



# HCSL 7x5mm SMD Oscillator

O7SL

(former F730SL, F740SL Series)

## DATASHEET

- HCSL Differential Output
- Stabilities to  $\pm 25$  PPM
- Temperature Ranges as wide as  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Supply Voltages: 2.5V, 3.3V

### 2.5V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range ( $F_0$ )	15.000 ~ 160.000 MHz
Storage Temperature Range ( $T_{STG}$ )	$-55 \sim +125^{\circ}\text{C}$
Supply Voltage ( $V_{DD}$ )	$2.5 \pm 5\%$
Input Current ( $I_{DD}$ )	40 mA
Standby Current	10 $\mu\text{A}$
Output Symmetry (50% $V_{DD}$ )	45 % ~ 55 %
Rise/Fall Time (20~80% $V_{OPP}$ ) ( $T_R/T_F$ )	
15.000 ~ 99.999999 MHz	1.0 nS
>100.000~ 160.000 MHz	0.7 nS
Output Voltage ( $V_{OL}$ )	$-0.15 \sim 0.15\text{V}$
( $V_{OH}$ )	$0.58 \sim 0.85\text{V}$
Output Swing ( $V_{OPP}$ )	0.6V Min
Output Termination	50 Ohms to GND
Start-up Time ( $T_S$ )	10 mS
Output Disable Time <sup>1</sup>	200 nS
Output Enable Time <sup>1</sup>	10 mS
Aging (per year @ $25^{\circ}\text{C}$ )	$\pm 3$ PPM
Phase Jitter (12kHz ~ 20MHz)	1pS RMS

### 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

### • Available Options by Stability & Operating Temp for 2.5V<sup>2</sup>

Frequency Stability <sup>2</sup>	Operating Temperature ( $^{\circ}\text{C}$ )	Frequency Range (MHz)
$\pm 100\text{PPM}$	0 ~ +70	15.000 ~ 160.000
$\pm 100\text{PPM}$	-40 ~ +85	15.000 ~ 160.000
$\pm 50\text{PPM}$	0 ~ +70	15.000 ~ 160.000
$\pm 50\text{PPM}$	-40 ~ +85	15.000 ~ 160.000
$\pm 25\text{PPM}$	0 ~ +70	15.000 ~ 160.000
$\pm 25\text{PPM}$	-40 ~ +85	15.000 ~ 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  $25^{\circ}\text{C}$  tolerance, operating temperature range, input voltage change, load change, shock, vibration, reflow, and one-year aging.





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### 3.3V ELECTRICAL CHARACTERISTICS

PARAMETERS	MAX (unless otherwise noted)
Frequency Range (F <sub>O</sub> )	15.000 ~ 160.000 MHz
Storage Temperature Range (T <sub>STG</sub> )	-55 ~ +125°C
Supply Voltage (V <sub>DD</sub> )	3.3V±10%
Input Current (I <sub>DD</sub> )	40 mA
Standby Current	10 µA
Output Symmetry (50% V <sub>DD</sub> )	45% ~ 55%
Rise/Fall Time (20~80% V <sub>OPP</sub> ) (T <sub>R</sub> /T <sub>F</sub> )	
15.000 ~ 99.999999 MHz	1.0 nS
>100.000 ~ 160.000 MHz	0.7 nS
Output Voltage (V <sub>OL</sub> )	-0.15 ~ 0.15V
(V <sub>OH</sub> )	0.66 ~ 0.85V
Output Swing (V <sub>OPP</sub> )	0.65V Min
Output Termination	50 Ohms to GND
Start-up Time (T <sub>S</sub> )	10 mS
Output Disable Time <sup>1</sup>	200 nS
Output Enable Time <sup>1</sup>	10 mS
Aging (per year @25°C)	±3 PPM
Phase Jitter (12kHz ~ 20MHz)	1 pS RMS

### 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<sup>2</sup>

Frequency Stability <sup>2</sup>	Operating Temperature (°C)	Frequency Range (MHz)
±100PPM	0 ~ +70	15.000 ~ 160.000
±100PPM	-40 ~ +85	15.000 ~ 160.000
±50PPM	0 ~ +70	15.000 ~ 160.000
±50PPM	-40 ~ +85	15.000 ~ 160.000
±25PPM	-0 ~ +70	15.000 ~ 160.000
±25PPM	-40 ~ +85	15.000 ~ 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, shock, vibration, reflow, and one-year aging.

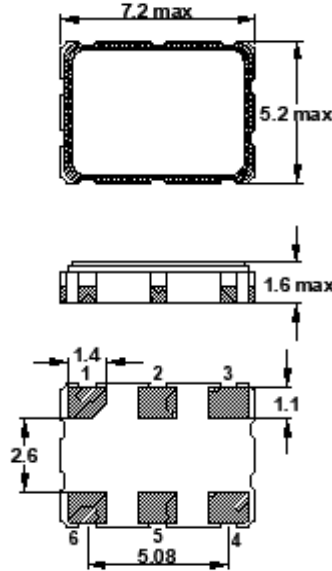




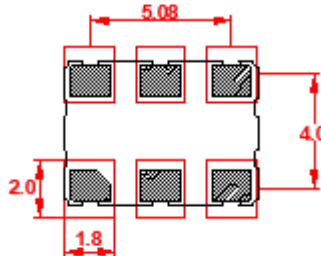
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## DIMENSIONS / MECHANICAL SPECIFICATIONS



### Recommended Solder Pad Layout



### Pin Connections

- #1 E/D      #4 Output\_1
- #2 N.C.    #5 Output\_2
- #3 GND     #6 V<sub>DD</sub>

All dimensions are in millimeters.

Maximum Soldering Temp / Time	260°C / 10 Seconds x 2
Moisture Sensivity Level (MSL)	1
Termination Finish	Au over Ni
Seal Method	Seam
Lead (Pb) Free	Yes
ROHS/REACH Compliant	Yes

#### Notes:

\*A 0.01μF capacitor should be placed between V<sub>DD</sub> (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

	<b>Title / Description:</b> O7SL SERIES STANDARD SPECIFICATIONS	
	<b>Drawing Number:</b> O7SL-DOC-1	<b>Size:</b> A
	<b>Part Number:</b>	<b>Cage:</b> 61429
	<b>Draftsperson:</b> DG	<b>Approved:</b> BEC
		<b>Revision Date:</b> 5/3/2019



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Tape Specifications (millimeters)							Reel Specifications (millimeters)						
A	B	C	D	E	F	Std Reel Qty	G	H	I	J	K	L	M
Ø1.55	4.0	8.0	7.5	16.0	2.0	-T1 = 1,000 -T2 = 2,000	2.5	Ø13.2	Ø21	Ø60.5	Ø180	17.0	1.5

### Available Options & Part Identification\*

Example: **F O7SL C B M 25.0**

F	O7SL	C	B	M	25.0
<b>Fox</b>	<b>Model Number</b>	<b>Voltage</b> H = 2.5V±5% C = 3.3V±10%	<b>Stability</b> A = 100 PPM B = 50 PPM D = 25 PPM	<b>Operating Temperature</b> C = 0 to +70°C M = -40 to +85°C	<b>Frequency(MHz)</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>.



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