

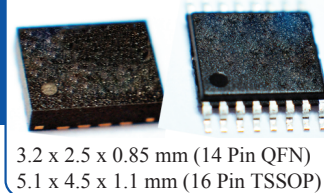
CRYSTAL-LESS PCI EXPRESS DUAL OUTPUT ULTRA MINIATURE PURE SILICON™ SMD CLOCK GENERATOR

AB-557-03 Series

Moisture Sensitivity Level
MSL 1 – 14 QFN
MSL 3 – 16 TSSOP



RoHS/RoHS II compliant



3.2 x 2.5 x 0.85 mm (14 Pin QFN)
5.1 x 4.5 x 1.1 mm (16 Pin TSSOP)

FEATURES:

- Meets PCIe Gen1, Gen2, & Gen3 specs.
- High Performance MEMS Technology by Discera
- Available Mixed Output Formats: HCSL, LVPECL, LVDS or LVCMOS
- Wide Temperature Range: -40° to 105° C
- Wide Supply Range: 2.25V to 3.6 V
- Low Power Consumption
- Excellent Shock & Vibration Immunity

APPLICATIONS:

- Solid State Storage
- Storage Area Networks
- Passive Optical Networks
- Ethernet: 1G, 10GBASE-T/KR/LR/SR, and FCoE
- TV and other Consumer Electronics
- Industrial and Medical
- Scanner, Printer

STANDARD SPECIFICATIONS:

Parameters		Minimum	Typical	Maximum	Unite	Notes
Frequency	f ₀	2.3	100	460 ^{*1}	MHz	
Operating Temperature		-20		+70	°C	See options
Storage Temperature		-55		+150	°C	
Overall Freq. Stability ^{*2}	Δf	-100		+100	ppm	See options
Supply Voltage	V _{DD}	+2.25		+3.6	V	
Supply Current- Enabled	I _{DD}		60		mA	R _L =50Ω, F ₀₁ =F ₀₂ =100.00MHz
Supply Current- Disabled	I _{DD}		21	23	mA	
Startup Time	t _{su}			5	ms	
Enable Time	t _{EN}			20	ns	
Disable Time	t _{DA}			5	ns	
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
Output Offset Voltage	V _{OH}	0.725			V	R _L =50 Ω
	V _{OL}			0.10		
Peak to Peak Output Swing			750		mV	Single-Ended
Rise Time	t _r	200		400	ps	R _L =50 Ω, C _L =2pF
Fall Time	t _f	200		400	ps	20% to 80%
Duty Cycle	SYM	48		52	%	Differential
Period Jitter	J _{PER}		2.5		ps _{RMS}	F ₀₁ =F ₀₂ =100.00MHz
Integrated Phase Noise (Common Clock Architecture)	R _J		0.540		ps _{RMS}	PCIe Gen 1.1 T _J = D _J + 14.069 x R _J (BER 10-12)
	D _J		0.832	41.9	ps _{p-p}	
	T _J		8.536	86.0		
	J _{RMS-CCHF}		0.458	3.1	ps _{RMS}	PCIe Gen 2.1 1.5 MHz to Nyquist
	J _{RMS-CCLF}		0.030	3.0		PCIe Gen 2.1 10kHz to 1.5 MHz
	J _{RMS-CC}		0.165	1.0	ps _{RMS}	PCIe Gen 3.0
Integrated Phase Noise (Data Clock Architecture)	J _{RMS-DCHF}		0.561	4.0	ps _{RMS}	PCIe Gen 2.1 1.5 MHz to Nyquist
	J _{RMS-DCLF}		1.778	7.5		PCIe Gen 2.1 10kHz to 1.5 MHz
	J _{RMS-DC}		0.147	1.0	ps _{RMS}	PCIe Gen 3.0

*1. For frequency other than 100MHz, please contact ABRACON or consider using ASEMDxx series

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

ABRACON IS
ISO9001:2008
CERTIFIED



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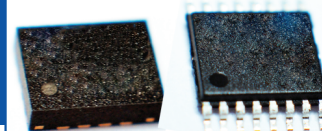
Revised: 04.12.13

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AB-557-03 Series



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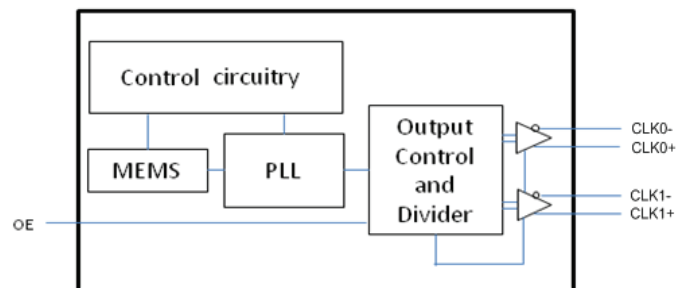


3.2 x 2.5 x 0.85 mm (14 Pin QFN)
5.1 x 4.5 x 1.1 mm (16 Pin TSSOP)

Absolute Maximum Ratings

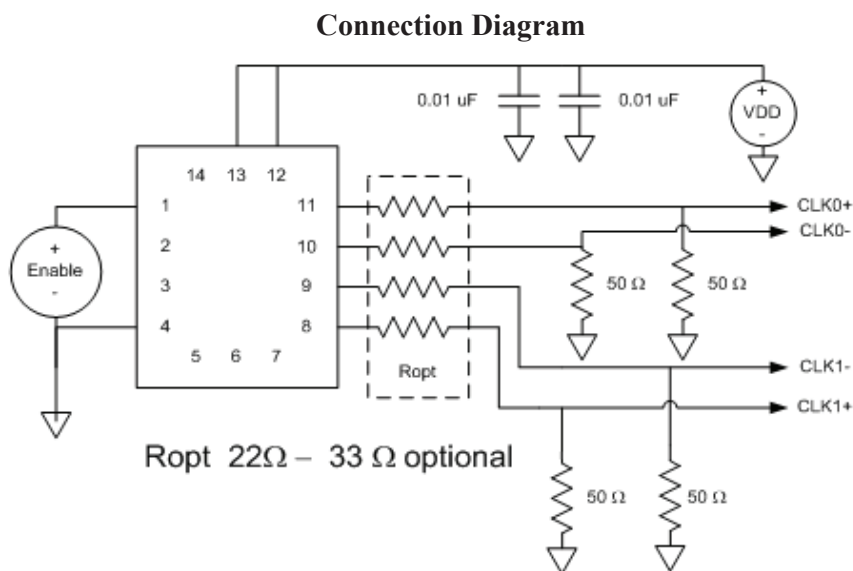
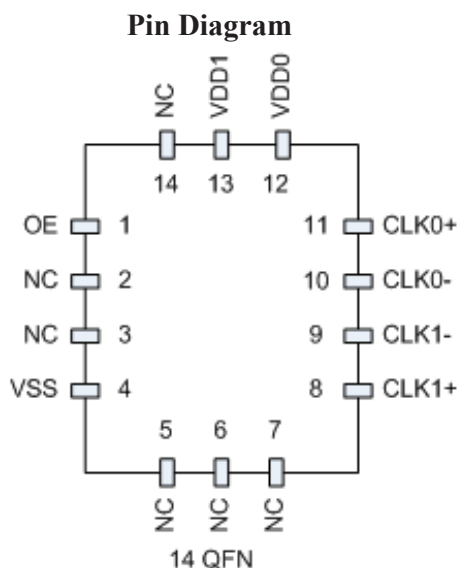
Item	Minimum	Maximum	Unit	Condition
Supply Voltage	-0.3	+4.0	V	
Input Voltage	-0.3	$V_{dd}+0.3$	V	
Junction Temp.		+150	°C	
Storage Temp.	-55	+150	°C	
Soldering Temp.		+260	°C	40sec max
ESD				
HBM		4,000	V	
MM		400		
CDM		1,500		

Block Diagram:



PIN LAYOUT:

14 Pin QFN:



Pin No.	Pin Name	Pin Type	Description
1	OE	I	Output Enable; active high
2	NC	NA	Ground Connected or Leave Unconnected
3	NC	NA	Ground Connected or Leave Unconnected
4	VSS	Power	Ground
5	NC	NA	Ground Connected or Leave Unconnected
6	NC	NA	Ground Connected or Leave Unconnected
7	NC	NA	Ground Connected or Leave Unconnected
8	CLK1+	O	True output of differential pair
9	CLK1-	O	Complement output of differential pair
10	CLK0-	O	Complement output of differential pair
11	CLK0+	O	True output of differential pair
12	VDD0	Power	Power Supply for Output 0 (CLK+/- 0)
13	VDD1	Power	Power Supply for Core and Output 1 (CLK +/- 1)
14	NC	NA	Ground Connected or Leave Unconnected

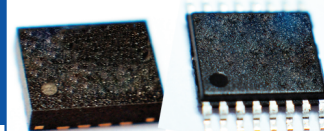


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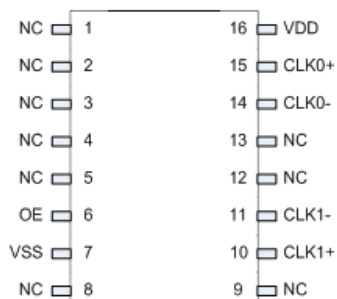
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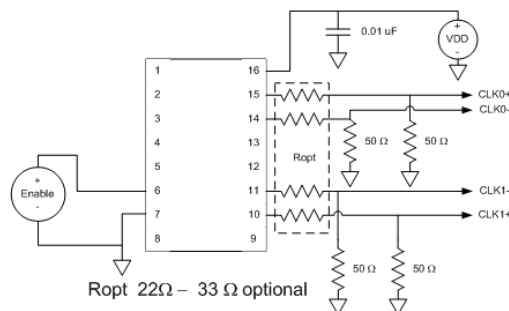
16 Pin TSSOP:

Pin Diagram



16-pin TSSOP

Connection Diagram



Pin No.	Pin Name	Pin Type	Description
1	NC	NA	Leave Unconnected
2	NC	NA	Leave Unconnected
3	NC	NA	Leave Unconnected
4	NC	NA	Leave Unconnected
5	NC	NA	Leave Unconnected
6	OE	I	Output Enable; active high
7	VSS	Power	Ground
8	NC	NA	Leave Unconnected
9	NC	NA	Leave Unconnected
10	CLK1+	O	True output of differential pair
11	CLK1-	O	Complement output of differential pair
12	NC	NA	Leave Unconnected
13	NC	NA	Leave Unconnected
14	CLK0-	O	Complement output of differential pair
15	CLK0+	O	True output of differential pair
16	VDD	Power	Power Supply

PART IDENTIFICATION:

AB-557-03-□□-□-□-□-□

Output Format, Clk1
C: LVCMOS
LP: LVPECL
LV: LVDS
HC: HCSL

Output Format, Clk0
C: LVCMOS
LP: LVPECL
LV: LVDS
HC: HCSL

Package Type
F: 14-QFN
S: 16-TSSOP

Operating Temp.
E: -20°C ~ +70°C
L: -40°C ~ +85°C
X: -40°C ~ +105°C

Overall Freq. Stability
Blank: ±100ppm
C: ±50ppm

Packaging
Blank: Bulk
T: Tape & Reel(1kpcs / reel)
T3: Tape & Reel(3kpcs/reel)

Note: For frequency other than 100MHz, please contact ABRACON or consider using ASEMDxx series

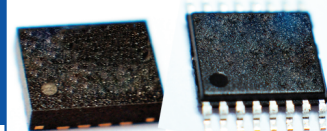


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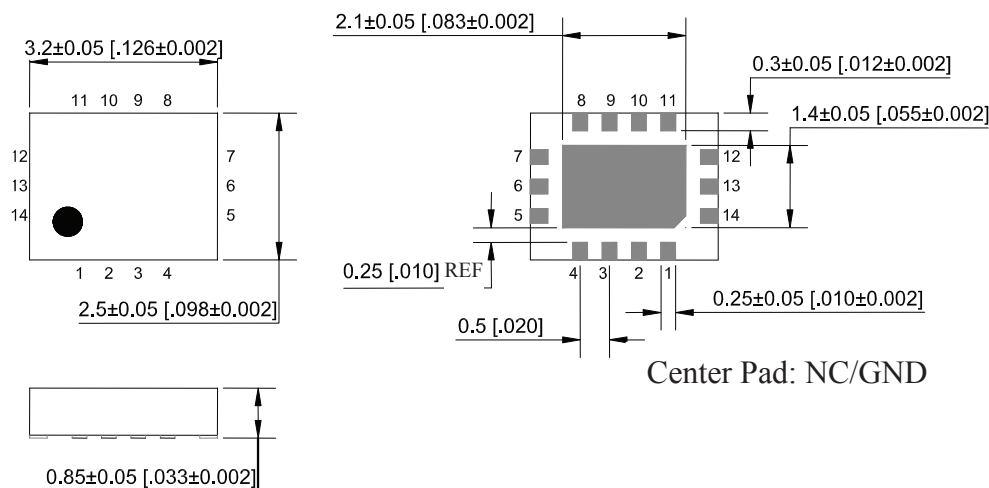
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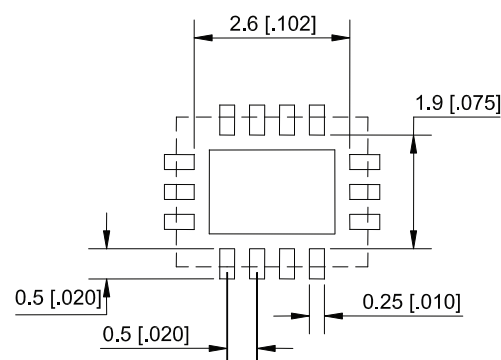
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OUTLINE DRAWING:

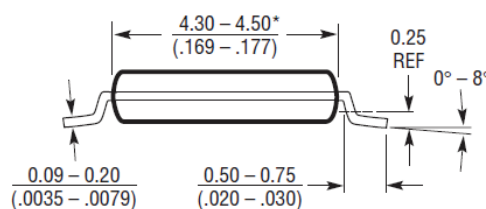
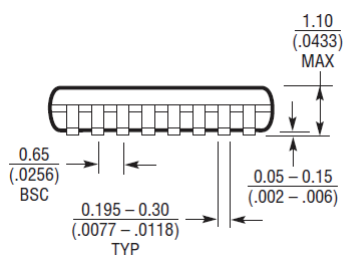
14 Pin QFN:



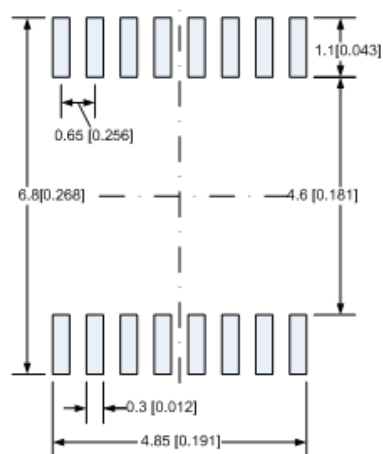
Recommended Solder Pad Layout



16 Pin TSSOP:



Recommended Solder Pad Layout



* Dimensions do not include mold flash. Mold flash shall not exceed 0.150mm(.006 inches) per side.

Dimensions: mm (inches)

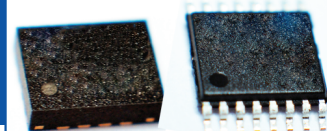


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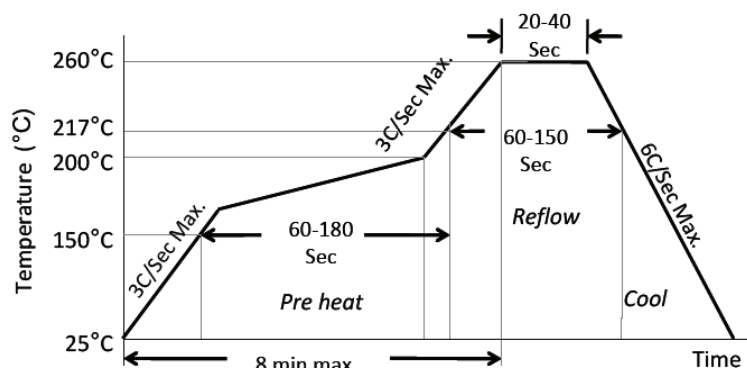


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REFLOW PROFILE:

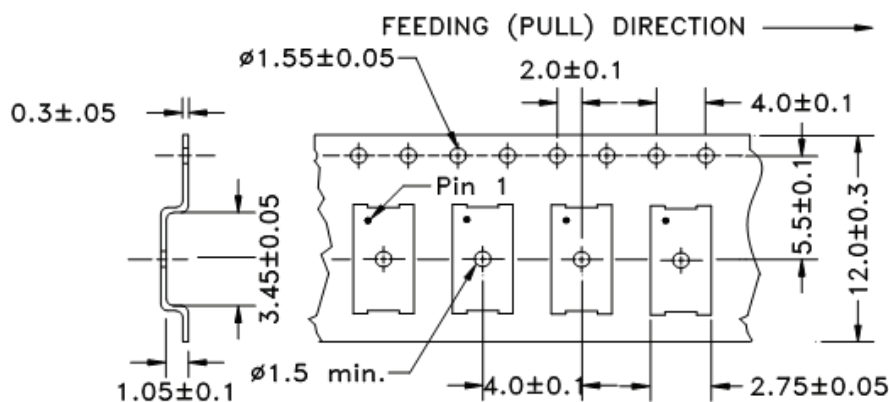


Ramp-Up Rate (200°C to Peak Temp)	3°C/Sec Max.
Preheat Time 150°C to 200°C	60-180 Sec
Time maintained above 217°C	60-150 Sec
Peak Temperature	255-260°C
Time within 5°C of actual Peak	20-40 Sec
Ramp-Down Rate	6°C/Sec Max.
Time 25°C to Peak Temperature	8 min Max.

TAPE & REEL:

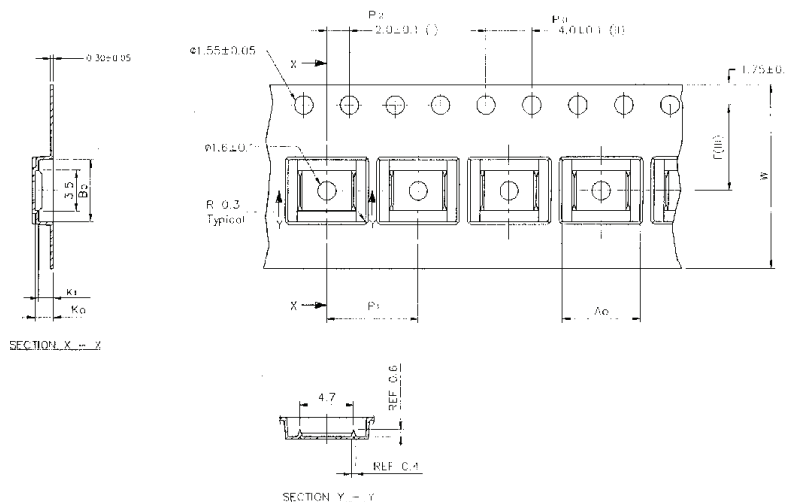
14 Pin QFN Tape Drawing:

T= 1,000pcs/reel
T3= 3,000pcs/reel



16 Pin TSSOP Tape Drawing

T= 1,000pcs/reel
T3= 3,000pcs/reel



A0	B0	K0	K1	F	P1	W
6.80±0.1	5.40±0.1	1.60±0.1	1.30±0.1	5.50±0.1	8.00±0.1	12.00±0.3

Dimensions: mm

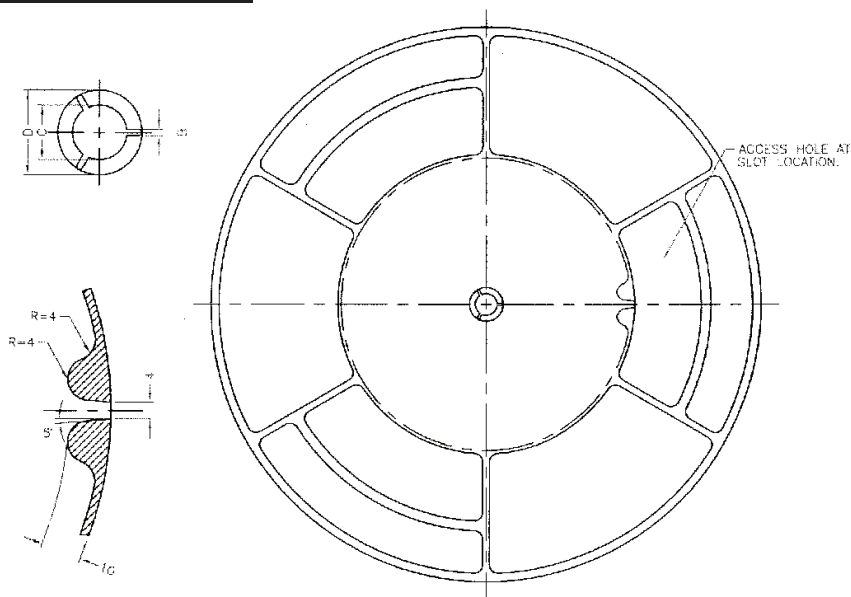




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5.1 x 4.5 x 1.1 mm (16 Pin TSSOP)

[illegible]

13" Reel Drawing (3000pcs/reel)



A	N	W1	W2	W3	D	B	C	Tape Width
330 (13'')	178 (7'') max.	12.4+2/-0	18.4 max.	12.35 min. 15.40 max.	20.2 min.	1.5 min	13.0+0.5/-0.2	12

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