



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, Variable (1.7 ~ 3.63V)

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})	1.0V $\pm 5\%$
Input Current (I_{DD})	
1.800 ~ 32.100 MHz	2.5 mA
$>32.100 \sim 50.000$ MHz	3.5 mA
Standby Current	100 μA
Output Symmetry (50% V_{DD})	40 % ~ 60 %
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	
1.800 ~ 50.000 MHz	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	50 μS
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 1.0V

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
$\pm 25\text{PPM}^3$	$-40 \sim +85$	1.800 ~ 50.000
$\pm 20\text{PPM}^3$	$-10 \sim +70$	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 $^{\circ}\text{C}$ tolerance, operating temperature range, input voltage change, load change, shock, vibration, reflow, and one-year aging.

³ Inclusive of 25C tolerance and operating temperature range





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1.8V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.625 ~ 133.000 MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	1.8±5%
Input Current (I_{DD})	
0.625 ~ 32.000 MHz	6 mA
>32.000 ~ 80.000 MHz	15 mA
>80.000 ~ 133.000 MHz	20 mA
Standby Current	10 uA
Output Symmetry (50% V_{DD})	
0.625 ~ 84.999999MHz	45 % ~ 55 %
85.000 ~ 133MHz	40 % ~ 60 %
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	
0.625 ~ 32.000 MHz	5 nS
>32.000 ~ 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 (°C)	Frequency Range (MHz)
±100PPM	-10 ~ +70	0.625 ~ 133.000
±100PPM	-40 ~ +85	0.625 ~ 133.000
±50PPM	-10 ~ +70	0.625 ~ 133.000
±50PPM	-40 ~ +85	0.625 ~ 133.000
±25PPM	-10 ~ +70	0.625 ~ 133.000
±25PPM ³	-40 ~ +85	0.625 ~ 133.000
±20PPM ³	-10 ~ +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, shock, vibration, reflow, and one-year aging.

³ Inclusive of 25C tolerance and operating temperature range





HCMOS 3.2x2.5mm SMD Oscillator O3HS DATASHEET

(Former F300, F310, F330, F340 Series)

2.5V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.625 ~ 170.000 MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	2.5±5%
Input Current (I_{DD})	
0.625 ~ 20.000 MHz	5 mA
>20.000 ~ 40.000 MHz	9 mA
>40.000 ~ 60.000 MHz	11 mA
>60.000 ~ 80.000MHz	20 mA
>80.000 ~ 170.000 MHz	30 mA
Standby Current	10 uA
Output Symmetry (50% V_{DD})	
0.625 ~ 84.99999MHz	45 % ~ 55 %
85.000 ~ 170MHz	40 % ~ 60 %
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 (°C)	Frequency Range (MHz)
±100PPM	-10 ~ +70	0.625 ~ 170.000
±100PPM	-20 ~ +70	0.625 ~ 170.000
±100PPM	-40 ~ +85	0.625 ~ 170.000
±50PPM	-10 ~ +70	0.625 ~ 170.000
±50PPM	-20 ~ +70	0.625 ~ 170.000
±50PPM	-40 ~ +85	0.625 ~ 170.000
±25PPM	-10 ~ +70	0.625 ~ 170.000
±25PPM	-20 ~ +70	0.625 ~ 170.000
±25PPM ³	-40 ~ +85	0.625 ~ 170.000
±20PPM ³	-10 ~ +70	0.625 ~ 170.000
±20PPM ³	-20 ~ +70	0.625 ~ 170.000

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HCMOS 3.2x2.5mm SMD Oscillator O3HS DATASHEET

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3.3V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_O)	0.625 ~ 170 MHz
Storage Temperature Range (T_{STG})	-55 ~ +125°C
Supply Voltage (V_{DD})	3.3V±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 uA
Output Symmetry (50% V_{DD})	
0.625 ~ 84.999999MHz	45 % ~ 55 %
85.000 ~ 170MHz	40 % ~ 60 %
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 (°C)	Frequency Range (MHz)
±100PPM	-10 ~ +70	0.625 ~ 170.000
±100PPM	-20 ~ +70	0.625 ~ 170.000
±100PPM	-40 ~ +85	0.625 ~ 170.000
±50PPM	-10 ~ +70	0.625 ~ 170.000
±50PPM	-20 ~ +70	0.625 ~ 170.000
±50PPM	-40 ~ +85	0.625 ~ 170.000
±25PPM	-10 ~ +70	0.625 ~ 170.000
±25PPM	-20 ~ +70	0.625 ~ 170.000
±25PPM ³	-40 ~ +85	0.625 ~ 170.000
±20PPM ³	-10 ~ +70	0.625 ~ 170.000
±20PPM ³	-20 ~ +70	0.625 ~ 170.000

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³ Inclusive of 25°C tolerance and operating temperature range





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(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, Variable (1.7 ~ 3.63V)

VARIABLE VOLTAGE ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F_0)	0.75 ~ 156.25 MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD}) 1.25 ~ 135.0 MHz >135.0 ~ 156.25 MHz	1.7 ~ 3.63V 2.25 ~ 3.63V
Input Current (I_{DD}) 0.750 ~ 19.999 MHz 20.000 ~ 39.999 MHz 40.000 ~ 59.999 MHz 60.000 ~ 84.999 MHz 85.000 ~ 135.000 MHz >135.000 ~ 156.250 MHz	4 mA 6 mA 10 mA 15 mA 23 mA 30 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD}) 0.75 ~ 84.999 MHz 85.0 ~ 156.25 MHz	45 % ~ 55 % 40 % ~ 60 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	6 nS
Output Voltage (V_{OL}) (V_{OH})	10 % V_{DD} 90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	5 mS
Output Disable Time ¹	200 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)
$\pm 100\text{PPM}$	$-20 \sim +70$	0.75 ~ 156.25
$\pm 100\text{PPM}$	$-40 \sim +85$	0.75 ~ 156.25
$\pm 50\text{PPM}$	$-20 \sim +70$	0.75 ~ 156.25
$\pm 50\text{PPM}$	$-40 \sim +85$	0.75 ~ 156.25
$\pm 25\text{PPM}$	$-20 \sim +70$	0.75 ~ 156.25
$\pm 25\text{PPM}^3$	$-40 \sim +85$	0.75 ~ 156.25
$\pm 20\text{PPM}^3$	$-20 \sim +70$	0.75 ~ 156.25

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³ Inclusive of 25°C tolerance and operating temperature range

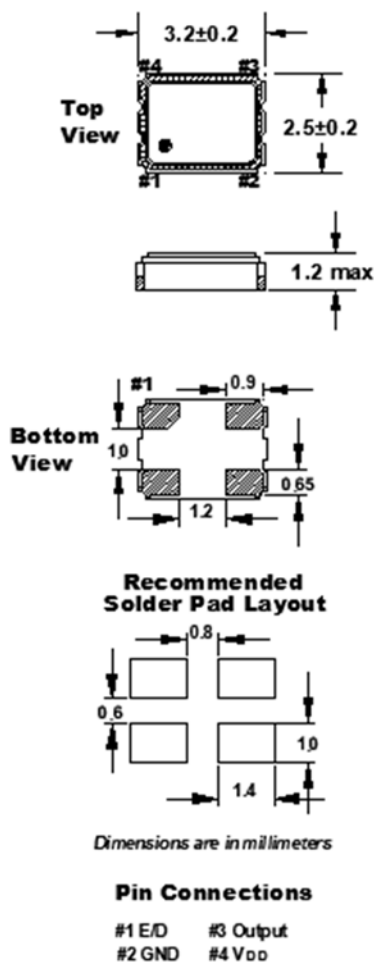




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DIMENSIONS / MECHANICAL SPECIFICATIONS



Maximum Soldering Temp / Time	260°C / 10 Seconds x2
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

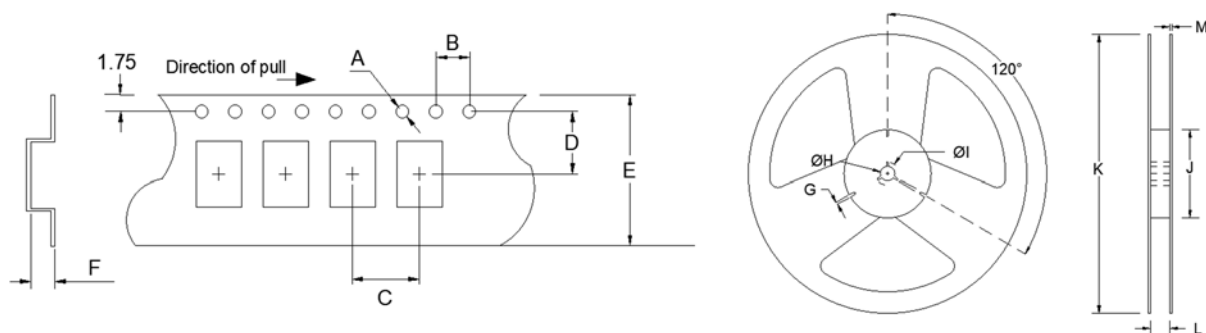




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Tape Specifications (millimeters)							Reel Specifications (millimeters)						
A	B	C	D	E	F	Reel Qty Options	G	H	I	J	K	L	M
Ø1.55	4.0	4.0	3.5	8.0	1.4	-T2 = 2,000 (default) -T1 = 1,000 -T3 = 3,000	2.0	Ø13	Ø21	Ø60	Ø180	9.0	1.2



Available Options & Part Identification*

Example: **F O3HS C B M 25.0**

F	O3HS	C	B	M	25.0
Fox	Model Number	Voltage	Stability	Operating Temperature	Frequency (MHz)
		M = 1.0V±5% K = 1.8V±5% H = 2.5V±5% C = 3.3V±10% V = 1.7 to 3.63V W = 2.25 to 3.63V	A = ±100 PPM B = ±50 PPM D = ±25 PPM E = ±20 PPM	E = -10 to +70°C F = -20 to +70°C M = -40 to +85°C	

*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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Title / Description: O3HS SERIES STANDARD SPECIFICATIONS			
Drawing Number: O3HS-DOC-1		Size: A	
Part Number:		Cage: 61429	
Draftsperson: MAJ	Approved: BEC		Revision Date: 10/23/2019