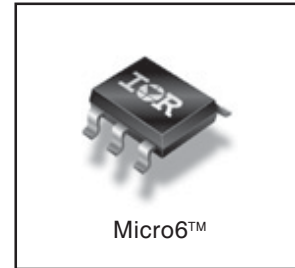
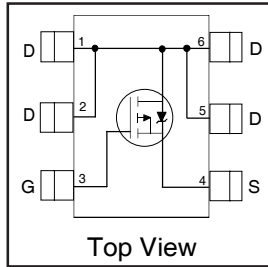


HEXFET® Power MOSFET

$V_{DS}$	<b>-20</b>	<b>V</b>
$R_{DS(on) \text{ max}}$ (@ $V_{GS} = -4.5V$ )	<b>0.200</b>	$\Omega$
$R_{DS(on) \text{ max}}$ (@ $V_{GS} = -2.7V$ )	<b>0.375</b>	
$Q_g$ (typical)	<b>5.8</b>	<b>nC</b>
$I_D$ (@ $T_A = 25^\circ C$ )	<b>-2.4</b>	<b>A</b>



**Features**

Industry-standard pinout Micro-6 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	
IRLMS6702TRPbF-1	Micro6™	Tape and Reel	3000	IRLMS6702TRPbF-1

**Absolute Maximum Ratings**

	Parameter	Max.	Units
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-2.4	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-1.9	
$I_{DM}$	Pulsed Drain Current ①	-13	
$P_D @ T_A = 25^\circ C$	Power Dissipation	1.7	W
	Linear Derating Factor	13	mW/°C
$V_{GS}$	Gate-to-Source Voltage	± 12	V
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

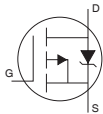
**Thermal Resistance Ratings**

	Parameter	Min.	Typ.	Max	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ④	—	—	75	°C/W

**Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)**

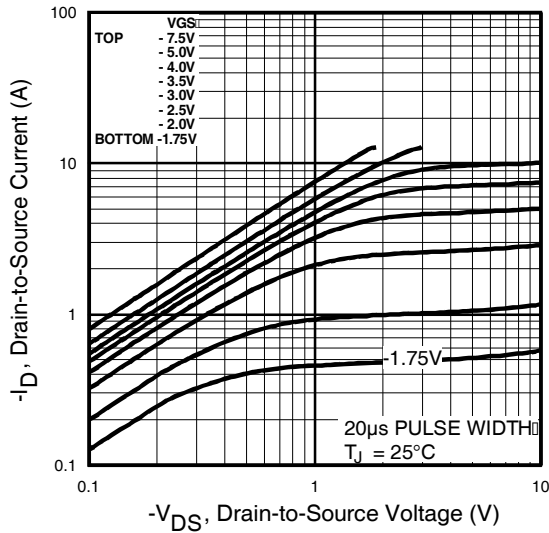
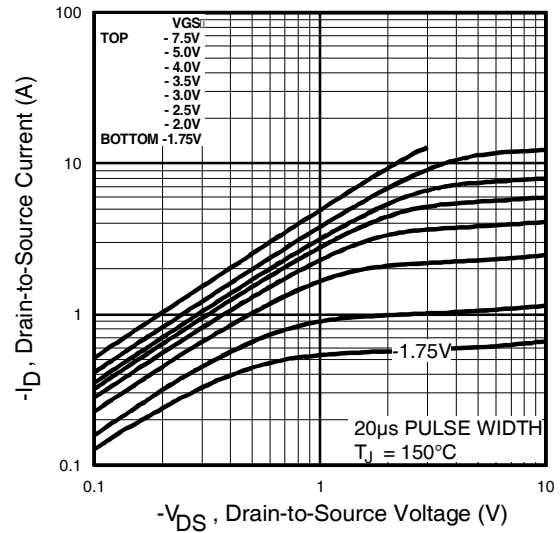
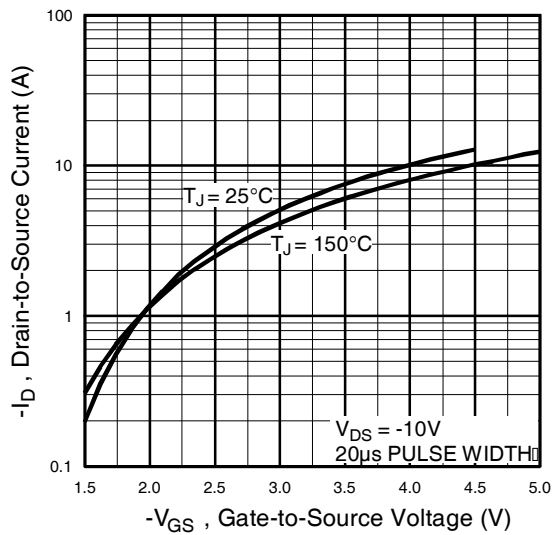
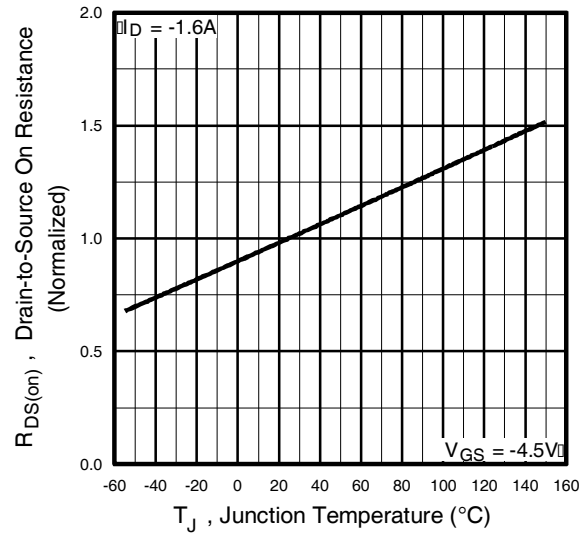
	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source Breakdown Voltage	-20	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
ΔV <sub>(BR)DSS/ΔT<sub>J</sub></sub>	Breakdown Voltage Temp. Coefficient	—	-0.005	—	V/°C	Reference to 25°C, I <sub>D</sub> = -1mA
R <sub>DS(on)</sub>	Static Drain-to-Source On-Resistance	—	—	0.200	Ω	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.6A ③
		—	—	0.375		V <sub>GS</sub> = -2.7V, I <sub>D</sub> = -0.80A ③
V <sub>GS(th)</sub>	Gate Threshold Voltage	-0.70	—	—	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
g <sub>fs</sub>	Forward Transconductance	1.5	—	—	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -0.80A
I <sub>DSS</sub>	Drain-to-Source Leakage Current	—	—	-1.0	μA	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V
		—	—	-25		V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C
I <sub>GSS</sub>	Gate-to-Source Forward Leakage	—	—	-100	nA	V <sub>GS</sub> = -12V
	Gate-to-Source Reverse Leakage	—	—	100		V <sub>GS</sub> = 12V
Q <sub>g</sub>	Total Gate Charge	—	5.8	8.8	nC	I <sub>D</sub> = -1.6A
Q <sub>gs</sub>	Gate-to-Source Charge	—	1.8	2.6		V <sub>DS</sub> = -16V
Q <sub>gd</sub>	Gate-to-Drain ("Miller") Charge	—	2.1	3.1		V <sub>GS</sub> = -4.5V, See Fig. 6 and 9 ③
t <sub>d(on)</sub>	Turn-On Delay Time	—	13	—	ns	V <sub>DD</sub> = -10V
t <sub>r</sub>	Rise Time	—	20	—		I <sub>D</sub> = -1.6A
t <sub>d(off)</sub>	Turn-Off Delay Time	—	21	—		R <sub>G</sub> = 6.0Ω
t <sub>f</sub>	Fall Time	—	18	—		R <sub>D</sub> = 6.1Ω, See Fig. 10 ③
C <sub>iss</sub>	Input Capacitance	—	210	—	pF	V <sub>GS</sub> = 0V
C <sub>oss</sub>	Output Capacitance	—	130	—		V <sub>DS</sub> = -15V
C <sub>rss</sub>	Reverse Transfer Capacitance	—	73	—		f = 1.0MHz, See Fig. 5

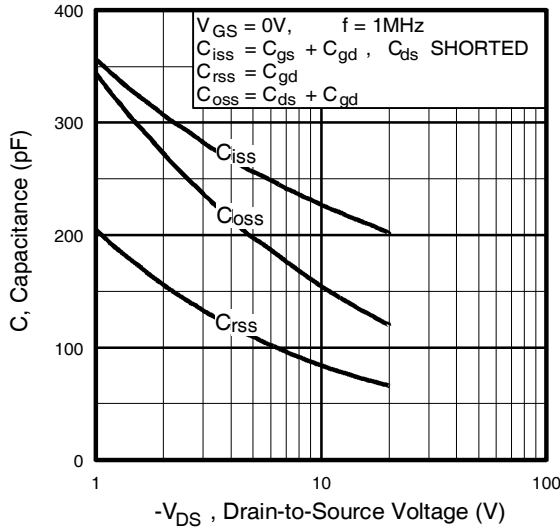
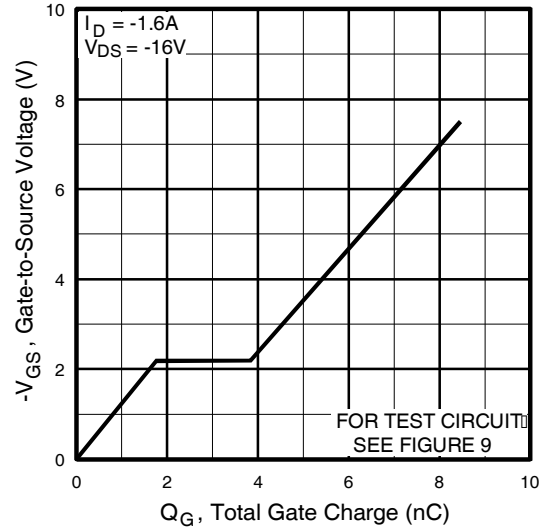
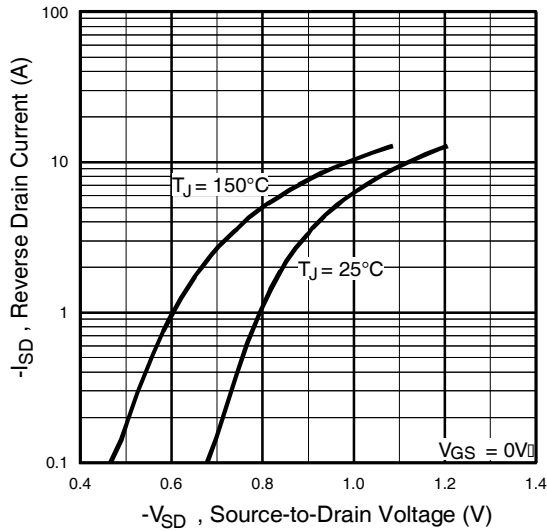
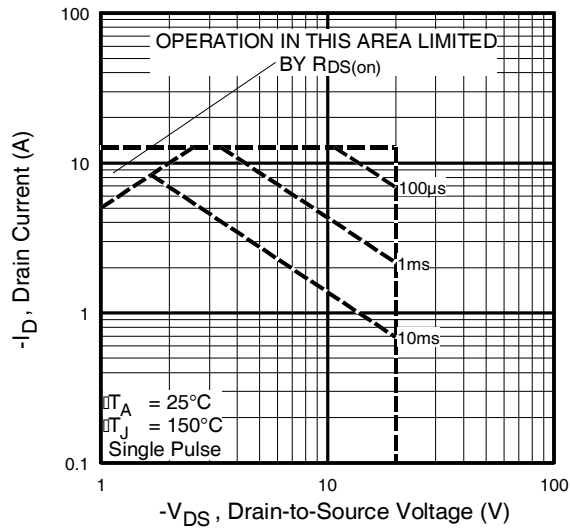
**Source-Drain Ratings and Characteristics**

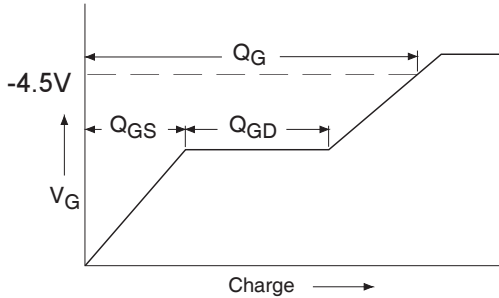
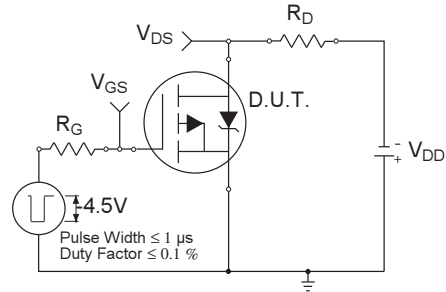
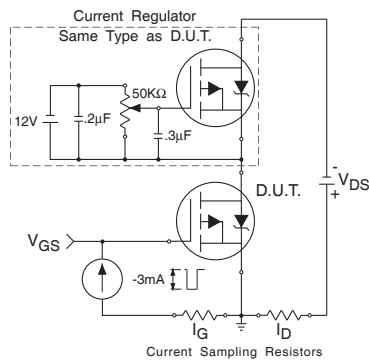
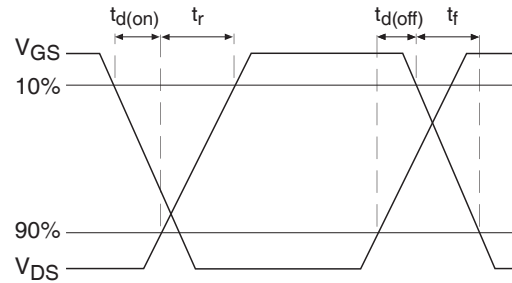
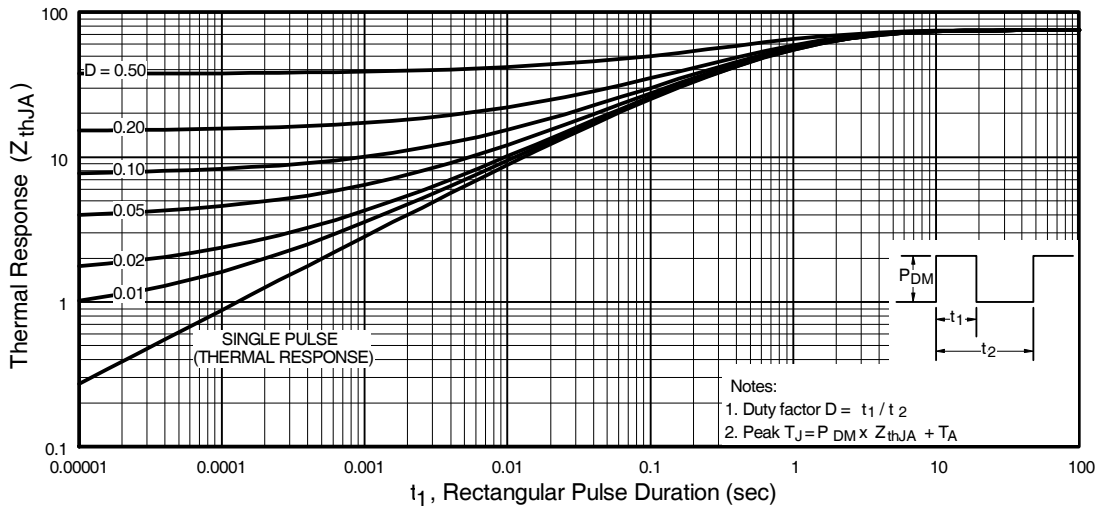
	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	—	—	-1.7	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①	—	—	-13		
V <sub>SD</sub>	Diode Forward Voltage	—	—	-1.2	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = -1.6A, V <sub>GS</sub> = 0V ③
t <sub>rr</sub>	Reverse Recovery Time	—	25	37	ns	T <sub>J</sub> = 25°C, I <sub>F</sub> = -1.6A
Q <sub>rr</sub>	Reverse Recovery Charge	—	15	22	nC	di/dt = -100A/μs ③

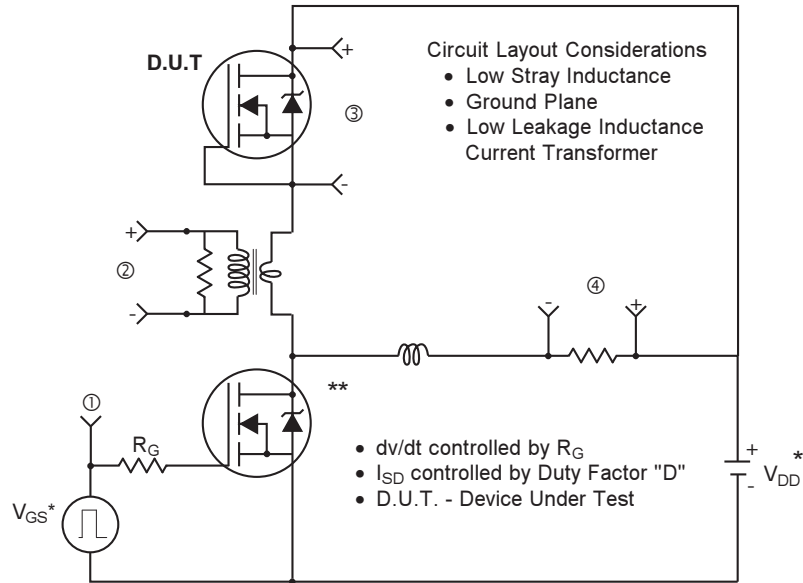
**Notes:**

- ① Repetitive rating; pulse width limited by max. junction temperature. ( See fig. 11 )
- ② I<sub>SD</sub> ≤ -1.6A, di/dt ≤ -100A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>, T<sub>J</sub> ≤ 150°C
- ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ④ Surface mounted on FR-4 board, t ≤ 5sec.

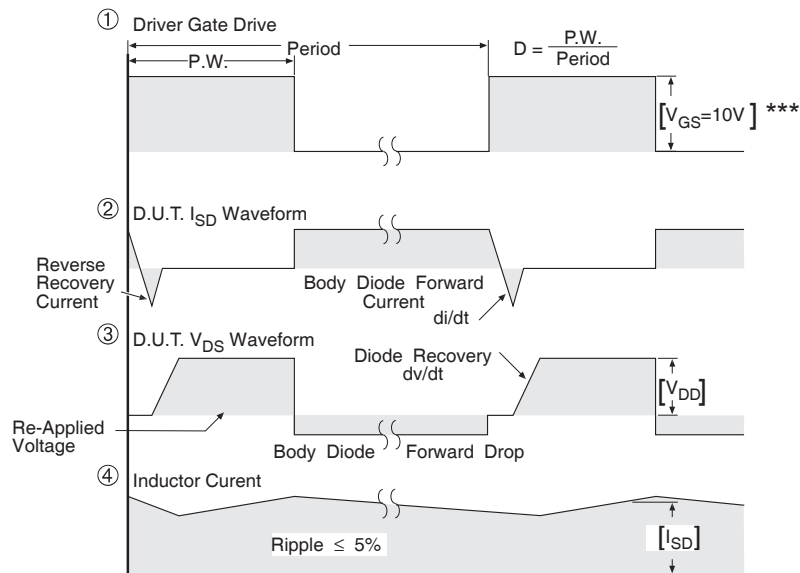

**Fig 1.** Typical Output Characteristics

**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**

**Peak Diode Recovery dv/dt Test Circuit**


\* Reverse Polarity of D.U.T for P-Channel

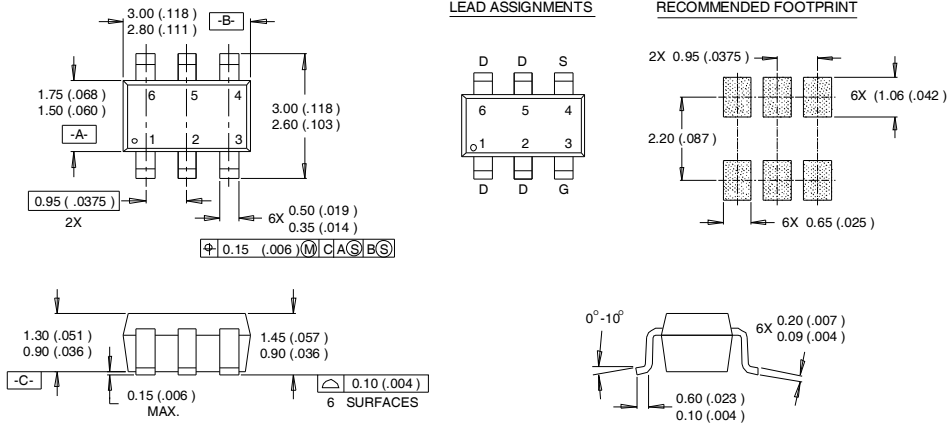


\*\*\*  $V_{GS} = 5.0V$  for Logic Level and 3V Drive Devices

**Fig 12.** For P-channel HEXFET® power MOSFETs

## Micro6 (SOT23 6L) Package Outline

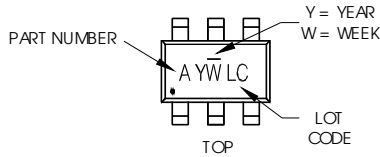
Dimensions are shown in millimeters (inches)



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

## Micro6 (SOT23 6L) Part Marking Information

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



PART NUMBER CODE REFERENCE:

- A = IRLMS1902
- B = IRLMS1503
- C = IRLMS6702
- D = IRLMS5703
- E = IRLMS6802
- F = IRLMS4502
- G = IRLMS2002
- H = IRLMS6803

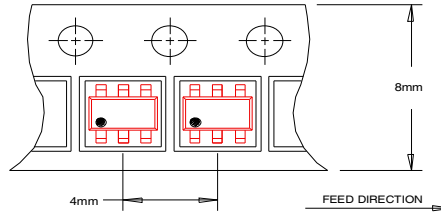
Note: A line above the work week (as shown here) indicates Lead-Free.

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

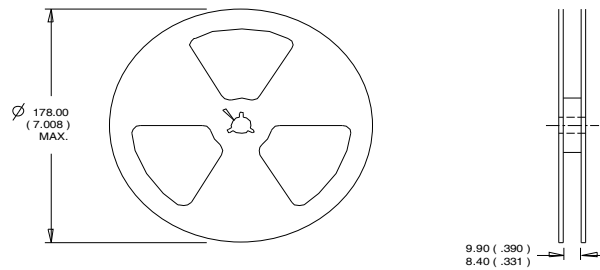
W = (27-52) IF PRECEDED BY A LETTER

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

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

**Micro6 Tape & Reel Information** (Dimensions are shown in millimeters (inches))


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



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 <sup>††</sup> guidelines)	
Moisture Sensitivity Level	Micro6™	MSL1 (per JEDEC J-STD-020D <sup>††</sup> )
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