HCMOS 7x5mm SMD Oscillator

O7HS

(former F4500, F4400, F4100 Series)

DATASHEET

- HCMOS Output
- Stabilities to ±20 PPM
- Temperature Ranges to -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 ~ 160.000MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	1.8V±5%
Input Current (I_{DD})	
0.012 ~ 32.000MHz	5mA
>32.000 ~ 70.000MHz	10mA
>70.000 ~ 120.000MHz	15mA
>120.000 ~ 160.000MHz	30mA
Standby Current	10µA
Output Symmetry (50% V_{DD})	40% ~ 60%
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	
0.012 ~ 32.000MHz	5.0nS
>32.000 ~ 120.000MHz	3.5nS
>120.000 ~ 160.000MHz	3.0nS
Output Voltage (V_{OL})	20%V_{DD}
(V_{OH})	80%V_{DD} Min
Output Current (I_{OL})	2mA Min
(I_{OH})	-2mA Min
Output Load (HCMOS)	15pF
Start-up Time (T_S)	10mS
Output Disable Time [1]	300nS
Output Enable Time [1]	10mS

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

Frequency Stability	Operating Temperature (ºC)	Frequency Range (MHz)
±100PPM[2]	-10 ~ +70	0.012 ~ 160.000
±100PPM[2]	-20 ~ +70	0.012 ~ 160.000
±100PPM[2]	-40 ~ +85	0.012 ~ 160.000
±50PPM[2]	-10 ~ +70	0.012 ~ 160.000
±50PPM[2]	-20 ~ +70	0.012 ~ 160.000
±50PPM[2]	-40 ~ +85	0.012 ~ 160.000
±25PPM[2]	-10 ~ +70	0.012 ~ 160.000
±25PPM[2]	-20 ~ +70	0.012 ~ 160.000
±25PPM[3]	-40 ~ +85	0.012 ~ 160.000
±20PPM[3]	-10 ~ +70	0.012 ~ 160.000
±20PPM[3]	-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, one-year aging, shock, and vibration.

[3] Inclusive of 25°C tolerance, operating temperature range.

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Title / Description: O7HS SERIES STANDARD SPECIFICATIONS		
Drawing Number: O7HS-DOC-1		**Size:** A
Part Number:		**Cage:** 61429
Draftsperson: BEC	**Approved:** MAJ	**Revision Date:** 10/02/2019

2.5V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.012 ~ 170.000MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	2.5V±5%
Input Current (I_{DD})	
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_{DD})	
0.012 ~ 50.000MHz	45% ~ 55%
>50.000 ~ 200.000MHz	40% ~ 60%
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	5nS
Output Voltage (V_{OL})	10%V_{DD}
(V_{OH})	90%V_{DD} Min
Output Current (I_{OL})	4mA Min
(I_{OH})	-4mA Min
Output Load (HCMOS)	15pF
Start-up Time (T_S)	10mS
Output Disable Time [1]	150nS
Output Enable Time [1]	10mS

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

Frequency Stability	Operating Temperature (ºC)	Frequency Range (MHz)
±100PPM[2]	-10 ~ +70	0.012 ~ 170.000
±100PPM[2]	-20 ~ +70	0.012 ~ 170.000
±100PPM[2]	-40 ~ +85	0.012 ~ 170.000
±50PPM[2]	-10 ~ +70	0.012 ~ 170.000
±50PPM[2]	-20 ~ +70	0.012 ~ 170.000
±50PPM[2]	-40 ~ +85	0.012 ~ 170.000
±25PPM[2]	-10 ~ +70	0.012 ~ 170.000
±25PPM[2]	-20 ~ +70	0.012 ~ 170.000
±25PPM[3]	-40 ~ +85	0.012 ~ 170.000
±20PPM[3]	-10 ~ +70	0.012 ~ 170.000
±20PPM[3]	-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
[2] Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, reflow, one-year aging, shock, and vibration.
[3] Inclusive of 25°C tolerance, operating temperature range.

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3.3V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.012 ~ 170.000MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	3.3V±10%
Input Current (I_{DD})	
0.012 ~ 0.040MHz	3mA
>0.040 ~ 1.500MHz	6mA
>1.500 ~ 32.000MHz	15mA
>32.000 ~ 50.000MHz	20mA
>50.000 ~ 67.000MHz	25mA
>67.000 ~ 170.000MHz	40mA
Standby Current	10µA
Output Symmetry (50% V_{DD})	
0.012 ~ 50.000MHz	45% ~ 55%
>50.000 ~ 170.000MHz	40% ~ 60%
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	
0.012 ~ 80.000MHz	6nS
>80.000 ~ 125.000MHz	4nS
>125.000 ~ 170.000MHz	3nS
Output Voltage (V_{OL})	10% V_{DD}
(V_{OH})	90% V_{DD} Min
Output Current (I_{OL})	2mA Min
(I_{OH})	-2mA Min
Output Load (HCMOS)	15pF
Start-up Time (T_S)	10mS
Output Disable Time [1]	150nS
Output Enable Time [1]	10mS

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

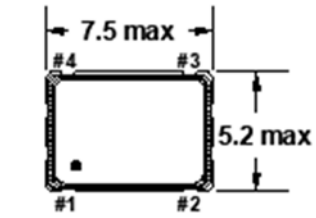
Frequency Stability	Operating Temperature (ºC)	Frequency Range (MHz)
±100PPM[2]	-10 ~ +70	0.012 ~ 170.000
±100PPM[2]	-20 ~ +70	0.012 ~ 170.000
±100PPM[2]	-40 ~ +85	0.012 ~ 170.000
±50PPM[2]	-10 ~ +70	0.012 ~ 170.000
±50PPM[2]	-20 ~ +70	0.012 ~ 170.000
±50PPM[2]	-40 ~ +85	0.012 ~ 170.000
±25PPM[2]	-10 ~ +70	0.012 ~ 170.000
±25PPM[2]	-20 ~ +70	0.012 ~ 170.000
±25PPM[3]	-40 ~ +85	0.012 ~ 170.000
±20PPM[3]	-10 ~ +70	0.012 ~ 170.000
±20PPM[3]	-20 ~ +70	0.012 ~ 170.000

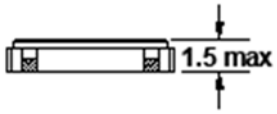
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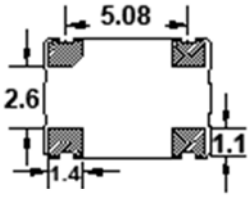
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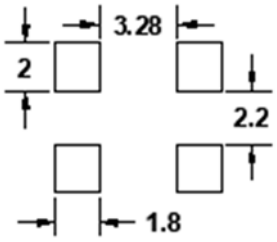
DIMENSIONS / MECHANICAL SPECIFICATIONS







Recommended Solder Pad Layout



Dimensions in mm

Pin Connections

#1 E/D #3 Output
#2 GND #4 V_{DD}

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_{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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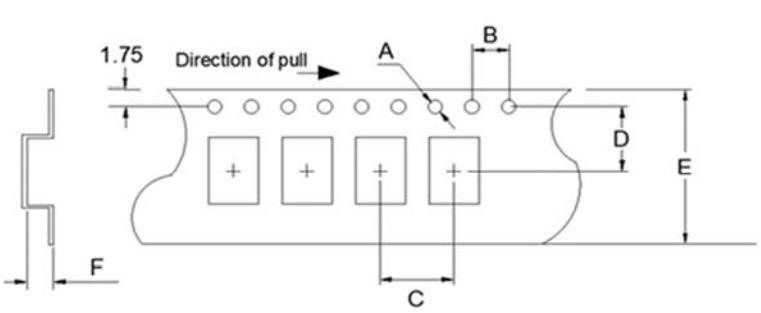
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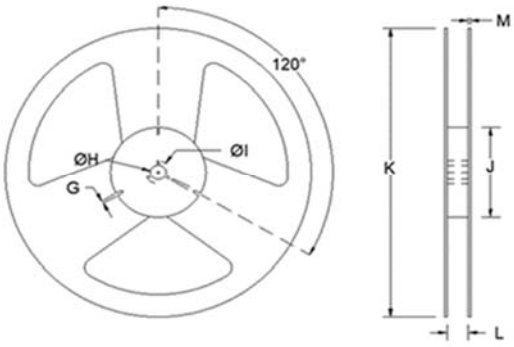
O7HS

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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% **C = 3.3V±10%**	A = ±100PPM **B = ±50PPM** D = ±25PPM E = ±20PPM	E = -10 to +70ºC F = -20 to +70ºC **M = -40 to +85ºC**	

*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}.

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