

Features

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

1.8V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range (F_0)	0.012 ~ 160.000MHz
Storage Temperature Range (T_{STG})	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$1.8\text{V} \pm 5\%$
Input Current (I_{DD})	
0.012 ~ 32.000MHz	5 mA
>32.000 ~ 70.000MHz	10 mA
>70.000 ~ 120.000MHz	15 mA
>120.000 ~ 160.000MHz	30 mA
Standby Current	10 μA
Output Symmetry (50% V_{DD})	40% ~ 60%
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	
0.012 ~ 32.000MHz	5.0 nS
>32.000 ~ 120.000MHz	3.5 nS
>120.000 ~ 160.000MHz	3.0 nS
Output Voltage (V_{OL})	20% V_{DD}
(V_{OH})	80% V_{DD} Min
Output Load (HCMOS)	15pF
Start-up Time (T_S)	10 mS
Output Disable Time 1	300 nS
Output Enable Time 1	10 mS

ENABLE / DISABLE FUNCTION	
Pin ¹	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 (°C)	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, and one-year aging.

³ Inclusive of 25°C tolerance and operating temperature rang.

2.5V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range (F_0)	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	7 mA
>32.000 ~ 50.000MHz	12 mA
>50.000 ~ 125.000MHz	26 mA
>125.000 ~ 160.000MHz	35 mA
>160.000 ~ 170.000MHz	40 mA
Standby Current	10 μ A
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)	5 nS
Output Voltage (V_{OL})	10% V_{DD}
(V_{OH})	90% V_{DD} Min
Output Load (HCMOS)	15pF
Start-up Time (T_S)	10 mS
Output Disable Time 1	150 nS
Output Enable Time 1	10 mS

ENABLE / DISABLE FUNCTION	
Pin ¹	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 (°C)	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

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³ Inclusive of 25°C tolerance and operating temperature rang.

3.3V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range (F_0)	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	3 mA
>0.040 ~ 1.500MHz	6 mA
>1.500 ~ 32.000MHz	15 mA
>32.000 ~ 50.000MHz	20 mA
>50.000 ~ 67.000MHz	25 mA
>67.000 ~ 170.000MHz	40 mA
Standby Current	10 μ A
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	6 nS
>80.000 ~ 125.000MHz	4 nS
>125.000 ~ 170.000MHz	3 nS
Output Voltage (V_{OL})	10% V_{DD}
(V_{OH})	90% V_{DD} Min
Output Load (HCMOS)	15pF
Start-up Time (T_S)	10 mS
Output Disable Time 1	150 nS
Output Enable Time 1	10 mS

ENABLE / DISABLE FUNCTION	
Pin ¹	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

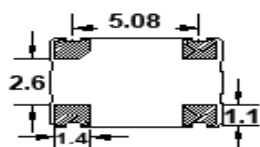
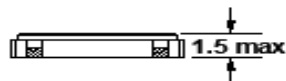
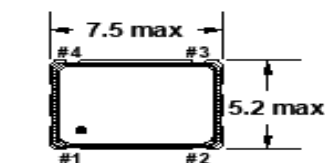
Available Options by Stability & Operating Temp for 3.3V		
Frequency Stability	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM ²	-10 ~ +70	0.012 ~ 170.000
±100PPM ²	-20 ~ +70	0.012 ~ 170.000
±100PPM ²	-40 ~ +85	0.012 ~ 170.000
±50PPM ²	-10 ~ +70	0.012 ~ 170.000
±50PPM ²	-20 ~ +70	0.012 ~ 170.000
±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

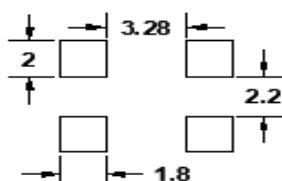
² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Reflow, and one-year aging.

³ Inclusive of 25°C tolerance and operating temperature rang.

DIMENSIONS / MECHANICAL SPECIFICATIONS



Recommended Solder Pad Layout



Dimensions in mm

Pin Connections

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

Note:

*A 0.01 μ F capacitor should be placed between V_{DD} (Pin 4) and GND (Pin 2) 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.

STANDARD SPECIFICATIONS

PARAMETERS	MAX (Unless otherwise noted)
Maximum Soldering Temp / Time	260°C / 10 Seconds x 2
Moisture Sensitivity Level (MSL) per J-STD-033	N/A
Termination Finish	Au (0.3~1 μ m) over Ni (1.27~8.89 μ m)
Seal Method	Seam
Lead (Pb) Free	Yes
RoHS Compliant	Yes, no exemptions
RERACH Compliant (latest version)	Yes

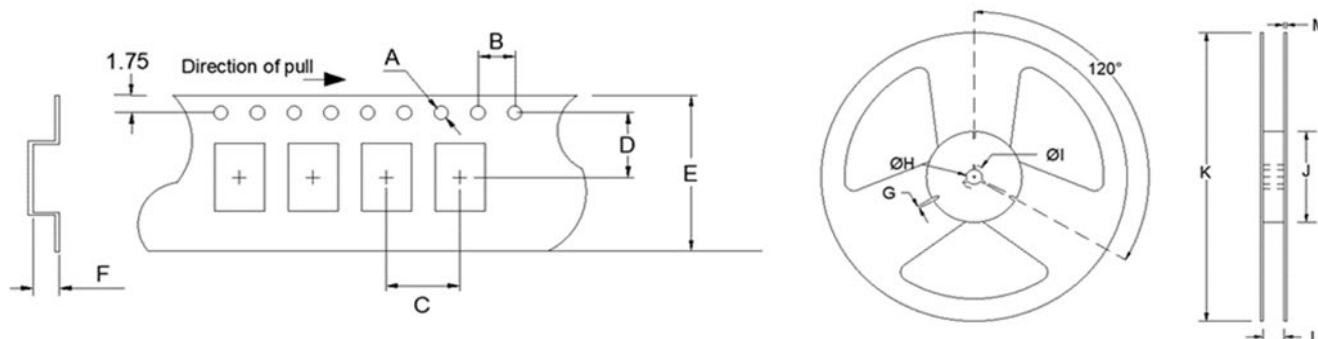
FO7HS

(Former F4500, F4400, F4100 Series)

7mm x 5mm
HCMOS SMD Oscillator



TAPE SPECIFICATIONS (mm)							REEL SPECIFICATIONS (mm)						
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	2.0	ø13	ø21	ø80	ø255	17.5	2.0



* 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} .

Available Options & Part Identification for HCMOS SMD Oscillator FO7HS*						
Sample PN: <u>FO7HSCBM25.0-T1</u>						
F	O7HS	C	B	M	25.0	-T1
<u>Fox</u>	<u>Model Number</u>	<u>Voltage</u> B = 3.3V±5% C = 3.3V±10% H = 2.5V±5% K = 1.8V±5%	<u>Stability</u> A = ±100PPM B = ±50PPM D = ±25PPM E = ±20PPM	<u>Operating Temperature</u> E = -10 to +70°C F = -20 to +70°C M = -40 to +85°C	<u>Frequency (MHz)</u>	<u>Values Added Options</u> Blank = Bulk T1 = 1,000 pcs

Reliability Test Conditions
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[ABRACON:](#)

[F4405-125.00MHz](#) [F4400-100.00MHZ](#) [FO7HSCBE66.6667-T2](#) [FO7HSCAE33.333-T2](#) [FO7HSCBE125.0-T2](#)
[FO7HSCAE66.6667-T2](#) [FO7HSCAE78.6432-BULK](#) [FO7HSCAM36.864-T1](#) [FO7HSCAE29.4912-BULK](#)
[FO7HSCAE50.0-T2](#) [FO7HSCBE27.0-T2](#) [FO7HSCBE106.25-T2](#) [FO7HSCBE80.0-T2](#) [FO7HSCAE32.0-T2](#)
[FO7HSCAM25.0-BULK](#) [FO7HSCBM3.6864-T2](#) [FO7HSCAE33.0-BULK](#) [FO7HSCBE66.0-T2](#) [FO7HSCAE4.096-BULK](#)
[FO7HSCAE40.0-T2](#) [FO7HSCBM36.864-T2](#) [FO7HSCAM10.0-T2](#) [FO7HSCAE75.0-BULK](#) [FO7HSCBE75.0-T2](#)
[FO7HSCBE100.0-T2](#) [FO7HSCAE48.0-T2](#) [FO7HSCDE33.0-BULK](#) [FO7HSHBE125.0-T2](#) [FO7HSCBE20.0-T2](#)
[FO7HSCAM50.0-BULK](#) [FO7HSCBM25.0-BULK](#) [FO7HSCAE106.25-T1](#) [FO7HSCBM26.0-T1](#) [FO7HSCBM37.4-T1](#)
[FO7HSCBM38.4-T2](#) [FO7HSCDM102.4-T2](#) [FO7HSCDM22.5792-T1](#) [FO7HSCAM27.0-T2](#) [FO7HSCBM33.333-T2](#)
[FO7HSCBM38.4-T2](#) [FO7HSCBM4.0-T2](#) [FO7HSCBM40.0-T2](#) [FO7HSCBM48.0-T2](#) [FO7HSCBM50.0-T2](#)
[FO7HSCDM48.0-T2](#) [FO7HSCEE24.0-T2](#) [FO7HSCBM24.0-T2](#) [FO7HSCBM27.12-T2](#) [FO7HSCBM33.333-T1](#)
[FO7HSCAE29.4912-T1](#) [FO7HSCAE29.4912-T2](#) [FO7HSCAE6.0-BULK](#) [FO7HSCAM1.0-BULK](#) [FO7HSCDM26.0-BULK](#)
[FO7HSCAM27.0-BULK](#) [FO7HSCDF40.0-BULK](#) [FO7HSBEM24.576-T1](#) [FO7HSCAE12.288-T1](#) [FO7HSCAE12.288-](#)
[T2](#) [FO7HSCAE68.0-T1](#) [FO7HSCAE9.5-T1](#) [FO7HSCAE9.5-T2](#) [FO7HSHBM33.33-T1](#) [FO7HSHDM125.0-T1](#)
[FO7HSCDF30.72-T2](#) [FO7HSCDF60.0-T1](#) [FO7HSCDM30.0-T1](#) [FO7HSHAF33.33-T1](#) [FO7HSHAF33.33-T2](#)
[FO7HSHBF33.33-T2](#) [FO7HSCBF12.0-T1](#) [FO7HSCBF12.0-T2](#) [FO7HSCBF62.5-T1](#) [FO7HSCBM62.5-T1](#)
[FO7HSCDF24.0-T1](#) [FO7HSCDF30.72-T1](#) [FO7HSCAF18.0-T1](#) [FO7HSCAF18.0-T2](#) [FO7HSCAF6.0-T1](#)
[FO7HSCAF6.0-T2](#) [FO7HSCAM125.0-T1](#) [FO7HSCBE14.7456-T2](#) [FO7HSBEM34.368-T1](#) [FO7HSBEM34.368-T2](#)
[FO7HSBHE12.288-T1](#) [FO7HSBHE12.288-T2](#) [FO7HSBHE18.432-T1](#) [FO7HSBHE18.432-T2](#) [FO7HSCBM8.0-T1](#)
[FO7HSCBM8.0-T2](#) [FO7HSCBM30.0-T2](#) [FO7HSCBM38.4-T1](#) [FO7HSCBM4.0-T1](#) [FO7HSCBM40.0-T1](#)
[FO7HSCBM48.0-T1](#) [FO7HSCBM50.0-T1](#) [FO7HSCBM22.0-T2](#) [FO7HSCBM24.0-T1](#) [FO7HSCBM26.0-T1](#)
[FO7HSCBM26.0-T2](#)