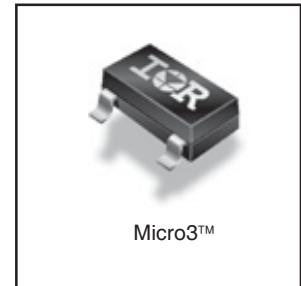
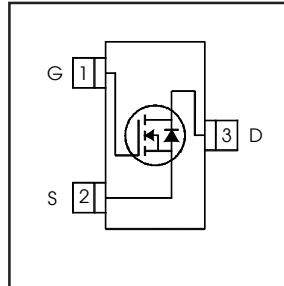


HEXFET® Power MOSFET

| | | |
|---|-------------|-----------|
| V_{DS} | 30 | V |
| $R_{DS(on) max}$ (@ $V_{GS} = 10V$) | 0.25 | Ω |
| Q_g (typical) | 3.3 | nC |
| I_D (@ $T_A = 25^\circ C$) | 1.2 | A |



Features

| |
|---|
| Industry-standard pinout SOT-23 Package |
| Compatible with Existing Surface Mount Techniques |
| RoHS Compliant, Halogen-Free |
| MSL1, Industrial qualification |



Benefits

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

| Base Part Number | Package Type | Standard Pack | | Orderable Part Number |
|------------------|------------------|---------------|----------|-----------------------|
| | | Form | Quantity | |
| IRLML2803TRPbF-1 | Micro3™ (SOT-23) | Tape and Reel | 3000 | IRLML2803TRPbF-1 |

Absolute Maximum Ratings

| | Parameter | Max. | Units |
|--------------------------|--|--------------|-------|
| $I_D @ T_A = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 1.2 | A |
| $I_D @ T_A = 70^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 0.93 | |
| I_{DM} | Pulsed Drain Current ① | 7.3 | |
| $P_D @ T_A = 25^\circ C$ | Power Dissipation | 540 | mW |
| | Linear Derating Factor | 4.3 | mW/°C |
| V_{GS} | Gate-to-Source Voltage | ±20 | V |
| E_{AS} | Single Pulse Avalanche Energy ⑤ | 3.9 | mJ |
| dv/dt | Peak diode Recovery dv/dt ② | 5.0 | V/ns |
| T_J, T_{STG} | Junction and Storage Temperature Range | -55 to + 150 | °C |

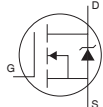
Thermal Resistance

| | Parameter | Typ. | Max. | Units |
|-----------------|-------------------------------|------|------|-------|
| $R_{\theta JA}$ | Maximum Junction-to-Ambient ③ | — | 230 | °C/W |

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

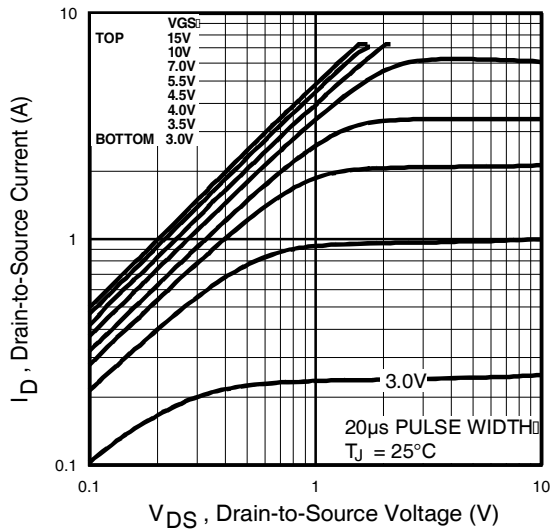
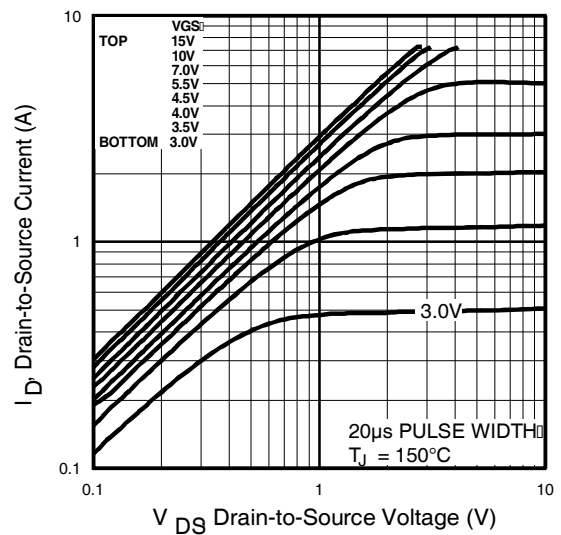
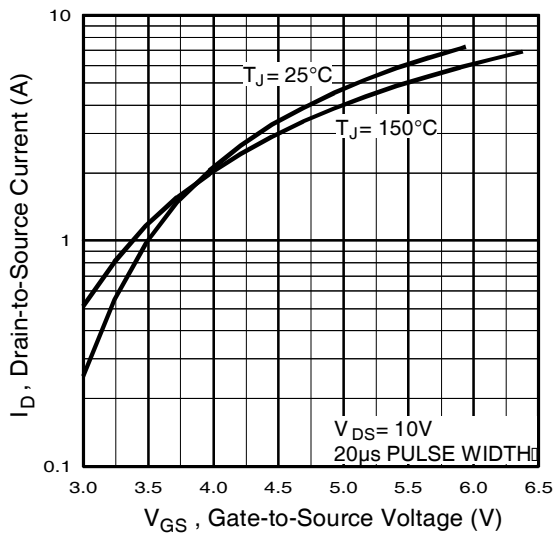
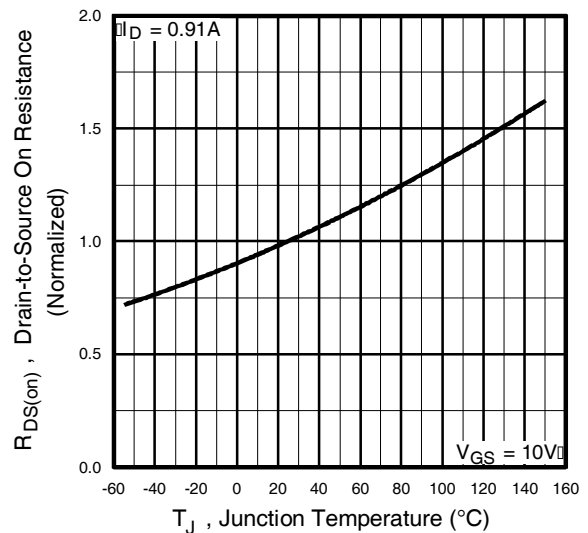
| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|--|--------------------------------------|------|-------|------|-------|---|
| V _{(BR)DSS} | Drain-to-Source Breakdown Voltage | 30 | — | — | V | V _{GS} = 0V, I _D = 250μA |
| ΔV _{(BR)DSS} /ΔT _J | Breakdown Voltage Temp. Coefficient | — | 0.029 | — | V/°C | Reference to 25°C, I _D = 1mA |
| R _{DS(on)} | Static Drain-to-Source On-Resistance | — | — | 0.25 | Ω | V _{GS} = 10V, I _D = 0.91A ③ |
| | | — | — | 0.40 | | V _{GS} = 4.5V, I _D = 0.46A ③ |
| V _{GS(th)} | Gate Threshold Voltage | 1.0 | — | — | V | V _{DS} = V _{GS} , I _D = 250μA |
| g _{fs} | Forward Transconductance | 0.87 | — | — | S | V _{DS} = 10V, I _D = 0.46A |
| I _{DSS} | Drain-to-Source Leakage Current | — | — | 1.0 | μA | V _{DS} = 24V, V _{GS} = 0V |
| | | — | — | 25 | | V _{DS} = 24V, V _{GS} = 0V, T _J = 125°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 | — | 3.3 | 5.0 | nC | I _D = 0.91A |
| Q _{gs} | Gate-to-Source Charge | — | 0.48 | 0.72 | | V _{DS} = 24V |
| Q _{gd} | Gate-to-Drain ("Miller") Charge | — | 1.1 | 1.7 | | V _{GS} = 10V, See Fig. 6 and 9 ③ |
| t _{d(on)} | Turn-On Delay Time | — | 3.9 | — | | V _{DD} = 15V |
| t _r | Rise Time | — | 4.0 | — | ns | I _D = 0.91A |
| t _{d(off)} | Turn-Off Delay Time | — | 9.0 | — | | R _G = 6.2Ω |
| t _f | Fall Time | — | 1.7 | — | | R _D = 16Ω, See Fig. 10 ③ |
| C _{iss} | Input Capacitance | — | 85 | — | pF | V _{GS} = 0V |
| C _{oss} | Output Capacitance | — | 34 | — | | V _{DS} = 25V |
| C _{rss} | Reverse Transfer Capacitance | — | 15 | — | | f = 1.0MHz, See Fig. 5 |

Source-Drain Ratings and Characteristics

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|-----------------|---|------|------|------|-------|--|
| I _S | Continuous Source Current (Body Diode) | — | — | 0.54 | A | MOSFET symbol showing the integral reverse p-n junction diode.  |
| I _{SM} | Pulsed Source Current (Body Diode) ① | — | — | 7.3 | | |
| V _{SD} | Diode Forward Voltage | — | — | 1.2 | V | T _J = 25°C, I _S = 0.91A, V _{GS} = 0V ③ |
| t _{rr} | Reverse Recovery Time | — | 26 | 40 | ns | T _J = 25°C, I _F = 0.91A |
| Q _{rr} | Reverse Recovery Charge | — | 22 | 32 | nC | di/dt = 100A/μs ③ |

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)
- ② I_{SD} ≤ 0.91A, di/dt ≤ 120A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
- ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ④ Surface mounted on FR-4 board, t ≤ 5sec.
- ⑤ Limited by T_{Jmax}, starting T_J = 25°C, L = 9.4mH, R_G = 25Ω, I_{AS} = 0.9A.


Fig 1. Typical Output Characteristics

Fig 2. Typical Output Characteristics

Fig 3. Typical Transfer Characteristics

Fig 4. Normalized On-Resistance Vs. Temperature

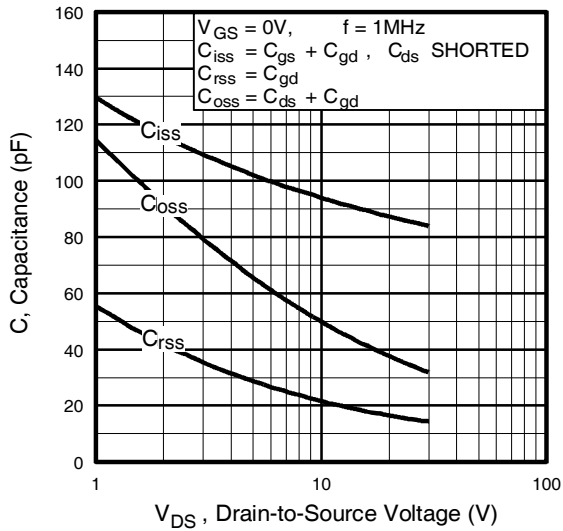


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

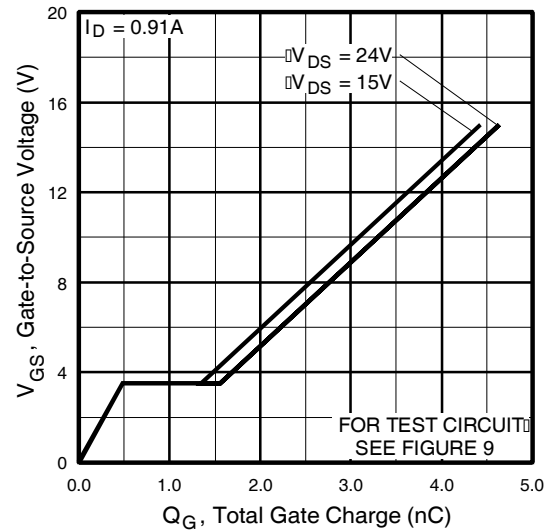


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

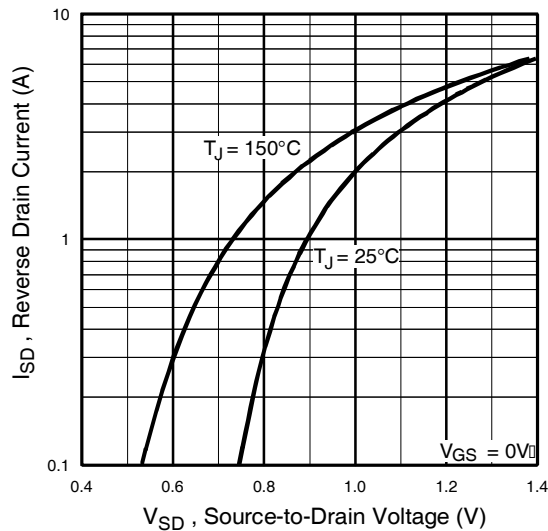


Fig 7. Typical Source-Drain Diode Forward Voltage

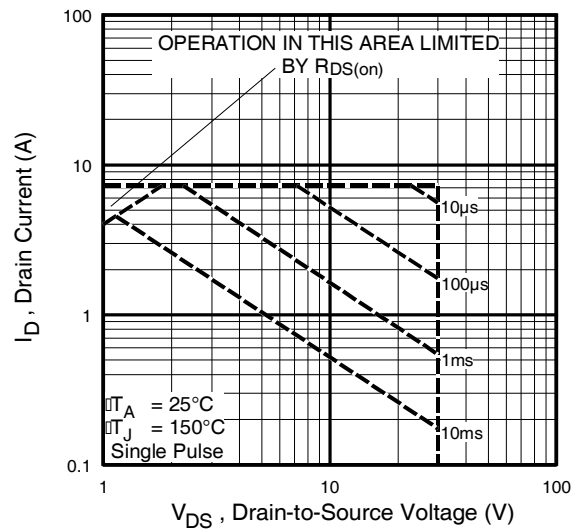
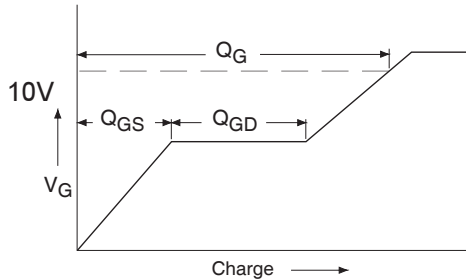
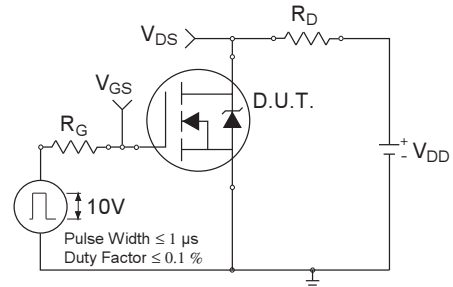
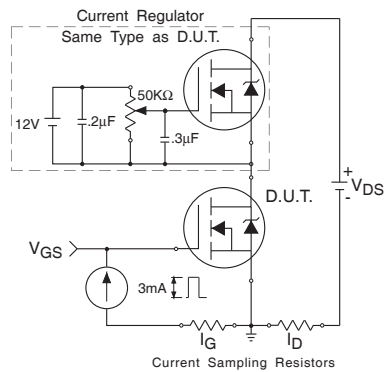
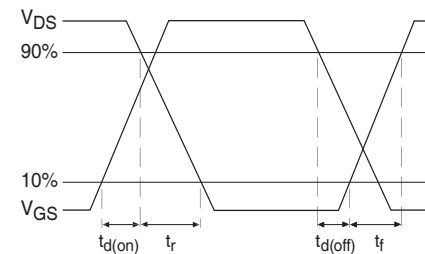
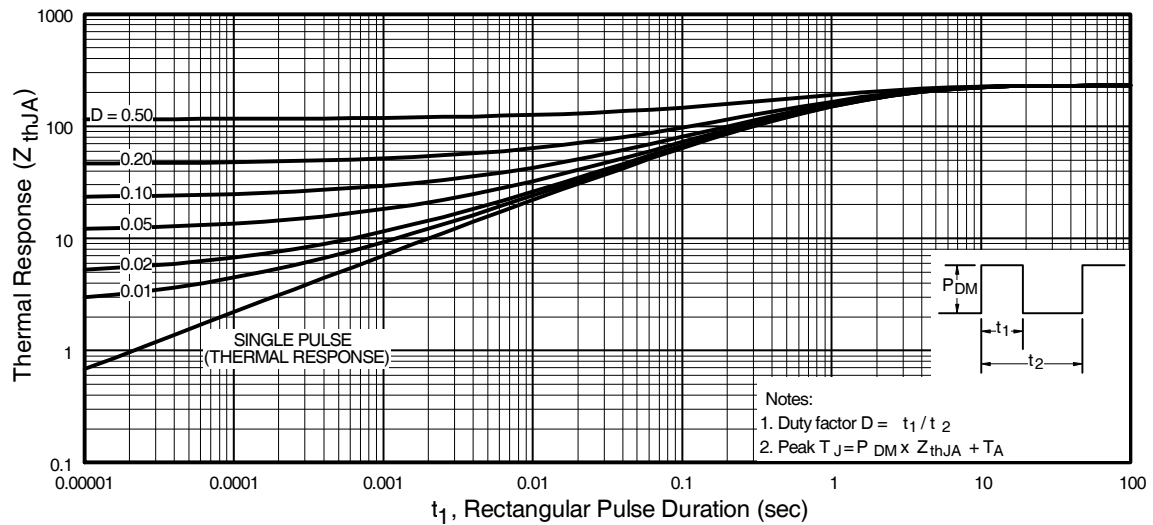
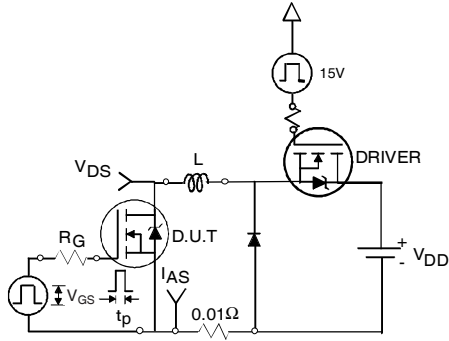
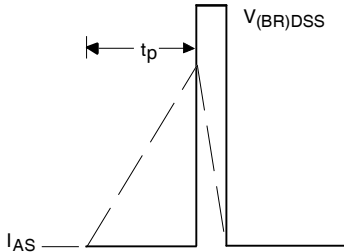
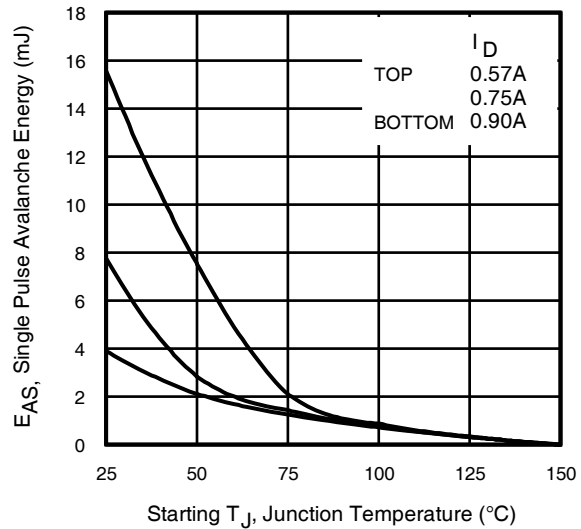
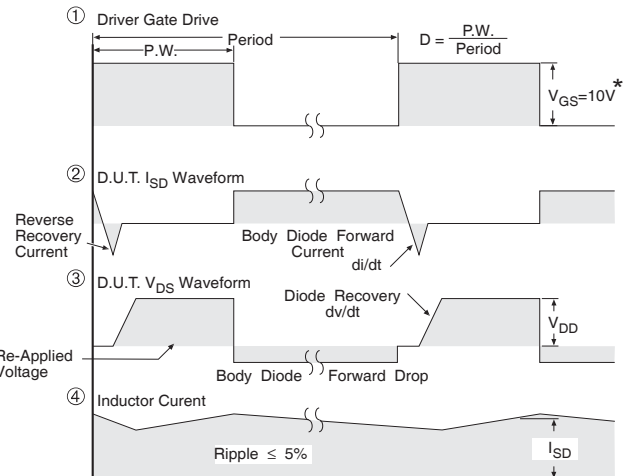
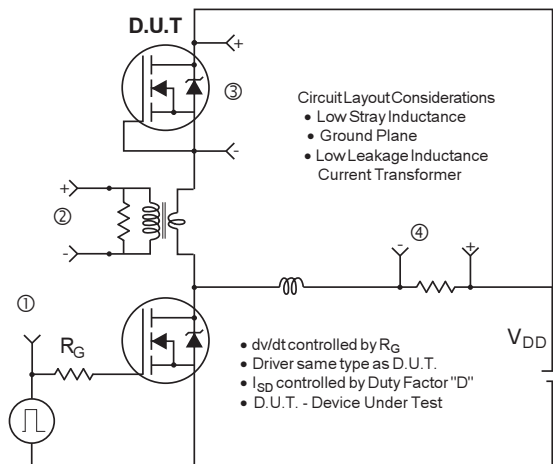


Fig 8. Maximum Safe Operating Area


Fig 9a. Basic Gate Charge Waveform

Fig 10a. Switching Time Test Circuit

Fig 9b. Gate Charge Test Circuit

Fig 10b. Switching Time Waveforms

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

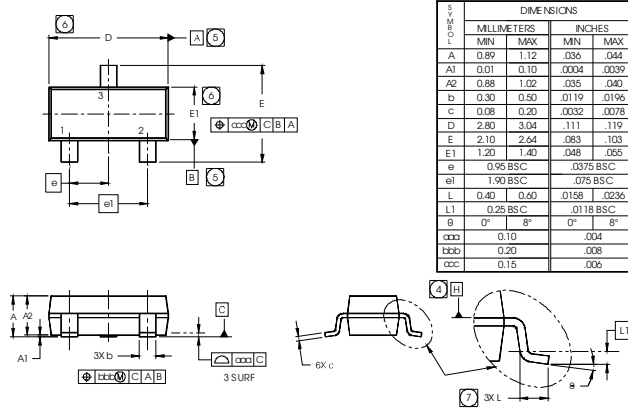

Fig 12a. Unclamped Inductive Test Circuit

Fig 12b. Unclamped Inductive Waveforms

Fig 12c. Maximum Avalanche Energy vs. Drain Current


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

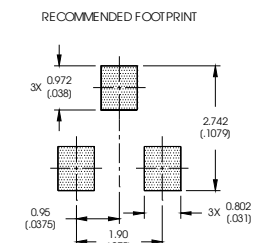
Fig 13. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET® Power MOSFETs



Micro3 (SOT-23) (Lead-Free) Package Outline
 Dimensions are shown in millimeters (inches)

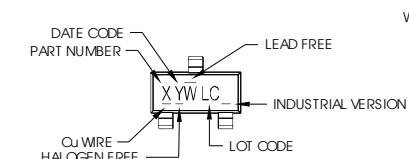


| DIMENSION | DIMENSIONS | | | |
|-----------|-------------|------|-----------|-------|
| | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 0.89 | 1.12 | .036 | .044 |
| A1 | 0.01 | 0.10 | .004 | .0039 |
| A2 | 0.88 | 1.02 | .035 | .040 |
| b | 0.30 | 0.50 | .019 | .0196 |
| c | 0.08 | 0.20 | .0032 | .0078 |
| D | 2.80 | 3.04 | .111 | .119 |
| E | 2.10 | 2.64 | .083 | .103 |
| E1 | 1.20 | 1.40 | .048 | .056 |
| e | 0.95 BSC | | .0375 BSC | |
| e1 | 1.90 BSC | | .075 BSC | |
| L | 0.40 | 0.60 | .0158 | .0236 |
| L1 | 0.25 BSC | | .0118 BSC | |
| θ | 0° | 8° | 0° | 8° |
| ccc | 0.10 | | .004 | |
| bbb | 0.20 | | .008 | |
| ccc | 0.15 | | .006 | |



- NOTES
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
 2. DIMENSIONS ARE SHOWN IN MILLIMETERS AND INCHES.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DATUM PLANE H IS LOCATED AT THE MOLD PARTING LINE.
 5. DATUMA AND B TO BE DETERMINED AT DATUM PLANE H.
 6. DIMENSIONS D AND E1 ARE MEASURED AT DATUM PLANE H.
 7. DIMENSION L IS THE LEAD LENGTH FOR SOLDERING TO A SUBSTRATE.
 8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-236AB.

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



- X = PART NUMBER CODE REFERENCE:
- | | |
|---------------|---------------|
| A = IRLML2402 | S = IRLML6244 |
| B = IRLML2803 | T = IRLML6246 |
| C = IRLML6302 | U = IRLML6344 |
| D = IRLML5103 | V = IRLML6346 |
| E = IRLML6402 | W = IRFML8244 |
| F = IRLML6401 | X = IRLML2244 |
| G = IRLML2502 | Y = IRLML2246 |
| H = IRLML5203 | Z = IRFML9244 |
| I = IRLML0030 | |
| J = IRLML2030 | |
| K = IRLML0100 | |
| L = IRLML0060 | |
| M = IRLML0040 | |
| N = IRLML2060 | |
| P = IRLML9301 | |
| R = IRLML9303 | |
- Note: A line above the work week (as shown here) indicates Lead-Free.

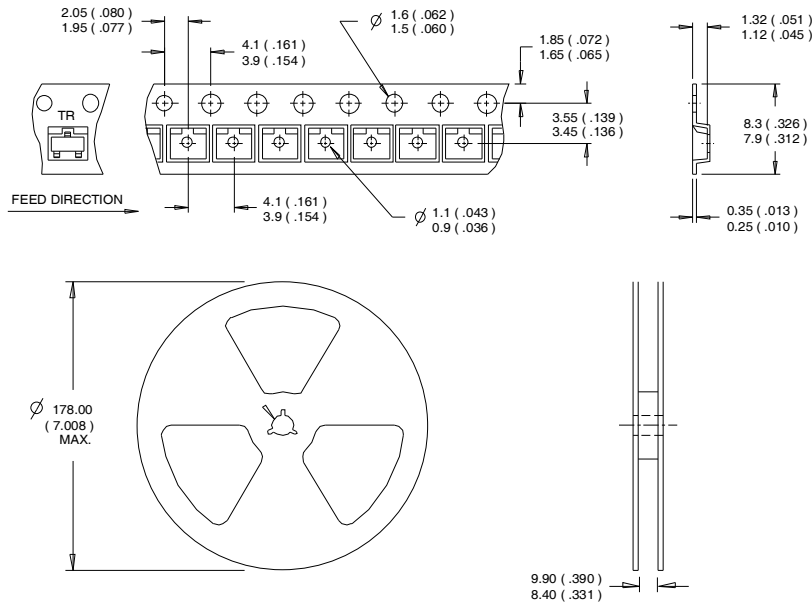
W = (1-26) IF PRECEDED BY LAST DIGIT OF CALENDAR YEAR

| 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 |

W = (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™ 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>

Qualification information†

| | | |
|----------------------------|--|---|
| Qualification level | Industrial (per JEDEC JESD47F ^{††} guidelines) | |
| Moisture Sensitivity Level | Micro3™ (SOT-23) | M6L1 (per 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>

†† Applicable version of JEDEC standard at the time of product release

Revision History

| Date | Comment |
|------------|--|
| 10/28/2014 | • Updated partmarking to reflect Industrial partmarking on page 7. |

International
 Rectifier

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 To contact International Rectifier, please visit <http://www.irf.com/whoto-call/>