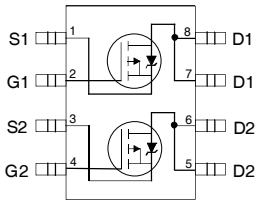
International
IOR Rectifier

IRF7324TRPbF-1

HEXFET® Power MOSFET

V_{DS}	-20	V
$R_{DS(on)\ max}$ (@V_{GS} = -4.5V)	0.018	Ω
$Q_{g\ (typical)}$	42	nC
I_D (@T_A = 25°C)	-9.0	A



Top View

SO-8

Features		Benefits
Industry-standard pinout SO-8 Package	⇒	Multi-Vendor Compatibility
Compatible with Existing Surface Mount Techniques		Easier Manufacturing
RoHS Compliant, Halogen-Free		Environmentally Friendlier
MSL1, Industrial qualification		Increased Reliability

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRF7324PbF-1	SO-8	Tape and Reel	4000	IRF7324TRPbF-1

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	-20	V
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ -4.5V	-9.0	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ -4.5V	-7.1	
I_{DM}	Pulsed Drain Current①	-71	
P_D @T_A = 25°C	Maximum Power Dissipation③	2.0	W
P_D @T_A = 70°C	Maximum Power Dissipation③	1.3	W
	Linear Derating Factor	16	mW/°C
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J , T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

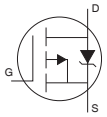
Thermal Resistance

	Parameter	Max.	Units	
$R_{\theta JA}$	Maximum Junction-to-Ambient ③	62.5		°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	-20	—	—	V	V_{GS} = 0V, I_D = -250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-0.02	—	V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.018	Ω	V_{GS} = -4.5V, I_D = -9.0A ②
		—	—	0.026		V_{GS} = -2.5V, I_D = -7.7A ②
$V_{GS(th)}$	Gate Threshold Voltage	-0.45	—	-1.0	V	V_{DS} = V_{GS}, I_D = -250µA
g_{fs}	Forward Transconductance	19	—	—	S	V_{DS} = -10V, I_D = -9.0A
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	µA	V_{DS} = -16V, V_{GS} = 0V
		—	—	-25		V_{DS} = -16V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	-100	nA	V_{GS} = -12V
	Gate-to-Source Reverse Leakage	—	—	100		V_{GS} = 12V
Q_g	Total Gate Charge	—	42	63	nC	I_D = -9.0A
Q_{gs}	Gate-to-Source Charge	—	7.1	11		V_{DS} = -16V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	12	18		V_{GS} = -5.0V
$t_{d(on)}$	Turn-On Delay Time	—	17	—	ns	V_{DD} = -10V
t_r	Rise Time	—	36	—		I_D = -1.0A
$t_{d(off)}$	Turn-Off Delay Time	—	170	—		R_G = 6.0Ω
t_f	Fall Time	—	190	—		R_D = 10Ω ②
C_{iss}	Input Capacitance	—	2940	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	630	—		V_{DS} = -15V
C_{rss}	Reverse Transfer Capacitance	—	420	—		f = 1.0MHz

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-71		
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	T_J = 25°C, I_S = -2.0A, V_{GS} = 0V ②
t_{rr}	Reverse Recovery Time	—	180	270	ns	T_J = 25°C, I_F = -2.0A
Q_{rr}	Reverse Recovery Charge	—	300	450	nC	di/dt = -100A/µs ②

Notes:

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

② Pulse width ≤ 300µs; duty cycle ≤ 2%.

③ Surface mounted on FR-4 board, t ≤ 10sec.

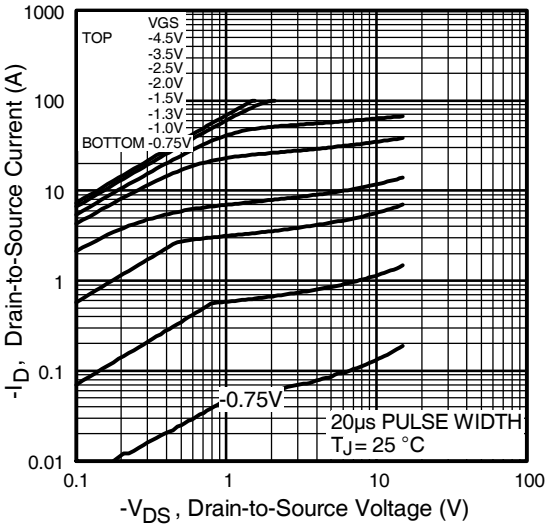


Fig 1. Typical Output Characteristics

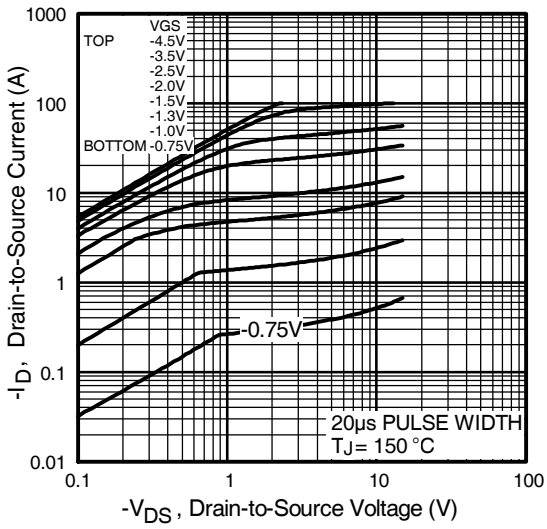


Fig 2. Typical Output Characteristics

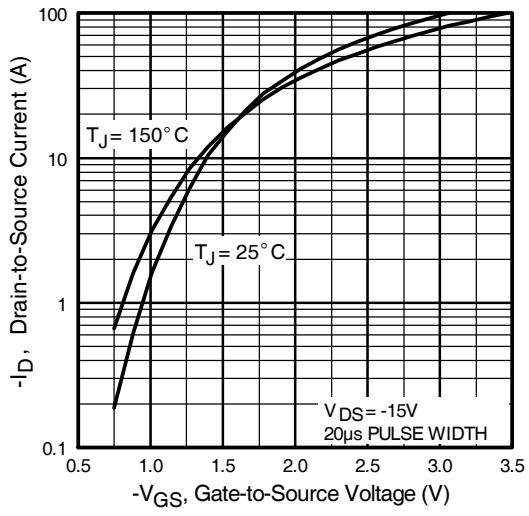


Fig 3. Typical Transfer Characteristics

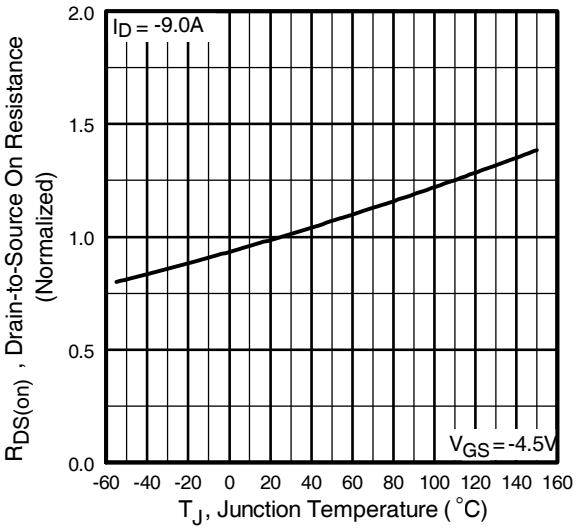


Fig 4. Normalized On-Resistance Vs. Temperature

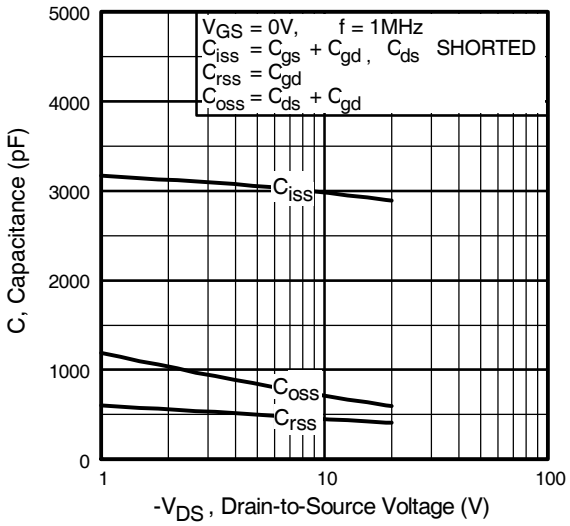


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

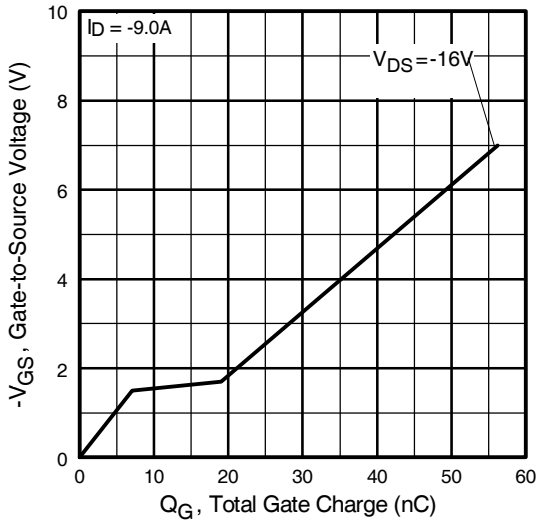


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

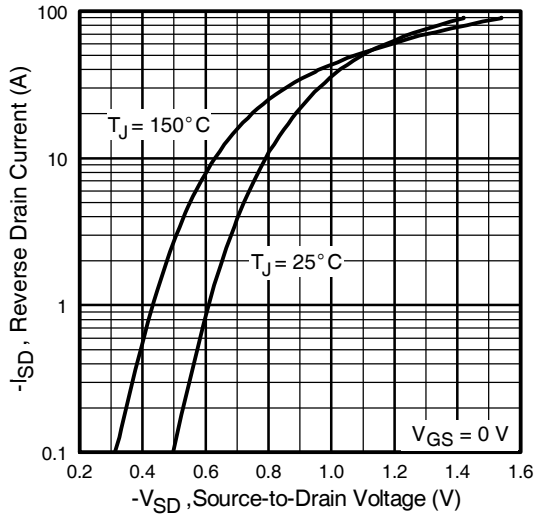


Fig 7. Typical Source-Drain Diode Forward Voltage

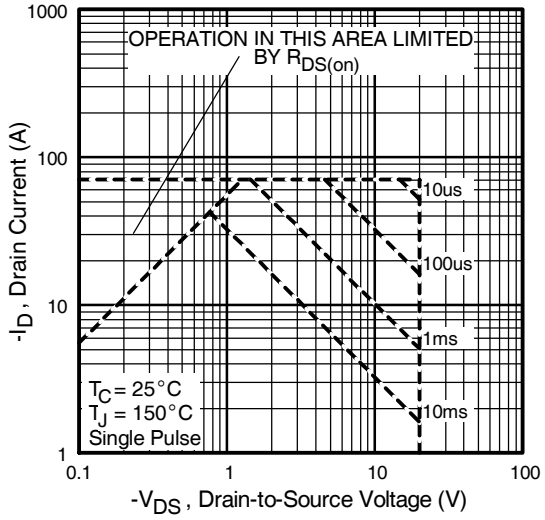


Fig 8. Maximum Safe Operating Area

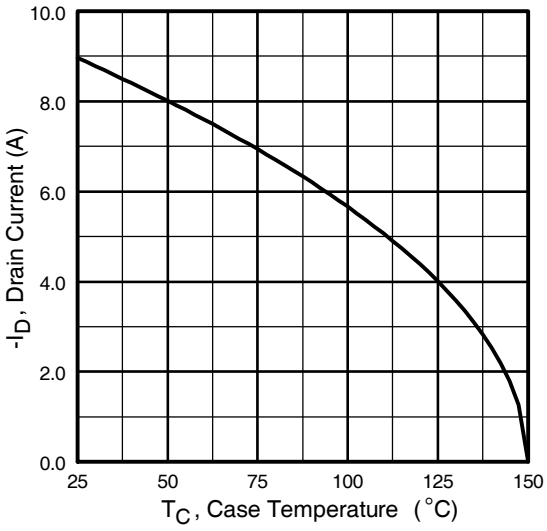


Fig 9. Maximum Drain Current Vs. Case Temperature

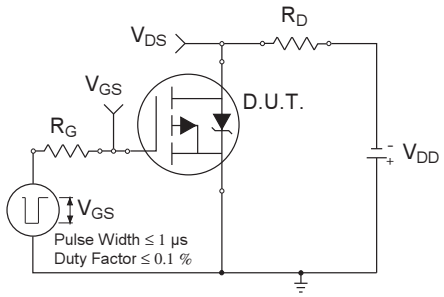


Fig 10a. Switching Time Test Circuit

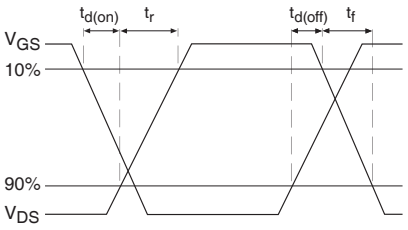


Fig 10b. Switching Time Waveforms

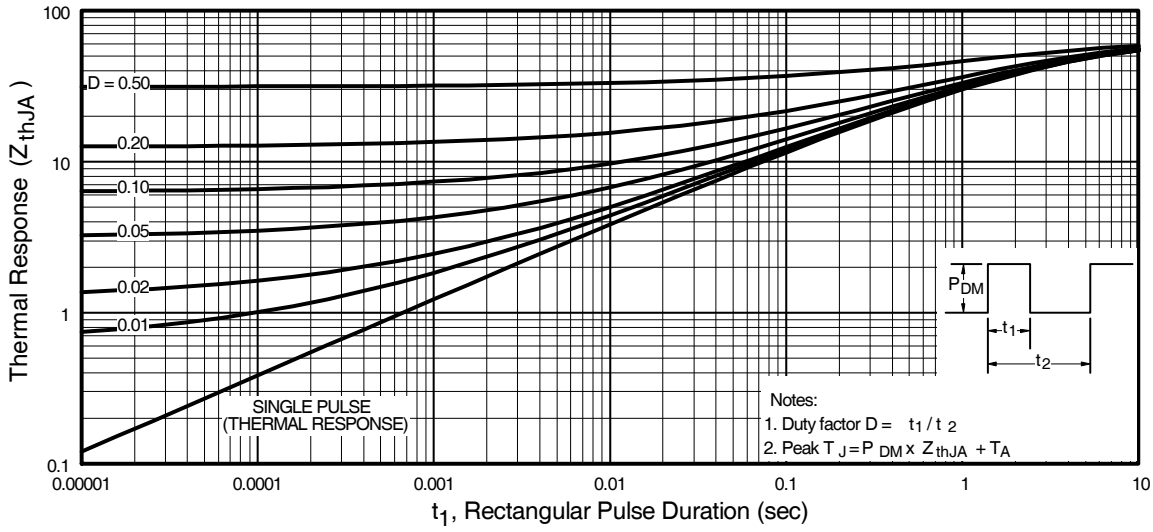


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

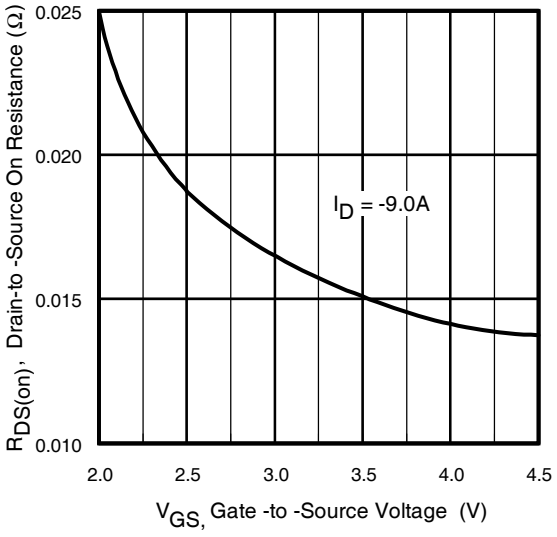


Fig 12. Typical On-Resistance Vs. Gate Voltage

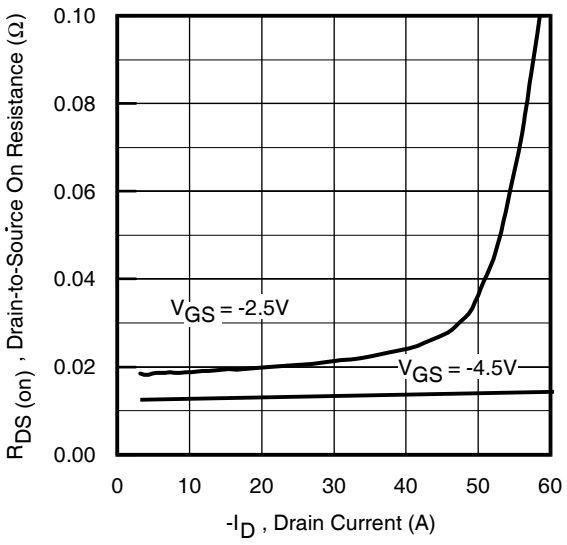


Fig 13. Typical On-Resistance Vs. Drain Current

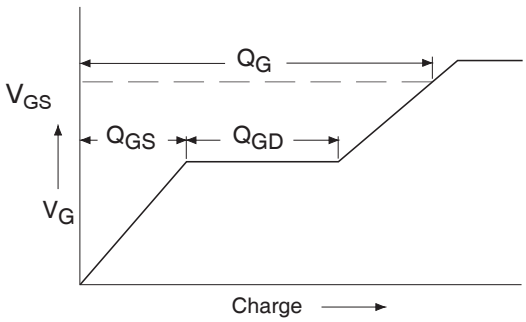


Fig 14a. Basic Gate Charge Waveform

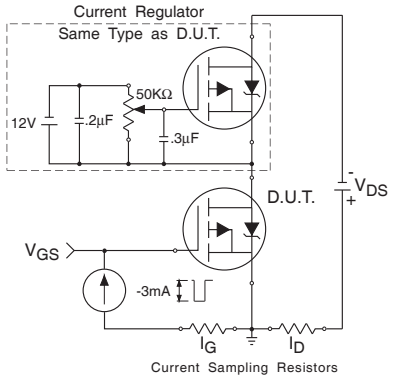
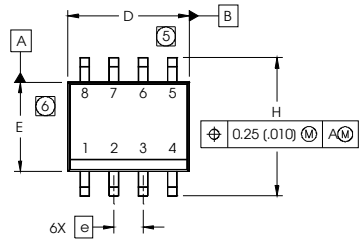
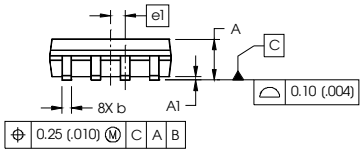


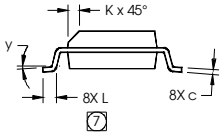
Fig 14b. Gate Charge Test Circuit

SO-8 Package Outline

Dimensions are shown in milimeters (inches)







DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°

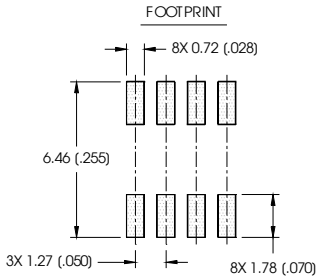
NOTES:

1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.

[5] DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).

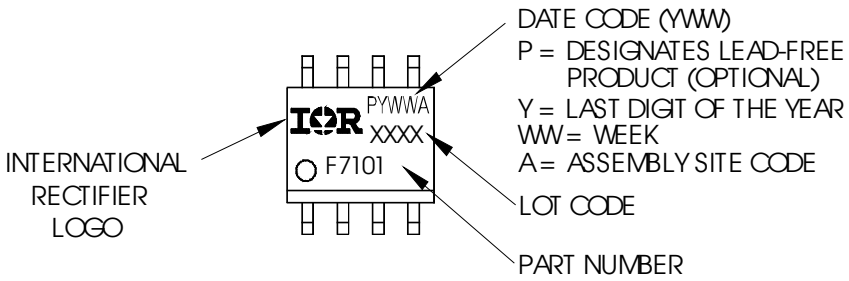
[6] DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.010).

[7] DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.



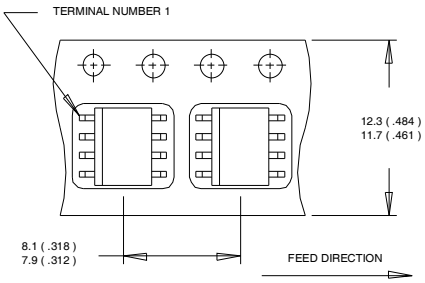
SO-8 Part Marking Information (Lead-Free)

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

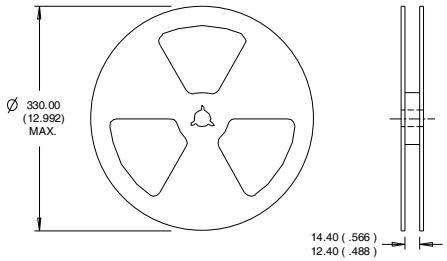


Note: For the most current drawing please refer to IR website at: http://www.irf.com/package/

SO-8 Tape and Reel (Dimensions are shown in milimeters (inches))



NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
3. 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†† guidelines)	
Moisture Sensitivity Level	SO-8	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	Comments
10/16/2014	• Corrected part number from" IRF7324PbF-1" to "IRF7324TRPbF-1" -all pages • Removed the "IRF7324PbF-1" bulk part number from ordering information on page1

International
IOR Rectifier
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