



HCMOS 3.2x2.5mm SMD Oscillator O3HS DATASHEET

(Former F300, F310, F330, F340, Series)

- HCMOS Output
- Stabilities to ± 20 PPM
- Temperature Ranges as wide as -40°C to $+85^{\circ}\text{C}$
- Supply Voltages: 1.0V, 1.8V, 2.5V, 3.3V

1.0V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_0)	1.800 ~ 50.000 MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$1.0\text{V} \pm 5\%$
Input Current (I_{DD})	
1.800 ~ 32.100 MHz	2.5 mA
$>32.100 \sim 50.000$ MHz	3.5 mA
Standby Current	5 μA
Output Symmetry (50% V_{DD})	40 % ~ 60 %
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	
1.800 ~ 32.100 MHz	5 nS
$>32.100 \sim 50.000$ MHz	3.5 nS
Output Voltage (V_{OL})	20 % V_{DD}
(V_{OH})	80 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	5 mS
Output Disable Time ¹	300 nS
Output Enable Time ¹	5 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 1.0V

Frequency Stability ²	Operating Temperature ($^{\circ}\text{C}$)	Frequency Range (MHz)
$\pm 100\text{PPM}$	$-10 \sim +70$	1.800 ~ 50.000
$\pm 100\text{PPM}$	$-40 \sim +85$	1.800 ~ 50.000
$\pm 50\text{PPM}$	$-10 \sim +70$	1.800 ~ 50.000
$\pm 50\text{PPM}$	$-40 \sim +85$	1.800 ~ 50.000
$\pm 25\text{PPM}$	$-10 \sim +70$	1.800 ~ 50.000
$\pm 25\text{PPM}$	$-40 \sim +85$	1.800 ~ 50.000
$\pm 20\text{PPM}^*$	$-10 \sim +70$	1.800 ~ 50.000

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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- HCMOS Output
- Stabilities to ± 25 PPM
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- Supply Voltages: 1.0V, 1.8V, 2.5V, 3.3V

1.8V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.625 ~ 133.000 MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$1.8 \pm 5\%$
Input Current (I_{DD})	
1.000 ~ 32.000 MHz	6 mA
$>32.000 \sim 80.000$ MHz	15 mA
$>80.000 \sim 133.000$ MHz	20 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD})	40 % ~ 60 %
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	
0.625 ~ 32.000 MHz	5 nS
$>32.000 \sim 133.000$ MHz	3.5 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 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

Frequency Stability ²	Operating Temperature ($^{\circ}\text{C}$)	Frequency Range (MHz)
± 100 PPM	$-10 \sim +70$	0.625 ~ 133.000
± 100 PPM	$-40 \sim +85$	0.625 ~ 133.000
± 50 PPM	$-10 \sim +70$	0.625 ~ 133.000
± 50 PPM	$-40 \sim +85$	0.625 ~ 133.000
± 25 PPM	$-10 \sim +70$	0.625 ~ 133.000
± 25 PPM	$-40 \sim +85$	0.625 ~ 133.000
± 20 PPM*	$-10 \sim +70$	0.625 ~ 133.000

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: O3HS SERIES STANDARD SPECIFICATIONS	
	Drawing Number: 101165	Size: A
	Part Number:	Cage: 61429
	Draftsperson: YM	Approved: BEC
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HCMOS 3.2x2.5mm SMD Oscillator O3HS DATASHEET

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- HCMOS Output
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- Temperature Ranges as wide as -40°C to $+85^{\circ}\text{C}$
- Supply Voltages: 1.0V, 1.8V, 2.5V, 3.3V

2.5V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_0)	0.625 ~ 170.000 MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$2.5 \pm 5\%$
Input Current (I_{DD})	
0.625 ~ 32.000 MHz	6 mA
$>32.000 \sim 60.000$ MHz	15 mA
$>60.000 \sim 80.000$ MHz	20 mA
$>80.000 \sim 170.000$ MHz	30 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD})	45 % ~ 55 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	6 nS
Output Voltage (V_{OL})	10 % V_{DD}
(V_{OH})	90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	5 mS
Output Disable Time ¹	150 nS
Output Enable Time ¹	5 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

Frequency Stability ²	Operating Temperature ($^{\circ}\text{C}$)	Frequency Range (MHz)
$\pm 100\text{PPM}$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 100\text{PPM}$	$-20 \sim +70$	0.625 ~ 170.000
$\pm 100\text{PPM}$	$-40 \sim +85$	0.625 ~ 170.000
$\pm 50\text{PPM}$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 50\text{PPM}$	$-20 \sim +70$	0.625 ~ 170.000
$\pm 50\text{PPM}$	$-40 \sim +85$	0.625 ~ 170.000
$\pm 25\text{PPM}$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 25\text{PPM}$	$-20 \sim +70$	0.625 ~ 170.000
$\pm 25\text{PPM}$	$-40 \sim +85$	0.625 ~ 170.000
$\pm 20\text{PPM}^*$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 20\text{PPM}^*$	$-20 \sim +70$	0.625 ~ 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.





- HCMOS Output
- Stabilities to ± 20 PPM
- Temperature Ranges as wide as -40°C to $+85^{\circ}\text{C}$
- Supply Voltages: 1.0V, 1.8V, 2.5V, 3.3V

3.3V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.625 ~ 170 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})	
0.625 ~ 20.000 MHz	7 mA
>20.000 ~ 40.000 MHz	13 mA
>40.000 ~ 60.000 Mhz	19 mA
>60.000 ~ 75.000 Mhz	24 mA
>75.000 ~ 80.000 Mhz	30 mA
>80.000 ~ 125.000 Mhz	40 mA
>125.000 ~ 170.000 Mhz	50 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD})	45 % ~ 55 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	6 nS
Output Voltage (V_{OL})	10 % V_{DD}
(V_{OH})	90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	5 mS
Output Disable Time ¹	150 nS
Output Enable Time ¹	5 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 3.3V

Frequency Stability ²	Operating Temperature ($^{\circ}\text{C}$)	Frequency Range (MHz)
$\pm 100\text{PPM}$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 100\text{PPM}$	$-20 \sim +70$	0.625 ~ 170.000
$\pm 100\text{PPM}$	$-40 \sim +85$	0.625 ~ 170.000
$\pm 50\text{PPM}$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 50\text{PPM}$	$-20 \sim +70$	0.625 ~ 170.000
$\pm 50\text{PPM}$	$-40 \sim +85$	0.625 ~ 170.000
$\pm 25\text{PPM}$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 25\text{PPM}$	$-20 \sim +70$	0.625 ~ 170.000
$\pm 25\text{PPM}$	$-40 \sim +85$	0.625 ~ 170.000
$\pm 20\text{PPM}^*$	$-10 \sim +70$	0.625 ~ 170.000
$\pm 20\text{PPM}^*$	$-20 \sim +70$	0.625 ~ 170.000

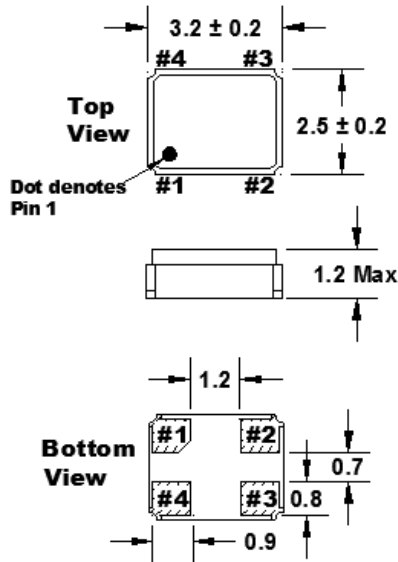
¹ An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open

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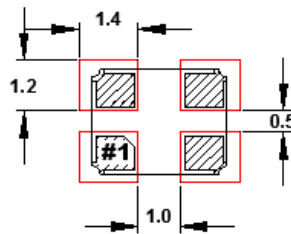
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DIMENSIONS / MECHANICAL SPECIFICATIONS



Recommended Solder Pad Layout



Pin Connections

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

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

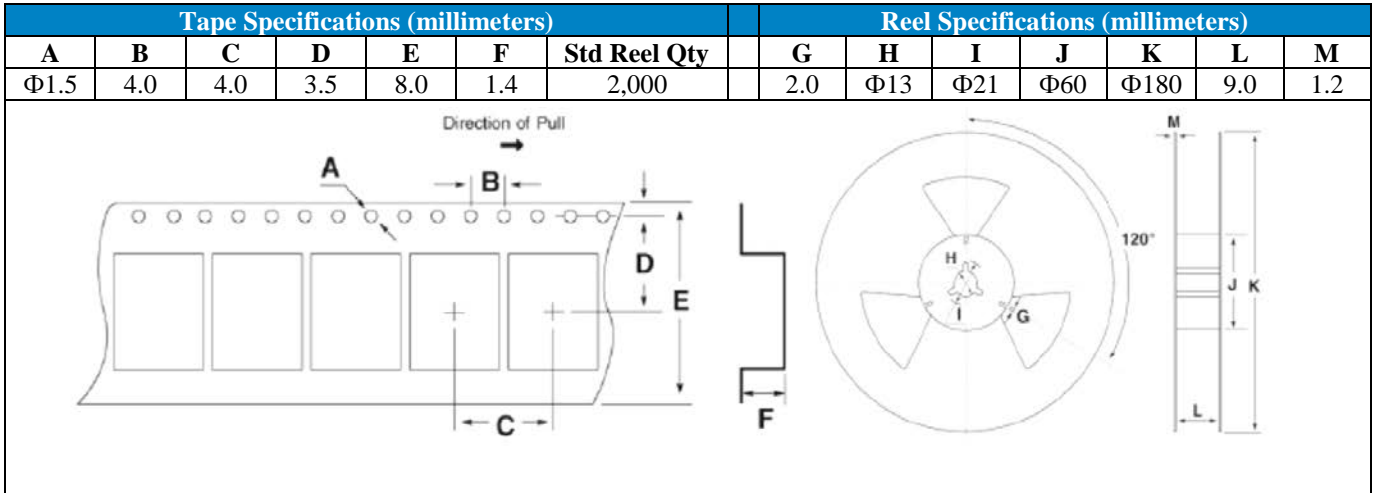
Notes:

- *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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Available Options & Part Identification*

Example: F O3HS C B M 25.0

F	O3HS	C	B	M	25.0
Fox	Model Number	Voltage M = 1.0V±5% K = 1.8V±5% H = 2.5V±5% C = 3.3V±10%	Stability A = 100 PPM B = 50 PPM D = 25 PPM E = 20 PPM	Operating Temperature E = -10 to +70°C F = -20 to +70°C M = -40 to +85°C	Frequency (MHz)

*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
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