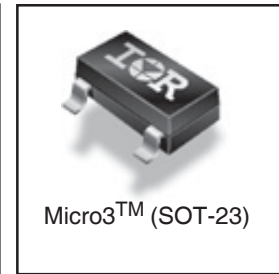
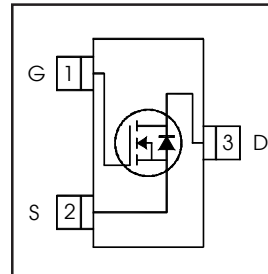


HEXFET® Power MOSFET

$V_{DS}$	<b>100</b>	<b>V</b>
$R_{DS(on) \max}$ (@ $V_{GS} = 10V$ )	<b>220</b>	<b>mΩ</b>
$Q_g$ (typical)	<b>2.5</b>	<b>nC</b>
$I_D$ (@ $T_A = 25^\circ C$ )	<b>1.6</b>	<b>A</b>



**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	
IRLML0100TRPbF-1	Micro3™ (SOT-23)	Tape and Reel	3000	IRLML0100TRPbF-1

**Absolute Maximum Ratings**

Symbol	Parameter	Max.	Units
$V_{DS}$	Drain-Source Voltage	100	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	1.6	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	1.3	
$I_{DM}$	Pulsed Drain Current	7.0	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation	1.3	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation	0.8	
	Linear Derating Factor	0.01	
$V_{GS}$	Gate-to-Source Voltage	± 16	V
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to + 150	°C

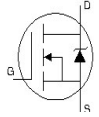
**Thermal Resistance**

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	

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

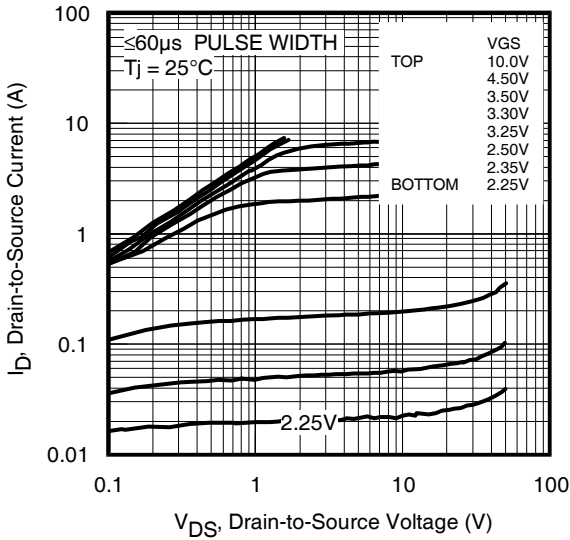
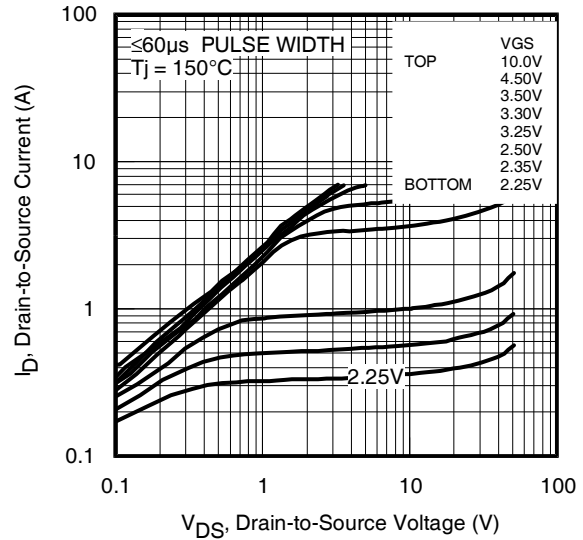
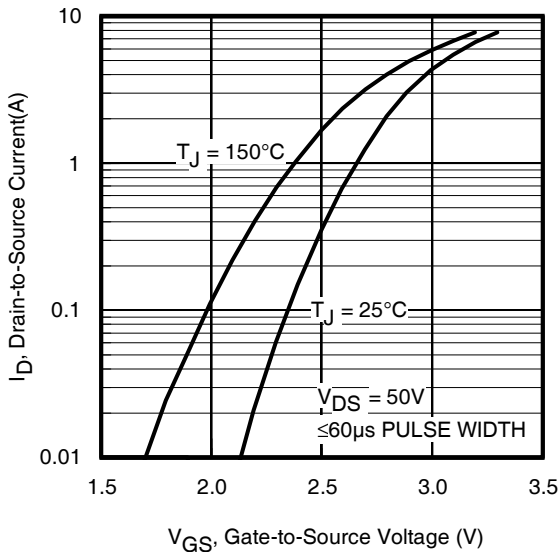
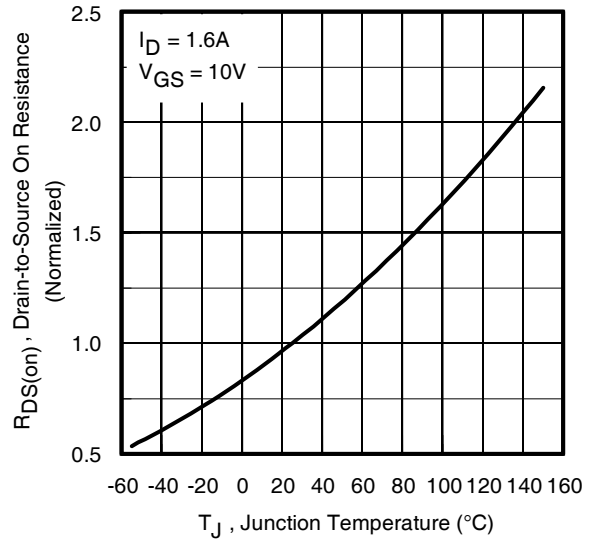
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source Breakdown Voltage	100	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
ΔV <sub>(BR)DSS</sub> /ΔT <sub>J</sub>	Breakdown Voltage Temp. Coefficient	—	0.10	—	V/°C	Reference to 25°C, I <sub>D</sub> = 1mA
R <sub>DS(on)</sub>	Static Drain-to-Source On-Resistance	—	190	235	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 1.3A ②
		—	178	220		V <sub>GS</sub> = 10V, I <sub>D</sub> = 1.6A ②
V <sub>GS(th)</sub>	Gate Threshold Voltage	1.0	—	2.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 25μA
I <sub>DSS</sub>	Drain-to-Source Leakage Current	—	—	20	μA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V
		—	—	250		V <sub>DS</sub> = 100V, 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> = 16V
	Gate-to-Source Reverse Leakage	—	—	-100		V <sub>GS</sub> = -16V
R <sub>G</sub>	Internal Gate Resistance	—	1.3	—	Ω	
g <sub>fs</sub>	Forward Transconductance	5.7	—	—	S	V <sub>DS</sub> = 50V, I <sub>D</sub> = 1.6A
Q <sub>g</sub>	Total Gate Charge	—	2.5	—	nC	I <sub>D</sub> = 1.6A
Q <sub>gs</sub>	Gate-to-Source Charge	—	0.5	—		V <sub>DS</sub> = 50V
Q <sub>gd</sub>	Gate-to-Drain ("Miller") Charge	—	1.2	—		V <sub>GS</sub> = 4.5V ②
t <sub>d(on)</sub>	Turn-On Delay Time	—	2.2	—	ns	V <sub>DD</sub> = 50V ②
t <sub>r</sub>	Rise Time	—	2.1	—		I <sub>D</sub> = 1.0A
t <sub>d(off)</sub>	Turn-Off Delay Time	—	9.0	—		R <sub>G</sub> = 6.8Ω
t <sub>f</sub>	Fall Time	—	3.6	—		V <sub>GS</sub> = 4.5V
C <sub>iss</sub>	Input Capacitance	—	290	—	pF	V <sub>GS</sub> = 0V
C <sub>oss</sub>	Output Capacitance	—	27	—		V <sub>DS</sub> = 25V
C <sub>riss</sub>	Reverse Transfer Capacitance	—	13	—		f = 1.0MHz

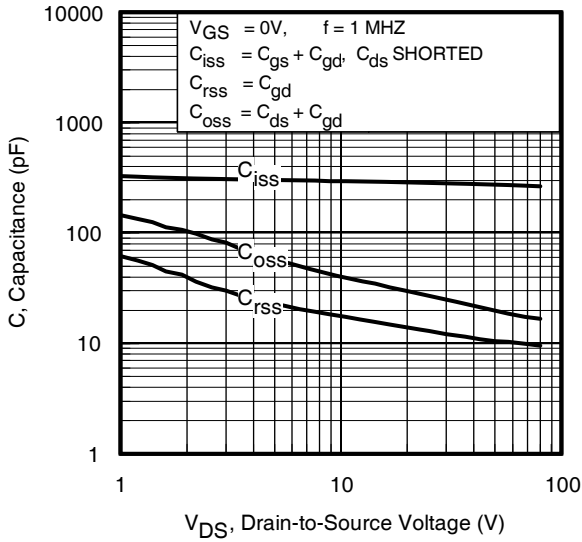
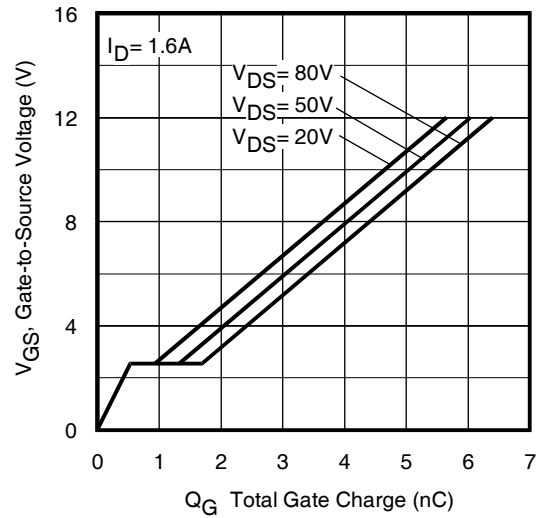
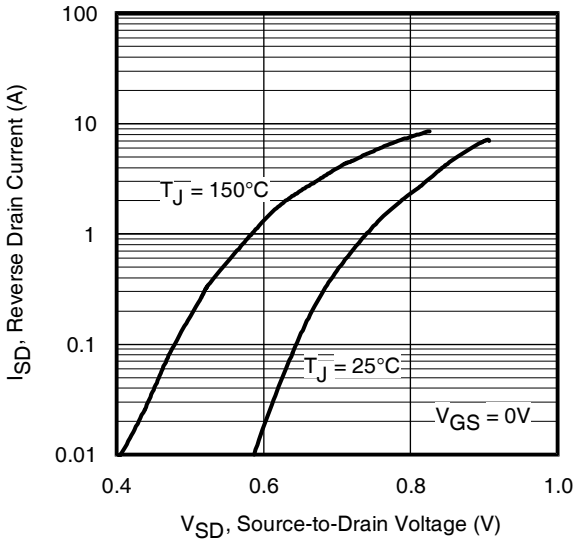
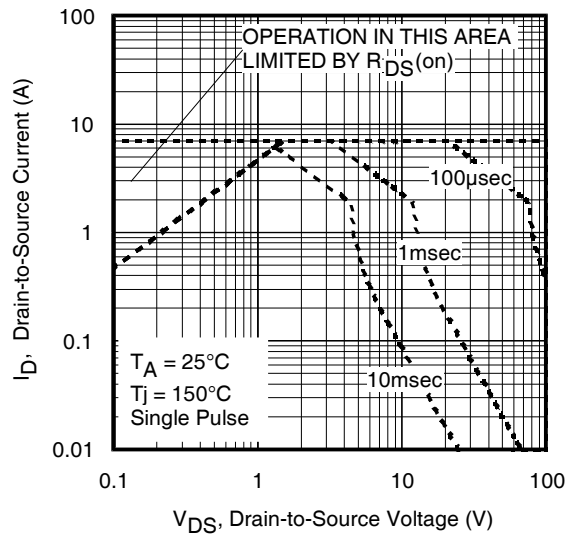
**Source - Drain Ratings and Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	—	—	1.1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①	—	—	7.0		
V <sub>SD</sub>	Diode Forward Voltage	—	—	1.3	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = 1.1A, V <sub>GS</sub> = 0V ②
t <sub>rr</sub>	Reverse Recovery Time	—	20	30	ns	T <sub>J</sub> = 25°C, V <sub>R</sub> = 50V, I <sub>F</sub> = 1.1A
Q <sub>rr</sub>	Reverse Recovery Charge	—	13	20	nC	di/dt = 100A/μs ②

**Notes:**

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width ≤ 400μs; duty cycle ≤ 2%.
- ③ Surface mounted on 1 in square Cu board
- ④ Refer to [application note #AN-994](#).


**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**

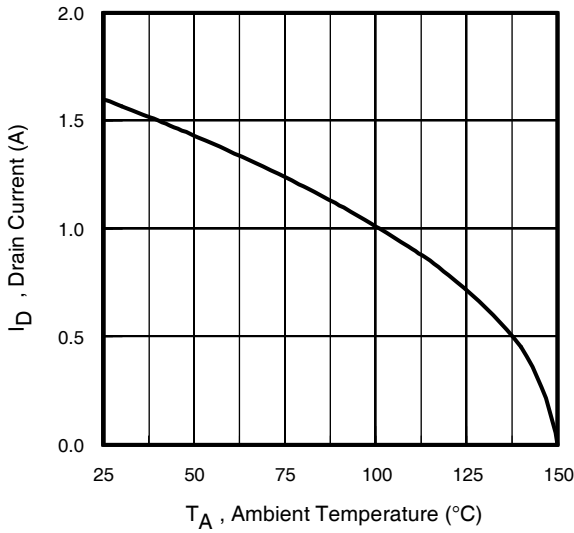


Fig 9. Maximum Drain Current Vs. Ambient Temperature

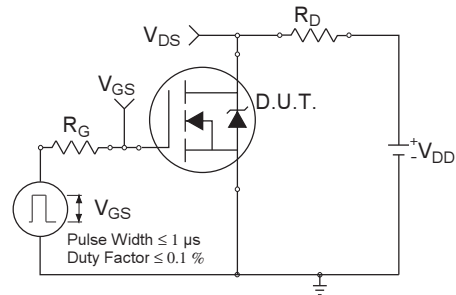


Fig 10a. Switching Time Test Circuit

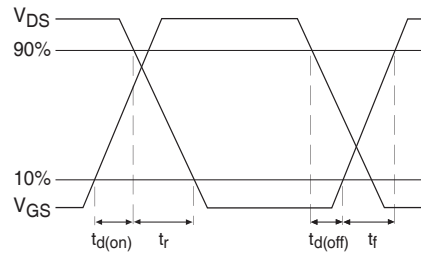


Fig 10b. Switching Time Waveforms

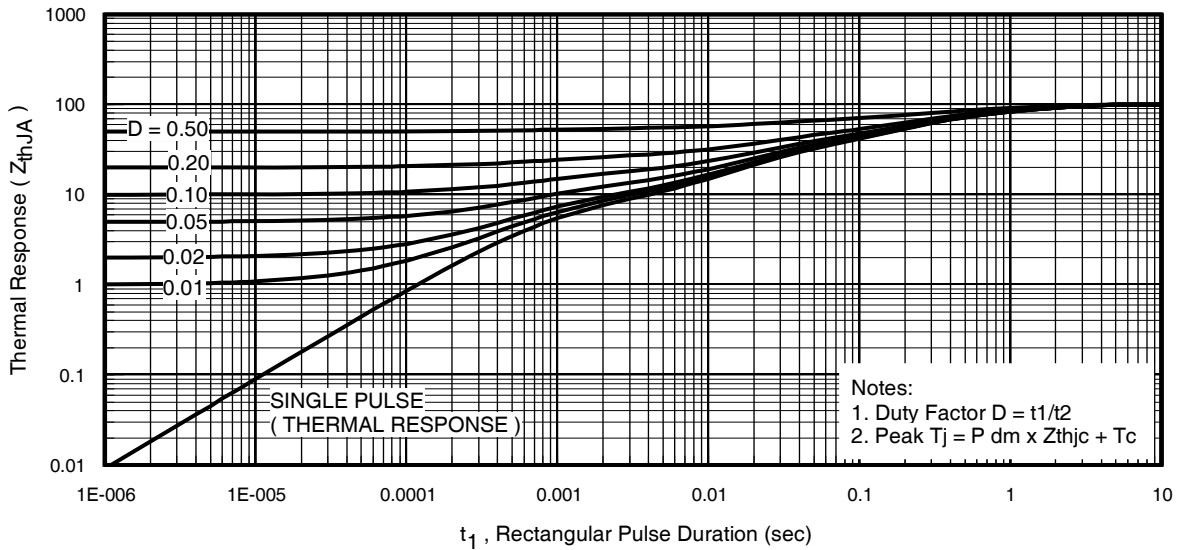
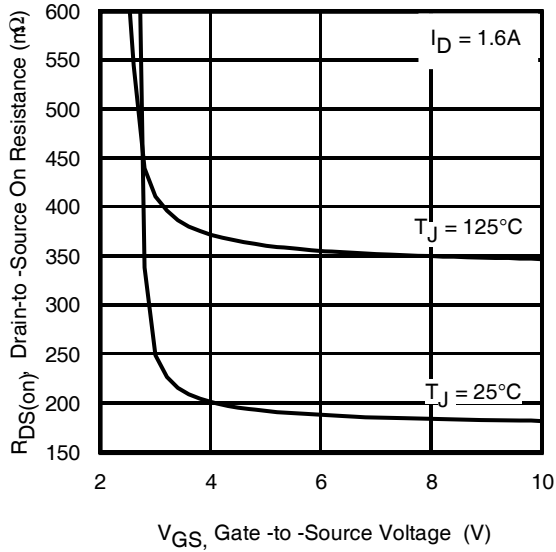
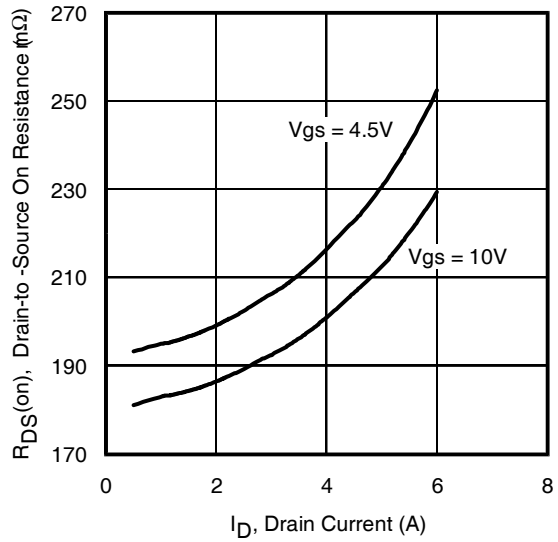
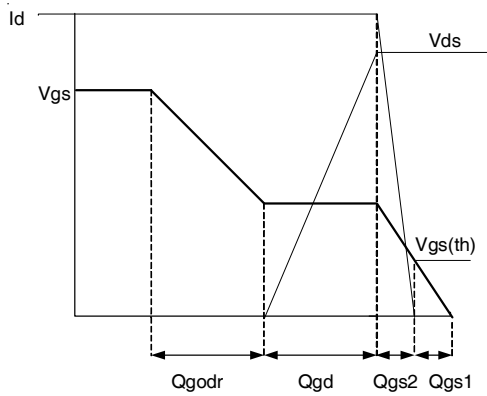
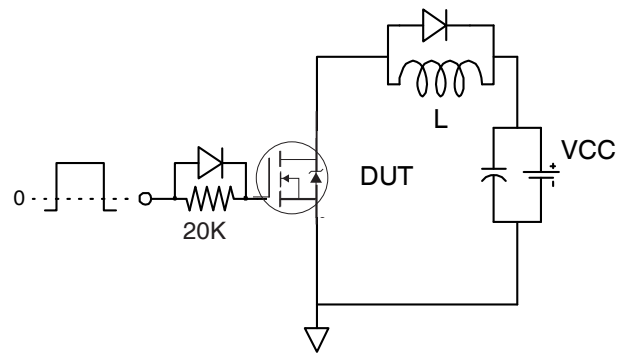
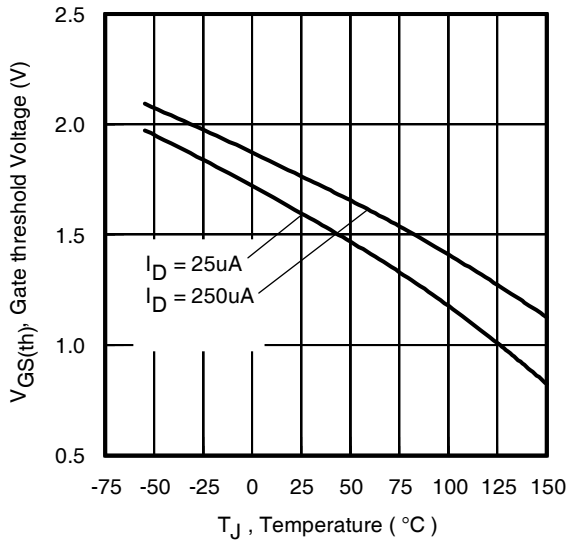
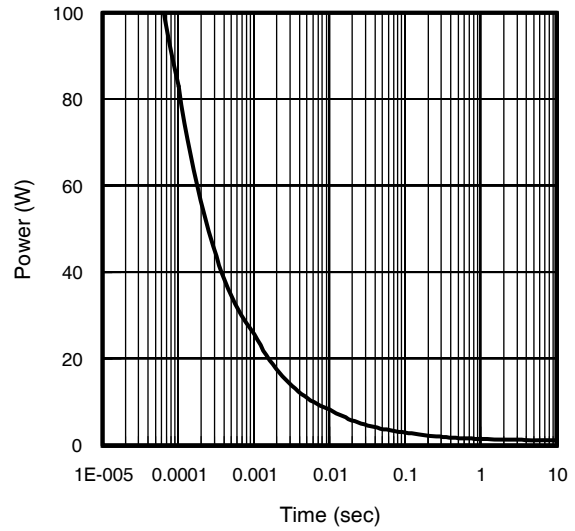


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient


**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



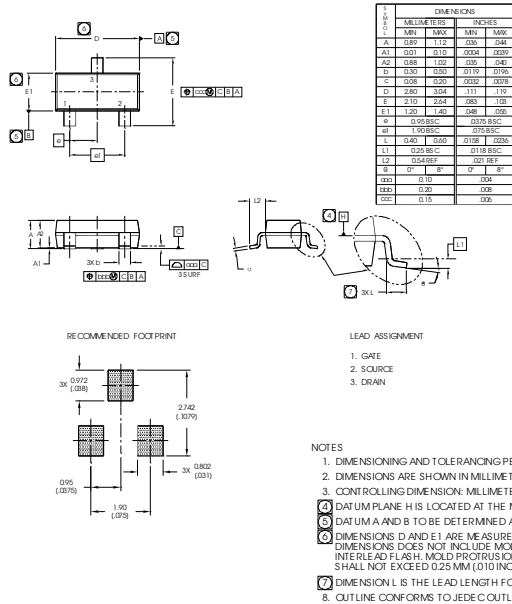
**Fig 16.** Typical Power Vs. Time



# IRLML0100PbF-1

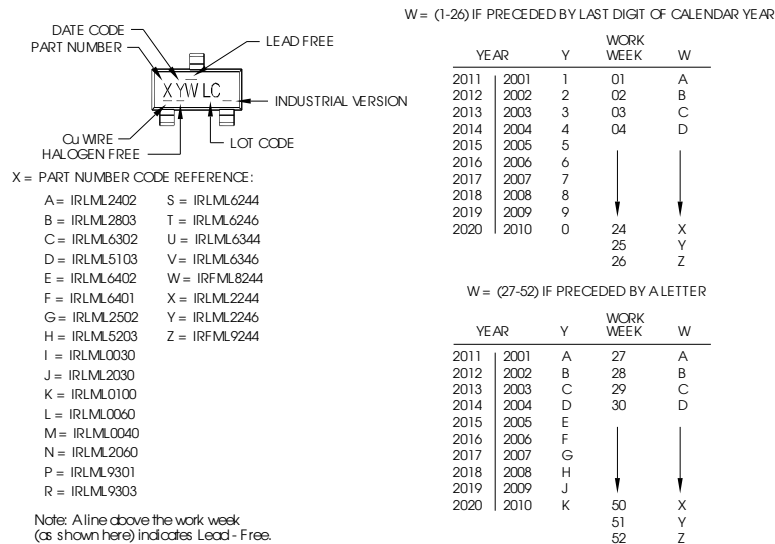
## Micro3 (SOT-23) (Lead-Free) Package Outline

Dimensions are shown in millimeters (inches)



SYMBOL	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.89	1.12	.036	.044
A1	0.01	0.10	.0004	.0039
A2	0.88	1.02	.035	.040
b	0.30	0.50	.0119	.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	.055
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	
L2	0.54 REF		.021 REF	
θ	0° 8°		0° 8°	
aaa	0.10		.004	
bbb	0.20		.008	
ccc	0.15		.006	

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



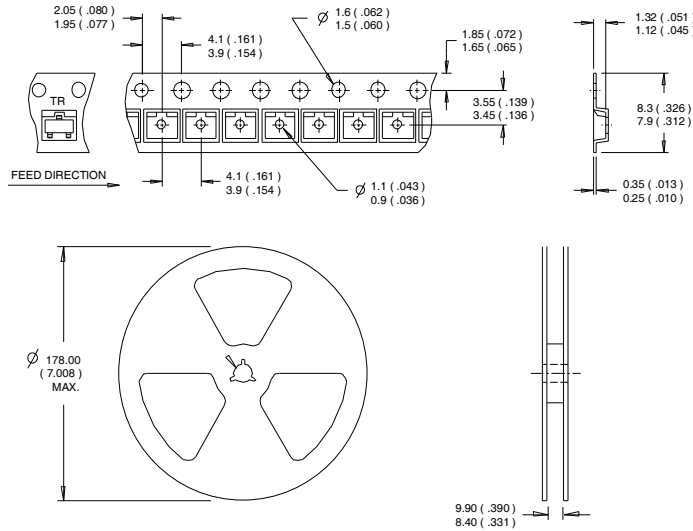
Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>





### 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 <sup>††</sup> guidelines)	
Moisture Sensitivity Level	Micro3™ (SOT-23)	ML1 (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

#### Revision History

Date	Comment
10/27/2014	• Updated partmarking to reflect Industrial partmarking on page 8.

International  
 Rectifier

IR WORLD HEADQUARTERS: 101 N. Sepulveda Blvd., El Segundo, California 90245, USA

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