International
IOR Rectifier

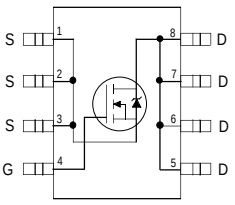
PD - 91330D

PROVISIONAL

IRF7413

HEXFET® Power MOSFET

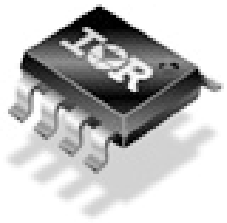
- Advanced Power MOSFET Technology
- Ultra Low On-Resistance
- N-Channel Mosfet
- Surface Mount
- Available in Tape & Reel
- Dynamic dv/dt Rating
- Fast Switching



Top View

V_{DSS} = 30V

$R_{DS(on)}$ = 0.011Ω


SO-8

Description

This N- channel 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 has been modified through a customized leadframe for enhanced thermal characteristics and multiple-die capability making it ideal in a variety of power applications. With these improvements, multiple devices can be used in an application with dramatically reduced board space. The package is designed for vapor phase, infrared, or wave soldering techniques. Power dissipation of greater than 0.8W is possible in a typical PCB mount application.

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	30	V
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	13	A
I_D @ T_C = 70°C	Continuous Drain Current, V_{GS} @ 10V	9.2	
I_{DM}	Pulsed Drain Current ①	58	
P_D @T_C = 25°C	Power Dissipation	2.5	W
P_D @T_C = 70°C	Power Dissipation	1.3	
	Linear Derating Factor	0.02	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy②	260	
dv/dt	Peak Diode Recovery dv/dt ③	5.0	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient⑤	——	50	°C/W

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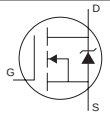
Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	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	—	0.034	—	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.011	Ω	V_{GS} = 10V, I_D = 7.3A ④
		—	—	0.018		V_{GS} = 4.5V, I_D = 3.7A ④
$V_{GS(th)}$	Gate Threshold Voltage	1.0	—	—	V	V_{DS} = V_{GS}, I_D = 250µA
g_{fs}	Forward Transconductance	12	—	—	S	V_{DS} = 10V, I_D = 3.7A
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	µA	V_{DS} = 24V, V_{GS} = 0V
		—	—	25		V_{DS} = 24V, V_{GS} = 0V, T_J = 125°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	—	34	51	nC	I_D = 7.3A
Q_{gs}	Gate-to-Source Charge	—	6.2	9.3		V_{DS} = 15V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	7.5	11		V_{GS} = 10V ④
$t_{d(on)}$	Turn-On Delay Time	—	11	—	ns	V_{DD} = 15V
t_r	Rise Time	—	47	—		I_D = 7.3A
$t_{d(off)}$	Turn-Off Delay Time	—	39	—		R_G = 6.2Ω
t_f	Fall Time	—	45	—		R_D = 2.0Ω, ④
C_{iss}	Input Capacitance	—	1670	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	660	—		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	—	92	—		f = 1.0MHz

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	3.1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	58		
V_{SD}	Diode Forward Voltage	—	—	1.0	V	T_J = 25°C, I_S = 7.3A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	—	52	110	ns	T_J = 25°C, I_F = 7.3A
Q_{rr}	Reverse RecoveryCharge	—	85	300	nC	di/dt = -100A/µs ③

Notes:

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

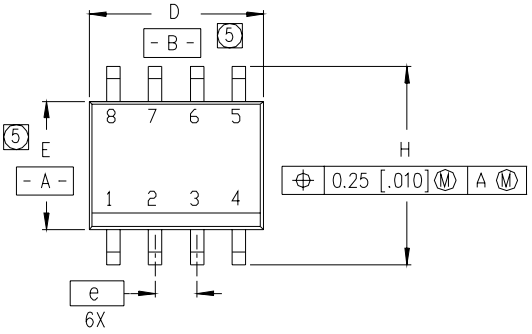
② Starting T_J = 25°C, L = 9.8mH R_G = 25Ω, I_{AS} = 7.3A.

③ I_{SD} ≤ 7.3A, di/dt ≤ TBD A/µs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150°C

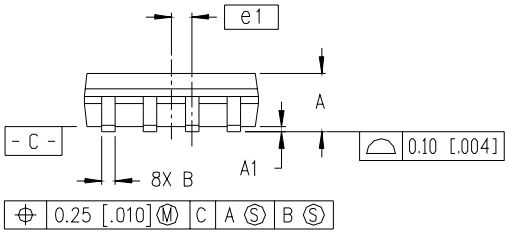
④ Pulse width ≤ 300µs; duty cycle ≤ 2%.

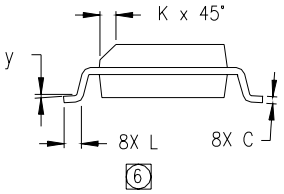
⑤ When mounted on 1 inch square copper board, t<10 sec

SO-8 Package Details

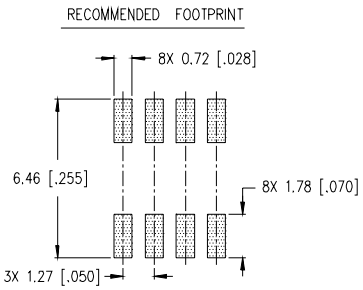


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
B	.014	.018	0.36	0.46
C	.0075	.0098	0.19	0.25
D	.189	.196	4.80	4.98
E	.150	.157	3.81	3.99
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.011	.019	0.28	0.48
L	.016	.050	0.41	1.27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



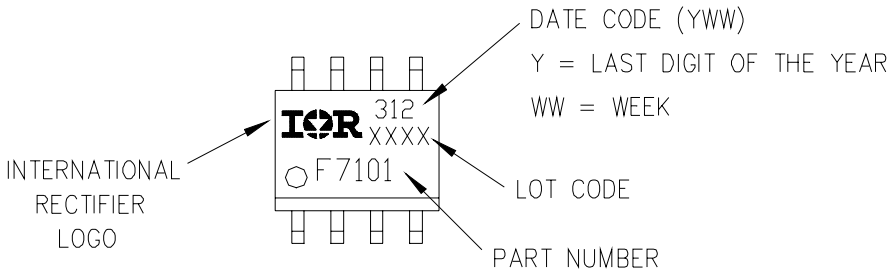


NOTES:
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.006].
6. DIMENSION IS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

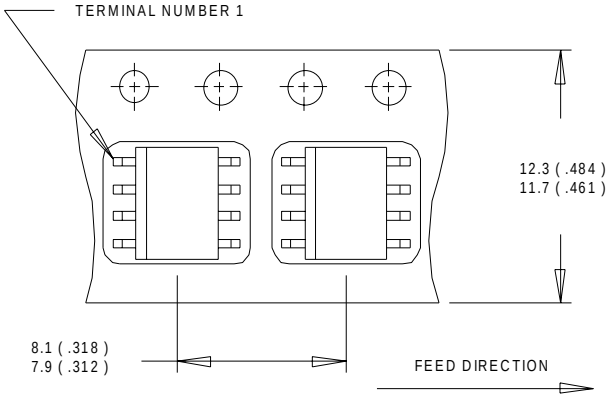


Part Marking

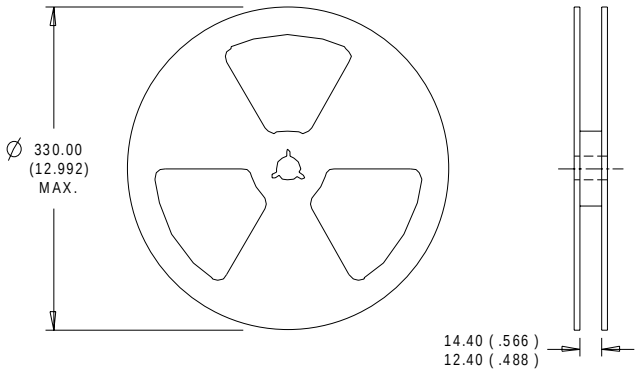
EXAMPLE: THIS IS AN IRF7101



Tape and Reel



NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



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1. CONTROLLING DIMENSION : MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

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