

## Features

- HCMOS Output
- Stabilities to  $\pm 20$  PPM
- Temperature Ranges from  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Supply Voltages: 1.8V, 2.5V, 3.3V, 5.0V

1.8V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range ( $F_0$ )	1.000 ~ 160 MHz
Temperature Range	
Storage ( $T_{STG}$ )	$-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Supply Voltage ( $V_{DD}$ )	$1.8\text{V} \pm 5\%$
Input Current ( $I_{DD}$ )	
1.000 ~ 32.000MHz	5 mA
>32.000 ~ 70.000MHz	10 mA
>70.000 ~ 120.000MHz	15 mA
>120.000 ~ 160.000MHz	30 mA
Standby Current	$10\mu\text{A}$
Output Symmetry (50% $V_{DD}$ )	40 % ~ 60 %
Rise/Fall Time (20%~80% $V_{DD}$ Levels) ( $T_R/T_F$ )	
1.000 ~ 32.000MHz	5 nS
>32.000 ~ 120.000MHz	3.5 nS
>120.000 ~ 160.000MHz	3 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 <sup>1</sup>	300 nS
Output Enable Time <sup>1</sup>	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN <sup>1</sup>	Active
'1' Level $V_{IH} \geq 70\%V_{DD}$	Active
'0' Level $V_{IL} \leq 30\%V_{DD}$	High Z

# FO5HS

(Former F510L, F540L, F530L, F550L)

5mm x 3.2mm  
HCMOS SMD Oscillator



Available Options by Stability & Operating Temp for 1.8V		
Frequency Stability	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 160.000
±100PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 160.000
±100PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 160.000
±50PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 160.000
±50PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 160.000
±50PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 160.000
±25PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 160.000
±25PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 160.000
±25PPM <sup>3</sup>	-40 ~ +85	1.000 ~ 160.000
±20PPM <sup>3</sup>	-10 ~ +70	1.000 ~ 160.000
±20PPM <sup>3</sup>	-20 ~ +70	1.000 ~ 160.000

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

<sup>2</sup> Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Reflow, one-year aging, shock, and vibration.

<sup>3</sup> Inclusive of 25°C tolerance and operating temperature range.

2.5V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range (F <sub>0</sub> )	1 ~ 160 MHz
Temperature Range	
Storage (T <sub>STG</sub> )	-55°C ~ +125°C
Supply Voltage (V <sub>DD</sub> )	2.5V±5%
Input Current (I <sub>DD</sub> )	
1.000 ~ 32.000MHz	7 mA
>32.000 ~ 50.000MHz	12 mA
>50.000 ~ 125.000MHz	26 mA
>125.000 ~ 160.000MHz	35 mA
Standby Current (I <sub>ST</sub> )	10µA
Output Symmetry (50% V <sub>DD</sub> )	
1.000 ~ 50.000MHz	45 % ~ 55 %
> 50.000 ~ 160.000MHz	40 % ~ 60 %
Rise/Fall Time (10%~90%V <sub>DD</sub> Levels) (T <sub>R</sub> /T <sub>F</sub> )	5 nS
Output Voltage (V <sub>OL</sub> )	10 % V <sub>DD</sub>
(V <sub>OH</sub> )	90 % V <sub>DD</sub> Min
Output Load (HCMOS)	15 pF
Start-up Time (T <sub>S</sub> )	10 mS
Output Disable Time <sup>1</sup>	150 nS
Output Enable Time <sup>1</sup>	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN <sup>1</sup>	Active
'1' Level V <sub>IH</sub> ≥ 70%V <sub>DD</sub>	Active
'0' Level V <sub>IL</sub> ≤ 30%V <sub>DD</sub>	High Z

Available Options by Stability & Operating Temp for 2.5V		
Frequency Stability	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 160.000
±100PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 160.000
±100PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 160.000
±50PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 160.000
±50PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 160.000
±50PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 160.000
±25PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 160.000
±25PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 160.000
±25PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 160.000
±20PPM <sup>3</sup>	-10 ~ +70	1.000 ~ 160.000
±20PPM <sup>3</sup>	-20 ~ +70	1.000 ~ 160.000

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

<sup>2</sup> Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Reflow, one-year aging, shock, and vibration.

<sup>3</sup> Inclusive of 25°C tolerance and operating temperature range.

3.3V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range (F <sub>0</sub> )	1 ~ 170MHz
Temperature Range	
Storage (T <sub>STG</sub> )	-55°C ~ +125°C
Supply Voltage (V <sub>DD</sub> )	3.3V±10%
Input Current (I <sub>DD</sub> )	
1.000 ~ 32.000MHz	15 mA
>32.000 ~ 50.000MHz	20 mA
>50.000 ~ 67.000MHz	25 mA
>67.000 ~ 170.000MHz	40 mA
Standby Current (I <sub>ST</sub> )	10µA
Output Symmetry (50% V <sub>DD</sub> )	
1.000 ~ 50.000MHz	45 % ~ 55 %
>50.000 ~ 170.000MHz	40 % ~ 60 %
Rise/Fall Time (10%~90%V <sub>DD</sub> Levels) (T <sub>R</sub> /T <sub>F</sub> )	
1.000 ~ 80.000MHz	6 nS
>80.000 ~ 125.000MHz	4 nS
>125.000 ~ 170.000MHz	3 nS
Output Voltage (V <sub>OL</sub> )	10 % V <sub>DD</sub>
(V <sub>OH</sub> )	90 % V <sub>DD</sub> Min
Output Load (HCMOS)	15 pF
Start-up Time (T <sub>S</sub> )	10 mS
Output Disable Time <sup>1</sup>	150 nS
Output Enable Time <sup>1</sup>	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN <sup>1</sup>	Active
'1' Level V <sub>IH</sub> ≥ 70%V <sub>DD</sub>	Active
'0' Level V <sub>IL</sub> ≤ 30%V <sub>DD</sub>	High Z

Available Options by Stability & Operating Temp for 3.3V		
Frequency Stability	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 170.000
±100PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 170.000
±100PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 170.000
±50PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 170.000
±50PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 170.000
±50PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 170.000
±25PPM <sup>2</sup>	-10 ~ +70	1.000 ~ 170.000
±25PPM <sup>2</sup>	-20 ~ +70	1.000 ~ 170.000
±25PPM <sup>2</sup>	-40 ~ +85	1.000 ~ 170.000
±20PPM <sup>3</sup>	-10 ~ +70	1.000 ~ 170.000
±20PPM <sup>3</sup>	-20 ~ +70	1.000 ~ 170.000

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

<sup>2</sup> Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Reflow, one-year aging, shock, and vibration.

<sup>3</sup> Inclusive of 25°C tolerance and operating temperature range.

5.0V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range (F <sub>0</sub> )	1.544 ~ 50MHz
Temperature Range Storage (T <sub>STG</sub> )	-55 ~ +125°C
Supply Voltage (V <sub>DD</sub> )	5.0V ± 10%
Input Current (I <sub>DD</sub> )	35 mA
Output Symmetry (50% V <sub>DD</sub> )	40% ~ 60%
Rise/Fall Time (10%~90%V <sub>DD</sub> Levels) (T <sub>R</sub> /T <sub>F</sub> )	10 nS
Output Voltage (V <sub>OL</sub> ) (V <sub>OH</sub> )	10% V <sub>DD</sub> 90% V <sub>DD</sub> Min
Output Load (HCMOS)	15 pF
Start-up Time (T <sub>S</sub> )	10 mS
Output Disable Time <sup>1</sup>	100 nS
Output Enable Time <sup>1</sup>	100 nS

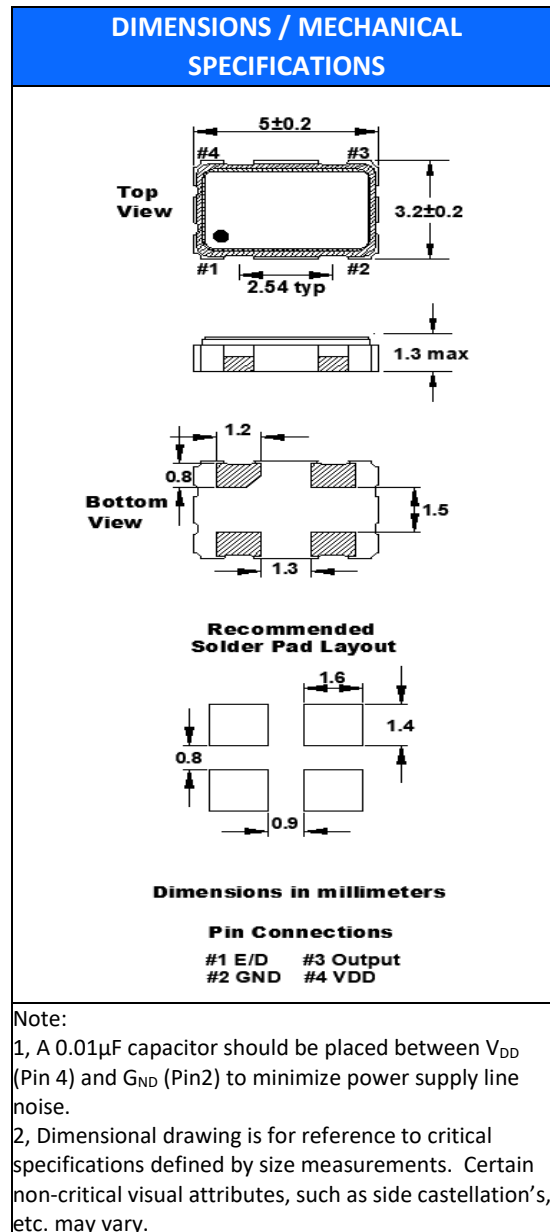
ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN <sup>1</sup>	Active
'1' Level V <sub>IH</sub> ≥ 70%V <sub>DD</sub>	Active
'0' Level V <sub>IL</sub> ≤ 30%V <sub>DD</sub>	High Z

Available Options by Stability & Operating Temp for 5.0V		
Frequency Stability	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM <sup>2</sup>	-10 ~ +70	1.544 ~ 50.000
±100PPM <sup>2</sup>	-40 ~ +85	1.544 ~ 50.000
±50PPM <sup>2</sup>	-10 ~ +70	1.544 ~ 50.000
±50PPM <sup>2</sup>	-40 ~ +85	1.544 ~ 50.000
±25PPM <sup>2</sup>	-10 ~ +70	1.544 ~ 50.000
±25PPM <sup>3</sup>	-40 ~ +85	1.544 ~ 50.000
±25PPM <sup>3</sup>	-10 ~ +70	1.544 ~ 50.000

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

<sup>2</sup> Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Reflow, one-year aging, shock, and vibration.

<sup>3</sup> Inclusive of 25°C tolerance and operating temperature range.



<b>STANDARD SPECIFICATIONS</b>	
<b>PARAMETERS</b>	<b>MAX (Unless otherwise noted)</b>
Maximum Soldering Temp / Time	260°C / 10 Seconds x 2
Moisture Sensitivity Level (MSL)	N/A
Termination Finish	Au (0.3~1μm) over Ni (1.27~8.89μm)
Seal Method	Seam
Lead (Pb) Free	Yes
ROHS Compliant	Yes

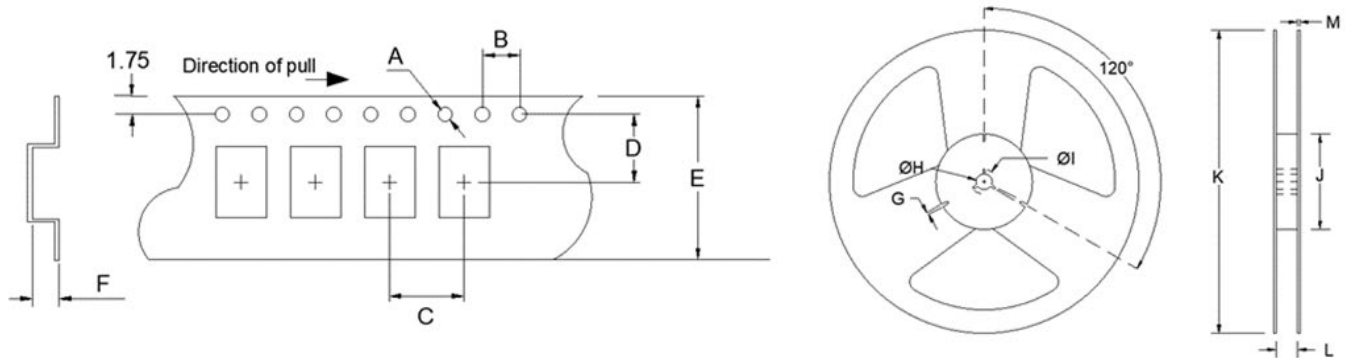
# FO5HS

(Former F510L, F540L, F530L, F550L)

5mm x 3.2mm  
**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	5.5	12.0	1.5	-T1 = 1,000	2.0	ø13	ø21	ø62	ø180	13.5	2.0



### Available Options & Part Identification\*

Sample PN: **FO5HSCBM25.0-T1**

F	O5HS	C	B	M	25.0	-T1
<b>Fox</b>	<b>Model Number</b>	<b>Voltage</b> K = 1.8V±5% H = 2.5V±5% <b>C = 3.3V±10%</b> A = 5.0V±10%	<b>Stability</b> A = ±100 PPM <b>B = ±50 PPM</b> D = ±25 PPM E = ±20 PPM	<b>Operating Temperature</b> E = -10 to +70°C F = -20 to +70°C <b>M = -40 to +85°C</b>	<b>Frequency (MHz)</b>	<b>Values Added Options</b> Blank = Bulk <b>T1 = 1,000 pcs</b>

\*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<sub>DD</sub>.

### Reliability Test Conditions

Please contact Abracon Quality Assurance department

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Standard Clock Oscillators](#) category:*

*Click to view products by [Abracon](#) manufacturer:*

Other Similar products are found below :

[601252](#) [F335-12](#) [F335-25](#) [F535L-33.333](#) [F535L-50](#) [ASV-20.000MHZ-LR-T](#) [ECS-2018-160-BN-TR](#) [EL13C7-H2F-125.00M](#) [MXO45HS-2C-66.6666MHZ](#) [SiT8209AI-32-33E-125.000000](#) [SM4420TEV-40.0M-T1K](#) [F335-24](#) [F335-40](#) [F535L-10](#) [F535L-12](#) [F535L-16](#) [F535L-24](#) [F535L-27](#) [F535L-48](#) [PE7744DW-100.0M](#) [CSX-750FCC14745600T](#) [ASF1-3.686MHZ-N-K-S](#) [XO57CTECNA3M6864](#) [ECS-2100A-147.4](#) [601251](#) [EP16E7E2H26.000MTR](#) [SIT8918AA-11-33S-16.000000G](#) [XO3003](#) [9120AC-2D2-33E212.500000](#) [9102AI-243N25E100.00000](#) [8208AC-82-18E-25.00000](#) [ASDK2-32.768KHZ-LR-T3](#) [8008AI-72-XXE-24.545454E](#) [8004AC-13-33E-133.33000X](#) [AS-4.9152-16-SMD-TR](#) [ASFL1-48.000MHZ-LC-T](#) [SIT8920AM-31-33E-25.0000](#) [DSC1028DI2-019.2000](#) [9121AC-2C3-25E100.00000](#) [9102AI-233N33E100.00000X](#) [9102AI-233N25E200.00000](#) [9102AI-232H25S125.00000](#) [9102AI-133N25E200.00000](#) [9102AC-283N25E200.00000](#) [9001AC-33-33E1-30.000](#) [XLH536125.000JS4I](#) [3921AI-2CF-33NZ125.000000](#) [5730-1SF](#) [PXA000010](#) [XLH535050.000000X](#)