

IRF7381PbF

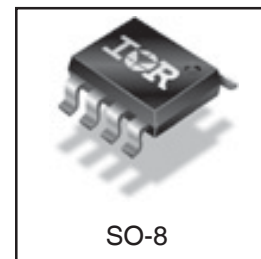
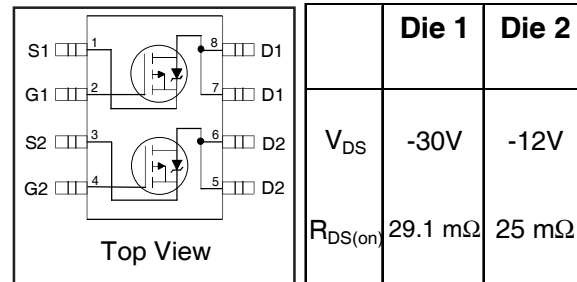
HEXFET® Power MOSFET

- Ultra Low On-Resistance
- Dual P-Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- Lead-Free!

Description

These P-Channel HEXFET® power MOSFETs from International Rectifier utilize advanced processing techniques to achieve the extremely low on-resistance per silicon area. This benefit provides the designer with an extremely efficient device for use in battery and load management applications.

This Dual 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.



Absolute Maximum Ratings

	Parameter	Max.		Units
		Die 1	Die 2	
V_{DS}	Drain-to-Source Voltage	-30	-12	V
V_{GS}	Gate-to-Source Voltage	± 20	± 12	
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	-4.9	-7.3	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	-3.4	-5.8	
I_{DM}	Pulsed Drain Current ①	-17	TBD	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ③	2.0		W
$P_D @ T_A = 70^\circ\text{C}$	Power Dissipation ③	1.3		
	Linear Derating Factor	16		mW/ $^\circ\text{C}$
T_J	Operating Junction and	-55 to + 150		$^\circ\text{C}$
T_{STG}	Storage Temperature Range			

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead	—	20	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-Ambient ③	—	62.5	

Notes ① through ③ are on page 4
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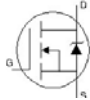
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Static @ T_J = 25°C (unless otherwise specified)

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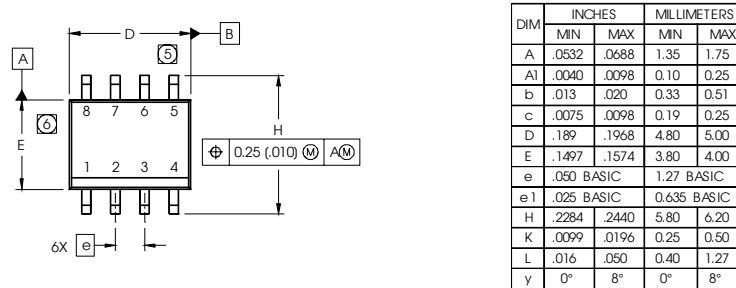
	Parameter		Min.	Typ.	Max.	Units	Conditions
BV _{DSS}	Drain-to-Source Breakdown Voltage	Die 1	-30	—	—	V	V _{GS} = 0V, I _D = -250μA
		Die 2	-12	—	—		
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	Die 1	—	-0.01	—	V/°C	Reference to 25°C, I _D = -1mA
		Die 2	—	TBD	—		
R _{DS(on)}	Static Drain-to-Source On-Resistance	Die 1	—	—	29.16	mΩ	V _{GS} = -10V, I _D = -5.0A ②
			—	—	49.31		V _{GS} = -4.5V, I _D = -4.0A ②
		Die 2	—	—	25		V _{GS} = -4.5V, I _D = -7.3A ②
			—	—	34		V _{GS} = -2.5V, I _D = -5.8A ②
			—	—	49		V _{GS} = -1.8V, I _D = -3.7A ②
V _{GS(th)}	Gate Threshold Voltage	Die 1	-1.0	—	-2.5	V	V _{DS} = V _{GS} , I _D = -250μA
		Die 2	-0.45	—	-0.9		
I _{DSS}	Drain-to-Source Leakage Current	Die 1	—	—	-15	μA	V _{DS} = -24V, V _{GS} = 0V
			—	—	-25		V _{DS} = -24V, V _{GS} = 0V, T _J = 70°C
		Die 2	—	—	-1.0		V _{DS} = -9.6V, V _{GS} = 0V
			—	—	-100		V _{DS} = -12V, V _{GS} = 0V, T _J = 70°C
I _{GSS}	Gate-to-Source Forward Leakage	Die 1	—	—	±100	nA	V _{GS} = ±20V
	Gate-to-Source Reverse Leakage	Die 2	—	—	±100		V _{GS} = ±20V
g _{fs}	Forward Transconductance	Die 1	13	—	—	S	V _{DS} = -10V, I _D = -5.0A ②
		Die 2	TBD	—	—		V _{DS} = -10V, I _D = -7.3A ②
Q _g	Total Gate Charge	Die 1	—	29.1	44		Die 1
		Die 2	—	TBD	TBD		V _{DS} = -15V, I _D = -4.9A, V _{GS} = -10V
Q _{gs}	Gate-to-Source Charge	Die 1	—	5.5	—		Die 2
		Die 2	—	TBD	—		V _{DS} = -10V, I _D = -7.3A, V _{GS} = -4.5V
Q _{gd}	Gate-to-Drain Charge	Die 1	—	5.0	—		
		Die 2	—	TBD	—		
t _{d(on)}	Turn-On Delay Time	Die 1	—	13	—		Die 1
		Die 2	—	TBD	—		V _{DS} = -15V, I _D = -1.0A, R _G = 6.0Ω
t _r	Rise Time	Die 1	—	16	—		V _{GS} = -10V
		Die 2	—	TBD	—		
t _{d(off)}	Turn-Off Delay Time	Die 1	—	155	—	ns	Die 2
		Die 2	—	TBD	—		V _{DS} = -10V, I _D = -TBD A, R _G = TBDΩ
t _f	Fall Time	Die 1	—	80	—		V _{GS} = -4.5V
		Die 2	—	TBD	—		
C _{iss}	Input Capacitance	Die 1	—	1464	—		Die 1
		Die 2	—	TBD	—		V _{GS} = 0V, V _{DS} = -25V, f = 1.0MHz
C _{oss}	Output Capacitance	Die 1	—	146	—	pF	Die 2
		Die 2	—	TBD	—		V _{GS} = 0V, V _{DS} = -10V, f = 1.0MHz
C _{rss}	Reverse Transfer Capacitance	Die 1	—	227	—		
		Die 2	—	TBD	—		

Diode Characteristics

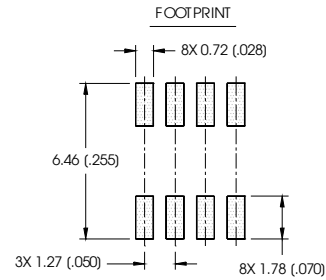
	Parameter		Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	Die 1	—	—	-2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
		Die 2	—	—	-2.0		
I _{SM}	Pulsed Source Current (Body Diode) ①	Die 1	—	—	-17	A	
		Die 2	—	—	TBD		
V _{SD}	Diode Forward Voltage	Die 1	—	—	-1.2	V	T _J = 25°C, I _S = -2.0A, V _{GS} = 0V ②
		Die 2	—	—	-1.2		T _J = 25°C, I _S = -2.0A, V _{GS} = 0V ②
t _{rr}	Reverse Recovery Time	Die 1	—	23	—	ns	Die 1 ②
		Die 2	—	TBD	—		T _J = 25°C, I _F = -2.0A, di/dt = 100A/μs
Q _{rr}	Reverse Recovery Charge	Die 1	—	19	—	nC	Die 2
		Die 2	—	TBD	—		T _J = 25°C, I _F = -2.0A, di/dt = 100A/μs

SO-8 Package Outline

Dimensions are shown in millimeters (inches)

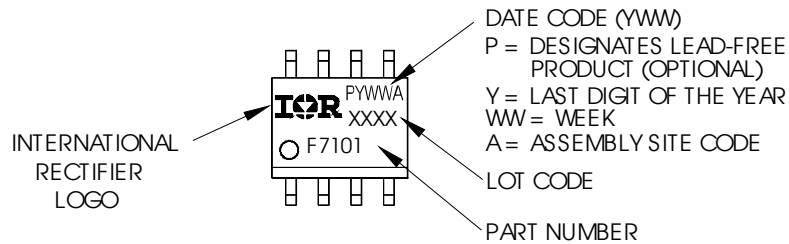


- NOTES:
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
 2. CONTROLLING DIMENSION: MILLIMETER
 3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
 4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
 5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
 6. DIMENSION 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)

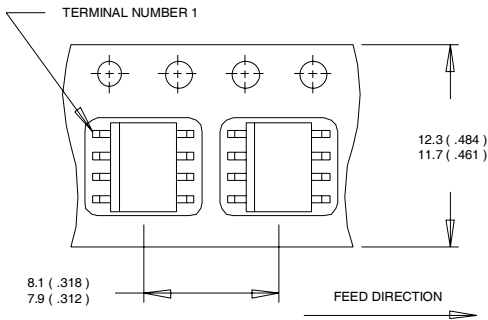


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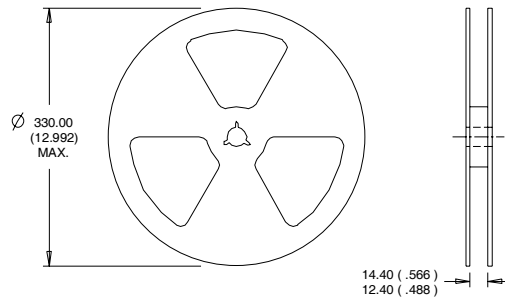
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SO-8 Tape and Reel

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.

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 16)
- ② Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ③ Surface mounted on 1 in square Cu board

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

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IR Rectifier

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