International
IOR Rectifier

IRF7905PbF

HEXFET® Power MOSFET

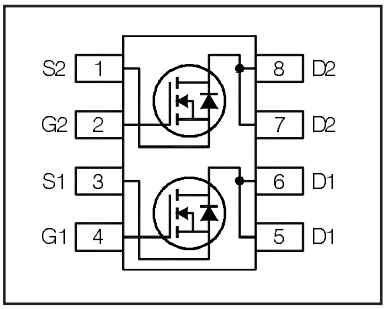
Applications

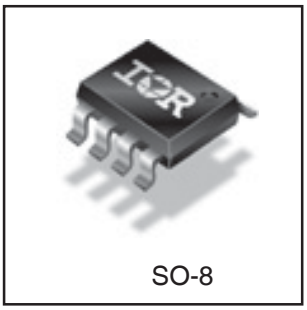
- Dual SO-8 MOSFET for POL Converters in Notebook Computers, Servers, Graphics Cards, Game Consoles and Set-Top Box

V_{DSS}	$R_{DS(on)}$ max	I_D
30V	Q1 21.8mΩ@V_{GS} = 10V	7.8A
	Q2 17.1mΩ@V_{GS} = 10V	8.9A

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





SO-8

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°C	Continuous Drain Current, V_{GS} @ 10V	7.8	8.9	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	6.2	7.1	
I_{DM}	Pulsed Drain Current ①	62	71	
P_D @T_A = 25°C	Power Dissipation	2.0	2.0	W
P_D @T_A = 70°C	Power Dissipation	1.3	1.3	
	Linear Derating Factor	0.016	0.016	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150		°C

Thermal Resistance

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

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

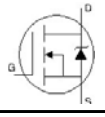
	Parameter		Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	Q1&Q2	30	–––	–––	V	V_{GS} = 0V, I_D = 250µA
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	Q1	–––	0.024	–––	V/°C	Reference to 25°C, I_D = 1mA
		Q2	–––	0.024	–––		
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	Q1	–––	17.4	21.8	mΩ	V_{GS} = 10V, I_D = 7.8A ③
			–––	23.4	29.3		V_{GS} = 4.5V, I_D = 6.2A ③
		Q2	–––	13.7	17.1		V_{GS} = 10V, I_D = 8.9A ③
			–––	17.1	21.3		V_{GS} = 4.5V, I_D = 7.1A ③
$V_{GS(th)}$	Gate Threshold Voltage	Q1&Q2	1.35	1.8	2.25	V	V_{DS} = V_{GS}, I_D = 25µA
$\Delta V_{GS(th)}/\Delta T_J$	Gate Threshold Voltage Coefficient	Q1	–––	-5.0	–––	mV/°C	
		Q2	–––	-5.0	–––		
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
gfs	Forward Transconductance	Q1	15	–––	–––	S	V_{DS} = 15V, I_D = 6.2A
		Q2	18	–––	–––		V_{DS} = 15V, I_D = 7.1A
Q_g	Total Gate Charge	Q1	–––	4.6	6.9	nC	
		Q2	–––	6.9	10		
Q_{gs1}	Pre-Vth Gate-to-Source Charge	Q1	–––	0.9	–––		Q1
		Q2	–––	1.5	–––		V_{DS} = 15V
Q_{gs2}	Post-Vth Gate-to-Source Charge	Q1	–––	0.6	–––		V_{GS} = 4.5V, I_D = 6.2A
		Q2	–––	0.8	–––		
Q_{gd}	Gate-to-Drain Charge	Q1	–––	1.7	–––		Q2
		Q2	–––	2.5	–––		V_{DS} = 15V
Q_{godr}	Gate Charge Overdrive	Q1	–––	1.4	–––		V_{GS} = 4.5V, I_D = 7.1A
		Q2	–––	2.1	–––		
Q_{sw}	Switch Charge (Q_{gs2} + Q_{gd})	Q1	–––	2.3	–––		
		Q2	–––	3.3	–––		
Q_{oss}	Output Charge	Q1	–––	2.9	–––	nC	V_{DS} = 16V, V_{GS} = 0V
		Q2	–––	4.5	–––		
R_G	Gate Resistance	Q1	–––	3.1	4.9	Ω	
		Q2	–––	3.1	4.9		
$t_{d(on)}$	Turn-On Delay Time	Q1	–––	5.2	–––	ns	Q1
		Q2	–––	6.2	–––		V_{DD} = 15V, V_{GS} = 4.5V
t_r	Rise Time	Q1	–––	8.3	–––		I_D = 6.2A
		Q2	–––	9.3	–––		
$t_{d(off)}$	Turn-Off Delay Time	Q1	–––	6.9	–––		Q2
		Q2	–––	8.1	–––		V_{DD} = 15V, V_{GS} = 4.5V
t_f	Fall Time	Q1	–––	3.4	–––		I_D = 7.1A
		Q2	–––	3.4	–––		Clamped Inductive Load
C_{iss}	Input Capacitance	Q1	–––	600	–––	pF	
		Q2	–––	910	–––		V_{GS} = 0V
C_{oss}	Output Capacitance	Q1	–––	130	–––		V_{DS} = 15V
		Q2	–––	190	–––		f = 1.0MHz
C_{rss}	Reverse Transfer Capacitance	Q1	–––	78	–––		
		Q2	–––	95	–––		

Avalanche Characteristics

	Parameter	Typ.	Q1 Max.	Q2 Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②	–––	12	18	mJ
I_{AR}	Avalanche Current ①	–––	6.2	7.1	A

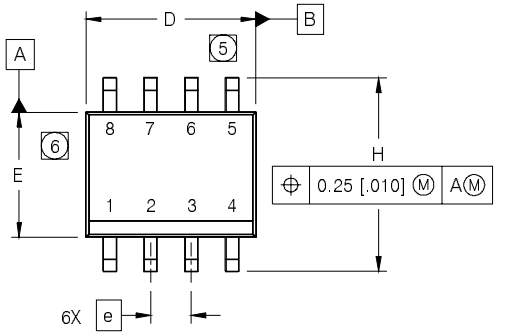
Diode Characteristics

	Parameter		Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current	Q1	–––	–––	2.8	A	MOSFET symbol
	(Body Diode)	Q2	–––	–––	2.8		showing the
I_{SM}	Pulsed Source Current	Q1	–––	–––	62	A	integral reverse
	(Body Diode) ①	Q2	–––	–––	71		p-n junction diode.
V_{SD}	Diode Forward Voltage	Q1	–––	–––	1.0	V	T_J = 25°C, I_S = 6.1A, V_{GS} = 0V ③
		Q2	–––	–––	1.0		T_J = 25°C, I_S = 7.1A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	Q1	–––	10	15	ns	Q1 T_J = 25°C, I_F = 6.2A,
		Q2	–––	13	20		V_{DD} = 15V, di/dt = 100A/µs ③
Q_{rr}	Reverse Recovery Charge	Q1	–––	2.5	3.8	nC	Q2 T_J = 25°C, I_F = 7.1A,
		Q2	–––	4.0	6.0		V_{DD} = 15V, di/dt = 100A/µs ③

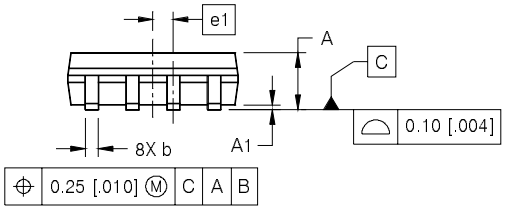


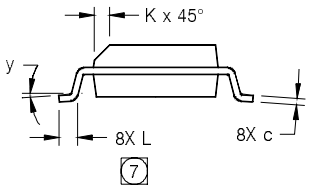
SO-8 Package Outline(Mosfet & Fetky)

Dimensions are shown in milimeters (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°





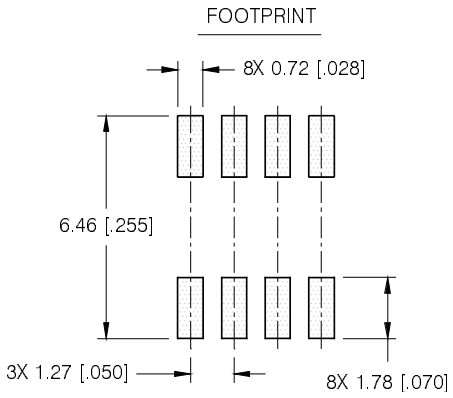
NOTES:

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].

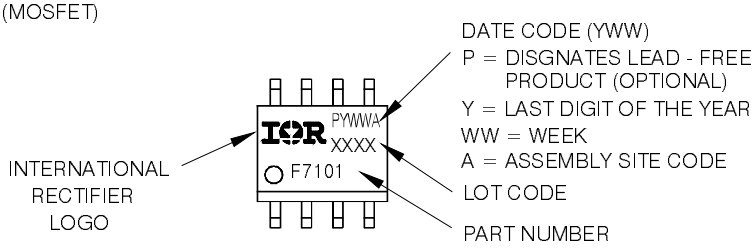
6 DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].

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



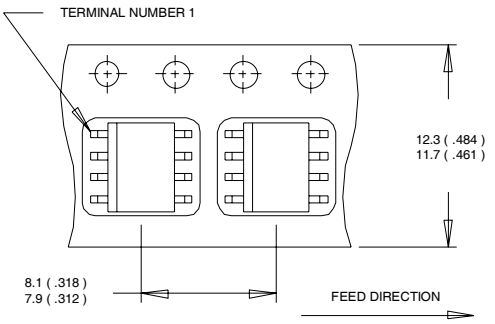
SO-8 Part Marking Information

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

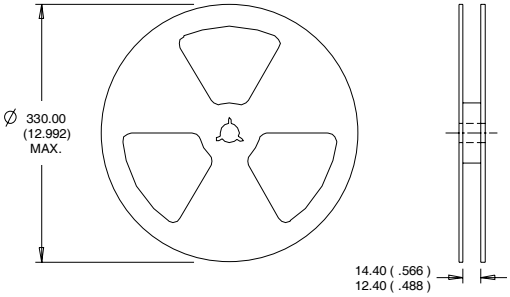


SO-8 Tape and Reel

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.

Notes:

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

② Starting T_J = 25°C, Q1: L = 0.62mH R_G = 25Ω, I_{AS} = 6.2A; Q2: L = 0.72mH R_G = 25Ω, I_{AS} = 7.1A.

③ Pulse width ≤ 400µs; duty cycle ≤ 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.

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