

PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATORS

ASDMP



2.5 x 2.0 x 0.85 mm

ASDMP Series

Moisture Sensitivity Level – MSL 1



RoHS/RoHS II compliant

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 _{dd})		31	35	mA	CL=15pF, 125MHz
Output Logic Level	V _{OH}	0.9*V _{dd}		V	I=±6mA
	V _{OL}		0.1*V _{dd}	V	
Rise Time		1.1	2.0	ns	CL=15pF
Fall Time		1.3	2.0	ns	20% to 80%
Duty Cycle	45		55	%	
Integrated Phase Jitter (J _{PH})		0.30	2	ps	200kHz ~ 20MHz@125MHz
		0.38	2		100kHz ~ 20MHz@125MHz
		1.70	2		12kHz ~ 20MHz@125MHz
Period Jitter RMS (J _{PER})		3.0		ps	

REVISED: 06.11.2018

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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 (ΔV_{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	

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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		400		
CDM		1,500		

PART IDENTIFICATIONS:

Programmed Orders (Quantity > 1,000pcs)

ASDMP [] - [] 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 (140pcs / 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			T5: Tape & Reel (5kpcs / reel)
					T10: Tape & Reel (10kpcs / reel)

* 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.

ASDMP [] - 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 (140pcs / 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			T5: Tape & Reel (5kpcs / reel)
				T10: Tape & Reel (10kpcs / reel)

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

** CMOS output only

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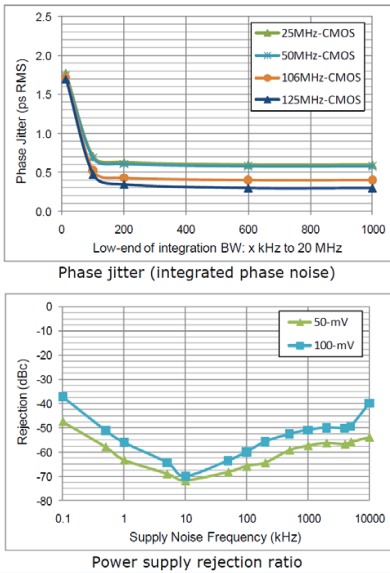
2.5 x 2.0 x 0.85 mm

ASDMP Series

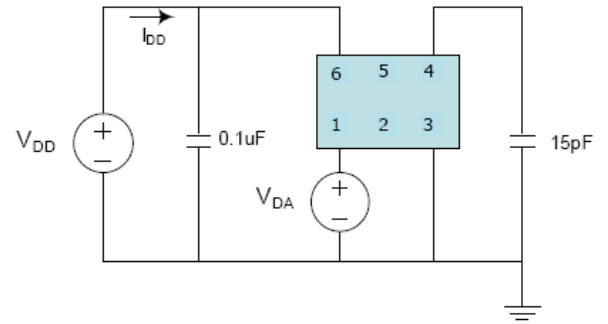


RoHS/RoHS II compliant

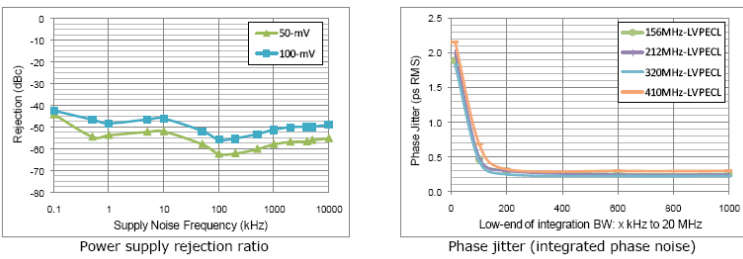
CMOS OUTPUT:



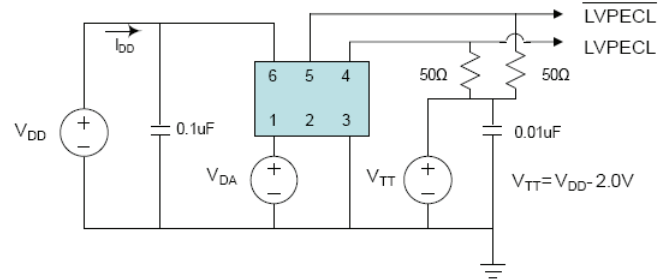
TEST CIRCUIT:



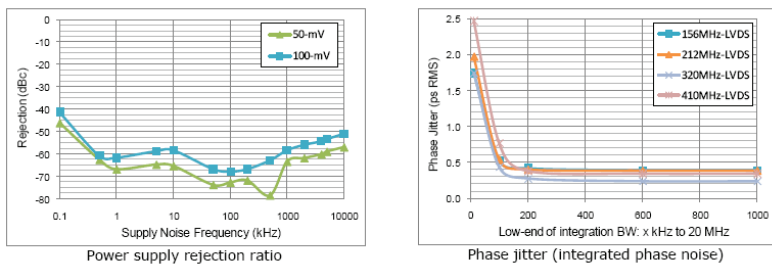
LVPECL OUTPUT:



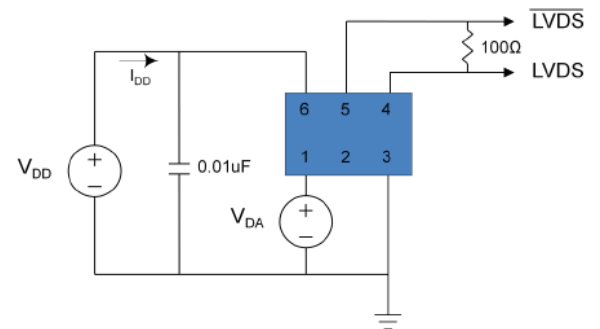
TEST CIRCUIT:



LVDS OUTPUT:



TEST CIRCUIT:



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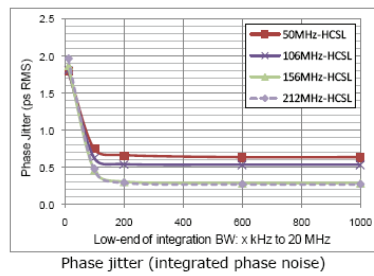
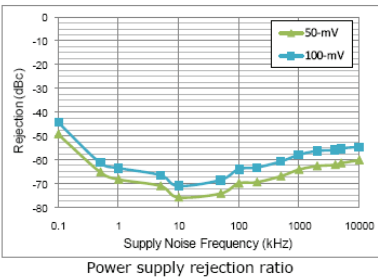
2.5 x 2.0 x 0.85 mm

ASDMP Series

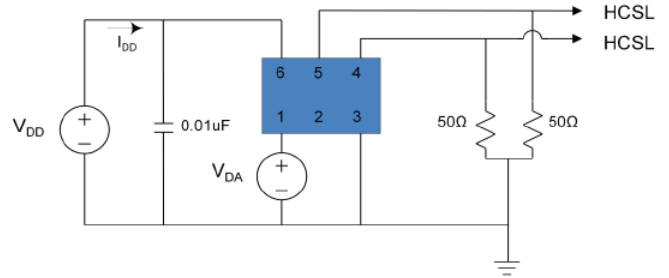


RoHS/RoHS II compliant

HCSL OUTPUT:

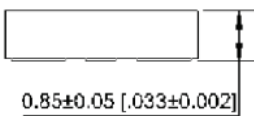
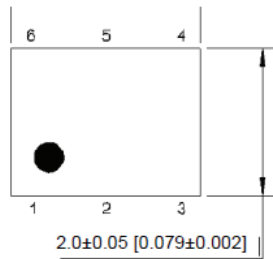


TEST CIRCUIT:



OUTLINE DRAWING:

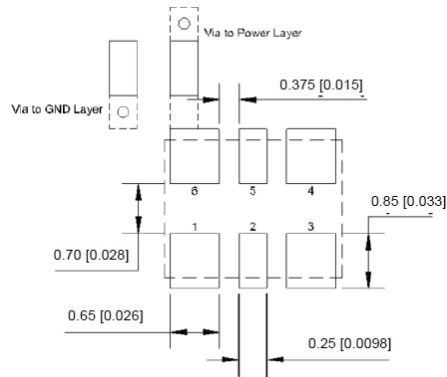
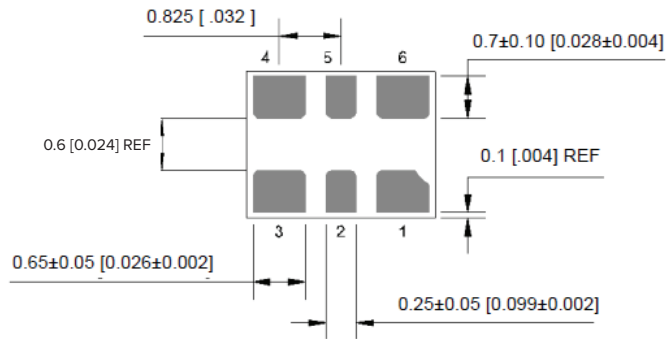
2.5±0.05 [0.098±0.002]



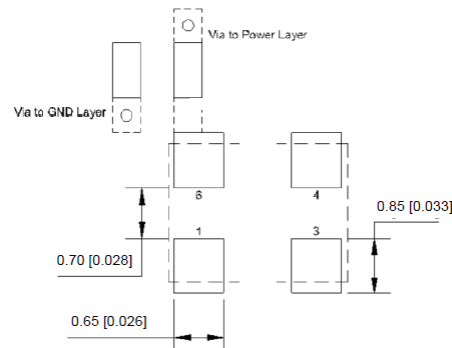
Pin #	Function
1	Tri-state
2	NC
3	GND
4	Output
5	NC (CMOS) Output (LVPECL, LVDS, HCSL)
6	Vdd

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

Dimensions: mm (inches)



Recommended Land Pattern for LVPECL, LVDS, HCSL



Recommended Land Pattern for CMOS

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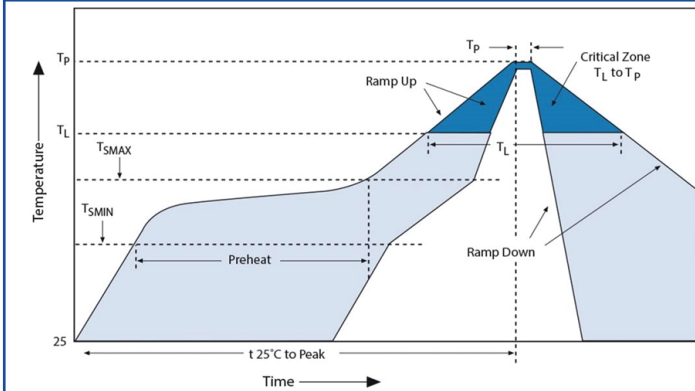
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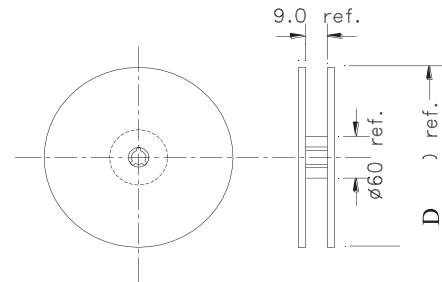
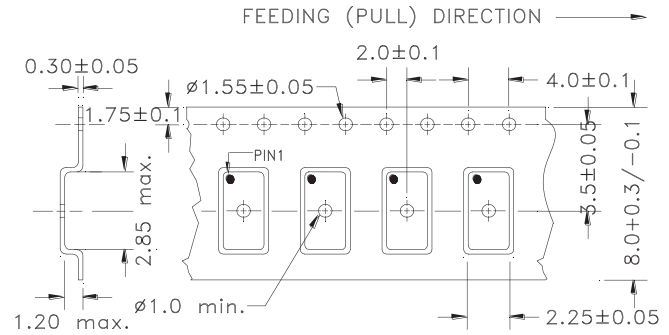
REFLOW PROFILE:



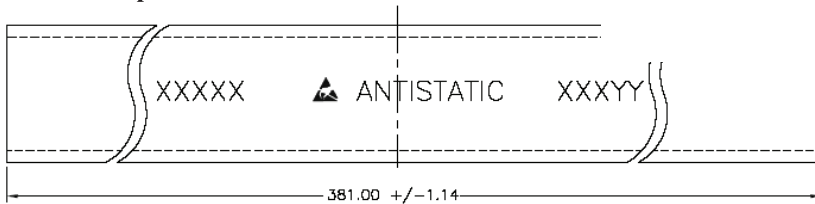
Zone	Description	Temperature	Time
1	Preheat / Soak	T _{SMIN} ~ T _{SMAX} 150°C ~ 200°C	60 ~ 180 sec.
2	Reflow	T _L 217°C	60 ~ 150 sec.
3	Peak heat	T _P 255°C ~ 260°C	40 sec. MAX.

TAPE & REEL:

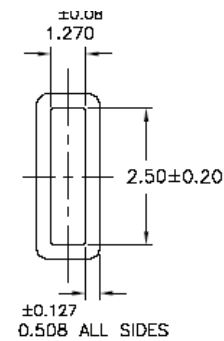
- T= 1,000pcs/reel (D=180mm)
- T3= 3,000pcs/reel (D=180mm)
- T5= 5,000pcs/reel (D=330mm)
- T10= 10,000pcs/reel (D=330mm)



Tube: 140 pcs/tube



Unit orientation in tube:



Dimensions: mm

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