



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_O)	0.012 ~ 160.000 MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	1.8V $\pm 5\%$
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 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}) (V_{OH})	20% V_{DD} 80% 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	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 (°C)	Frequency Range (MHz)
$\pm 100\text{PPM}$	-10 ~ +70	0.012 ~ 160.000
$\pm 100\text{PPM}$	-20 ~ +70	0.012 ~ 160.000
$\pm 100\text{PPM}$	-40 ~ +85	0.012 ~ 160.000
$\pm 50\text{PPM}$	-10 ~ +70	0.012 ~ 160.000
$\pm 50\text{PPM}$	-20 ~ +70	0.012 ~ 160.000
$\pm 50\text{PPM}$	-40 ~ +85	0.012 ~ 160.000
$\pm 25\text{PPM}$	-10 ~ +70	0.012 ~ 160.000
$\pm 25\text{PPM}$	-20 ~ +70	0.012 ~ 160.000
$\pm 25\text{PPM}$	-40 ~ +85	0.012 ~ 160.000
$\pm 20\text{PPM}^*$	-10 ~ +70	0.012 ~ 160.000
$\pm 20\text{PPM}^*$	-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.





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07HS

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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

ENABLE / DISABLE FUNCTION

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

- Available Options by Stability & Operating Temp for 2.5V²

Frequency Stability ²	Operating Temperature (°C)	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

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



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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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(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 _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}) (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 (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 (°C)	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

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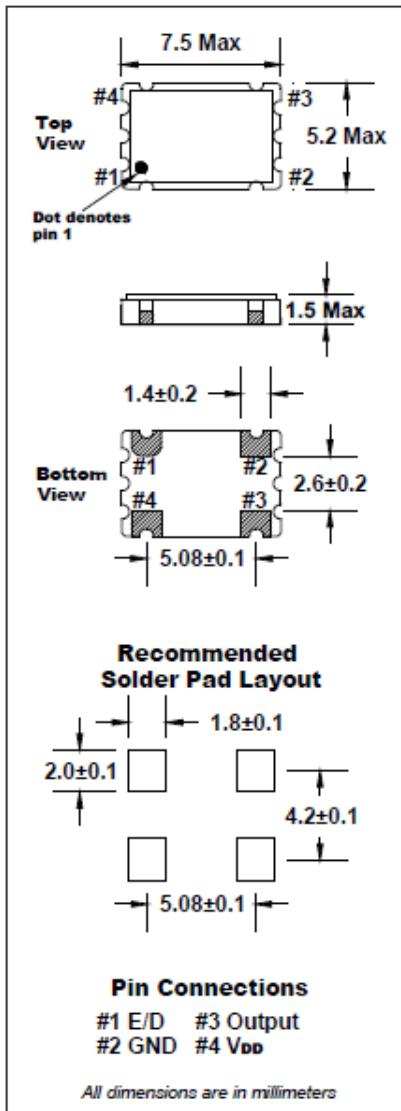
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DIMENSIONS / MECHANICAL SPECIFICATIONS



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 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}.



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