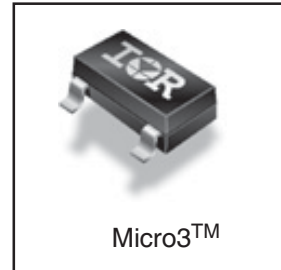
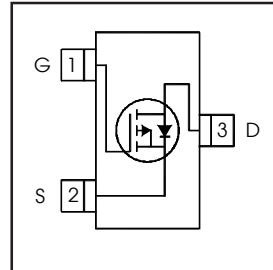


HEXFET® Power MOSFET

V_{DS}	-30	V
$R_{DS(on) \text{ max}}$ (@ $V_{GS} = -10V$)	98	mΩ
$R_{DS(on) \text{ max}}$ (@ $V_{GS} = -4.5V$)	165	
Q_g (typical)	9.5	nC
I_D (@ $T_A = 25^\circ C$)	-3.0	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	
IRLML5203TRPbF-1	Micro3™ (SOT-23)	Tape and Reel	3000	IRLML5203TRPbF-1

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	-3.0	A
I_D @ $T_A = 70^\circ C$	Continuous Drain Current, V_{GS} @ -10V	-2.4	
I_{DM}	Pulsed Drain Current ①	-24	
P_D @ $T_A = 25^\circ C$	Power Dissipation	1.25	W
P_D @ $T_A = 70^\circ C$	Power Dissipation	0.80	
	Linear Derating Factor	10	
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

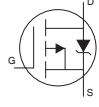
Thermal Resistance

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient③	100	°C/W

Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-30	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.019	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	98	m Ω	$V_{GS} = -10V, I_D = -3.0A$ ②
		—	—	165		$V_{GS} = -4.5V, I_D = -2.6A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	—	-2.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
g_{fs}	Forward Transconductance	3.1	—	—	S	$V_{DS} = -10V, I_D = -3.0A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	μA	$V_{DS} = -24V, V_{GS} = 0V$
		—	—	-5.0		$V_{DS} = -24V, V_{GS} = 0V, T_J = 70^\circ\text{C}$
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	—	9.5	14	nC	$I_D = -3.0A$
Q_{gs}	Gate-to-Source Charge	—	2.3	3.5		$V_{DS} = -24V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	1.6	2.4		$V_{GS} = -10V$ ②
$t_{d(on)}$	Turn-On Delay Time	—	12	—	ns	$V_{DD} = -15V$ ②
t_r	Rise Time	—	18	—		$I_D = -1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	88	—		$R_G = 6.0\Omega$
t_f	Fall Time	—	52	—		$V_{GS} = -10V$
C_{iss}	Input Capacitance	—	510	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	71	—		$V_{DS} = -25V$
C_{rss}	Reverse Transfer Capacitance	—	43	—		$f = 1.0MHz$

Source-Drain Ratings and Characteristics

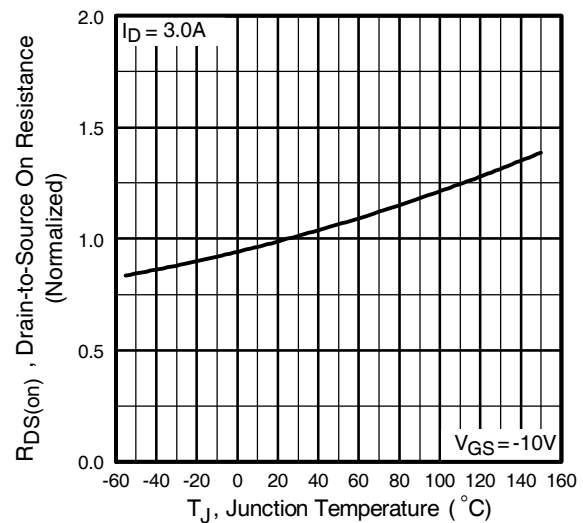
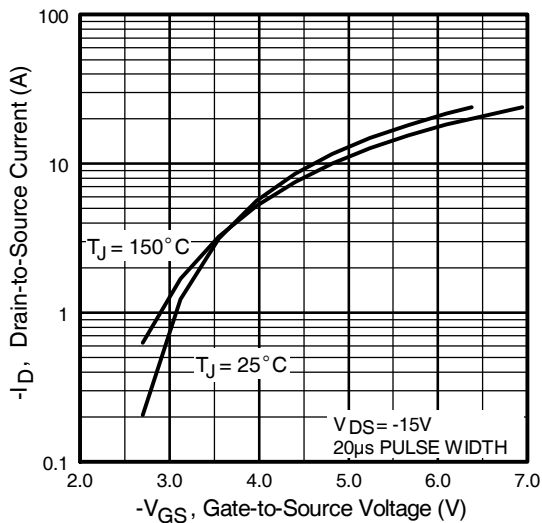
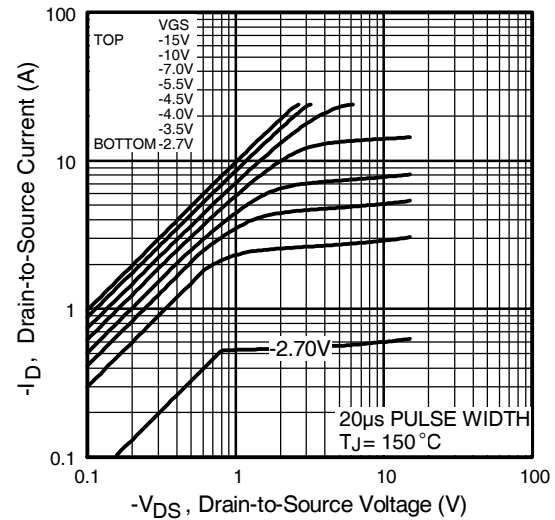
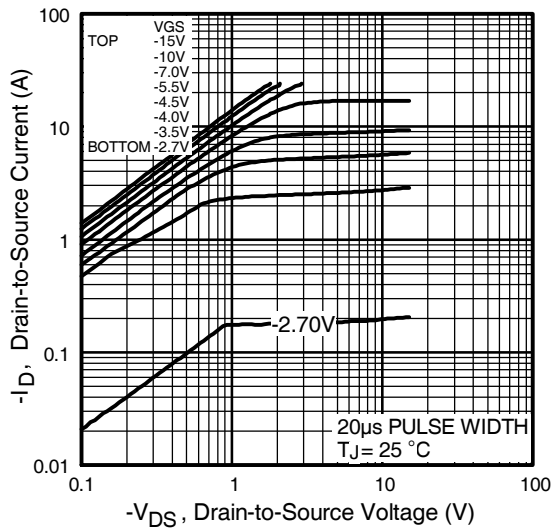
	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-1.3	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-24		
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	$T_J = 25^\circ\text{C}, I_S = -1.3A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time	—	17	26	ns	$T_J = 25^\circ\text{C}, I_F = -1.3A$
Q_{rr}	Reverse Recovery Charge	—	12	18	nC	$di/dt = -100A/\mu s$ ②

Notes:

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

② Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.

③ Surface mounted on FR-4 board, $t \leq 5sec$.



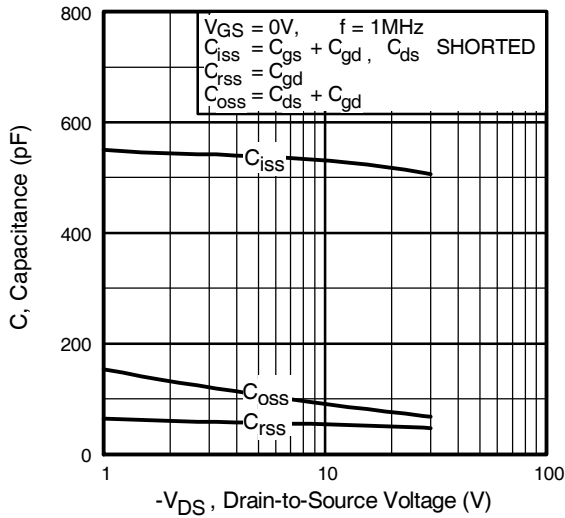


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

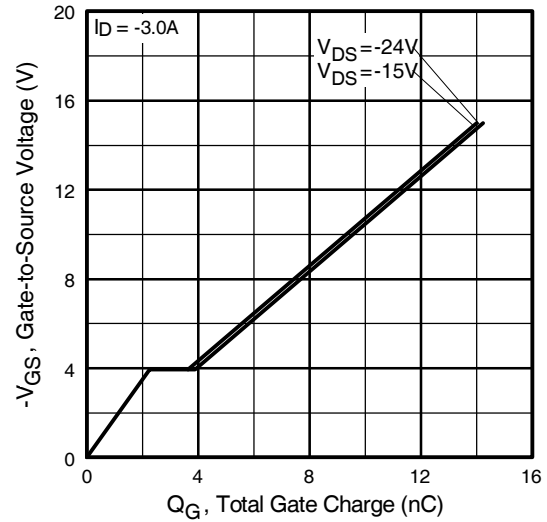


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

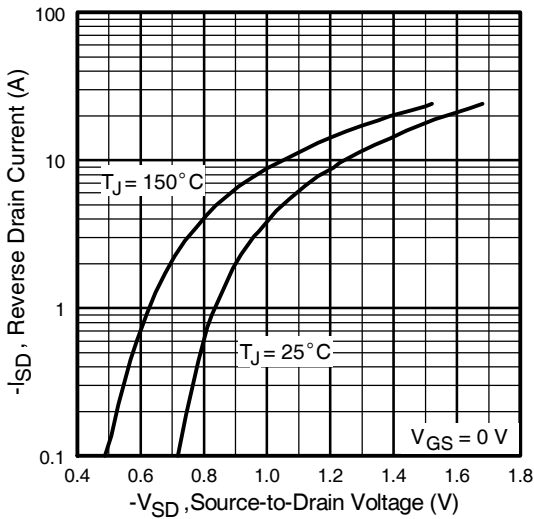


Fig 7. Typical Source-Drain Diode Forward Voltage

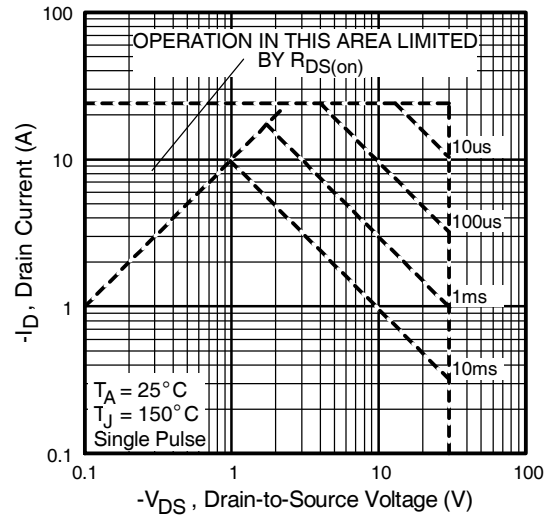


Fig 8. Maximum Safe Operating Area

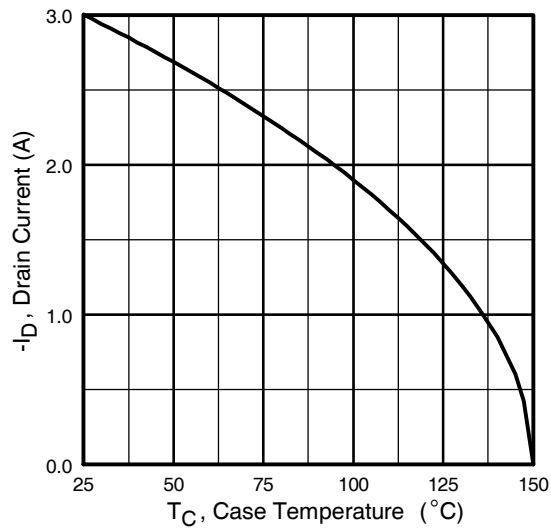


Fig 9. Maximum Drain Current Vs. Case Temperature

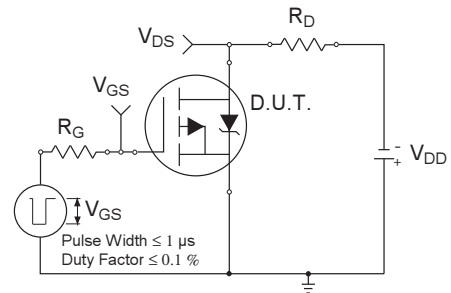


Fig 10a. Switching Time Test Circuit

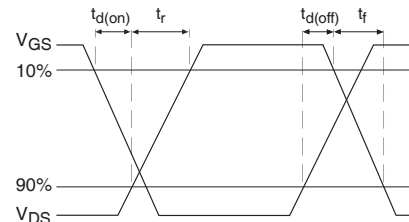


Fig 10b. Switching Time Waveforms

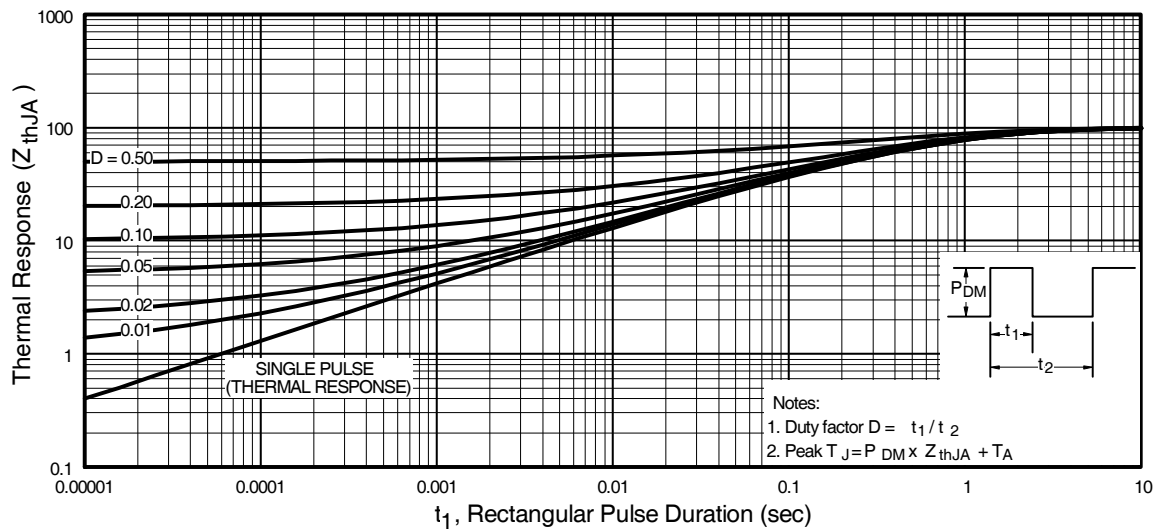


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

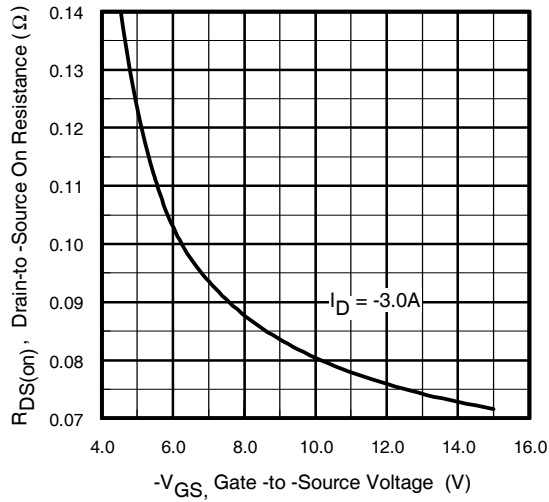


Fig 11. Typical On-Resistance Vs. Gate Voltage

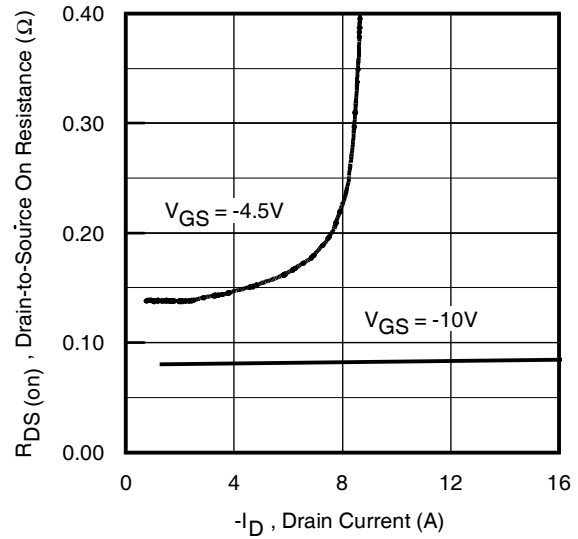


Fig 12. Typical On-Resistance Vs. Drain Current

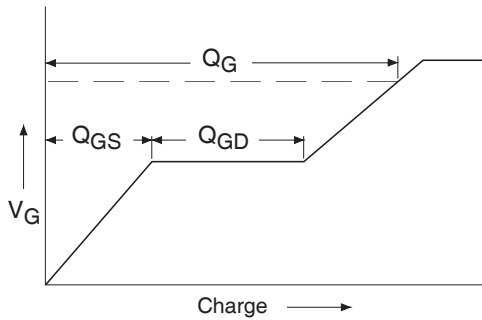


Fig 13a. Basic Gate Charge Waveform

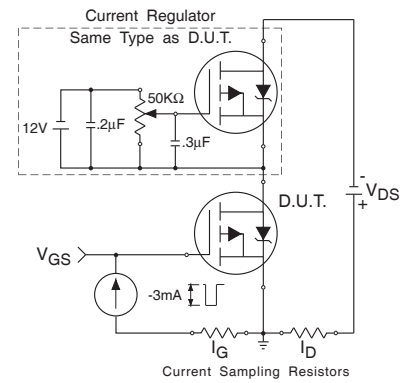


Fig 13b. Gate Charge Test Circuit

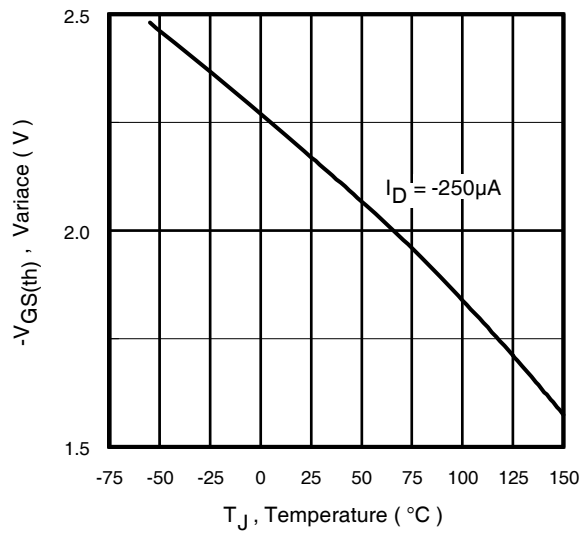


Fig 14. Threshold Voltage Vs. Temperature

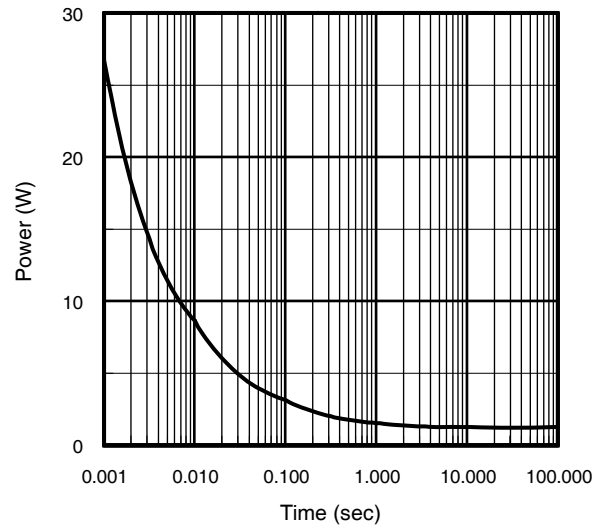


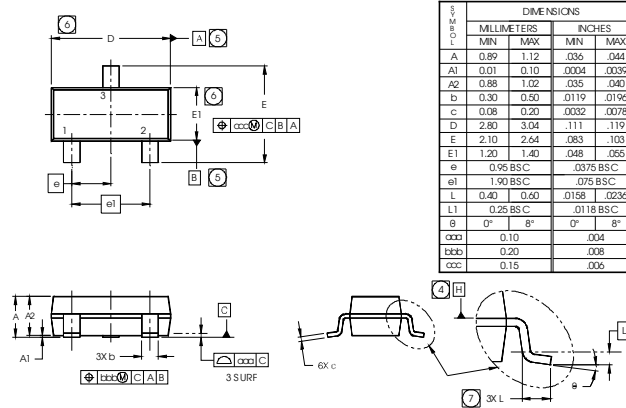
Fig 15. Typical Power Vs. Time



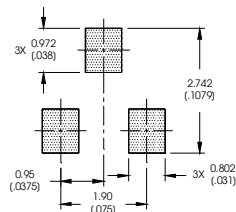
IRLML5203PbF-1

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

Dimensions are shown in millimeters (inches)



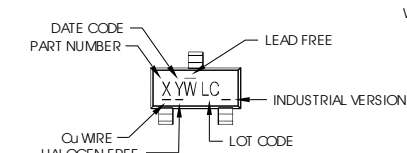
RECOMMENDED FOOTPRINT



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. DATUM A 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

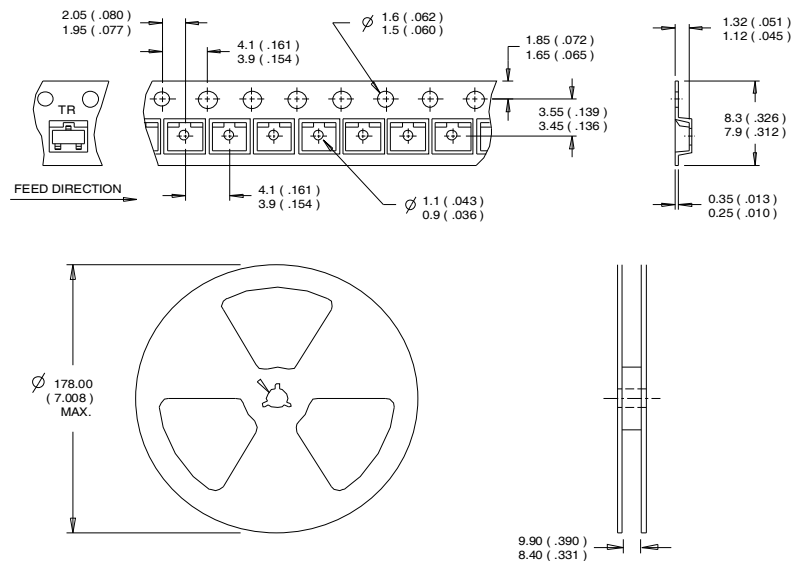
W = (27-52) IF PRECEDED BY A LETTER

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)	MSL1 (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 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/>