HCMOS 7x5mm SMD Oscillator O7HS

(former F4500, F4400, F4100 Series)

DATASHEET

- HCMOS Output
- Stabilities to ±20 PPM
- Temperature Ranges as wide as -40ºC to +85ºC
- Supply Voltages: 1.8V, 2.5V, 3.3V

1.8V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.012 ~ 160.000 MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	1.8V±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 uA
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 1.8V[2]

Frequency Stability[2]	Operating Temperature (ºC)	Frequency Range (MHz)
±100PPM	-10 ~ +70	0.012 ~ 160.000
±100PPM	-20 ~ +70	0.012 ~ 160.000
±100PPM	-40 ~ +85	0.012 ~ 160.000
±50PPM	-10 ~ +70	0.012 ~ 160.000
±50PPM	-20 ~ +70	0.012 ~ 160.000
±50PPM	-40 ~ +85	0.012 ~ 160.000
±25PPM	-10 ~ +70	0.012 ~ 160.000
±25PPM	-20 ~ +70	0.012 ~ 160.000
±25PPM	-40 ~ +85	0.012 ~ 160.000
±20PPM*	-10 ~ +70	0.012 ~ 160.000
±20PPM*	-20 ~ +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.

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

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2.5V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.012 ~ 170.000 MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	2.5V±5%
Input Current (I_{DD})	
0.012 ~ 32.000 MHz	7 mA
>32.000 ~ 50.000 MHz	12 mA
>50.000 ~ 125.000 MHz	26 mA
>125.000 ~ 160.000 MHz	35 mA
>160.000 ~ 170.000 MHz	40 mA
Standby Current	10 uA
Output Symmetry (50% V_{DD})	
0.012 ~ 50.000 MHz	45 % ~ 55 %
>50.000 ~ 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 2.5V[2]

Frequency Stability[2]	Operating Temperature (ºC)	Frequency Range (MHz)
±100PPM	-10 ~ +70	0.012 ~ 170.000
±100PPM	-20 ~ +70	0.012 ~ 170.000
±100PPM	-40 ~ +85	0.012 ~ 170.000
±50PPM	-10 ~ +70	0.012 ~ 170.000
±50PPM	-20 ~ +70	0.012 ~ 170.000
±50PPM	-40 ~ +85	0.012 ~ 170.000
±25PPM	-10 ~ +70	0.012 ~ 170.000
±25PPM	-20 ~ +70	0.012 ~ 170.000
±25PPM	-40 ~ +85	0.012 ~ 170.000
±20PPM*	-10 ~ +70	0.012 ~ 170.000
±20PPM*	-20 ~ +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

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3.3V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.012 ~ 170.000 MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	3.3V±10%
Input Current (I_{DD})	
0.012 ~ 0.040 MHz	3 mA
>0.040 ~ 1.500 MHz	6 mA
>1.500 ~ 32.000 MHz	15 mA
>32.000 ~ 50.000 MHz	20 mA
>50.000 ~ 67.000 MHz	25 mA
>67.000 ~ 170.000 MHz	40 mA
Standby Current	10 uA
Output Symmetry (50% V_{DD})	
0.012 ~ 50.000 MHz	45% ~ 55%
>50.000 ~ 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 ~ 125.000 MHz	4 nS
>125.000 ~ 170.000 MHz	3 nS
Output Voltage (V_{OL})	10% V_{DD}
(V_{OH})	90% 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]	150 nS
Output Enable Time [1]	10 mS
Jitter (FO ≥ 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 3.3V[2]

Frequency Stability[2]	Operating Temperature (ºC)	Frequency Range (MHz)
±100PPM	-10 ~ +70	0.012 ~ 170.000
±100PPM	-20 ~ +70	0.012 ~ 170.000
±100PPM	-40 ~ +85	0.012 ~ 170.000
±50PPM	-10 ~ +70	0.012 ~ 170.000
±50PPM	-20 ~ +70	0.012 ~ 170.000
±50PPM	-40 ~ +85	0.012 ~ 170.000
±25PPM	-10 ~ +70	0.012 ~ 170.000
±25PPM	-20 ~ +70	0.012 ~ 170.000
±25PPM	-40 ~ +85	0.012 ~ 170.000
±20PPM*	-10 ~ +70	0.012 ~ 170.000
±20PPM*	-20 ~ +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

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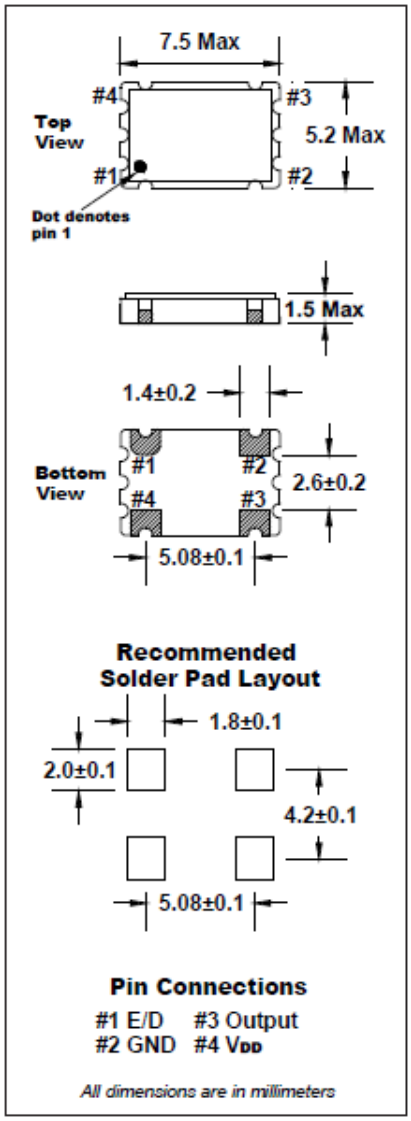
DIMENSIONS / MECHANICAL SPECIFICATIONS



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

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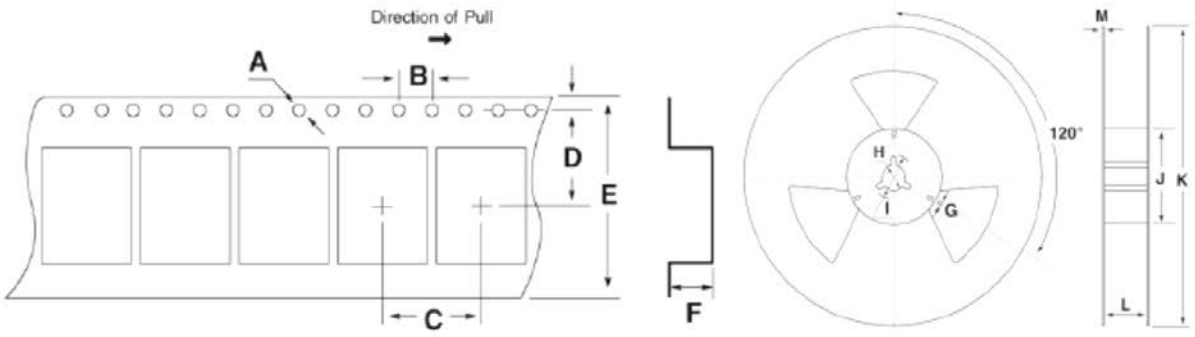
Tape Specifications (millimeters)								Reel Specifications (millimeters)						
A	B	C	D	E	F	Std Reel Qty		G	H	I	J	K	L	M
Φ1.5	4.0	8.0	7.5	16.0	2.15	2,000		2.0	Φ13	Φ21	Φ80	Φ255	17.5	2.0



Available Options & Part Identification*

Example: F O7HS C B M 25.0

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

*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

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