



HCMOS 7x5mm SMD Oscillator

O7HS

(former F4500, F4400, F4100 Series)

DATASHEET

- HCMOS Output
- Stabilities to ± 20 PPM
- Temperature Ranges as wide as -40°C to $+85^{\circ}\text{C}$
- Supply Voltages: 1.8V, 2.5V, 3.3V

1.8V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_0)	0.012 ~ 160.000 MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$1.8\text{V} \pm 5\%$
Input Current (I_{DD})	
0.012 ~ 32.000 MHz	5 mA
>32.000 ~ 70.000 MHz	10 mA
>70.000 ~ 120.000 MHz	15 mA
>120.000 ~ 160.000 MHz	30 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD})	40 % ~ 60 %
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	
0.012 ~ 32.000 MHz	5.0 nS
>32.000 ~ 120.000 MHz	3.5 nS
>120.000 ~ 160.000 MHz	3.0 nS
Output Voltage (V_{OL})	20% V_{DD}
(V_{OH})	80% V_{DD} Min
Output Current (I_{OL})	2 mA Min
(I_{OH})	-2 mA Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time ¹	300 nS
Output Enable Time ¹	10 mS

ENABLE / DISABLE FUNCTION

Pin1	Output (pin 3)
OPEN ¹	Active
'1' Level $V_{IH} \geq 70\% V_{DD}$	Active
'0' Level $V_{IL} \leq 30\% V_{DD}$	High Z

• Available Options by Stability & Operating Temp for 1.8V²

Frequency Stability ²	Operating Temperature ($^{\circ}\text{C}$)	Frequency Range (MHz)
$\pm 100\text{PPM}$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 100\text{PPM}$	$-20 \sim +70$	0.012 ~ 160.000
$\pm 100\text{PPM}$	$-40 \sim +85$	0.012 ~ 160.000
$\pm 50\text{PPM}$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 50\text{PPM}$	$-20 \sim +70$	0.012 ~ 160.000
$\pm 50\text{PPM}$	$-40 \sim +85$	0.012 ~ 160.000
$\pm 25\text{PPM}$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 25\text{PPM}$	$-20 \sim +70$	0.012 ~ 160.000
$\pm 25\text{PPM}$	$-40 \sim +85$	0.012 ~ 160.000
$\pm 20\text{PPM}^*$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 20\text{PPM}^*$	$-20 \sim +70$	0.012 ~ 160.000

¹ An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open

² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, reflow, and one year aging. *Excludes Shock/Vibration.





HCMOS 7x5mm SMD Oscillator

O7HS

(former F4500, F4400, F4100 Series)

DATASHEET

- HCMOS Output
- Stabilities to ± 20 PPM
- Temperature Ranges as wide as -40°C to $+85^{\circ}\text{C}$
- Supply Voltages: 1.8V, 2.5V, 3.3V

2.5V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_0)	0.012 ~ 170.000 MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$2.5\text{V} \pm 5\%$
Input Current (I_{DD})	
0.012 ~ 32.000 MHz	7 mA
$>32.000 \sim 50.000$ MHz	12 mA
$>50.000 \sim 125.000$ MHz	26 mA
$>125.000 \sim 160.000$ MHz	35 mA
$>160.000 \sim 170.000$ MHz	40 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD})	
0.012 ~ 50.000 MHz	45 % ~ 55 %
$>50.000 \sim 200.000$ MHz	40 % ~ 60 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	5 nS
Output Voltage (V_{OL})	10% V_{DD}
(V_{OH})	90% V_{DD} Min
Output Current (I_{OL})	4 mA Min
(I_{OH})	-4 mA Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time ¹	150 nS
Output Enable Time ¹	10 mS

ENABLE / DISABLE FUNCTION

Pin1	Output (pin 3)
OPEN ¹	Active
'1' Level $V_{IH} \geq 70\% V_{DD}$	Active
'0' Level $V_{IL} \leq 30\% V_{DD}$	High Z

• Available Options by Stability & Operating Temp for 2.5V²

Frequency Stability ²	Operating Temperature ($^{\circ}\text{C}$)	Frequency Range (MHz)
$\pm 100\text{PPM}$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 100\text{PPM}$	$-20 \sim +70$	0.012 ~ 170.000
$\pm 100\text{PPM}$	$-40 \sim +85$	0.012 ~ 170.000
$\pm 50\text{PPM}$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 50\text{PPM}$	$-20 \sim +70$	0.012 ~ 170.000
$\pm 50\text{PPM}$	$-40 \sim +85$	0.012 ~ 170.000
$\pm 25\text{PPM}$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 25\text{PPM}$	$-20 \sim +70$	0.012 ~ 170.000
$\pm 25\text{PPM}$	$-40 \sim +85$	0.012 ~ 170.000
$\pm 20\text{PPM}^*$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 20\text{PPM}^*$	$-20 \sim +70$	0.012 ~ 170.000

¹ An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open

² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, reflow, and one year aging. *Excludes Shock/Vibration.



© Copyright 2017 Fox Electronics, All rights reserved

Title / Description: O7HS SERIES STANDARD SPECIFICATIONS

Drawing Number: 101147

Size: A

Part Number:

Cage: 61429

Draftsperson: CMR

Approved: BEC

Revision Date: 10/10/2017



HCMOS 7x5mm SMD Oscillator

O7HS

(former F4500, F4400, F4100 Series)

DATASHEET

- HCMOS Output
- Stabilities to ± 20 PPM
- Temperature Ranges as wide as -40°C to $+85^{\circ}\text{C}$
- Supply Voltages: 1.8V, 2.5V, 3.3V

3.3V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_0)	0.012 ~ 170.000 MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$3.3\text{V} \pm 10\%$
Input Current (I_{DD})	
0.012 ~ 0.040 MHz	3 mA
$>0.040 \sim 1.500$ MHz	6 mA
$>1.500 \sim 32.000$ MHz	15 mA
$>32.000 \sim 50.000$ MHz	20 mA
$>50.000 \sim 67.000$ MHz	25 mA
$>67.000 \sim 170.000$ MHz	40 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD})	
0.012 ~ 50.000 MHz	45% ~ 55%
$>50.000 \sim 170.000$ MHz	40% ~ 60%
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	
0.012 ~ 80.000 MHz	6 nS
$>80.000 \sim 125.000$ MHz	4 nS
$>125.000 \sim 170.000$ MHz	3 nS
Output Voltage (V_{OL}) (V_{OH})	10% V_{DD} 90% V_{DD} Min
Output Current (I_{OL}) (I_{OH})	2 mA Min -2 mA Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time ¹	150 nS
Output Enable Time ¹	10 mS
Jitter ($F_0 \geq 100$ MHz, 12 kHz ~ 20 MHz)	0.3 pS Typ.

ENABLE / DISABLE FUNCTION

Pin1	Output (pin 3)
OPEN ¹	Active
'1' Level $V_{IH} \geq 70\% V_{DD}$	Active
'0' Level $V_{IL} \leq 30\% V_{DD}$	High Z

• Available Options by Stability & Operating Temp for 3.3V²

Frequency Stability ²	Operating Temperature ($^{\circ}\text{C}$)	Frequency Range (MHz)
$\pm 100\text{PPM}$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 100\text{PPM}$	$-20 \sim +70$	0.012 ~ 170.000
$\pm 100\text{PPM}$	$-40 \sim +85$	0.012 ~ 170.000
$\pm 50\text{PPM}$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 50\text{PPM}$	$-20 \sim +70$	0.012 ~ 170.000
$\pm 50\text{PPM}$	$-40 \sim +85$	0.012 ~ 170.000
$\pm 25\text{PPM}$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 25\text{PPM}$	$-20 \sim +70$	0.012 ~ 170.000
$\pm 25\text{PPM}$	$-40 \sim +85$	0.012 ~ 170.000
$\pm 20\text{PPM}^*$	$-10 \sim +70$	0.012 ~ 170.000
$\pm 20\text{PPM}^*$	$-20 \sim +70$	0.012 ~ 170.000

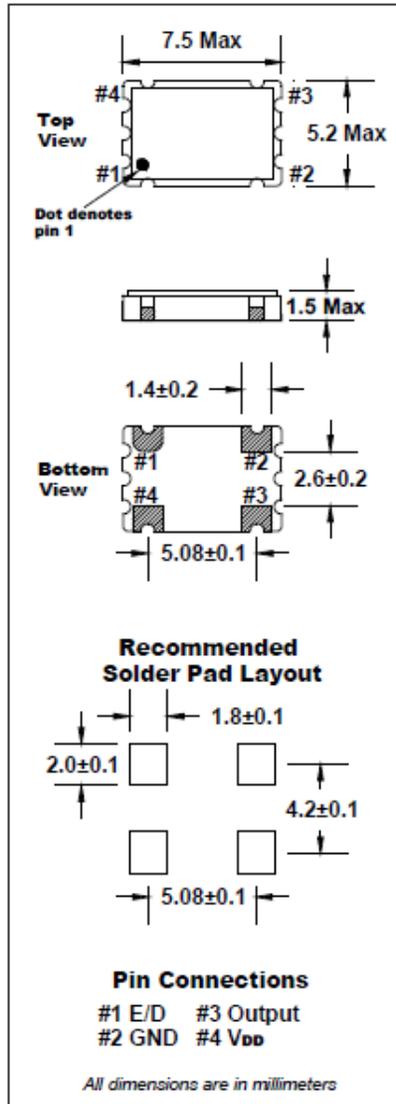
¹ An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open

² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, reflow, and one year aging. *Excludes Shock/Vibration.

	Title / Description: O7HS SERIES STANDARD SPECIFICATIONS		
	Drawing Number: 101147		Size: A
	Part Number:		Cage: 61429
	Draftsperson: CMR	Approved: BEC	Revision Date: 10/10/2017



DIMENSIONS / MECHANICAL SPECIFICATIONS



Maximum Soldering Temp / Time	260°C / 10 Seconds
Moisture Sensitivity Level (MSL)	1
Termination Finish	Au over Ni
Seal Method	Seam Seal
Lead (Pb) Free	Yes
ROHS/REACH Compliant	Yes

Notes:

*A 0.01µF capacitor should be placed between V_{DD} (Pin 4) and GND (Pin2) to minimize power supply line noise.

*Dimensional drawing is for reference to critical specifications defined by size measurements.

Certain non-critical visual attributes, such as side castellations, reference pin shape, etc. may vary

	Title / Description: O7HS SERIES STANDARD SPECIFICATIONS	
	Drawing Number: 101147	Size: A
	Part Number:	Cage: 61429
	Draftsperson: CMR	Approved: BEC
		Revision Date: 10/10/2017



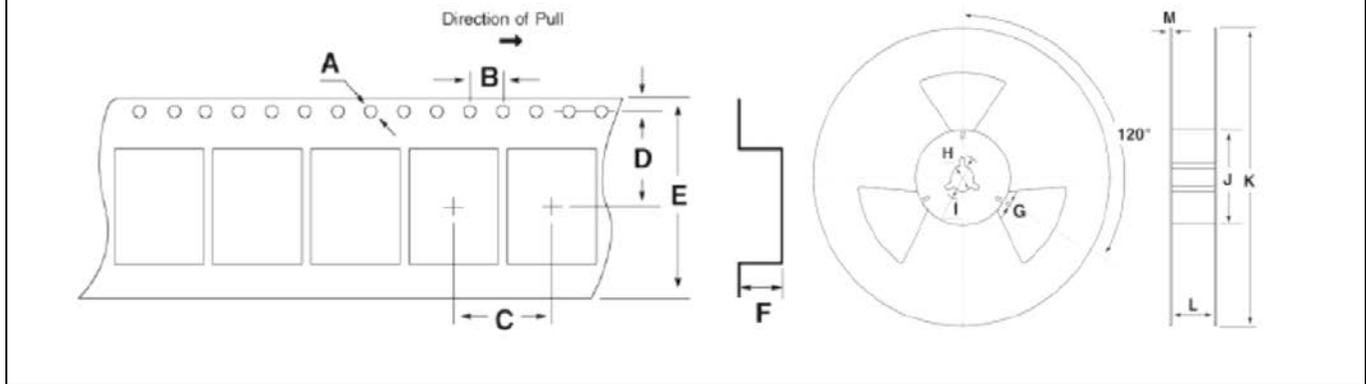
HCMOS 7x5mm SMD Oscillator

O7HS

(former F4500, F4400, F4100 Series)

DATASHEET

Tape Specifications (millimeters)							Reel Specifications (millimeters)							
A	B	C	D	E	F	Std Reel Qty	G	H	I	J	K	L	M	
Φ1.5	4.0	8.0	7.5	16.0	2.15	2,000	2.0	Φ13	Φ21	Φ80	Φ255	17.5	2.0	



Available Options & Part Identification*

Example: **F O7HS C B M 25.0**

F	O7HS	C	B	M	25.0
Fox	Model Number	Voltage K = 1.8V±5% H = 2.5V±5% C = 3.3V±10%	Stability A = 100PPM B = 50PPM D = 25PPM E = 20PPM	Operating Temperature E = -10 to +70°C F = -20 to +70°C M = -40 to +85°C	Frequency

*Not all frequencies in the frequency range, or every combination of stability, temp range, and voltage available. See stabilities and op temps for each V_{DD}.



Corporate Headquarters
5570 Enterprise Parkway
Fort Myers, FL 33905
<http://www.FOXONLINE.com>

Sales
1-888-GET-2-FOX (1-888-438-2369)
or
1-239-693-0099
<http://www.FOXONLINE.com/repdisty>

Tech Support
<http://www.FOXONLINE.com/email>

Product use: Fox Electronics reserves the right to modify the products and/or specifications described herein at any time and at Fox Electronics' sole discretion. All information in this document, including descriptions of product features and performance, is subject to change without notice. Performance specifications and the operating parameters of the described products are determined in the independent state and are not guaranteed to perform the same way when installed in customer products. The information contained herein is provided without representation or warranty of any kind, whether express or implied, including, but not limited to, the suitability of Fox Electronics' products for any particular purpose, an implied warranty of merchantability, or non-infringement of the intellectual property rights of others. This document is presented only as a guide and does not convey any license under intellectual property rights of Fox Electronics or any third parties.

Fox Electronics' products are not intended for use in applications involving extreme environmental conditions or in life support systems or similar devices where the failure or malfunction of a Fox Electronics product can be reasonably expected to significantly affect the health or safety of users. Anyone using a Fox Electronics product in such a manner does so at their own risk, absent an express, written agreement by Fox Electronics.

Fox Electronics and the Fox logo are registered trademarks of Fox Electronics. Product specification is subject to change without notice. Other trademarks and service marks used herein, including protected names, logos and designs, are the property of Fox Electronics or their respective third party owners.

	Title / Description: O7HS SERIES STANDARD SPECIFICATIONS		
	Drawing Number: 101147		Size: A
	Part Number:		Cage: 61429
	Draftsperson: CMR	Approved: BEC	Revision Date: 10/10/2017

© Copyright 2017 Fox Electronics. All rights reserved