



# HCMOS 7x5mm SMD Oscillator

## O7HS

(former F4500, F4400, F4100 Series)

### DATASHEET

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

## ENABLE / DISABLE FUNCTION

Pin1	Output (pin 3)
OPEN <sup>1</sup>	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 1.8V

Frequency Stability	Operating Temperature ( $^{\circ}\text{C}$ )	Frequency Range (MHz)
$\pm 100\text{PPM}^2$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 100\text{PPM}^2$	$-20 \sim +70$	0.012 ~ 160.000
$\pm 100\text{PPM}^2$	$-40 \sim +85$	0.012 ~ 160.000
$\pm 50\text{PPM}^2$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 50\text{PPM}^2$	$-20 \sim +70$	0.012 ~ 160.000
$\pm 50\text{PPM}^2$	$-40 \sim +85$	0.012 ~ 160.000
$\pm 25\text{PPM}^2$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 25\text{PPM}^2$	$-20 \sim +70$	0.012 ~ 160.000
$\pm 25\text{PPM}^3$	$-40 \sim +85$	0.012 ~ 160.000
$\pm 20\text{PPM}^3$	$-10 \sim +70$	0.012 ~ 160.000
$\pm 20\text{PPM}^3$	$-20 \sim +70$	0.012 ~ 160.000

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

<sup>2</sup> Inclusive of  $25^{\circ}\text{C}$  tolerance, operating temperature range, input voltage change, load change, reflow, one-year aging, shock, and vibration.

<sup>3</sup> Inclusive of  $25^{\circ}\text{C}$  tolerance, operating temperature range.



© Copyright 2020 Fox Electronics. All rights reserved

<b>Title / Description:</b> O7HS SERIES STANDARD SPECIFICATIONS		
<b>Drawing Number:</b> O7HS-DOC-1		<b>Size:</b> A
<b>Part Number:</b>		<b>Cage:</b> 61429
<b>Draftsperson:</b> BEC	<b>Approved:</b> MAJ	<b>Revision Date:</b> 01/13/2020



# HCMOS 7x5mm SMD Oscillator

## O7HS

(former F4500, F4400, F4100 Series)

### DATASHEET

#### 2.5V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F <sub>o</sub> )	0.012 ~ 170.000MHz
Storage Temperature Range (T <sub>STG</sub> )	-55 ~ +125°C
Supply Voltage (V <sub>DD</sub> )	2.5V±5%
Input Current (I <sub>DD</sub> )	
0.012 ~ 32.000MHz	7mA
>32.000 ~ 50.000MHz	12mA
>50.000 ~ 125.000MHz	26mA
>125.000 ~ 160.000MHz	35mA
>160.000 ~ 170.000MHz	40mA
Standby Current	10µA
Output Symmetry (50% V <sub>DD</sub> )	
0.012 ~ 50.000MHz	45% ~ 55%
>50.000 ~ 200.000MHz	40% ~ 60%
Rise/Fall Time (10%/90% V <sub>DD</sub> Levels) (T <sub>R</sub> /T <sub>F</sub> )	5nS
Output Voltage (V <sub>OL</sub> )	10%V <sub>DD</sub>
(V <sub>OH</sub> )	90%V <sub>DD</sub> Min
Output Load (HCMOS)	15pF
Start-up Time (T <sub>s</sub> )	10mS
Output Disable Time <sup>1</sup>	150nS
Output Enable Time <sup>1</sup>	10mS

#### ENABLE / DISABLE FUNCTION

Pin1	Output (pin 3)
OPEN <sup>1</sup>	Active
'1' Level V <sub>IH</sub> ≥ 70%V <sub>DD</sub>	Active
'0' Level V <sub>IL</sub> ≤ 30%V <sub>DD</sub>	High Z

#### • Available Options by Stability & Operating Temp for 2.5V

Frequency Stability	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM <sup>2</sup>	-10 ~ +70	0.012 ~ 170.000
±100PPM <sup>2</sup>	-20 ~ +70	0.012 ~ 170.000
±100PPM <sup>2</sup>	-40 ~ +85	0.012 ~ 170.000
±50PPM <sup>2</sup>	-10 ~ +70	0.012 ~ 170.000
±50PPM <sup>2</sup>	-20 ~ +70	0.012 ~ 170.000
±50PPM <sup>2</sup>	-40 ~ +85	0.012 ~ 170.000
±25PPM <sup>2</sup>	-10 ~ +70	0.012 ~ 170.000
±25PPM <sup>2</sup>	-20 ~ +70	0.012 ~ 170.000
±25PPM <sup>2</sup>	-40 ~ +85	0.012 ~ 170.000
±25PPM <sup>3</sup>	-10 ~ +70	0.012 ~ 170.000
±20PPM <sup>3</sup>	-10 ~ +70	0.012 ~ 170.000
±20PPM <sup>3</sup>	-20 ~ +70	0.012 ~ 170.000

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

<sup>2</sup> Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, reflow, one-year aging, shock, and vibration.

<sup>3</sup> Inclusive of 25°C tolerance, operating temperature range.



© Copyright 2020 Fox Electronics. All rights reserved

<b>Title / Description:</b> O7HS SERIES STANDARD SPECIFICATIONS		
<b>Drawing Number:</b> O7HS-DOC-1		<b>Size:</b> A
<b>Part Number:</b>		<b>Cage:</b> 61429
<b>Draftsperson:</b> BEC	<b>Approved:</b> MAJ	<b>Revision Date:</b> 01/13/2020



# HCMOS 7x5mm SMD Oscillator

## O7HS

(former F4500, F4400, F4100 Series)

### DATASHEET

### 3.3V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F <sub>o</sub> )	0.012 ~ 170.000MHz
Storage Temperature Range (T <sub>STG</sub> )	-55 ~ +125°C
Supply Voltage (V <sub>DD</sub> )	3.3V±10%
Input Current (I <sub>DD</sub> )	
0.012 ~ 0.040MHz	3 mA
>0.040 ~ 1.500MHz	6 mA
>1.500 ~ 32.000MHz	15 mA
>32.000 ~ 50.000MHz	20 mA
>50.000 ~ 67.000MHz	25 mA
>67.000 ~ 170.000MHz	40 mA
Standby Current	10 µA
Output Symmetry (50% V <sub>DD</sub> )	
0.012 ~ 50.000MHz	45% ~ 55%
>50.000 ~ 170.000MHz	40% ~ 60%
Rise/Fall Time (10%/90% V <sub>DD</sub> Levels) (T <sub>R</sub> /T <sub>F</sub> )	
0.012 ~ 80.000MHz	6 nS
>80.000 ~ 125.000MHz	4 nS
>125.000 ~ 170.000MHz	3 nS
Output Voltage (V <sub>OL</sub> )	10% V <sub>DD</sub>
(V <sub>OH</sub> )	90% V <sub>DD</sub> Min
Output Load (HCMOS)	15 pF
Start-up Time (T <sub>s</sub> )	10 mS
Output Disable Time <sup>1</sup>	150 nS
Output Enable Time <sup>1</sup>	10 mS

### ENABLE / DISABLE FUNCTION

Pin1	Output (pin 3)
OPEN <sup>1</sup>	Active
'1' Level V <sub>IH</sub> ≥ 70%V <sub>DD</sub>	Active
'0' Level V <sub>IL</sub> ≤ 30%V <sub>DD</sub>	High Z

### • Available Options by Stability & Operating Temp for 3.3V

Frequency Stability	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM <sup>2</sup>	-10 ~ +70	0.012 ~ 170.000
±100PPM <sup>2</sup>	-20 ~ +70	0.012 ~ 170.000
±100PPM <sup>2</sup>	-40 ~ +85	0.012 ~ 170.000
±50PPM <sup>2</sup>	-10 ~ +70	0.012 ~ 170.000
±50PPM <sup>2</sup>	-20 ~ +70	0.012 ~ 170.000
±50PPM <sup>2</sup>	-40 ~ +85	0.012 ~ 170.000
±25PPM <sup>2</sup>	-10 ~ +70	0.012 ~ 170.000
±25PPM <sup>2</sup>	-20 ~ +70	0.012 ~ 170.000
±25PPM <sup>3</sup>	-40 ~ +85	0.012 ~ 170.000
±20PPM <sup>3</sup>	-10 ~ +70	0.012 ~ 170.000
±20PPM <sup>3</sup>	-20 ~ +70	0.012 ~ 170.000

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

<sup>2</sup> Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, reflow, one-year aging, shock, and vibration.

<sup>3</sup> Inclusive of 25°C tolerance, operating temperature range.



© Copyright 2020 Fox Electronics. All rights reserved

<b>Title / Description:</b> O7HS SERIES STANDARD SPECIFICATIONS		
<b>Drawing Number:</b> O7HS-DOC-1		<b>Size:</b> A
<b>Part Number:</b>		<b>Cage:</b> 61429
<b>Draftsperson:</b> BEC	<b>Approved:</b> MAJ	<b>Revision Date:</b> 01/13/2020



# HCMOS 7x5mm SMD Oscillator

## O7HS

(former F4500, F4400, F4100 Series)

### DATASHEET

## DIMENSIONS / MECHANICAL SPECIFICATIONS



### Recommended Solder Pad Layout



Dimensions in mm

### Pin Connections

#1 E/D    #3 Output  
 #2 GND   #4 V<sub>DD</sub>

Maximum Soldering Temp / Time	260°C / 10 Seconds x 2
Moisture Sensitivity Level (MSL)	1
Termination Finish	Au over Ni
Seal Method	Seam
Lead (Pb) Free	Yes
ROHS/REACH Compliant	Yes

#### Notes:

\*A 0.01μF capacitor should be placed between V<sub>DD</sub> (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

 © Copyright 2020 Fox Electronics. All rights reserved	<b>Title / Description:</b> O7HS SERIES STANDARD SPECIFICATIONS		
	<b>Drawing Number:</b> O7HS-DOC-1		<b>Size:</b> A
	<b>Part Number:</b>		<b>Cage:</b> 61429
	<b>Draftsperson:</b> BEC	<b>Approved:</b> MAJ	<b>Revision Date:</b> 01/13/2020



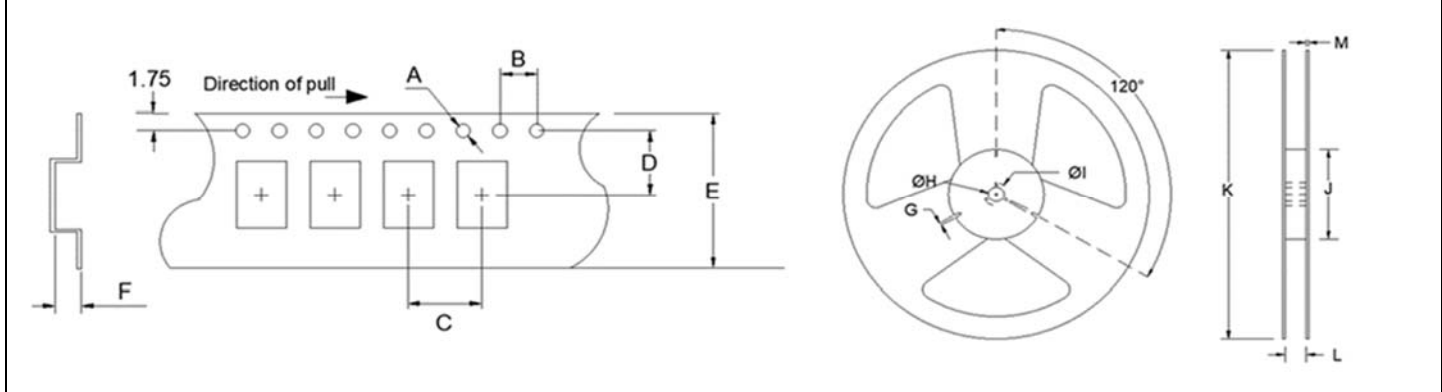
# HCMOS 7x5mm SMD Oscillator

## O7HS

(former F4500, F4400, F4100 Series)

### DATASHEET

Tape Specifications (millimeters)						Reel Specifications (millimeters)								
A	B	C	D	E	F	Reel Qty		G	H	I	J	K	L	M
Ø1.5	4.0	8.0	7.5	16.0	2.15	-T1 = 1,000	-T2 = 2,000	2.0	Ø13	Ø21	Ø80	Ø255	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	Stability	Operating Temperature	Frequency(MHz)
		K = 1.8V±5% H = 2.5V±5% <b>C = 3.3V±10%</b>	A = ±100PPM <b>B = ±50PPM</b> D = ±25PPM E = ±20PPM	E = -10 to +70°C F = -20 to +70°C <b>M = -40 to +85°C</b>	

\*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<sub>DD</sub>.



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.

	<b>Title / Description:</b> O7HS SERIES STANDARD SPECIFICATIONS		
	<b>Drawing Number:</b> O7HS-DOC-1	<b>Size:</b> A	
	<b>Part Number:</b>	<b>Cage:</b> 61429	
	<b>Draftsperson:</b> BEC	<b>Approved:</b> MAJ	<b>Revision Date:</b> 01/13/2020

© Copyright 2020 Fox Electronics. All rights reserved

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А