



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMP

Life Size   
5.0 x 3.2 x 0.85 mm

ASFLMP



RoHS/RoHS II compliant

Moisture Sensitivity Level- MSL 1

## FEATURES:

- Ultra Miniature Pure Silicon™ Clock Oscillator
- High Performance MEMS Technology by Discera
- Low Power Consumption for high speed communication
- Exceptional Stability Over Temp. at -40 to +85°C, ±15ppm
- Extended Automotive Grade Temp. stability at -55 to +125°C, ±25ppm
- MIL-STD-883 shock and vibration compliant
- Durable QFN Plastic Compact Packaging
- Standby or Disable Tri-state function
- Low jitter (Period jitter RMS and Phase jitter RMS)
- High power supply noise reduction, -50dBc

## APPLICATIONS:

- Storage Area Networks (SATA, SAS, Fiber Channel)
- Passive Optical Networks (EPON, 10G-EPON, GPON, 10G-PON)
- Ethernet (1G, 10GBASE-T, KR/LR/SR, FCoE)
- PCI Express
- Display port

## STANDARD SPECIFICATIONS:

### Common Key Electrical Specifications – CMOS, LVPECL, LVDS, and HCSL

Parameters	Minimum	Typical	Maximum	Units	Notes	
Frequency Range	CMOS	2.3000*		170.0000	MHz	-20 ~ +70°C -40 ~ +85°C
	CMOS	3.3000*		170.0000		-40 ~ +105°C -55 ~ +125°C
	LVPECL	2.3000*		460.0000		Commercial, Industrial temp. range
	LVDS	2.3000*		460.0000		Commercial, Industrial temp. range
	HCSL	2.3000*		460.0000		Commercial, Industrial temp. range
Operating Temperature	-20		+70	°C	See options	
Storage Temperature	-55		+150	°C		
Overall Frequency Stability	-50		+50	ppm	See options	
Supply Voltage (Vdd)	+2.25		+3.6	V		
Startup Time			5	ms		
Enable Time			20	ns	STD (Tri-state)	
			5	ms	PD option (Power Down)	
Disable Time			5	ns		
Disable Current		20	22	mA	STD (Tri-state)	
			0.095		PD option (Power Down)	
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	

\* For 2.3000MHz < F0 < 9.9999MHz, 6-8 weeks lead-time applies

## Key Electrical Specifications – CMOS

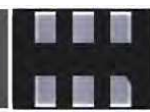
Parameters	Minimum	Typical	Maximum	Units	Notes
Supply Current (I <sub>dd</sub> )		31	35	mA	CL=15pF, 125MHz
Output Logic Level	V <sub>OH</sub>	0.9 * V <sub>dd</sub>		V	I = ±6mA
	V <sub>OL</sub>		0.1 * V <sub>dd</sub>	V	
Rise Time	Tr	1.1	2.0	ns	CL=15pF
Fall Time	Tf	1.3	2.0	ns	20% to 80%
Duty Cycle		45	55	%	
Integrated Phase Jitter (J <sub>PH</sub> )		0.30	2	ps	200kHz ~ 20MHz@125MHz
		0.38	2		100kHz ~ 20MHz@125MHz
		1.70	2		12kHz ~ 20MHz@125MHz
Period Jitter RMS (J <sub>PER</sub> )		3.0		ps	

REVISED: 12.6.2017



# PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMP



Life Size



5.0 x 3.2 x 0.85 mm

ASFLMP



RoHS/RoHS II compliant

## Key Electrical Specifications – LVPECL

Parameters		Minimum	Typical	Maximum	Units	Notes
Supply Current ( $I_{dd}$ )			56.5	58	mA	RL=50Ω
Output Logic Level	$V_{OH}$	$V_{dd}-1.08$			V	RL=50Ω
	$V_{OL}$			$V_{dd}-1.55$	V	
Peak to Peak Output Swing ( $V_{pp}$ )			800		mV	Single ended
Rise Time	$T_r$		250		ps	RL=50Ω , CL=0pF 20% to 80%
Fall Time	$T_f$		250			
Duty Cycle		48		52	%	Differential
Integrated Phase Jitter ( $J_{PH}$ )			0.25	2	ps	200kHz ~ 20MHz @156.25MHz
			0.38	2		100kHz ~ 20MHz @156.25MHz
			1.70	2		12kHz ~ 20MHz @156.25MHz
Period Jitter RMS ( $J_{PER}$ )			2.5		ps	

## Key Electrical Specifications – LVDS

Parameters		Minimum	Typical	Maximum	Units	Notes
Supply Current ( $I_{dd}$ )			29	32	mA	RL=100Ω
Output Offset Voltage ( $V_{OS}$ )		1.125		1.4	V	RL=100Ω differential
Delta Offset Voltage ( $\Delta V_{OS}$ )				50	mV	
Peak to Peak Output Swing ( $V_{pp}$ )			350		mV	Single ended
Rise Time	$T_r$		200		ps	RL=50Ω , CL=2pF 20% to 80%
Fall Time	$T_f$		200			
Duty Cycle		48		52	%	Differential
Integrated Phase Jitter ( $J_{PH}$ )			0.28	2	ps	200kHz ~ 20MHz @156.25MHz
			0.40	2		100kHz ~ 20MHz @156.25MHz
			1.70	2		12kHz ~ 20MHz @156.25MHz
Period Jitter RMS ( $J_{PER}$ )			2.5		ps	

## Key Electrical Specifications – HCSL

Parameters		Minimum	Typical	Maximum	Units	Notes
Supply Current ( $I_{dd}$ )			40	42	mA	RL=50Ω
Output Logic Level	$V_{OH}$	0.725			V	RL=50Ω
	$V_{OL}$			0.1	V	
Peak to Peak Output Swing ( $V_{pp}$ )			750		mV	Single ended
Rise Time	$T_r$	200		400	ps	RL=50Ω , CL=2pF 20% to 80%
Fall Time	$T_f$	200		400		
Duty Cycle		48		52	%	Differential
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
Period Jitter RMS ( $J_{PER}$ )			2.5		ps	

# PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMP



Life Size



5.0 x 3.2 x 0.85 mm

ASFLMP



RoHS/RoHS II compliant

## Absolute Maximum Ratings

Item	Minimum	Maximum	Unit	Condition
Supply Voltage	-0.3	+4.0	V	
Input Voltage	-0.3	V <sub>dd</sub> +0.3	V	
Junction Temp.		+150	°C	
Storage Temp.	-55	+150	°C	
Soldering Temp.		+260	°C	40sec max
ESD			V	
HBM		4,000		
MM		400		
CDM		1,500		

## OPTIONS AND PART IDENTIFICATION: (Left Blank if Standard)

### Programmed Orders (Quantity > 1,000pcs)

ASFLMP [ ] - [ ] MHz - [ ] [ ] - [ ] - [ ]

Output Type	Frequency in MHz	Operating Temp.	Overall Freq. Stability	Tri-state (Pin 1)	Packaging
C: CMOS	e.g. 156.2500 MHz (Maximum 4 digits after decimal)	Blank: -20°C ~ +70°C	Blank: ±50ppm	Blank: Tri-state	Blank***: Tube (72pcs / Tube)
LP: LVPECL		L: -40°C ~ +85°C	Y: ±10ppm*	PD: Power Down	T: Tape & Reel (1kpcs / reel)
LV: LVDS		X: -40°C ~ +105°C	R: ±25 ppm		T3: Tape & Reel (3kpcs / reel)
HC: HCSL		Z** : -55°C ~ +125°C			

\* Temp option L, X or -20°C ~ +70°C, only

\*\* CMOS output only

\*\*\* For Quick turn-around programmable orders < 1000pcs: Due to the immediate availability of stock and the qty of the order, the parts may be delivered as BULK: Cut Tape, Loose parts in Antistatic Bag or in Tube(s). The MOQ per the series will still apply for Tube packaging.

### Un-Programmed Orders

Blank un-programmed oscillators are available for quick turn engineering requirements. Please call ABRACON for more information.

ASFLMP [ ] - BLANK - [ ] [ ] - [ ] - [ ]

Output Type	Operating Temp.	Overall Freq. Stability	Tri-state (Pin 1)	Packaging
C: CMOS	Blank: -20°C ~ +70°C	Blank: ±50ppm	Blank: Tri-state	Blank: Tube (72pcs / Tube)
LP: LVPECL	L: -40°C ~ +85°C	Y: ±10ppm*	PD: Power Down	T: Tape & Reel (1kpcs / reel)
LV: LVDS	X: -40°C ~ +105°C	R: ±25 ppm		T3: Tape & Reel (3kpcs / reel)
HC: HCSL	Z** : -55°C ~ +125°C			

\* Temp option L, X or -20°C ~ +70°C, only

\*\* CMOS output only

# PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMP

Life Size

5.0 x 3.2 x 0.85 mm

ASFLMP



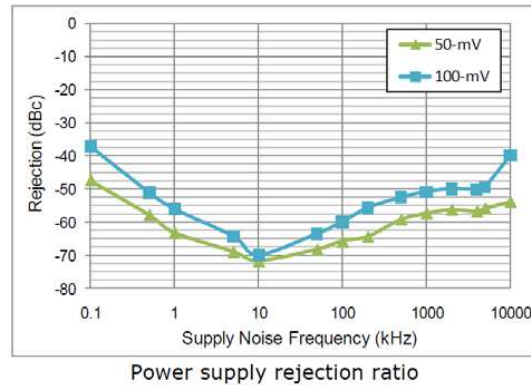
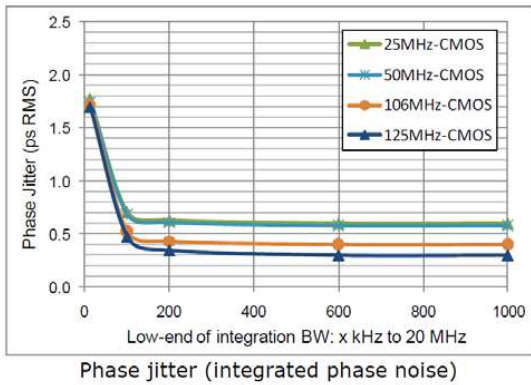
RoHS/RoHS II compliant



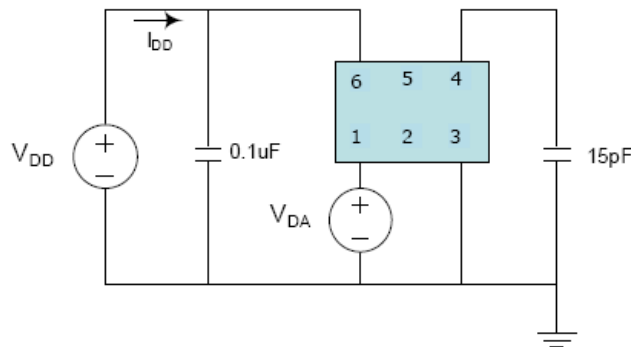
## NOMINAL PERFORMANCE PARAMETERS

(Unless specified otherwise: T=25° C, VDD=3.3 V)

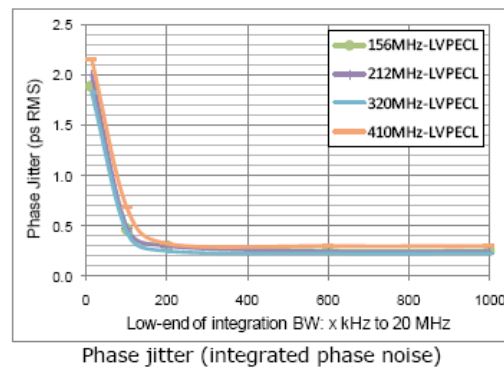
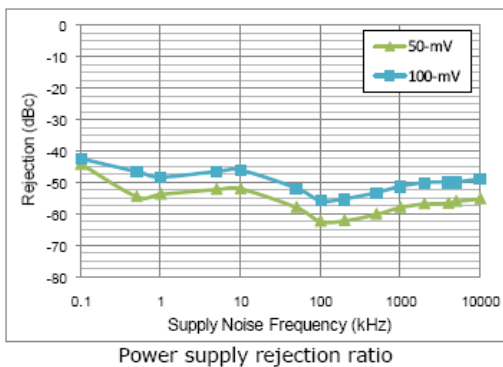
### CMOS OUTPUT



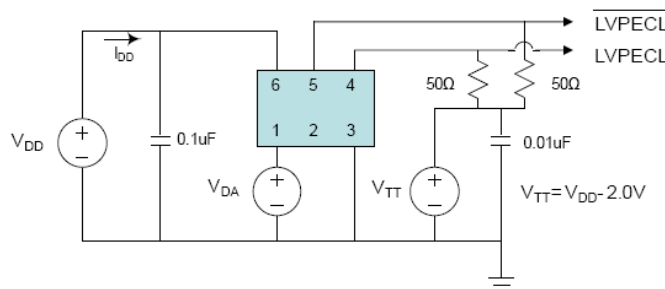
### Test Circuit



### LVPECL output



### Test Circuit



# PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMP



Life Size



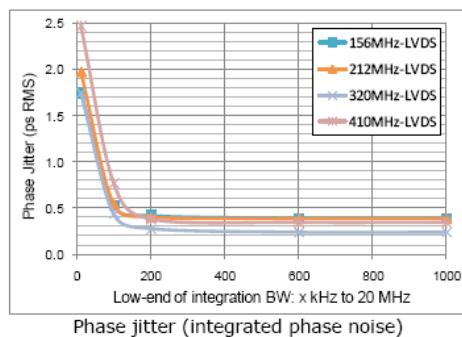
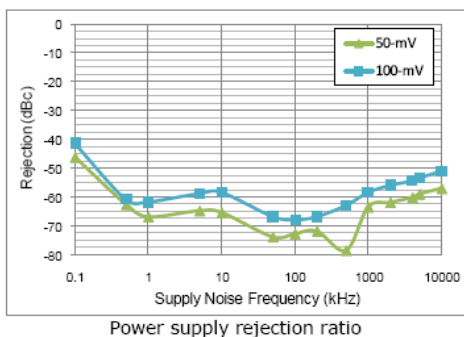
5.0 x 3.2 x 0.85 mm

ASFLMP

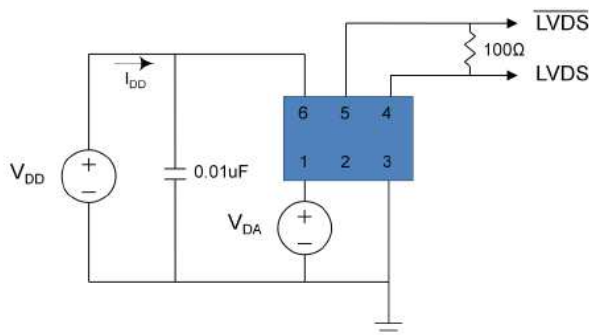


RoHS/RoHS II compliant

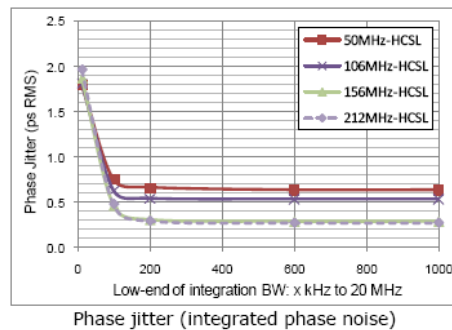
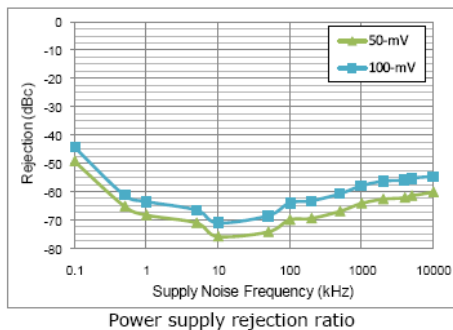
## LVDS output



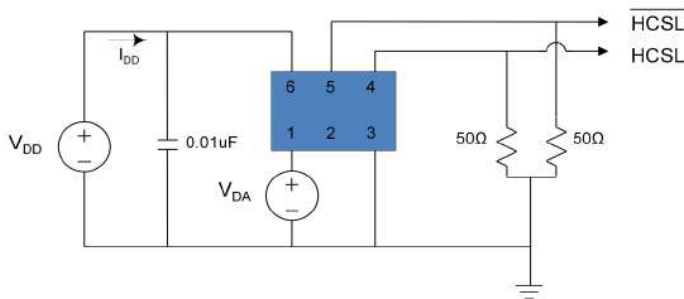
## Test Circuit



## HCSL output



## Test Circuit



# PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMP

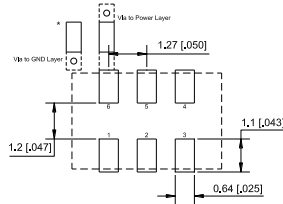
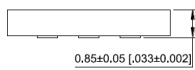
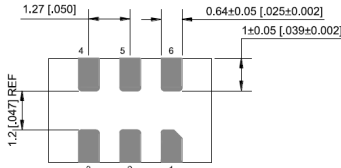
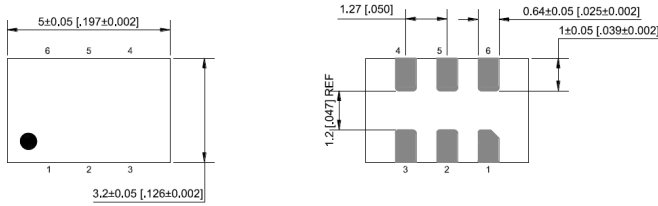
Life Size  
5.0 x 3.2 x 0.85 mm

ASFLMP



RoHS/RoHS II compliant

## OUTLINE DIMENSIONS:

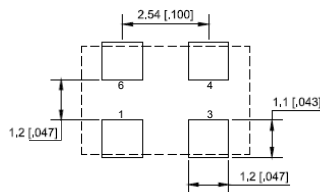


Recommended Land Pattern for LVPECL, LVDS, HCSSL

Pin #	Function
1	Tri-state
2	NC
3	GND
4	Output
5	NC (CMOS)
6	Output (LVPECL, LVDS, HCSSL) Vdd

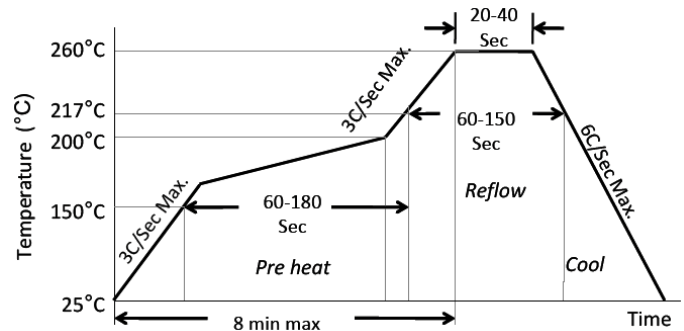
Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 6 and 3.

Dimensions: mm (inches)



Recommended Land Pattern for CMOS

## REFLOW PROFILE:

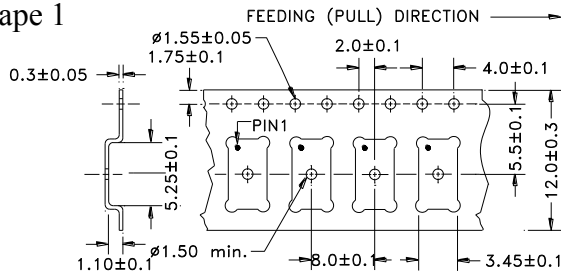


Ramp-Up Rate (200°C to Peak Temp)	3°C/Sec Max.
Preheat Time 150°C to 200°C	60-180 Sec
Time maintained above 217°C	60-150 Sec
Peak Temperature	255-260°C
Time within 5°C of actual Peak	20-40 Sec
Ramp-Down Rate	6°C/Sec Max.
Time 25°C to Peak Temperature	8 min Max.

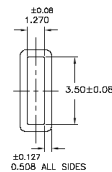
## TAPE AND REEL:

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

### Tape 1



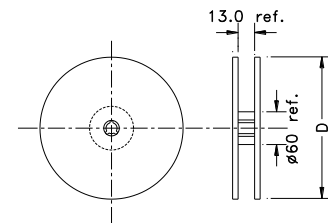
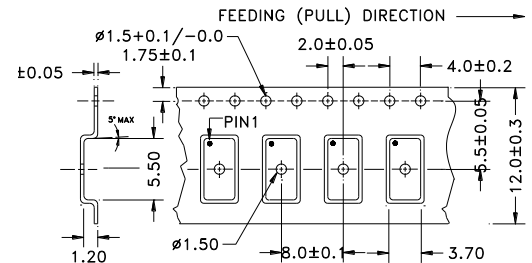
Tube: 72 pcs/tube



Unit orientation in tube:



### Tape 2



Dimensions: mm

**ATTENTION:** Abracon LLC products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon LLC is required. Please contact Abracon LLC for more information.