PD - 96107

International
IOR Rectifier

IRF7314QPbF

HEXFET® Power MOSFET

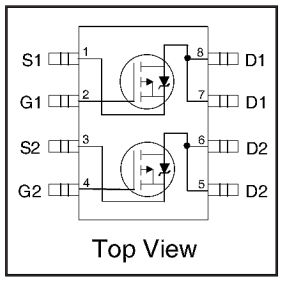
V_{DSS}	$R_{DS(on)}$ max	I_D
-20V	0.058@V_{GS} = -4.5V	-5.2A
	0.098@V_{GS} = -2.7V	-4.42A

Typical Applications

- Anti-lock Braking Systems (ABS)
- Electronic Fuel Injection
- Air bag

Benefits

- Advanced Process Technology
- Dual P-Channel MOSFET
- Ultra Low On-Resistance
- 175°C Operating Temperature
- Repetitive Avalanche Allowed up to Tjmax
- Automotive [Q101] Qualified
- Lead-Free



Top View


SO-8

Description

Specifically designed for Automotive applications, these HEXFET ® Power MOSFET's in a Dual SO-8 package utilize the lastest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of these Automotive qualified HEXFET Power MOSFET's are a 175°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These benefits combine to make this design an extremely efficient and reliable device for use in Automotive applications and a wide variety of other applications.

The 175°C rating for the SO-8 package provides improved thermal performance with increased safe operating area and dual MOSFET die capability make it ideal in a variety of power applications. This dual, surface mount SO-8 can dramatically reduce board space and is also available in Tape & Reel.

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	-20	V
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	-5.2	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	-4.3	
I_{DM}	Pulsed Drain Current①	-43	
P_D @T_A = 25°C	Maximum Power Dissipation③	2.4	W
P_D @T_A = 70°C	Maximum Power Dissipation③	1.7	W
	Linear Derating Factor	16	mW/°C
V_{GS}	Gate-to-Source Voltage	± 12	V
E_{AS}	Single Pulse Avalanche Energy②	610	mJ
I_{AR}	Avalanche Current①	-5.2	A
E_{AR}	Repetitive Avalanche Energy	See Fig.14, 15, 16	mJ
T_J , T_{STG}	Junction and Storage Temperature Range	-55 to + 175	°C

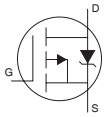
Thermal Resistance

	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	—	0.009	—	V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	0.049	0.058	Ω	V_{GS} = -4.5V, I_D = -5.2A ②
		—	0.082	0.098		V_{GS} = -2.7V, I_D = -4.42A ②
$V_{GS(th)}$	Gate Threshold Voltage	-0.7	—	—	V	V_{DS} = V_{GS}, I_D = -250µA
g_{fs}	Forward Transconductance	6.8	—	—	S	V_{DS} = 10V, I_D = -5.2A
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 = 150°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	—	19	29	nC	I_D = -5.2A
Q_{gs}	Gate-to-Source Charge	—	2.1	3.2		V_{DS} = -16V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	9.3	14		V_{GS} = -4.5V
$t_{d(on)}$	Turn-On Delay Time	—	18	—	ns	V_{DD} = -10V
t_r	Rise Time	—	26	—		I_D = -1.0A
$t_{d(off)}$	Turn-Off Delay Time	—	41	—		R_G = 6.0Ω
t_f	Fall Time	—	38	—		V_{GS} = -4.5V ②
C_{iss}	Input Capacitance	—	913	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	512	—		V_{DS} = -15V
C_{rss}	Reverse Transfer Capacitance	—	260	—		f = 1.0MHz

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-3.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-43		
V_{SD}	Diode Forward Voltage	—	—	-1.0	V	T_J = 25°C, I_S = -3.0A, V_{GS} = 0V ②
t_{rr}	Reverse Recovery Time	—	44	66	ns	T_J = 25°C, I_F = -3.0A
Q_{rr}	Reverse Recovery Charge	—	54	81	nC	di/dt = -100A/µs ②

Notes:

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

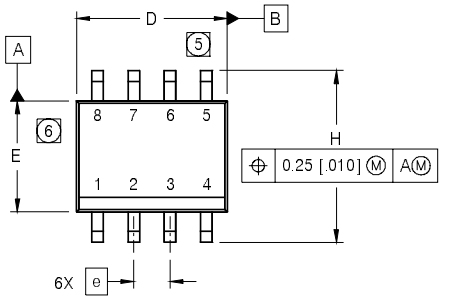
② Starting T_J = 25°C, L = 45mH R_G = 25Ω, I_{AS} = -5.2A.

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

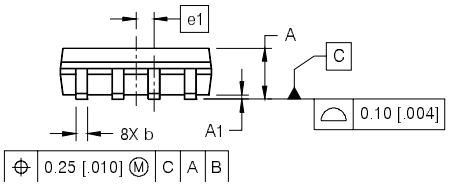
④ Pulse width ≤ 300µs; duty cycle ≤ 2%.

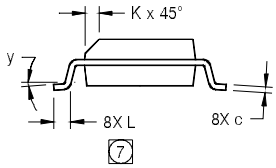
SO-8 Package Outline

Dimensions are shown in millimeters (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	
e 1	.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°





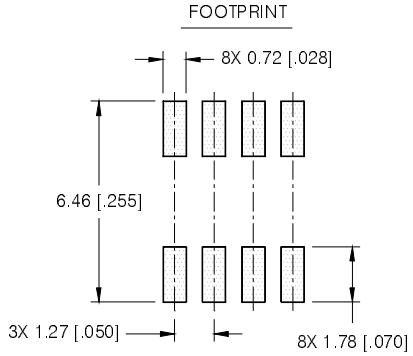
NOTES:

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].

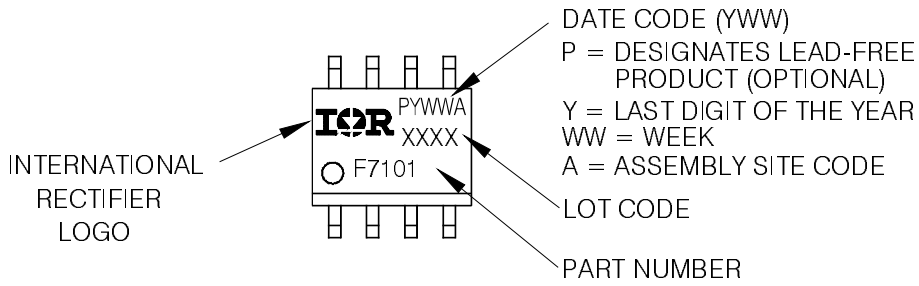
6 DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].

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



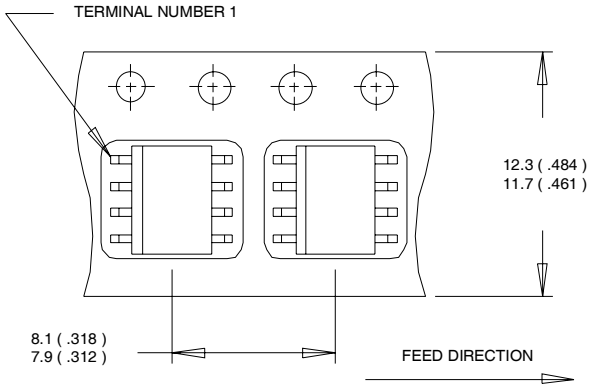
SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

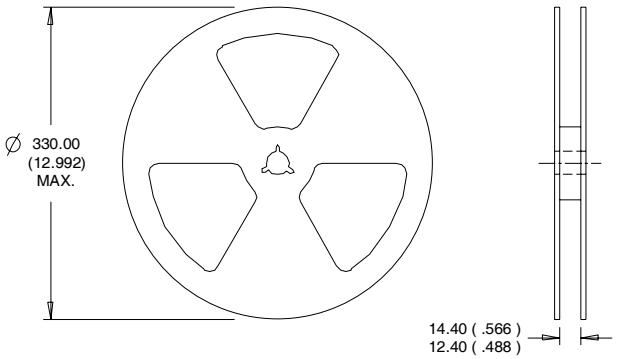


SO-8 Tape and Reel

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.

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

Data and specifications subject to change without notice.
This product has been designed and qualified for the Automotive [Q101] market.
Qualification Standards can be found on IR's Web site.

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