

# LOW JITTER PIN CONFIGURABLE HCSL OUTPUT ULTRA MINIATURE PURE SILICON™ SMD CLOCK OSCILLATORS



3.2 x 2.5 x 0.85 mm

**ASEMCHC**

Moisture Sensitivity Level – MSL 1



**RoHS**  
Compliant

## FEATURES:

- Ultra Miniature Pure Silicon™ Clock Oscillator
- Pin Configurable HCSL output
- Low Jitter (Period Jitter RMS 2.8ps typical)
- Low Integrated Phase Jitter 2ps max
- Tight Stability +/-10ppm -40 to +85C
- Excellent Shock & Vibration Immunity

## APPLICATIONS:

- Consumer Electronics
- Storage Area Networks
- SATA, SAS, Fibre Channel
- Passive Optical Networks
- EPON, 10G-EPON, GPON, 10G-PON
- Ethernet
- 1G, 10GBASE-T/KR/LR/SR, and FCoE
- PCI Express

Low Jitter  
Pin Configurable  
CMOS Output  
3G MEMS

## STANDARD SPECIFICATIONS:

### Pre-programmed Output Frequency Configuration

Ordering Info	Freq (MHz)	Freq Select Bits [FS1, FS0] – Default is [11]			
		00	01	10	<b>11</b>
Frequency Configuration 1	f <sub>OUT</sub>	125	156.25	200	<b>100</b>
Custom Configuration	f <sub>OUT</sub>	Contact Abracon for customized configurations			

Frequency select bits [FS1, FS0] are weakly tied high so if left **floated**, the default setting will be [11] and the device will output the associated frequency highlighted in **Bold**. If other frequency combinations are required, please contact Abracon for customized configuration. Please see the configurable frequency range in the section 2.0

### Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes	
Configurable frequency range	10	-----	460	MHz	Commercial, Industrial temp range	
Operating Temperature	-20	-----	+70	°C	See options	
Storage Temperature	-55	-----	+150	°C		
Overall Frequency Stability*1	-50	-----	+50	ppm	See options	
Supply Voltage (Vdd)	+2.25	-----	+3.6	V		
Startup Time	-----	-----	5	ms	T=25°C	
Enable Time	-----	-----	20	ns		
Disable Time	-----	-----	5	ns		
Disable Current	-----	21	23	mA		
Tri-state Function (Standby/Disable)	"1" (VIH≥0.75*Vdd) or Open: Oscillation "0" (VIL<0.25*Vdd) : Hi Z			V	40kΩ pull-up resistor embedded	
Aging	-5.0	-----	+5.0	ppm	First year	
Supply Current (I <sub>dd</sub> )	-----	40	42	mA	RL=50Ω, 156.25MHz	
Output Logic Level	V <sub>OH</sub>	0.725	-----	V	RL=50Ω	
	V <sub>OL</sub>	-----	0.10			
Peak to Peak Output Swing		750		mV	Single Ended	
Rise Time	Tr	200	-----	400	ps	RL=50Ω, CL=2pF
Fall Time	Tf	200	-----	400	ps	20%/80%*VDD
Duty Cycle		48	-----	52	%	Differential

\*1. Frequency stability includes frequency variations due to initial tolerance, temp. and power supply voltage

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### Key Electrical Specifications (continued)

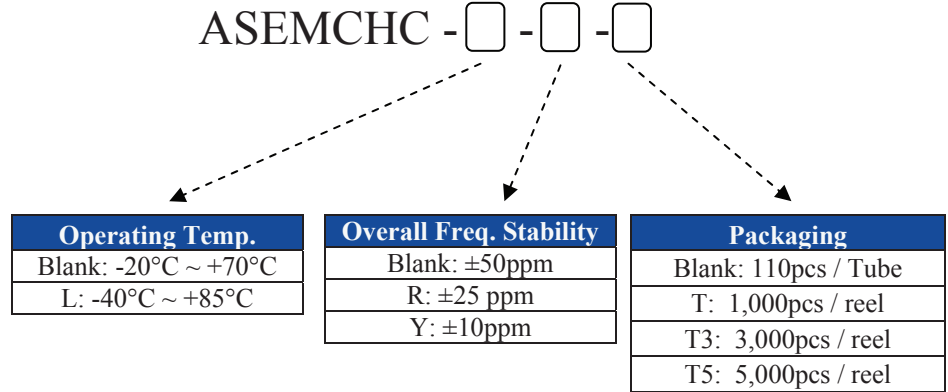
Parameters	Minimum	Typical	Maximum	Units	Notes
Period Jitter RMS ( $J_{PER}$ )	-----	2.8	-----	ps	F0= 156.25MHz
Integrated Phase Jitter ( $J_{PH}$ )	-----	0.25	2	ps	200kHz ~ 20MHz, 156.25MHz
	-----	0.37	2		100kHz ~ 20MHz, 156.25MHz
	-----	1.70	2		12kHz ~ 20MHz, 156.25MHz

### ABSOLUTE MAXIMUM RATINGS:

Item	Minimum	Maximum	Unit	Condition
Supply Voltage	-0.3	+4.0	V	
Input Voltage	-0.3	$V_{dd}+0.3$	V	
Junction Temp.	-----	+150	°C	
Storage Temp.	-55	+150	°C	
Soldering Temp.	-----	+260	°C	40sec max
ESD			V	
HBM		4,000		
MM		200		
CDM		1,500		

### OPTIONS AND PART IDENTIFICATION:

(left blank if standard)



Ordering Info	Freq (MHz)	Freq Select Bits [FS1, FS0] – Default is [11]			
		00	01	10	11
Frequency Configuration 1	$f_{OUT}$	125	156.25	200	<b>100</b>
Custom Configuration	$f_{OUT}$	Contact Abracon for customized configurations			

Default condition: Frequency select bits [FS1, FS0] are all left floated. FS1, FS0 are pulled high [11]  
 Frequency combination and default frequency is customized upon request. Please contact Abracon for the frequency combinations.

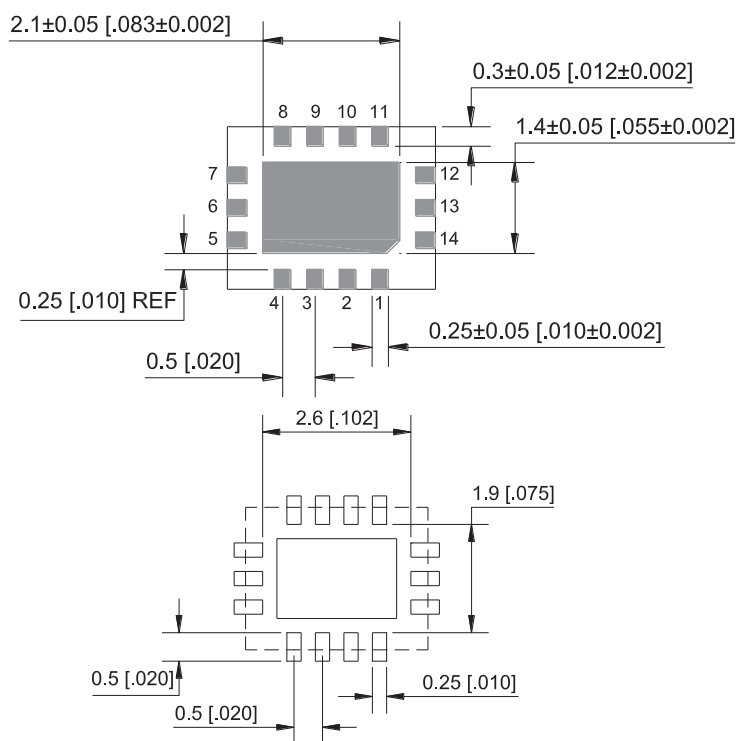
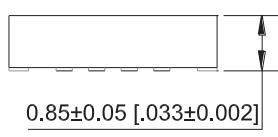
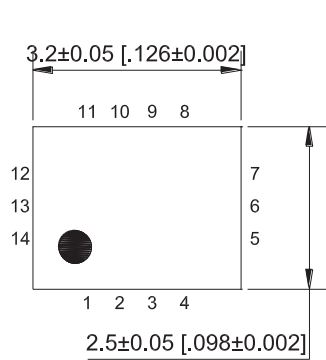


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## MECHANICAL DIMENSIONS



Recommended Land Pattern

Pin No.	Pin Name	Pin Type	Description
1	Enable	I	Enables outputs when high and disables when low
2	NC	NA	Leave unconnected or grounded
3	NC	NA	Leave unconnected or grounded
4	GND	Power	Ground
5	FS0	I	Least significant bit for frequency selection
6	FS1	I	Most significant bit for frequency selection
7	NC	NA	Leave unconnected or grounded
8	Output+	O	Positive HCSL Output
9	Output-	O	Negative HCSL Output
10	NC	NA	Leave unconnected or grounded
11	NC	NA	Leave unconnected or grounded
12	VDD2	Power	Power Supply
13	VDD	Power	Power Supply
14	NC	NA	Leave unconnected or grounded

Dimensions: mm (inches)

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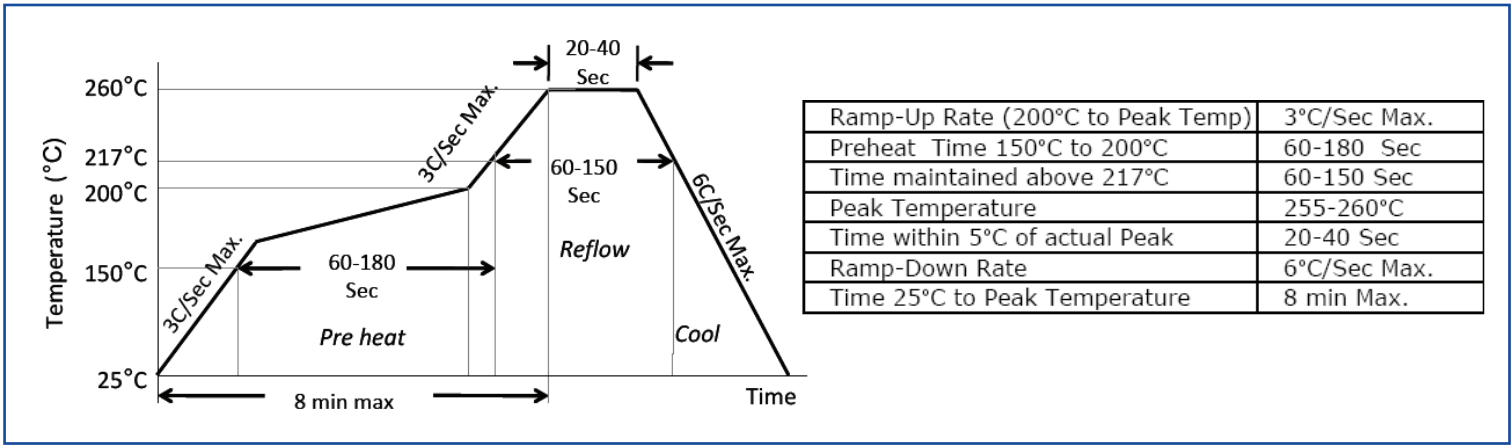


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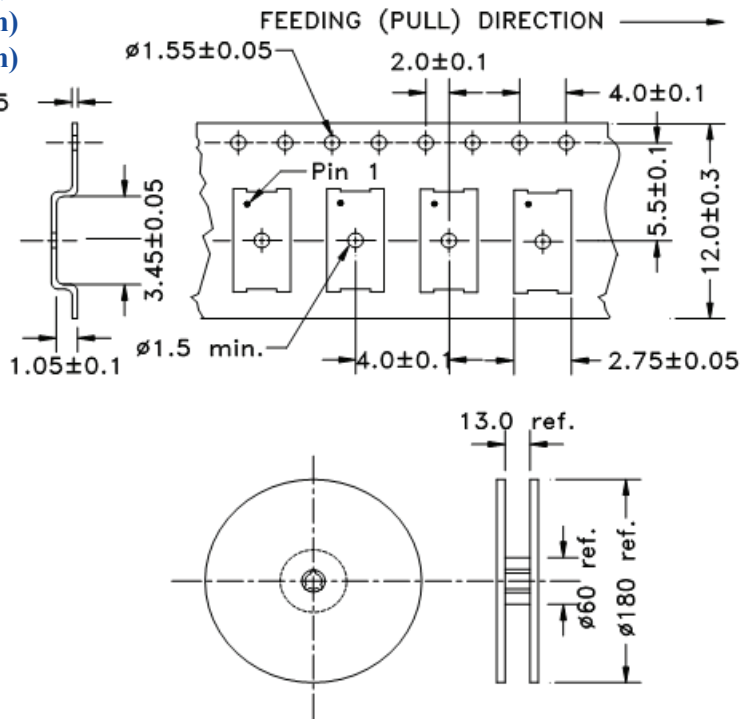
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## REFLOW PROFILE

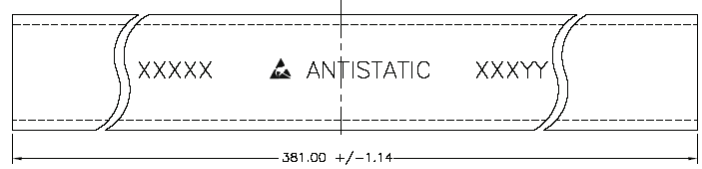


## TAPE & REEL:

T= 1,000pcs/reel (D=180mm)  
T3= 3,000pcs/reel (D=180mm)  
T5= 5,000pcs/reel (D=330mm)



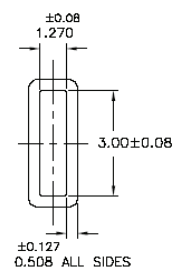
Tube: 110 pcs/tube



Unit orientation in tube:



Dimensions: mm



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