

FO3HSCDE12.0-T1 Datasheet

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DiGi Electronics Part Number	FO3HSCDE12.0-T1-DG
Manufacturer	Fox Electronics
Manufacturer Product Number	FO3HSCDE12.0-T1
Description	OSC XO 12MHZ 3.3V HCMOS
Detailed Description	Oscillator



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Purchase and inquiry

Manufacturer Product Number:

FO3HSCDE12.0-T1

Series:

*

Manufacturer:

Fox Electronics

Product Status:

Active

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

FO3HS

(Former F300, F310, F330, F340 Series)

3.2mm x 2.5mm
HCMOS SMD Oscillator**Features**

- HCMOS Output
- Stabilities to ± 20 PPM
- Temperature Ranges as wide as -40°C to $+125^{\circ}\text{C}$
- Supply Voltages: 1.0V, 1.8V, 2.5V, 3.3V, Variable (1.6V ~ 3.63V; 2.25V ~ 3.63V)

1.0V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range	1.800 ~ 50.000 MHz
Temperature Range	
Storage (T_{STG})	$-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Supply Voltage (V_{DD})	$1.0\text{V} \pm 5\%$
Input Current (I_{DD})	
1.800 ~ 32.100 MHz	2.5 mA
>32.100 ~ 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) ($T_{\text{R}}/T_{\text{F}}$)	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	
Pin ¹	Output (pin 3)
OPEN ¹	Active
'1' Level $V_{\text{IH}} \geq 70\%V_{\text{DD}}$	Active
'0' Level $V_{\text{IL}} \leq 30\%V_{\text{DD}}$	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 open² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Shock, vibration, reflow, and one-year aging.³ Inclusive of 25°C tolerance and operating temperature range.

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3.2mm x 2.5mm
HCMOS SMD Oscillator

1.8V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range	0.625 ~ 133.000 MHz
Temperature Range Storage (T _{STG})	-55°C ~ +125°C
Supply Voltage (V _{DD})	1.8V±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 µA
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 µS
Output Enable Time ¹	10 mS

ENABLE / DISABLE FUNCTION	
Pin ¹	Output (pin 3)
OPEN ¹	Active
'1' Level V _{IH} ≥ 70%V _{DD}	Active
'0' Level V _{IL} ≤ 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 open² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Shock, vibration, reflow, and one-year aging.³ Inclusive of 25°C tolerance and operating temperature range.

FO3HS

(Former F300, F310, F330, F340 Series)

3.2mm x 2.5mm
HCMOS SMD Oscillator

2.5V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range	0.625 ~ 170.000 MHz
Temperature Range	
Storage (T _{STG})	-55°C ~ +125°C
Supply Voltage (V _{DD})	2.5V±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 µA
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	
Pin ¹	Output (pin 3)
OPEN ¹	Active
'1' Level V _{IH} ≥ 70%V _{DD}	Active
'0' Level V _{IL} ≤ 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

¹ An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Shock, vibration, reflow, and one-year aging.³ Inclusive of 25°C tolerance and operating temperature range.

FO3HS

(Former F300, F310, F330, F340 Series)

**3.2mm x 2.5mm
HCMOS SMD Oscillator**

3.3V ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range	0.625 ~ 170 MHz
Temperature Range	
Storage (T _{STG})	-55°C ~ +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 ~ 75.000MHz	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})	
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	
Pin ¹	Output (pin 3)
OPEN ¹	Active
'1' Level V _{IH} ≥ 70%V _{DD}	Active
'0' Level V _{IL} ≤ 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

¹ An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open² Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, Shock, vibration, reflow, and one year aging.³ Inclusive of 25°C tolerance and operating temperature range.

FO3HS

(Former F300, F310, F330, F340 Series)

**3.2mm x 2.5mm
HCMOS SMD Oscillator**

VARIABLE VOLTAGE ELECTRICAL CHARACTERISTICS	
PARAMETERS	MAX (Unless otherwise noted)
Frequency Range	0.75 ~ 156.25 MHz
Temperature Range Storage (T _{STG})	-55°C ~ +125°C
Supply Voltage (V _{DD})	
1.25 ~ 135.0 MHz	1.6V ~ 3.63V
>135.0 ~ 156.25 MHz	2.25V ~ 3.63V
Input Current (I _{DD})	
0.750 ~ 19.999 MHz	4 mA
20.000 ~ 39.999 MHz	6 mA
40.000 ~ 59.999 MHz	10 mA
60.000 ~ 84.999 MHz	15 mA
85.000 ~ 135.000 MHz	23 mA
>135.000 ~ 156.250 MHz	30 mA
Standby Current	
T _{OPR} = -40 ~ +85°C	10 µA
T _{OPR} = -40 ~ +105°C / -40 ~ +125°C	20 µA
Output Symmetry (50% V _{DD})	
0.75 ~ 84.999 MHz	45 % ~ 55 %
85.0 ~ 156.25 MHz	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	200 nS
Output Enable Time ¹	5 mS

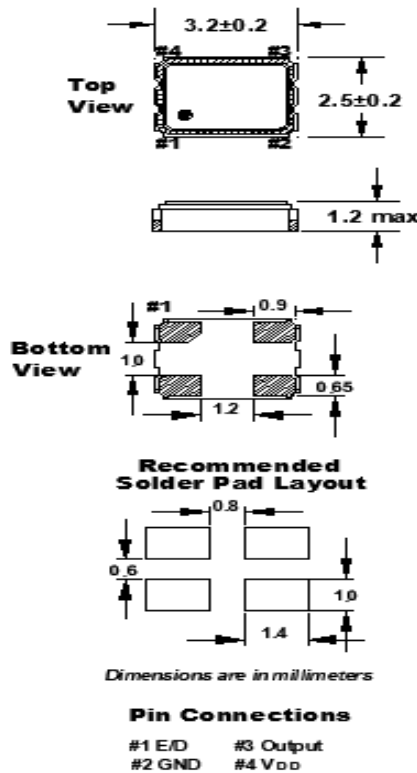
ENABLE / DISABLE FUNCTION	
Pin ¹	Output (pin 3)
OPEN ¹	Active
'1' Level V _{IH} ≥ 70%V _{DD}	Active
'0' Level V _{IL} ≤ 30%V _{DD}	High Z

Available Options by Stability & Operating Temp		
Frequency Stability ²	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM	-20 ~ +70	0.75 ~ 156.25
±100PPM	-40 ~ +85	0.75 ~ 156.25
±100PPM	-40 ~ +105	1.25 ~ 135.0
±100PPM	-40 ~ +125	1.25 ~ 135.0
±50PPM	-20 ~ +70	0.75 ~ 156.25
±50PPM	-40 ~ +85	0.75 ~ 156.25
±50PPM	-40 ~ +105	1.25 ~ 135.0
±50PPM	-40 ~ +125	1.25 ~ 135.0
±25PPM	-20 ~ +70	0.75 ~ 156.25
±20PPM ³	-40 ~ +85	0.75 ~ 156.25
±20PPM ³	-20 ~ +70	0.75 ~ 156.25

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FO3HS

(Former F300, F310, F330, F340 Series)

**3.2mm x 2.5mm
HCMOS SMD Oscillator****DIMENSIONS / MECHANICAL
SPECIFICATIONS****Note:**

1, A 0.01μF capacitor should be placed between V_{DD} (Pin 4) and G_{ND} (Pin2) to minimize power supply line noise.

2, Dimensional drawing is for reference to critical specifications defined by size measurements. Certain non-critical visual attributes, such as side castellation's, etc. may vary.

STANDARD SPECIFICATIONS

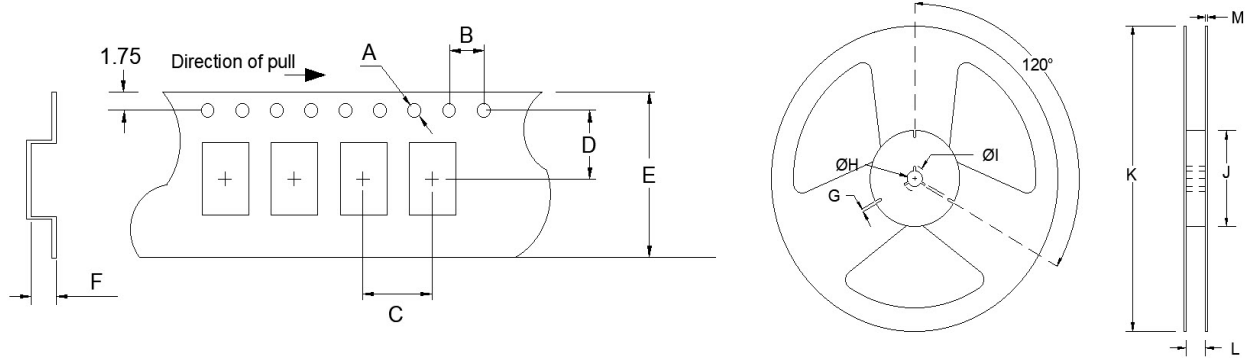
PARAMETERS	MAX (Unless otherwise noted)
Maximum Soldering Temp / Time	260°C / 10 Seconds x 2
Moisture Sensitivity Level (MSL)	1
Termination Finish	Au over Ni
Seal Method	Seam
Lead (Pb) Free	Yes
RoHS Compliant	Yes, no exemptions
REACH Compliant (latest version)	Yes

FO3HS

(Former F300, F310, F330, F340 Series)

**3.2mm x 2.5mm
HCMOS SMD Oscillator**

TAPE SPECIFICATIONS (mm)							REEL SPECIFICATIONS (mm)						
A	B	C	D	E	F	REEL QTY	G	H	I	J	K	L	M
ø1.55	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 for SMD Oscillator O3HS***Sample PN: FO3HSCBM25.0-T2

F	O3HS	C	B	M	25.0	-T2
Fox	Model Number	Voltage M = 1.0V±5% K = 1.8V±5% H = 2.5V±5% C = 3.3V±10% V = 1.6V to 3.63V W = 2.25V to 3.63V	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 P = 40 to +105°C I = -40 to +125°C	Frequency (MHz)	Values Added Options Blank = Bulk T1 = 1,000 pcs T2 = 2,000 pcs T3 = 3,000 pcs

* 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}.

Reliability Test Conditions

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