

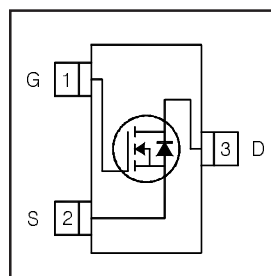
International
IR Rectifier

PD - 97535A

IRLML6244TRPbF

HEXFET® Power MOSFET

V_{DS}	20	V
$V_{GS\ Max}$	±12	V
$R_{DS(on)\ max}$ (@ $V_{GS} = 4.5V$)	21.0	mΩ
$R_{DS(on)\ max}$ (@ $V_{GS} = 2.5V$)	27.0	mΩ



Application(s)

- Load/ System Switch

Features and Benefits

Features

Low $R_{DS(on)}$ (< 21mΩ)
Industry-standard SOT-23 Package
RoHS compliant containing no lead, no bromide and no halogen

results in

⇒

Benefits

Lower conduction losses
Multi-vendor compatibility
Environmentally friendly

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	6.3	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	5.1	
I_{DM}	Pulsed Drain Current	32	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation	1.3	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation	0.80	
	Linear Derating Factor	0.01	
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 @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	20	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	7.8	—	mV/ $^\circ\text{C}$	Reference to 25°C , $I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	16.0	21.0	m Ω	$V_{GS} = 4.5V, I_D = 6.3A$ ②
		—	22.0	27.0		$V_{GS} = 2.5V, I_D = 5.1A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	0.5	0.9	1.1	V	$V_{DS} = V_{GS}, I_D = 10\mu A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	$V_{DS} = 16V, V_{GS} = 0V$
		—	—	150		$V_{DS} = 16V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
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	—	1.7	—	Ω	
g_{fs}	Forward Transconductance	17	—	—	S	$V_{DS} = 10V, I_D = 6.3A$
Q_g	Total Gate Charge	—	8.9	—	nC	$I_D = 6.3A$
Q_{gs}	Gate-to-Source Charge	—	0.68	—		$V_{DS} = 10V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	4.4	—		$V_{GS} = 4.5V$ ②
$t_{d(on)}$	Turn-On Delay Time	—	4.9	—	ns	$V_{DD} = 10V$ ②
t_r	Rise Time	—	7.5	—		$I_D = 1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	19	—		$R_G = 6.8\Omega$
t_f	Fall Time	—	12	—		$V_{GS} = 4.5V$
C_{iss}	Input Capacitance	—	700	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	140	—		$V_{DS} = 16V$
C_{rss}	Reverse Transfer Capacitance	—	98	—		$f = 1.0\text{MHz}$

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	—	—	32		
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$T_J = 25^\circ\text{C}, I_S = 6.3A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time	—	12	18	ns	$T_J = 25^\circ\text{C}, V_R = 15V, I_F = 1.3A$
Q_{rr}	Reverse Recovery Charge	—	5.1	7.7	nC	$di/dt = 100A/\mu s$ ②

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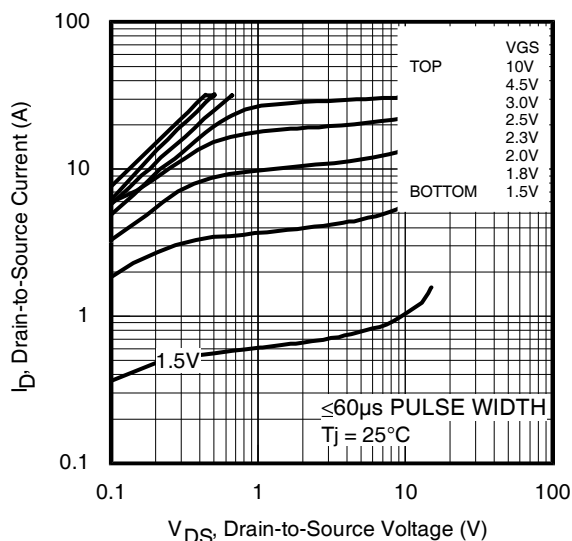


Fig 1. Typical Output Characteristics

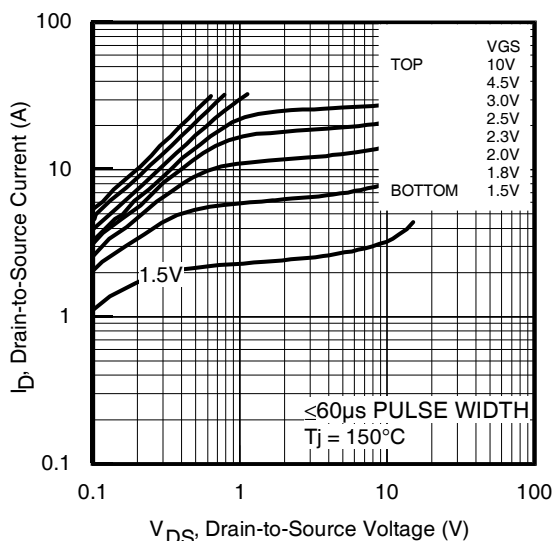


Fig 2. Typical Output Characteristics

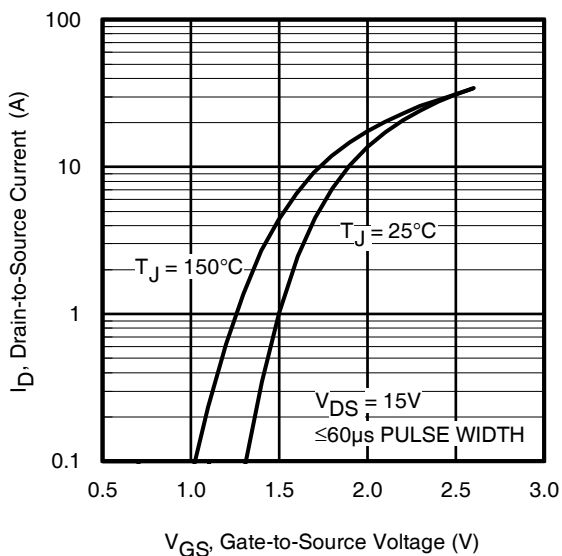


Fig 3. Typical Transfer Characteristics

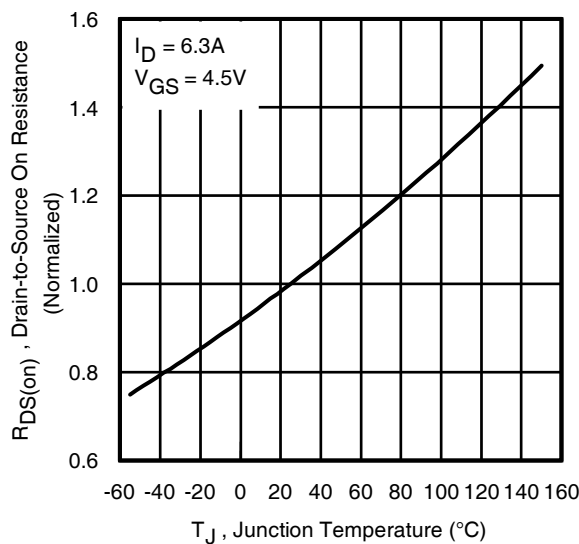


Fig 4. Normalized On-Resistance
vs. Temperature

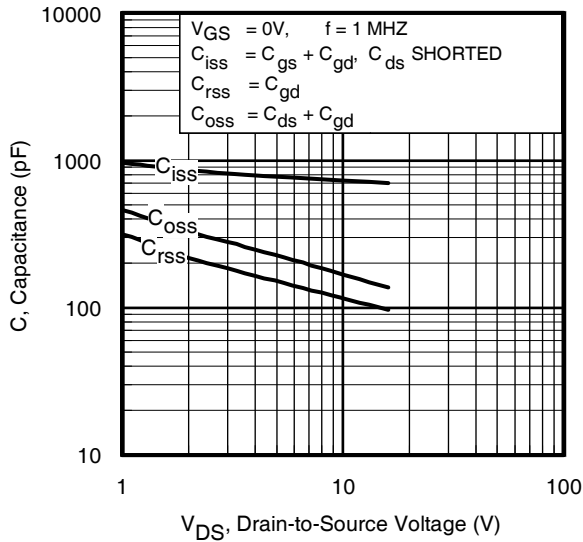


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

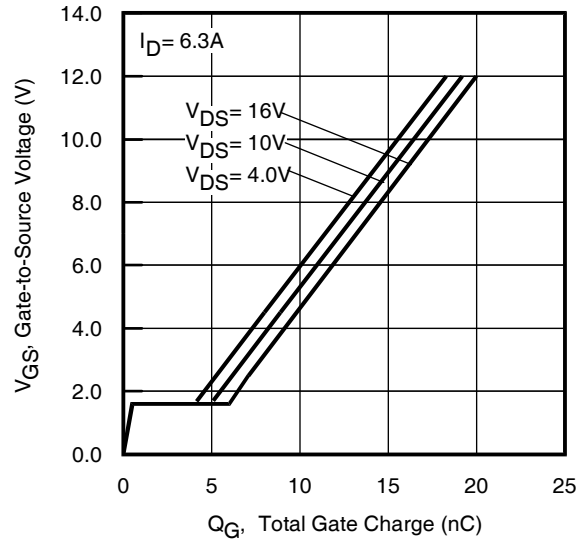


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

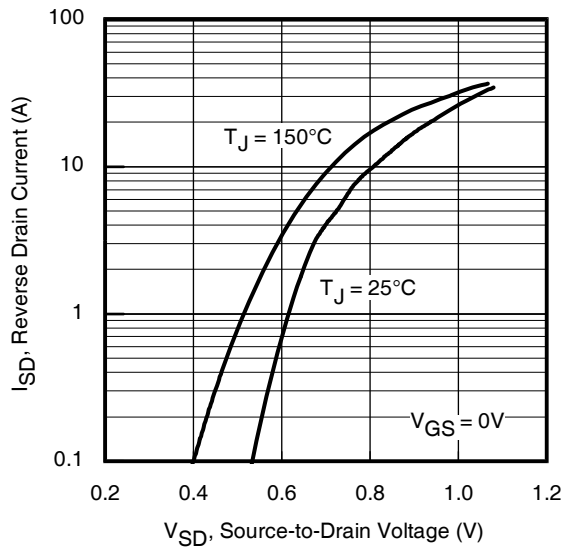


Fig 7. Typical Source-Drain Diode Forward Voltage

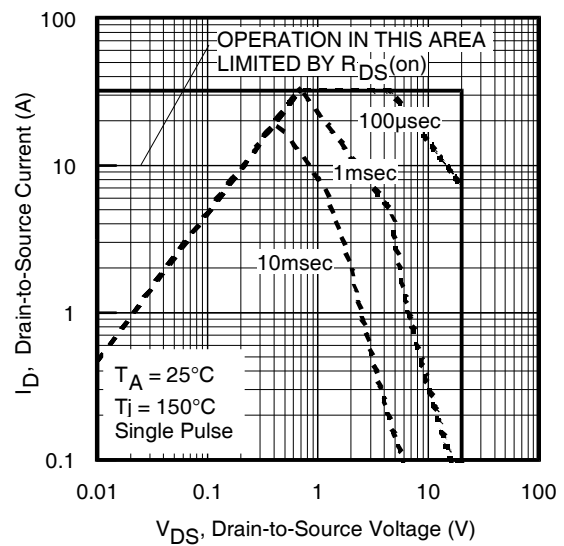


Fig 8. Maximum Safe Operating Area

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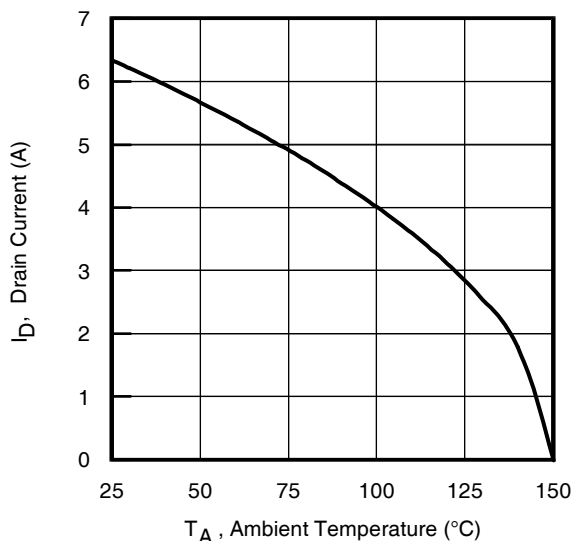


Fig 9. Maximum Drain Current vs. Ambient Temperature

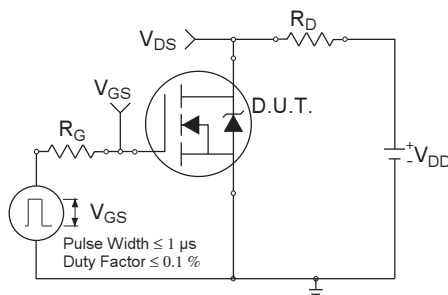


Fig 10a. Switching Time Test Circuit

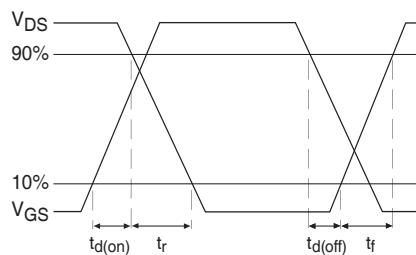


Fig 10b. Switching Time Waveforms

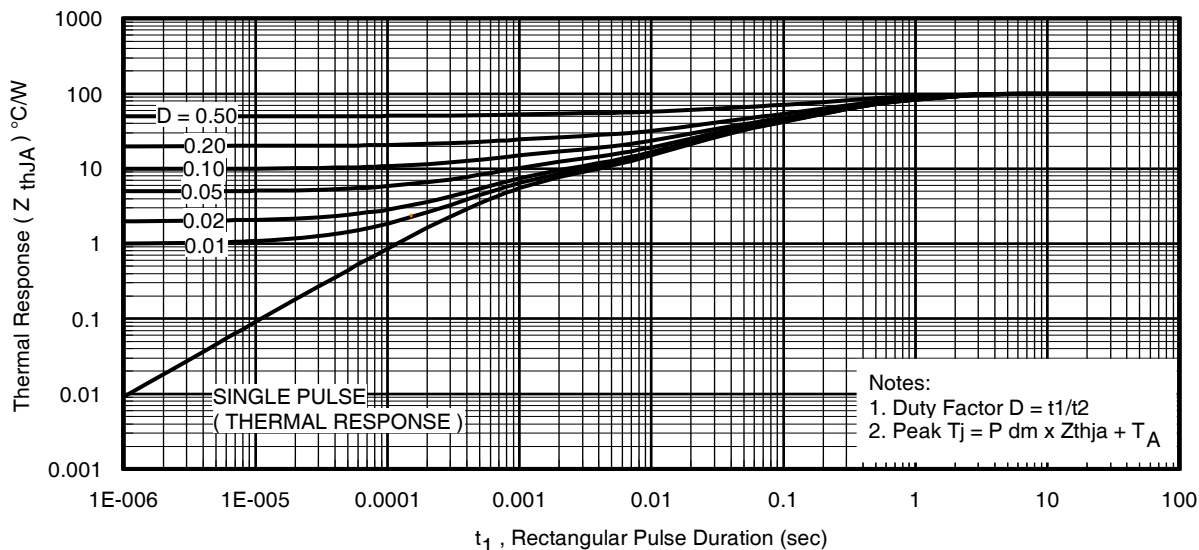


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

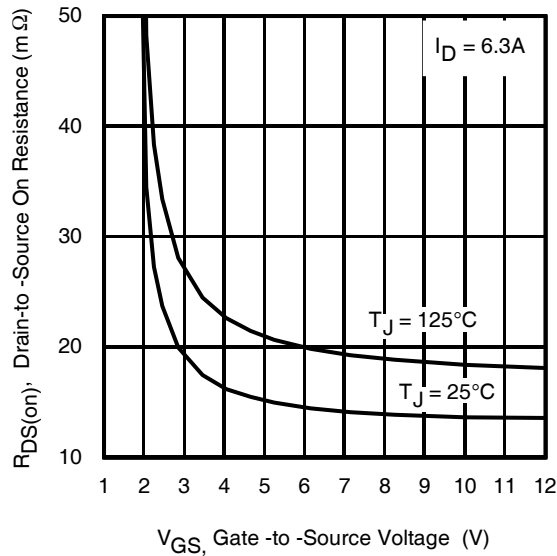


Fig 12. Typical On-Resistance vs. Gate Voltage

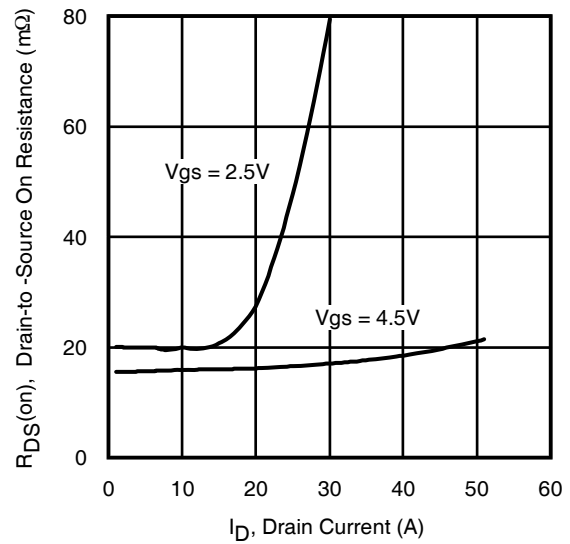


Fig 13. Typical On-Resistance vs. Drain Current

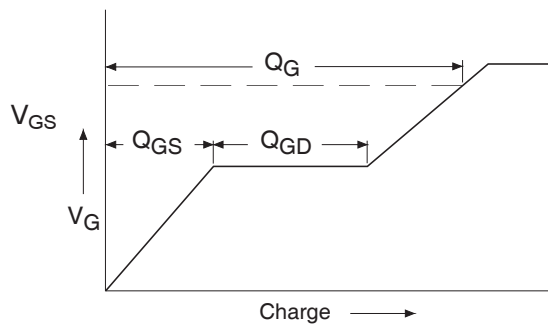


Fig 14a. Basic Gate Charge Waveform

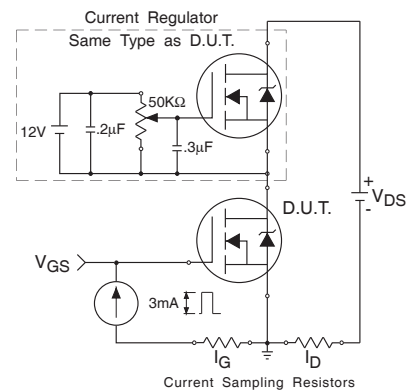


Fig 14b. Gate Charge Test Circuit

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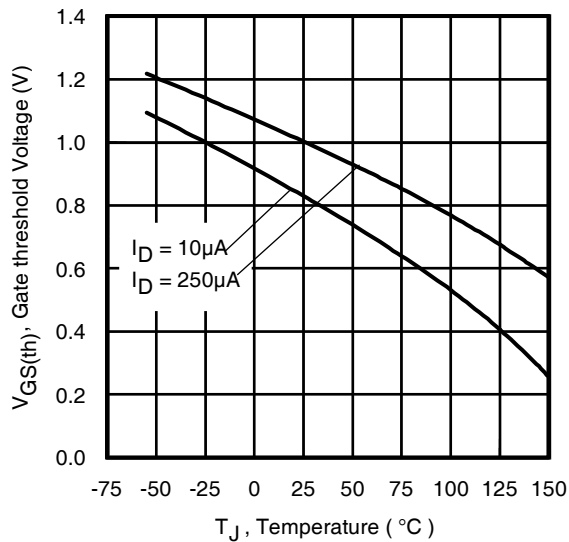


Fig 15. Typical Threshold Voltage vs. Junction Temperature

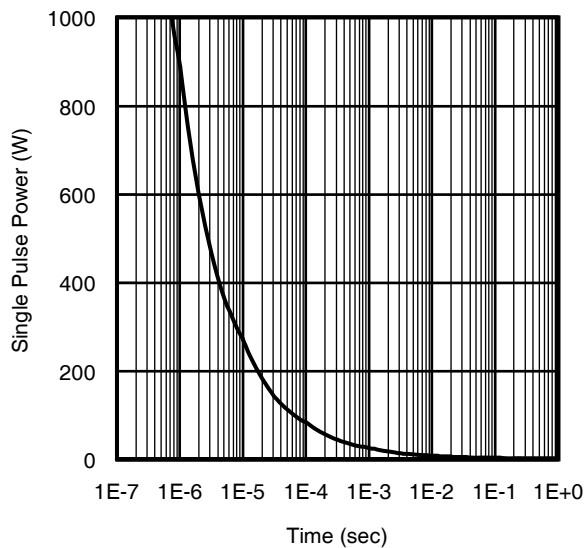


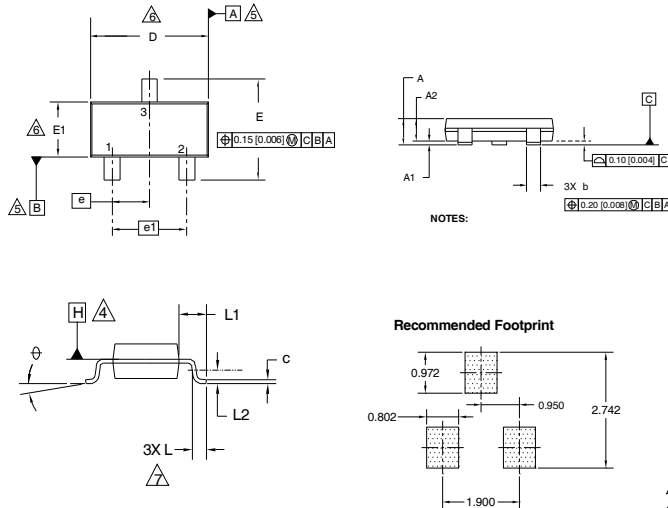
Fig 16. Typical Power vs. Time

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Micro3 (SOT-23) Package Outline

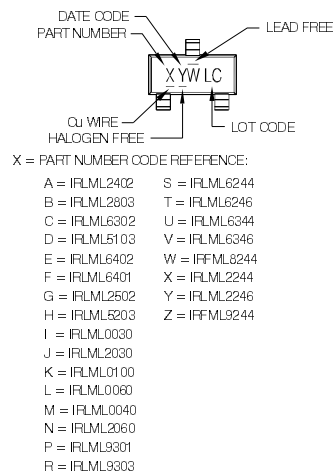
Dimensions are shown in millimeters (inches)



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
Ø	0	8	0	8

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

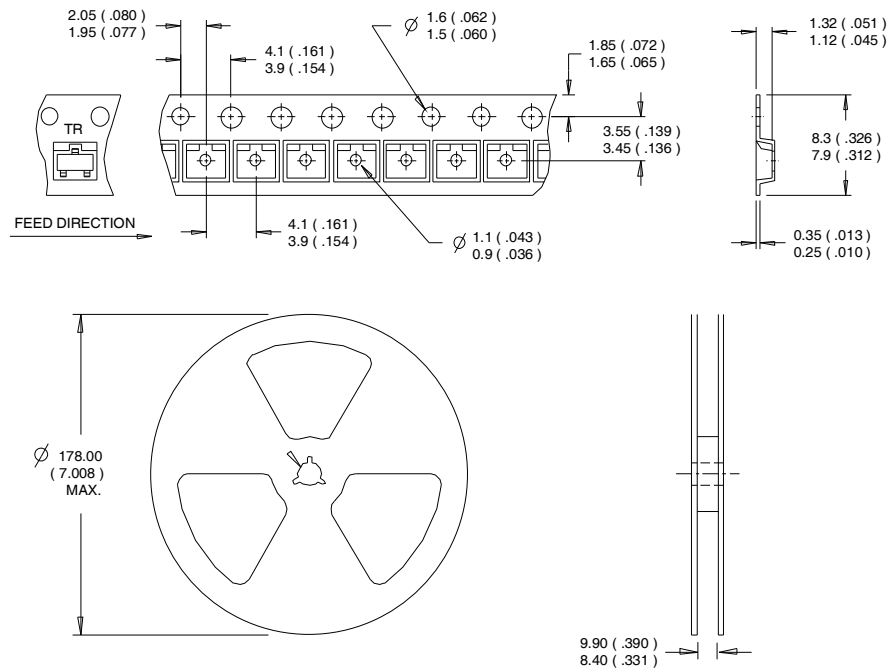
Notes: This part marking information applies to devices produced after 02/26/2001



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/>

IRLML6244TRPbF

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Orderable part number	Package Type	Standard Pack		Note
		Form	Quantity	
IRLML6244TRPbF	Micro3 (SOT-23)	Tape and Reel	3000	

Qualification information[†]

Qualification level	Consumer ^{††} (per JEDEC JESD47F ^{†††} guidelines)	
Moisture Sensitivity Level	Micro3 (SOT-23)	MSL 1 (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 ≤ 400μs; duty cycle ≤ 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.

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Visit us at www.irf.com for sales contact information.03/12

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