Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

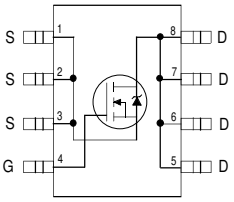
International
IOR Rectifier

PD - 93835

Si4420DY

HEXFET® Power MOSFET

- N-Channel MOSFET
- Low On-Resistance
- Low Gate Charge
- Surface Mount
- Logic Level Drive



Top View

V_{DSS} = 30V

$R_{DS(on)}$ = 0.009Ω

Description

This N-channel HEXFET® power MOSFET is produced using International Rectifier's advanced HEXFET power MOSFET technology. The low on-resistance and low gate charge inherent to this technology make this device ideal for low voltage or battery driven power conversion applications

The SO-8 package with copper leadframe offers enhanced thermal characteristics that allow power dissipation of greater that 800mW in typical board mount applications.

SO-8

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	30	V
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	±12.5	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	±10	
I_{DM}	Pulsed Drain Current ①	±50	
P_D @T_A = 25°C	Power Dissipation ③	2.5	W
P_D @T_A = 70°C	Power Dissipation ③	1.6	
	Linear Derating Factor	0.02	W/°C
E_{AS}	Single Pulse Avalanche Energy④	400	mJ
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

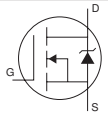
	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient③	50	°C/W

1/3/2000

Electrical Characteristics @ T_J = 25°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 = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.028	—	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.009	Ω	V_{GS} = 10V, I_D = 12.5A ②
		—	—	0.013		V_{GS} = 4.5V, I_D = 10.5A ②
$V_{GS(th)}$	Gate Threshold Voltage	1.0	—	—	V	V_{DS} = V_{GS}, I_D = 250µA
g_{fs}	Forward Transconductance	—	29	—	S	V_{DS} = 15V, I_D = 12.5A
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	µA	V_{DS} = 30V, V_{GS} = 0V
		—	—	5.0		V_{DS} = 30V, V_{GS} = 0V, T_J = 55°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	—	52	78	nC	I_D = 12.5A
Q_{gs}	Gate-to-Source Charge	—	8.7	—		V_{DS} = 15V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	12	—		V_{GS} = 10V, See Fig. 6 ②
$t_{d(on)}$	Turn-On Delay Time	—	15	—	ns	V_{DD} = 15V
t_r	Rise Time	—	10	—		I_D = 1.0A
$t_{d(off)}$	Turn-Off Delay Time	—	55	—		R_G = 6.0Ω
t_f	Fall Time	—	47	—		R_D = 15Ω, ②
C_{iss}	Input Capacitance	—	2240	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	1100	—		V_{DS} = 15V
C_{rss}	Reverse Transfer Capacitance	—	150	—		f = 1.0MHz, See Fig. 5②

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Diode Conduction)	—	—	2.3	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	50		
V_{SD}	Diode Forward Voltage	—	—	1.1	V	T_J = 25°C, I_S = 2.3A, V_{GS} = 0V ②
t_{rr}	Reverse Recovery Time	—	52	78	ns	T_J = 25°C, I_F = 2.3A

Notes:

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

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

③ When mounted on FR4 Board, t ≤10 sec

④ Starting T_J = 25°C, L = 13mH
R_G = 25Ω, I_{AS} = 8.9A. (See Figure 15)

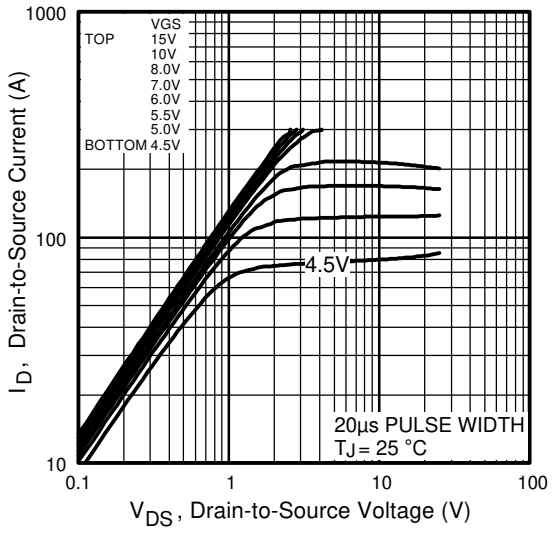


Fig 1. Typical Output Characteristics

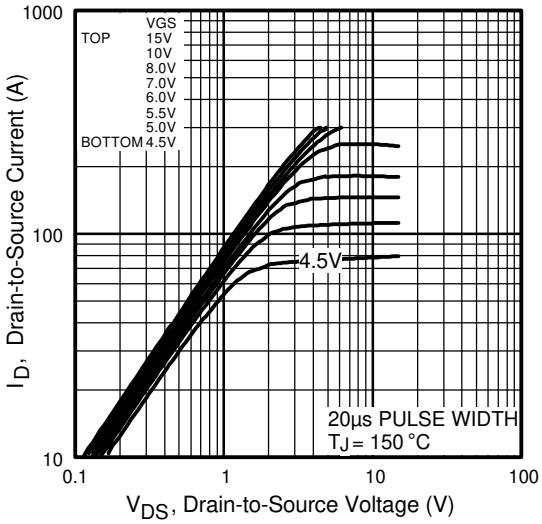


Fig 2. Typical Output Characteristics

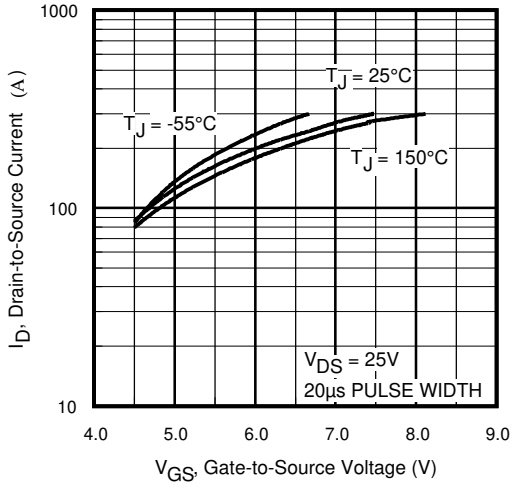


Fig 3. Typical Transfer Characteristics

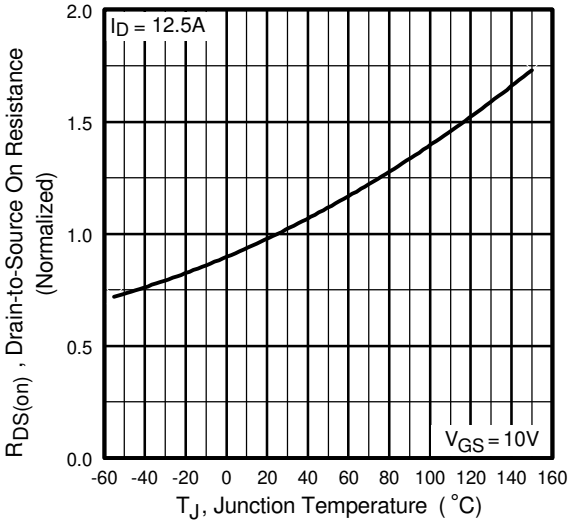


Fig 4. Normalized On-Resistance Vs. Temperature

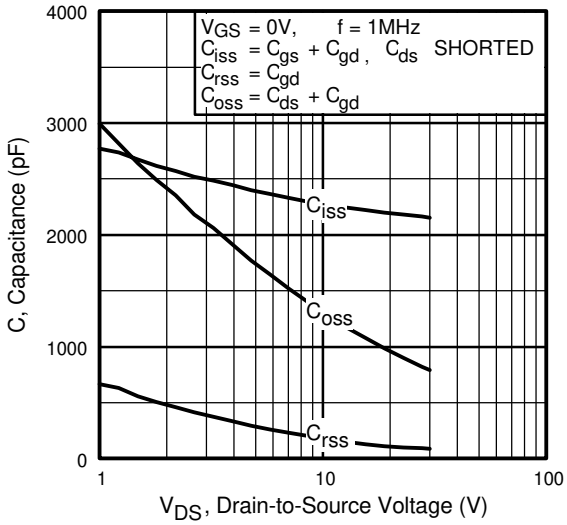


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

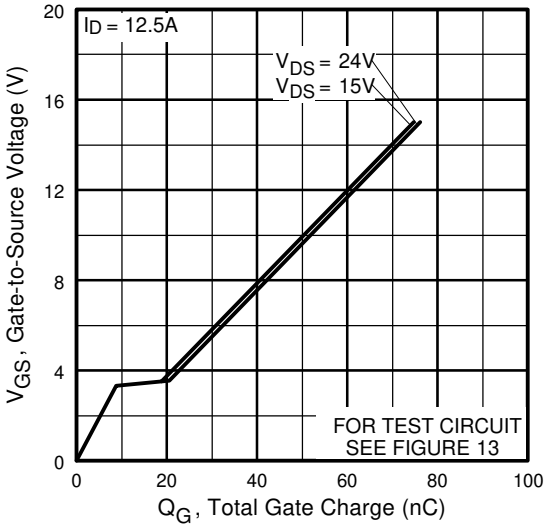


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

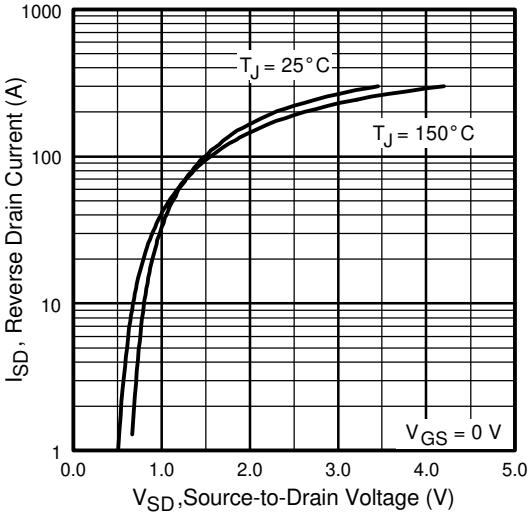


Fig 7. Typical Source-Drain Diode Forward Voltage

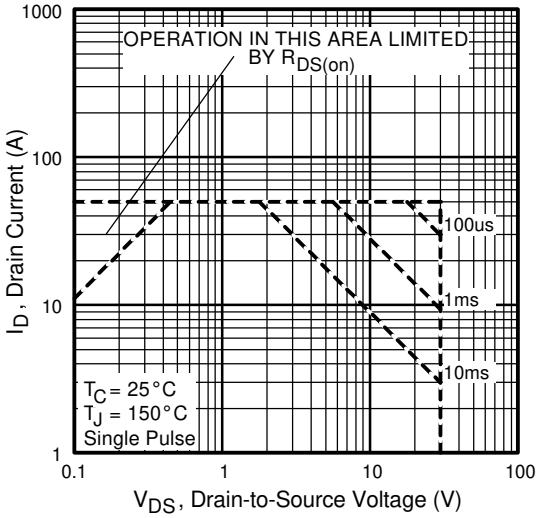


Fig 8. Maximum Safe Operating Area

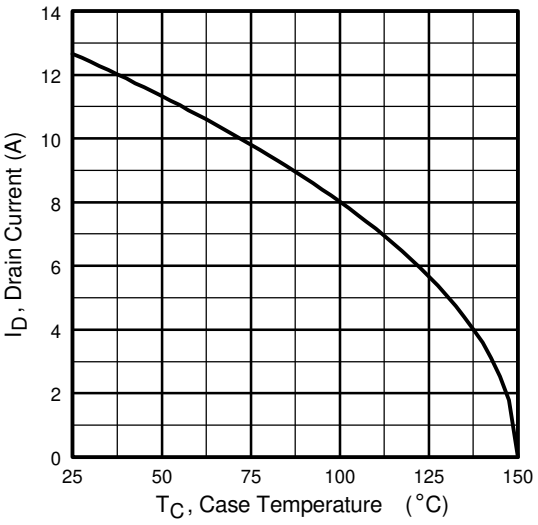


Fig 9. Maximum Drain Current Vs. Case Temperature

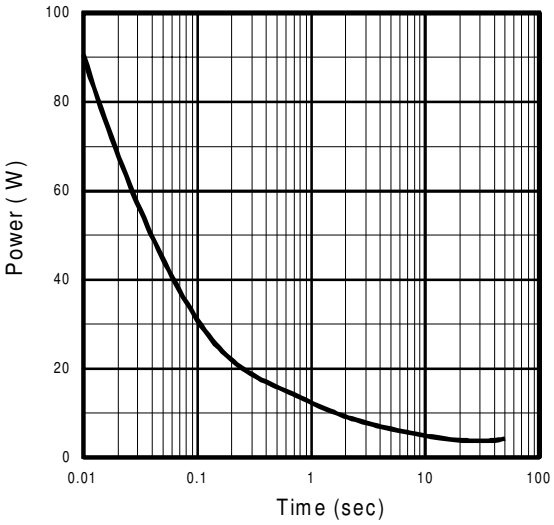


Fig 10. Typical Power Vs. Time

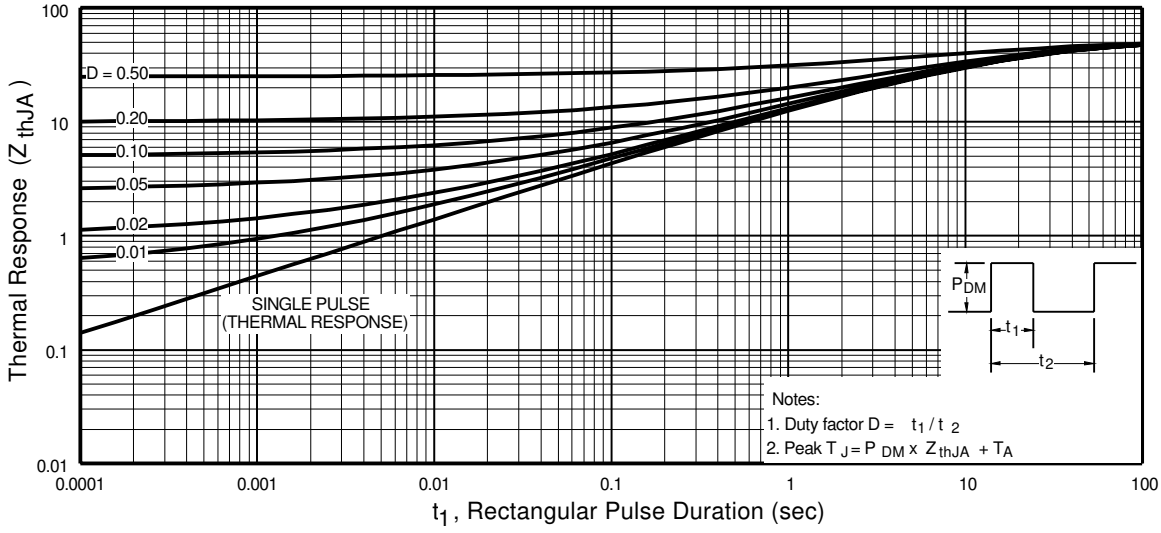


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

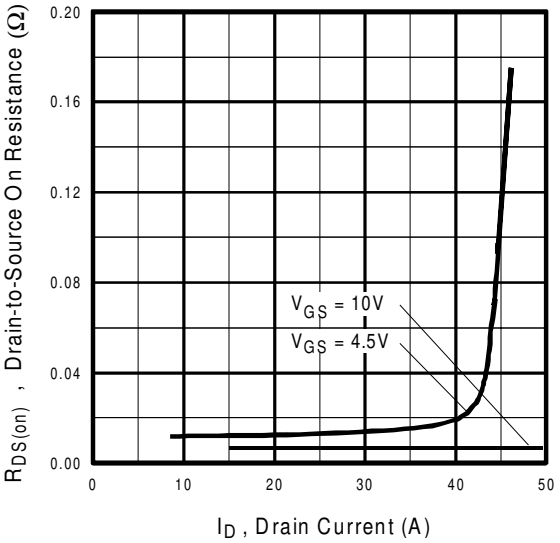


Fig 12. Typical On-Resistance Vs. Drain Current

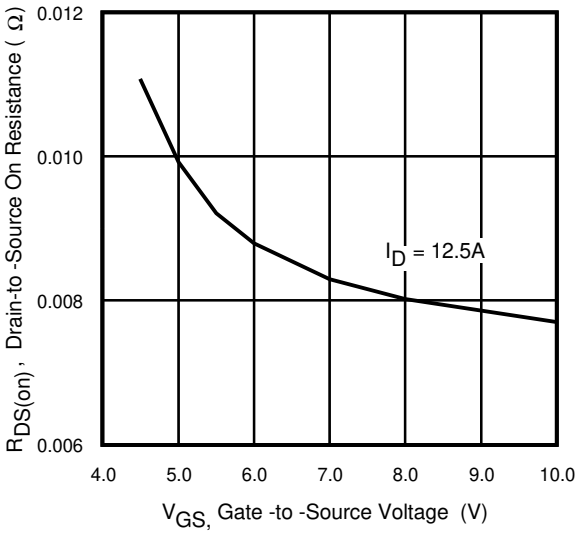


Fig 13. Typical On-Resistance Vs. Gate Voltage

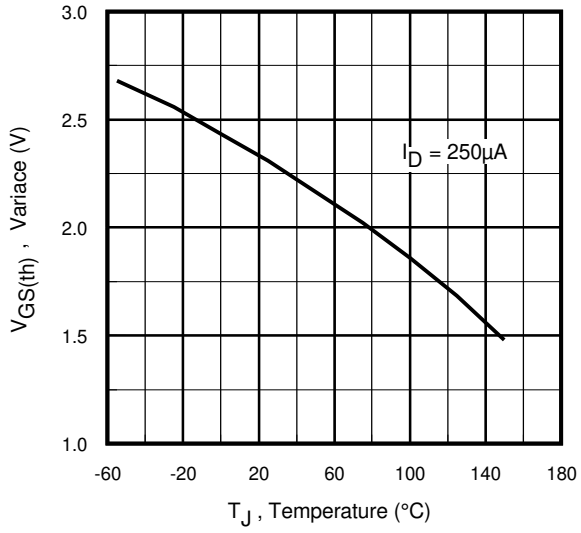


Fig 14. Typical Threshold Voltage Vs.Temperature

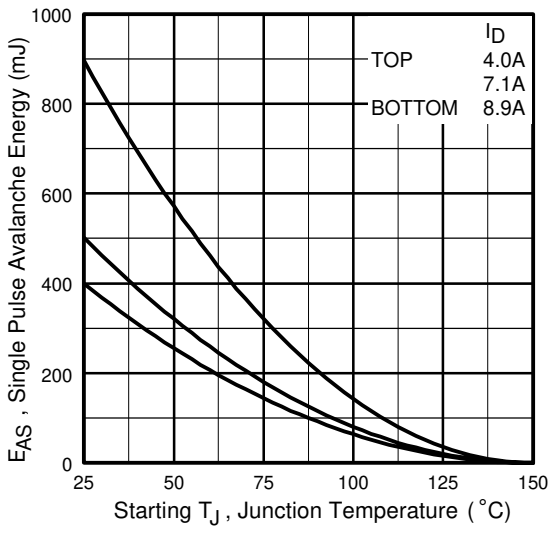
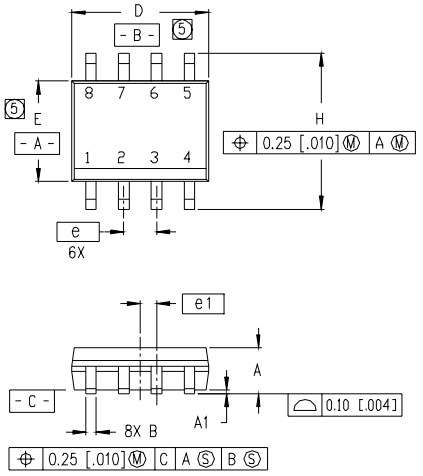


Fig 15. Maximum Avalanche Energy Vs. Drain Current

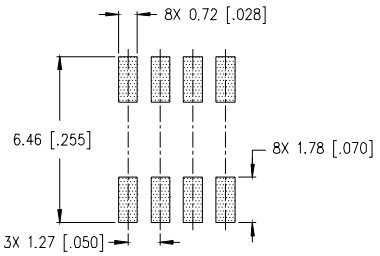
SO-8 Package Outline



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
B	.014	.018	0.36	0.46
C	.0075	.0098	0.19	0.25
D	.189	.196	4.80	4.98
E	.150	.157	3.81	3.99
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.011	.019	0.28	0.48
L	.016	.050	0.41	1.27
y	0°	8°	0°	8°

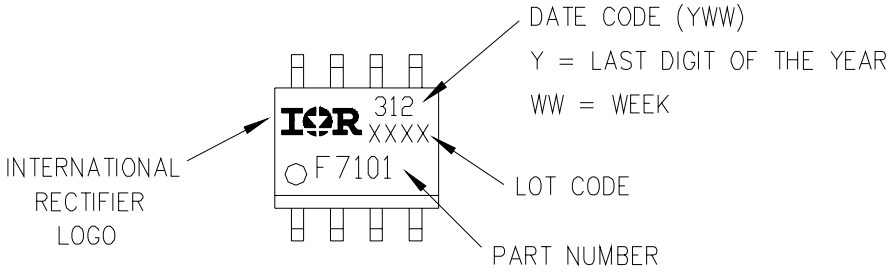
NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M–1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.006].
6. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

RECOMMENDED FOOTPRINT



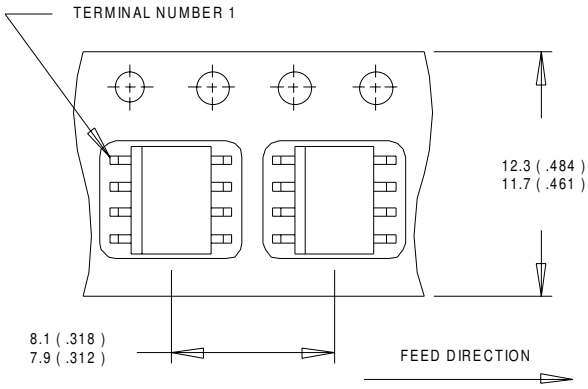
SO-8 Part Marking Information

EXAMPLE: THIS IS AN IRF7101

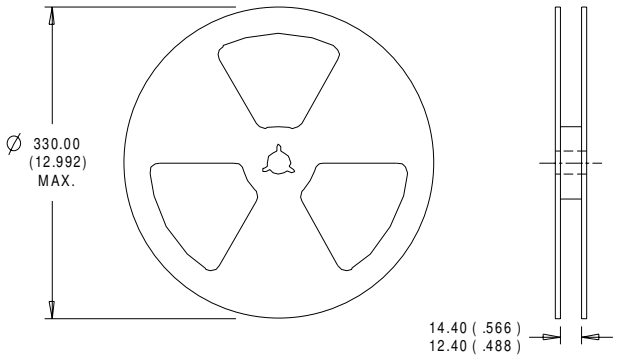


SO-8 Tape & Reel Information

Dimensions are shown in millimeters (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.

International
IOR Rectifier

WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, Tel: (310) 252-7105
IR GREAT BRITAIN: Hurst Green, Oxted, Surrey RH8 9BB, UK Tel: ++ 44 1883 732020
IR CANADA: 15 Lincoln Court, Brampton, Ontario L6T3Z2, Tel: (905) 453 2200
IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590
IR ITALY: Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 451 0111
IR JAPAN: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo Japan 171 Tel: 81 3 3983 0086
IR SOUTHEAST ASIA: 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994 Tel: ++ 65 838 4630
IR TAIWAN:16 Fl. Suite D. 207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan Tel: 886-2-2377-9936
Data and specifications subject to change without notice. 1/2000