

IRF7907PbF

HEXFET® Power MOSFET

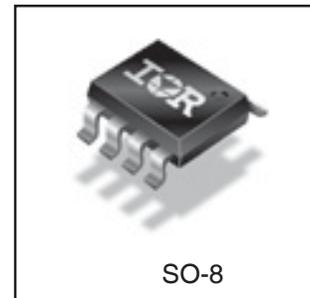
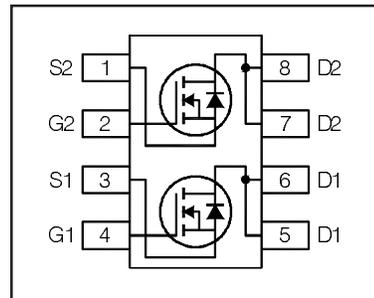
Applications

- Dual SO-8 MOSFET for POL Converters in Notebook Computers, Servers, Graphics Cards, Game Consoles and Set-Top Box

Benefits

- Very Low $R_{DS(on)}$ at 4.5V V_{GS}
- Low Gate Charge
- Fully Characterized Avalanche Voltage and Current
- 20V V_{GS} Max. Gate Rating
- Improved Body Diode Reverse Recovery
- 100% Tested for R_G
- Lead-Free

V_{DSS}	$R_{DS(on)}$ max	I_D
30V	Q1 16.4m Ω @ $V_{GS} = 10V$	9.1A
	Q2 11.8m Ω @ $V_{GS} = 10V$	11A



Absolute Maximum Ratings

	Parameter	Q1 Max.	Q2 Max.	Units
V_{DS}	Drain-to-Source Voltage	30		V
V_{GS}	Gate-to-Source Voltage	± 20		
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	9.1	11	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	7.3	8.8	
I_{DM}	Pulsed Drain Current ①	76	85	
$P_D @ T_A = 25^\circ C$	Power Dissipation	2.0	2.0	W
$P_D @ T_A = 70^\circ C$	Power Dissipation	1.3	1.3	
	Linear Derating Factor	0.016	0.016	W/ $^\circ C$
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150		$^\circ C$

Thermal Resistance

	Parameter	Q1 Max.	Q2 Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead ⑤	42	42	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient ④⑤	62.5	62.5	

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Static @ T_J = 25°C (unless otherwise specified)

International
IR Rectifier

	Parameter		Min.	Typ.	Max.	Units	Conditions		
BV _{DSS}	Drain-to-Source Breakdown Voltage	Q1&Q2	30	—	—	V	V _{GS} = 0V, I _D = 250μA		
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	Q1	—	0.024	—	V/°C	Reference to 25°C, I _D = 1mA		
		Q2	—	0.024	—				
R _{DS(on)}	Static Drain-to-Source On-Resistance	Q1	—	13.7	16.4	mΩ	V _{GS} = 10V, I _D = 9.1A ③		
			—	17.1	20.5		V _{GS} = 4.5V, I _D = 7.3A ③		
		Q2	—	9.8	11.8		V _{GS} = 10V, I _D = 11A ③		
			—	11.5	13.7		V _{GS} = 4.5V, I _D = 8.8A ③		
V _{GS(th)}	Gate Threshold Voltage	Q1&Q2	1.35	1.8	2.35	V	Q1: V _{DS} = V _{GS} , I _D = 25μA Q2: V _{DS} = V _{GS} , I _D = 50μA		
ΔV _{GS(th)} /ΔT _J	Gate Threshold Voltage Coefficient	Q1	—	-4.6	—	mV/°C			
		Q2	—	-4.9	—				
I _{DSS}	Drain-to-Source Leakage Current	Q1&Q2	—	—	1.0	μA	V _{DS} = 24V, V _{GS} = 0V		
		Q1&Q2	—	—	150		V _{DS} = 24V, V _{GS} = 0V, T _J = 125°C		
I _{GSS}	Gate-to-Source Forward Leakage	Q1&Q2	—	—	100	nA	V _{GS} = 20V		
	Gate-to-Source Reverse Leakage	Q1&Q2	—	—	-100		V _{GS} = -20V		
g _{fs}	Forward Transconductance	Q1	19	—	—	S	V _{DS} = 15V, I _D = 7.0A		
		Q2	24	—	—		V _{DS} = 15V, I _D = 8.8A		
Q _g	Total Gate Charge	Q1	—	6.7	10	nC	Q1 V _{DS} = 15V V _{GS} = 4.5V, I _D = 7.0A Q2 V _{DS} = 15V V _{GS} = 4.5V, I _D = 8.8A		
		Q2	—	14	21				
Q _{gs1}	Pre-V _{th} Gate-to-Source Charge	Q1	—	1.3	—				
		Q2	—	3.0	—				
Q _{gs2}	Post-V _{th} Gate-to-Source Charge	Q1	—	0.7	—				
		Q2	—	1.3	—				
Q _{gd}	Gate-to-Drain Charge	Q1	—	2.5	—				
		Q2	—	4.9	—				
Q _{godr}	Gate Charge Overdrive	Q1	—	2.2	—				
		Q2	—	4.8	—				
Q _{sw}	Switch Charge (Q _{gs2} + Q _{gd})	Q1	—	3.2	—				
		Q2	—	6.2	—				
Q _{oss}	Output Charge	Q1	—	4.5	—	nC	V _{DS} = 16V, V _{GS} = 0V		
		Q2	—	9.0	—				
R _G	Gate Resistance	Q1	—	2.6	4.7	Ω			
		Q2	—	3.0	5.0				
t _{d(on)}	Turn-On Delay Time	Q1	—	6.0	—	ns	Q1 V _{DD} = 15V, V _{GS} = 4.5V I _D = 7.0A Q2 V _{DD} = 15V, V _{GS} = 4.5V I _D = 8.8A Clamped Inductive Load		
		Q2	—	8.0	—				
t _r	Rise Time	Q1	—	9.3	—				
		Q2	—	14	—				
t _{d(off)}	Turn-Off Delay Time	Q1	—	8.0	—				
		Q2	—	13	—				
t _f	Fall Time	Q1	—	3.4	—				
		Q2	—	5.3	—				
C _{iss}	Input Capacitance	Q1	—	850	—			pF	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz
		Q2	—	1790	—				
C _{oss}	Output Capacitance	Q1	—	190	—				
		Q2	—	390	—				
C _{rss}	Reverse Transfer Capacitance	Q1	—	88	—				
		Q2	—	190	—				

Avalanche Characteristics

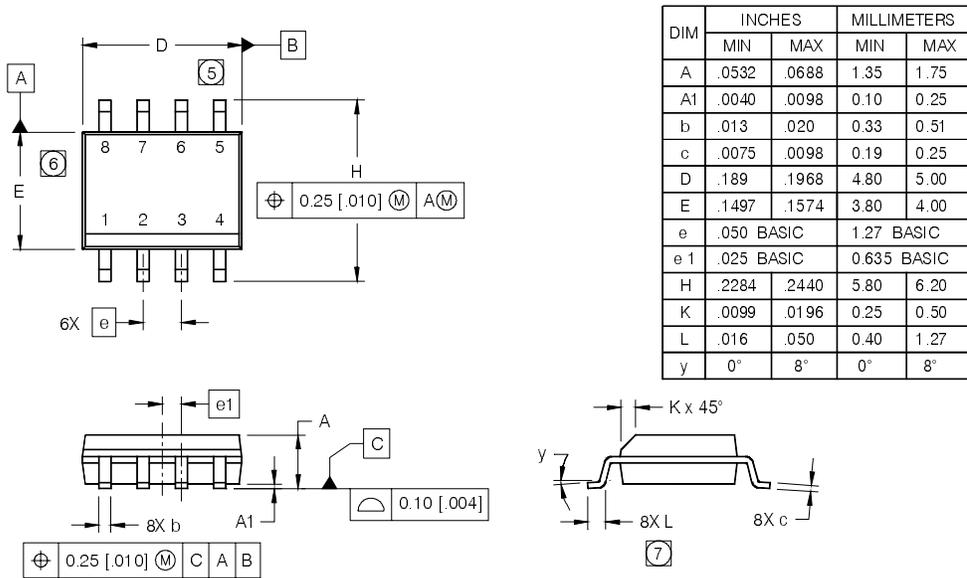
	Parameter	Typ.	Q1 Max.	Q2 Max.	Units
E _{AS}	Single Pulse Avalanche Energy ②	—	10	15	mJ
I _{AR}	Avalanche Current ①	—	7.0	8.8	A

Diode Characteristics

	Parameter		Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	Q1	—	—	2.8	A	MOSFET symbol showing the integral reverse p-n junction diode.
		Q2	—	—	2.8		
I _{SM}	Pulsed Source Current (Body Diode) ①	Q1	—	—	76	A	
		Q2	—	—	85		
V _{SD}	Diode Forward Voltage	Q1	—	—	1.0	V	T _J = 25°C, I _S = 7.3A, V _{GS} = 0V ③
		Q2	—	—	1.0		T _J = 25°C, I _S = 8.8A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time	Q1	—	12	18	ns	Q1 T _J = 25°C, I _F = 7.0A, V _{DD} = 15V, di/dt = 100A/μs ③
		Q2	—	16	24		
Q _{rr}	Reverse Recovery Charge	Q1	—	4.1	6.1	nC	Q2 T _J = 25°C, I _F = 8.8A, V _{DD} = 15V, di/dt = 100A/μs ③
		Q2	—	5.9	8.9		

SO-8 Package Outline (MOSFET & Fetky)

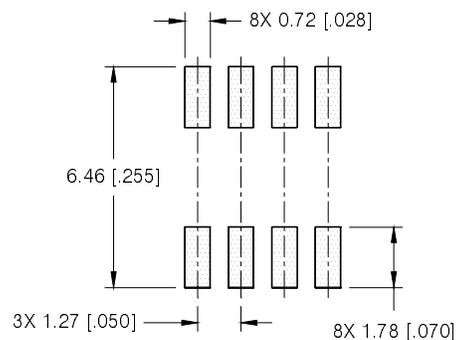
Dimensions are shown in millimeters (inches)



NOTES:

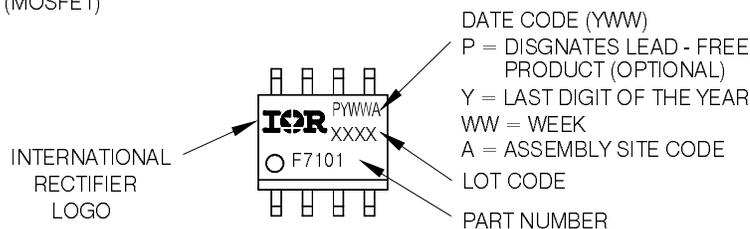
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- ⑤ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
- ⑥ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.010].
- ⑦ DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



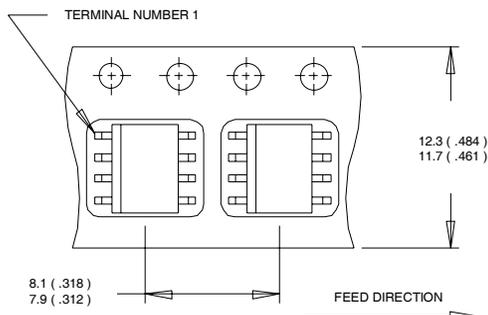
SO-8 Part Marking Information

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

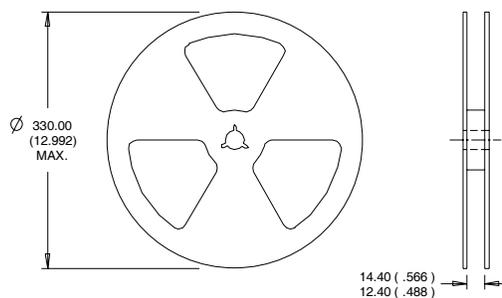


SO-8 Tape and Reel

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/>

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting $T_J = 25^\circ\text{C}$, Q1: $L = 0.41\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 7.0\text{A}$;
Q2: $L = 0.38\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 8.8\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board.
- ⑤ R_θ is measured at T_J approximately 90°C .

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.