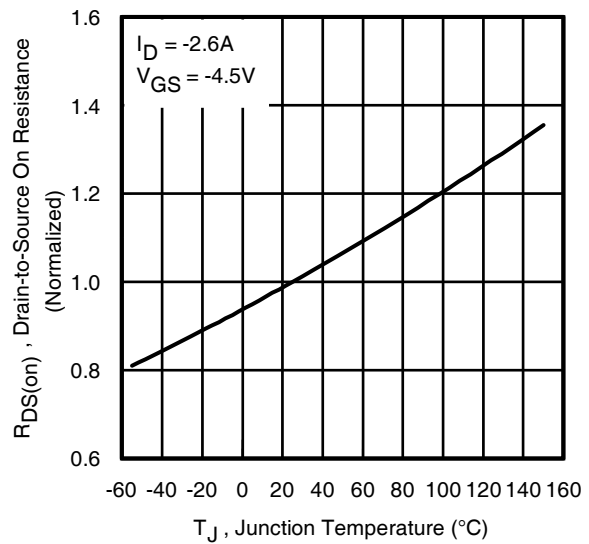


Fig 4. Normalized On-Resistance vs. Temperature

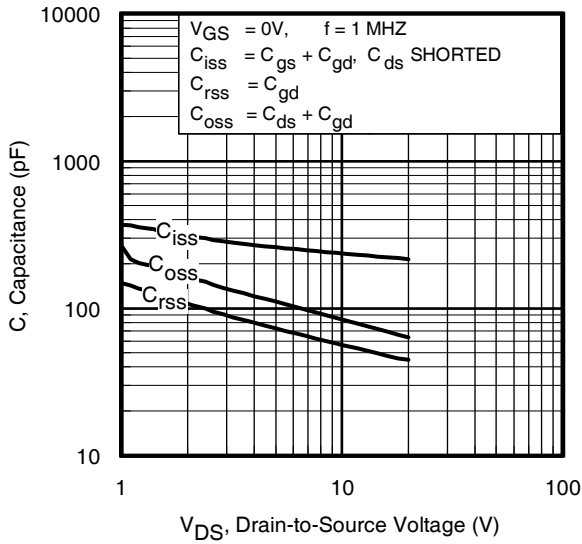


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

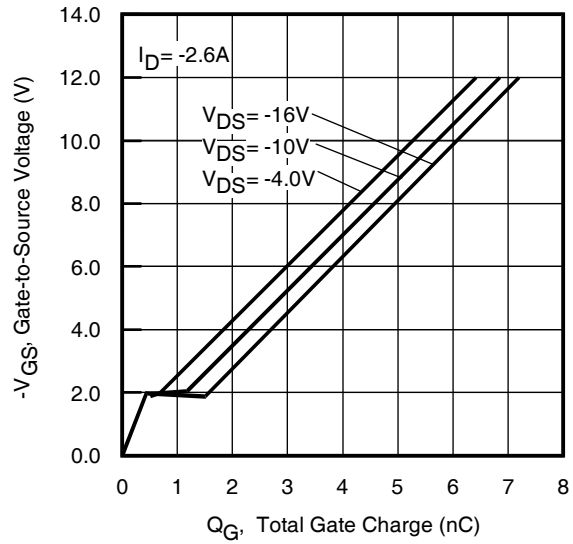


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

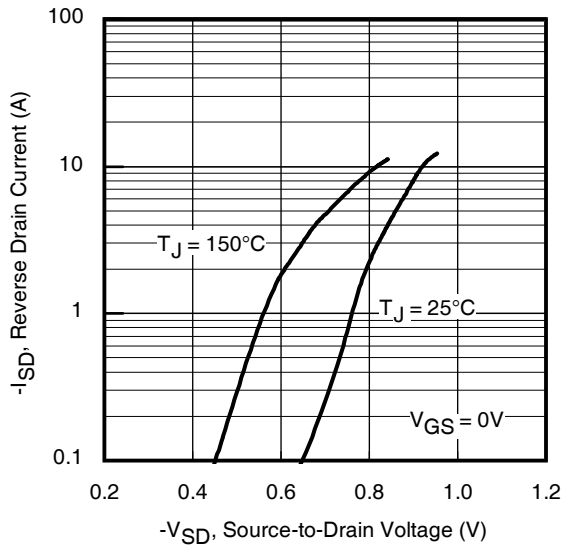


Fig 7. Typical Source-Drain Diode Forward Voltage

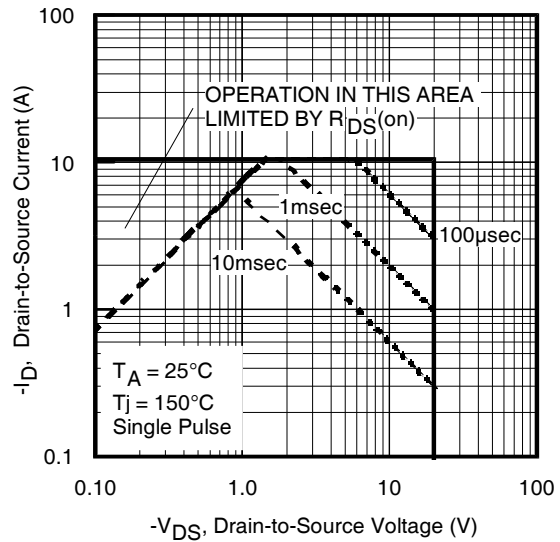


Fig 8. Maximum Safe Operating Area

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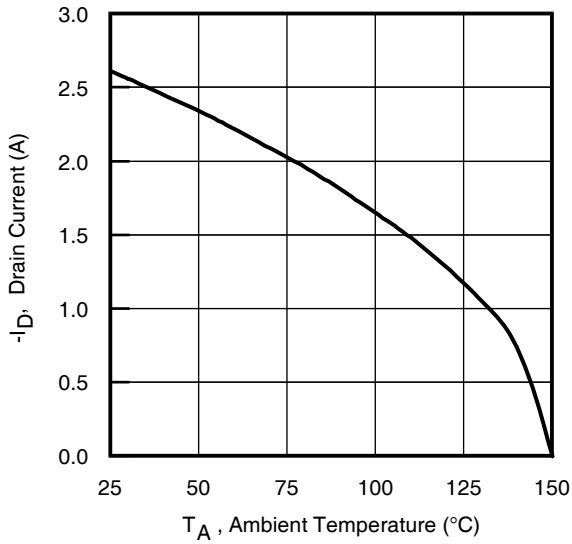


Fig 9. Maximum Drain Current vs. Ambient Temperature

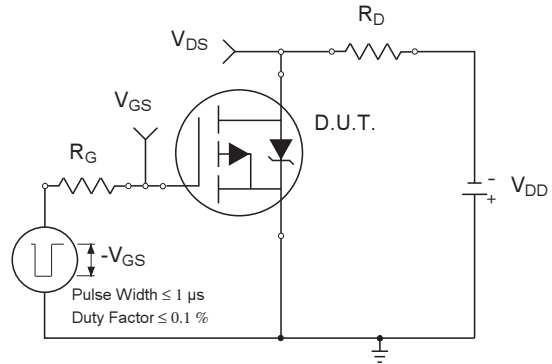


Fig 10a. Switching Time Test Circuit

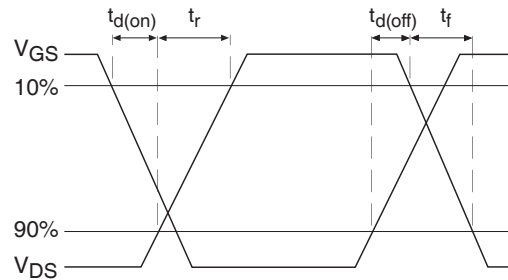


Fig 10b. Switching Time Waveforms

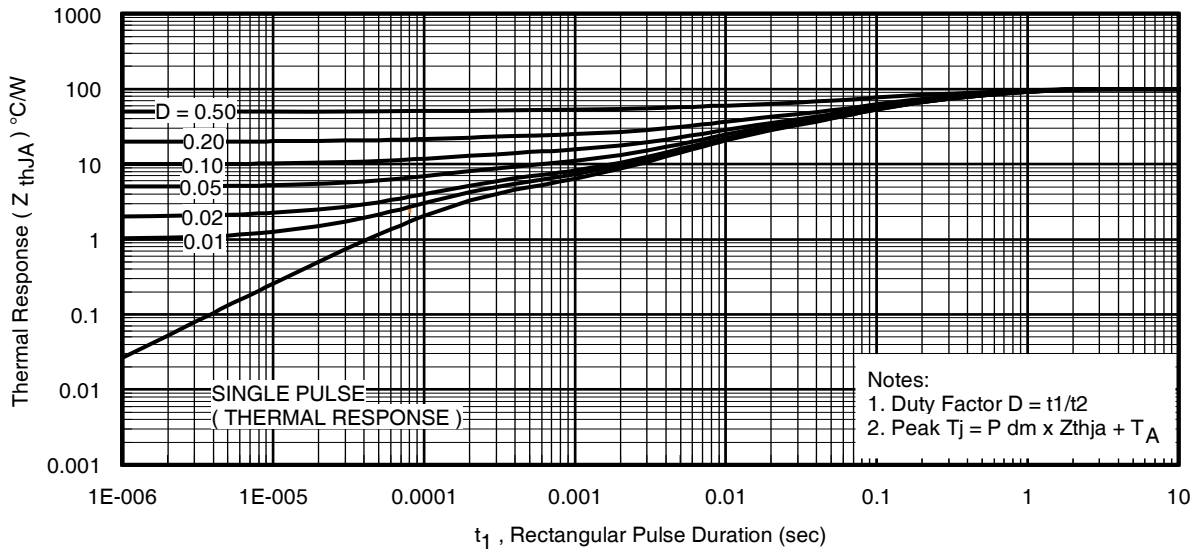


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

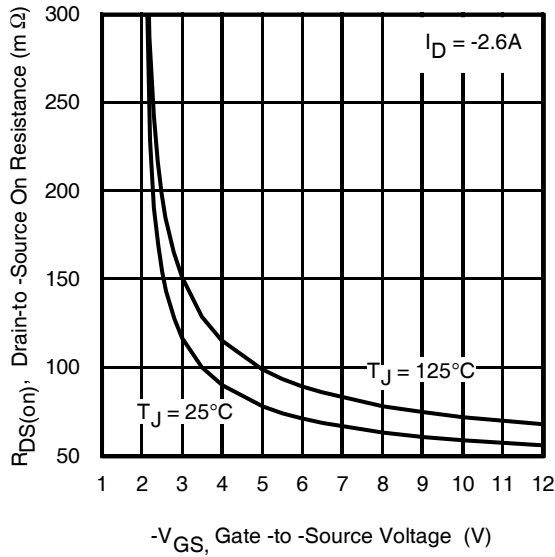


Fig 12. Typical On-Resistance vs. Gate Voltage

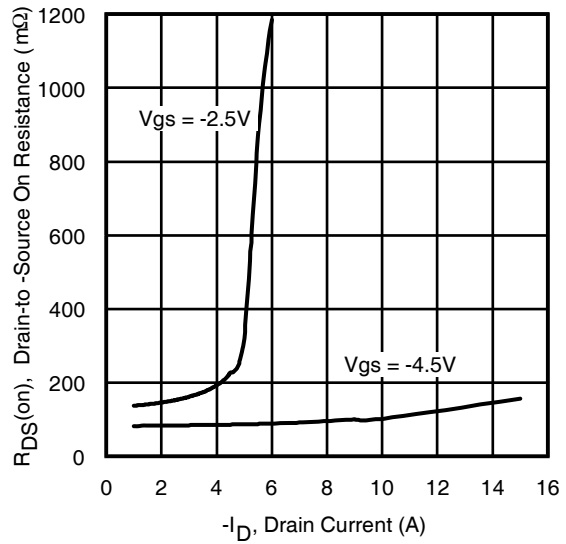


Fig 13. Typical On-Resistance vs. Drain Current

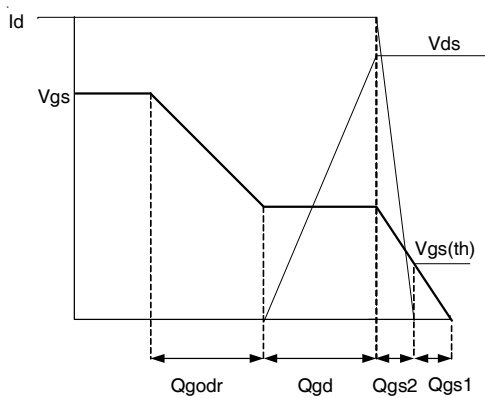


Fig 14a. Basic Gate Charge Waveform

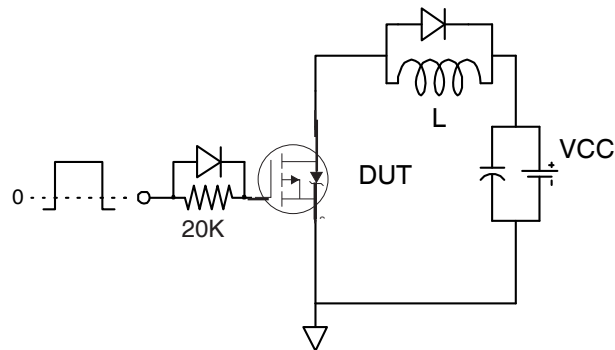


Fig 14b. Gate Charge Test Circuit

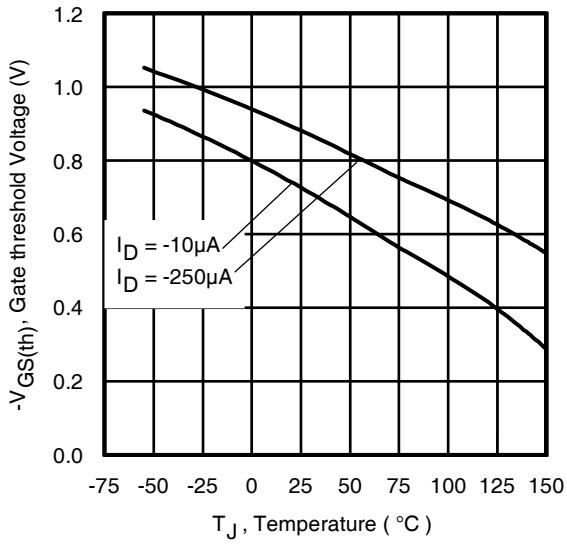


Fig 15. Typical Threshold Voltage vs. Junction Temperature

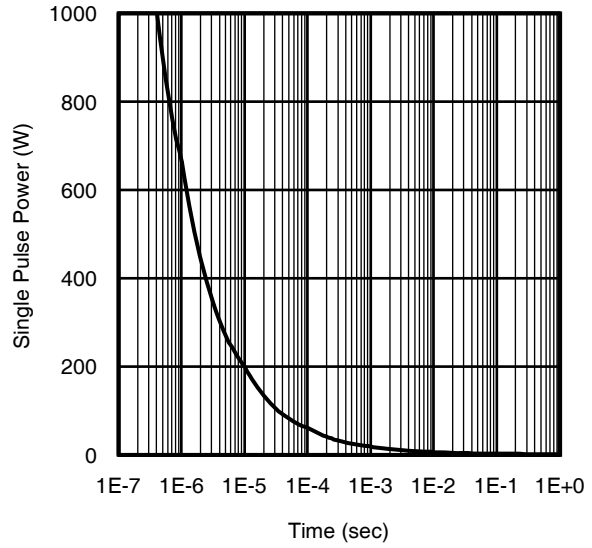


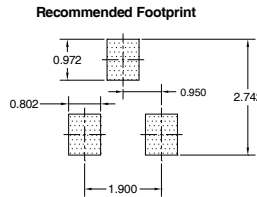
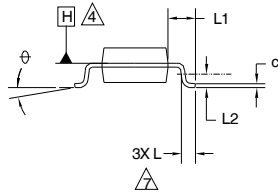
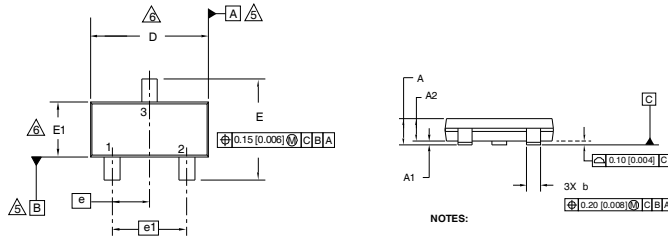
Fig 16. Typical Power vs. Time

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Micro3 (SOT-23) Package Outline

Dimensions are shown in millimeters (inches)

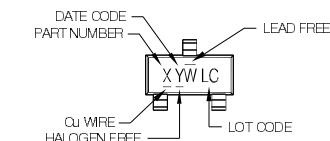


| DIMENSIONS | | | | |
|------------|-------------|------|--------|-------|
| SYMBOL | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 0.89 | 1.12 | 0.035 | 0.044 |
| A1 | 0.01 | 0.10 | 0.0004 | 0.004 |
| A2 | 0.88 | 1.02 | 0.035 | 0.040 |
| b | 0.30 | 0.50 | 0.012 | 0.020 |
| c | 0.08 | 0.20 | 0.003 | 0.008 |
| D | 2.80 | 3.04 | 0.110 | 0.120 |
| E | 2.10 | 2.64 | 0.083 | 0.104 |
| E1 | 1.20 | 1.40 | 0.047 | 0.055 |
| e | 0.95 | BSC | 0.037 | BSC |
| e1 | 1.90 | BSC | 0.075 | BSC |
| L | 0.40 | 0.60 | 0.016 | 0.024 |
| L1 | 0.54 | REF | 0.021 | REF |
| L2 | 0.25 | BSC | 0.010 | BSC |
| ⌀ | 0 | 8 | 0 | 8 |

1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES)
3. CONTROLLING DIMENSION: MILLIMETER
4. DATUM PLANE H IS LOCATED AT THE MOLD PARTING LINE
5. DATUM A AND B TO BE DETERMINED AT DATUM PLANE H
6. DIMENSIONS D AND E1 ARE MEASURED AT DATUM PLANE H. DIMENSIONS DOES NOT INCLUDE MOLD PROTRUSIONS OR INTERLEAD FLASH. MOLD PROTRUSIONS OR INTERLEAD FLASH SHALL NOT EXCEED 0.25MM [0.010 INCH] PER SIDE
7. DIMENSION L IS THE LEAD LENGTH FOR SOLDERING TO A SUBSTRATE
8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-236 AB

Micro3 (SOT-23/TO-236AB) Part Marking Information

Notes: This part marking information applies to devices produced after 02/26/2001



X = PART NUMBER CODE REFERENCE:

- | | |
|---------------|---------------|
| A = IRLML2402 | S = IRLML6244 |
| B = IRLML2603 | T = IRLML6246 |
| C = IRLML6302 | U = IRLML6344 |
| D = IRLML6103 | V = IRLML6346 |
| E = IRLML6402 | W = IFFML8244 |
| F = IRLML6401 | X = IRLML2244 |
| G = IRLML2502 | Y = IRLML2246 |
| H = IRLML6203 | Z = IFFML9244 |
| I = IRLML0030 | |
| J = IRLML2030 | |
| K = IRLML0100 | |
| L = IRLML0080 | |
| M = IRLML0040 | |
| N = IRLML2060 | |
| P = IRLML9301 | |
| R = IRLML9303 | |

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 | A |
| 2012 | 2002 | 2 | 02 | B |
| 2013 | 2003 | 3 | 03 | C |
| 2014 | 2004 | 4 | 04 | D |
| 2015 | 2005 | 5 | | |
| 2016 | 2006 | 6 | | |
| 2017 | 2007 | 7 | | |
| 2018 | 2008 | 8 | | |
| 2019 | 2009 | 9 | | |
| 2020 | 2010 | 0 | 24 | X |
| | | | 25 | Y |
| | | | 26 | Z |

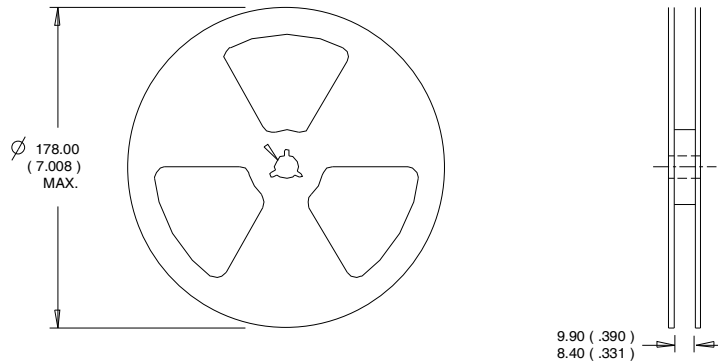
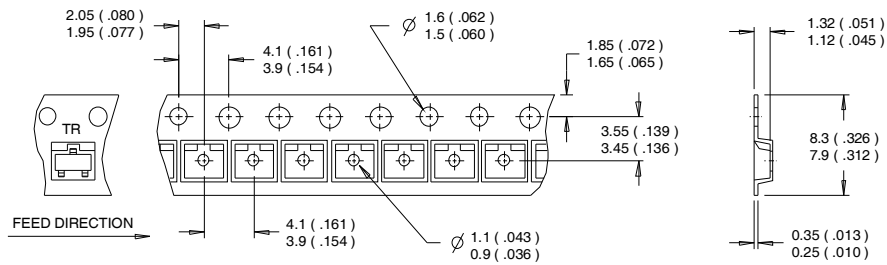
WW = (27-52) IF PRECEDED BY A LETTER

| YEAR | Y | WORK WEEK | W | |
|------|------|-----------|----|---|
| 2011 | 2001 | A | 27 | A |
| 2012 | 2002 | B | 28 | B |
| 2013 | 2003 | C | 29 | C |
| 2014 | 2004 | D | 30 | D |
| 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/>

Micro3™ (SOT-23) Tape & Reel Information

Dimensions are shown in millimeters (inches)



- 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/>

IRLML2246TRPbF

International
IR Rectifier

| Orderable part number | Package Type | Standard Pack | | Note |
|-----------------------|-----------------|---------------|----------|------|
| | | Form | Quantity | |
| IRLML2246TRPbF | Micro3 (SOT-23) | Tape and Reel | 3000 | |

Qualification information[†]

| | | | |
|----------------------------|---|--|--|
| Qualification level | Consumer ^{††} (per JEDEC JESD47F ^{†††} guidelines) | | |
| Moisture Sensitivity Level | Micro3 (SOT-23) | MSL1 (per IPC/JEDEC J-STD-020D ^{†††}) | |
| RoHS compliant | Yes | | |

- † Qualification standards can be found at International Rectifier's web site
<http://www.irf.com/product-info/reliability>
- †† 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/>
- ††† Applicable version of JEDEC standard at the time of product release.

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ③ Surface mounted on 1 in square Cu board.
- ④ Refer to [application note #AN-994](#).

Data and specifications subject to change without notice.

International
IR Rectifier

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

Visit us at www.irf.com for sales contact information. 03/2012

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[MIC4420CM-TR](#) [VN1206L](#) [614234A](#) [715780A](#) [NTNS3166NZT5G](#) [SSM6J414TU,LF\(T](#) [751625C](#) [BUK954R8-60E](#) [GROUP A 5962-](#)
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[SSM6P69NU,LF](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#)