

IRF7807ZPbF

HEXFET® Power MOSFET

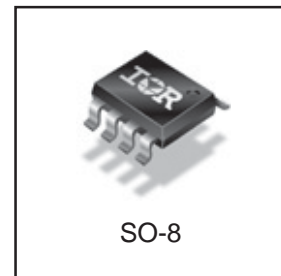
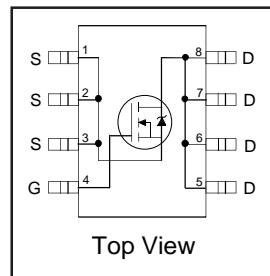
Applications

- Control FET for Notebook Processor Power
- Synchronous Rectifier MOSFET for Graphics Cards and POL Converters in Networking and Telecommunication Systems

Benefits

- Very Low $R_{DS(on)}$ at 4.5V V_{GS}
- Ultra-Low Gate Impedance
- Fully Characterized Avalanche Voltage and Current
- 100% Tested for R_G
- Lead-Free

V_{DSS}	$R_{DS(on)}$ max	Qg(typ.)
30V	13.8m Ω @ $V_{GS} = 10V$	7.2nC



Absolute Maximum Ratings

	Parameter	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, $V_{GS} @ 10V$	11	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	8.7	
I_{DM}	Pulsed Drain Current ①	88	
$P_D @ T_A = 25^\circ C$	Power Dissipation ④	2.5	W
$P_D @ T_A = 70^\circ C$	Power Dissipation ④	1.6	
	Linear Derating Factor	0.02	W/ $^\circ C$
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	$^\circ C$

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead	—	20	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient ④	—	50	

Notes ① through ④ are on page 10

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

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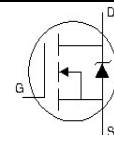
	Parameter	Min.	Typ.	Max.	Units	Conditions
BV _{DSS}	Drain-to-Source Breakdown Voltage	30	—	—	V	V _{GS} = 0V, I _D = 250μA
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	—	0.023	—	V/°C	Reference to 25°C, I _D = 1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	11	13.8	mΩ	V _{GS} = 10V, I _D = 11A ③
		—	14.5	18.2		V _{GS} = 4.5V, I _D = 8.8A ③
V _{GS(th)}	Gate Threshold Voltage	1.35	1.8	2.25	V	V _{DS} = V _{GS} , I _D = 250μA
ΔV _{GS(th)}	Gate Threshold Voltage Coefficient	—	-4.7	—	mV/°C	
I _{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	V _{DS} = 24V, V _{GS} = 0V
		—	—	150		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
g _{fs}	Forward Transconductance	22	—	—	S	V _{DS} = 15V, I _D = 8.8A
Q _g	Total Gate Charge	—	7.2	11	nC	V _{DS} = 15V V _{GS} = 4.5V I _D = 8.8A See Fig. 16
Q _{gs1}	Pre-V _{th} Gate-to-Source Charge	—	2.1	—		
Q _{gs2}	Post-V _{th} Gate-to-Source Charge	—	0.7	—		
Q _{gd}	Gate-to-Drain Charge	—	2.7	—		
Q _{godr}	Gate Charge Overdrive	—	1.7	—		
Q _{sw}	Switch Charge (Q _{gs2} + Q _{gd})	—	3.4	—		
Q _{oss}	Output Charge	—	2.8	—	nC	V _{DS} = 15V, V _{GS} = 0V
R _G	Gate Resistance	—	2.5	4.8	Ω	
t _{d(on)}	Turn-On Delay Time	—	6.9	—	ns	V _{DD} = 15V, V _{GS} = 4.5V ③ I _D = 8.8A Clamped Inductive Load
t _r	Rise Time	—	6.2	—		
t _{d(off)}	Turn-Off Delay Time	—	10	—		
t _f	Fall Time	—	3.1	—		
C _{iss}	Input Capacitance	—	770	—	pF	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz
C _{oss}	Output Capacitance	—	190	—		
C _{rss}	Reverse Transfer Capacitance	—	100	—		

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E _{AS}	Single Pulse Avalanche Energy ②	—	63	mJ
I _{AR}	Avalanche Current ①	—	8.8	A

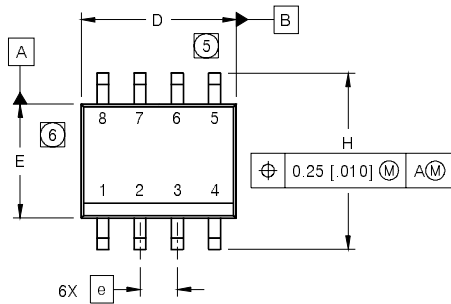
Diode Characteristics

	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	—	—	88		
V _{SD}	Diode Forward Voltage	—	—	1.0	V	T _J = 25°C, I _S = 8.8A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time	—	31	46	ns	T _J = 25°C, I _F = 8.8A, V _{DD} = 15V
Q _{rr}	Reverse Recovery Charge	—	17	26	nC	di/dt = 100A/μs ③

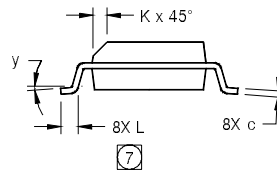
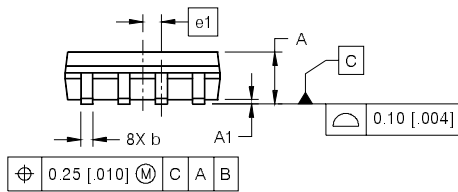


SO-8 Package Outline

Dimensions are shown in millimeters (inches)



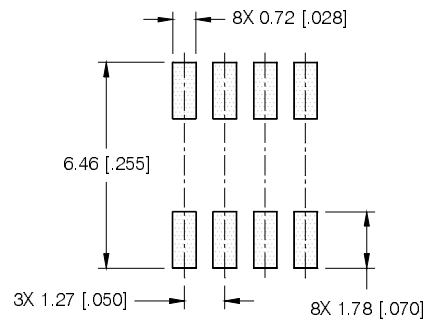
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	1.497	1.574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	2.284	2.440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°



NOTES:

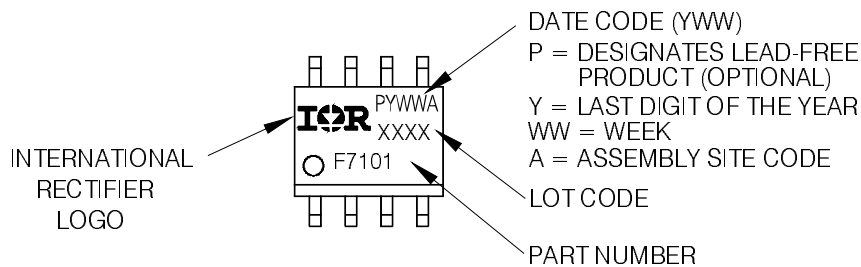
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- ⑤ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
- ⑥ DIMENSION DOES NOT 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

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

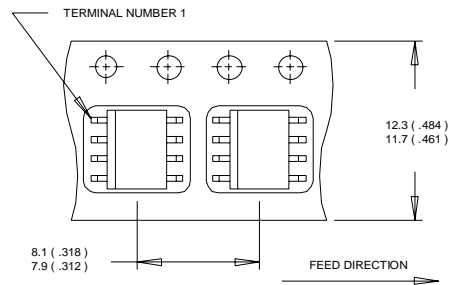


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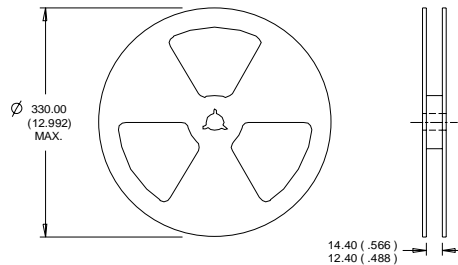
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SO-8 Tape and Reel

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.
- ② Starting $T_J = 25^\circ\text{C}$, $L = 1.6\text{mH}$
 $R_G = 25\Omega$, $I_{AS} = 8.8\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board

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

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