



CJVHE5
5.0 x 3.2 x 1.25 mm
LCC Ceramic Package

Features

- Quartz crystal controlled Precision Square Wave Oscillator
- LVPECL Output
- Voltage Control function
- Enable/Disable Function on pad 2
- 3.3V nominal Supply Voltage
- 10MHz - 1500MHz frequency range

Applications

Driving A/Ds, D/As, FPGAs
Fibre Channel
Ethernet, GbE, SynchE
Medical
Storage Area Networking
COTS
Telecom
PON

Electrical Characteristics					
Parameter	Min	Typ	Max	Unit	Condition
Frequency Range ²	10	-	1500	MHz	
Frequency pullability APR ²	-	±50	-	ppm	Absolute pull range, includes effect of temperature stability
Operating Temperature Range ²	-20 -40	-	+70 +85	°C	
Supply Voltage ^{1,2} V _{CC}	2.97	3.3	3.63	V	TV _{CC} ramp = 100µs min
Supply Current I _{CC}	-	54	-	mA	
Output Waveform	LVPECL				
Output Voltage High V _{OH}	V _{CC} - 1.03	-	V _{CC} - 0.6	V	
Output Voltage Low V _{OL}	V _{CC} - 1.85	-	V _{CC} - 1.6	V	
Output T _{RISE} and T _{FALL}	-	-	0.25	ns	V _{th} is 10% and 90% of amplitude
Startup Time	-	-	10	ms	Time for output to reach specified frequency
Duty Cycle	45	-	55	%	Referenced to 50% of amplitude or crossing point
V _{DISABLE}	-	-	0.3*V _{CC}	Volts	Referenced to Ground
V _{ENABLE}	0.7*V _{CC}	-	-		
Enable Time	-	-	200	ns	< 50MHz
	-	-	100	ns	≥ 50MHz
Disable Time	-	-	50	ns	Time for output to reach a high Z state
Control Voltage	0	1.65	3.3		
Modulation Bandwidth	10	-	-	kHz	
Voltage vs. Frequency Linearity	-	10	-	%	
Standby Current	-	18	-	mA	Pad 2 low, device disabled
Aging	-	-	±3.0	ppm	per year
Storage Temperature Range	-55	-	+125	°C	

Notes: Specifications with Pad 2 E/D open circuit

¹ Place an appropriate power supply bypass capacitor next to device for correct operation

² Defined by part number

Typical Phase Noise/Jitter			
Phase Noise	10 Hz 100 Hz 1 kHz 1 MHz 20 MHz	-66 -96 -112 -136 -154	dBc/Hz
Precision Developed Frequencies: 100, 106.25, 120, 150, 156.25, 162.5, 175, 187.5, 200, 212.5, 250.0, 312.5, 625.0MHz 25°C ± 2°C at 2.5V / 156.250 MHz			
Jitter	0.6	ps rms	12 kHz to 20 MHz from the output frequency @ 156.25Mhz
Phase Noise	10 Hz 100 Hz 1 kHz 1 MHz 20 MHz	-51 -88 -108 -135 -151	dBc/Hz
All Other Frequencies 25°C ± 2°C at 2.5V / 133 MHz			
Jitter	2.4	ps rms	12 kHz to 20 MHz from the output frequency @133MHz

Part Number (Example: CJVHE5LZ-A7BP-100.0TS)								
Series Model	Logic	Package size	Supply Voltage	Packaging	Operating Temperature Range	Pullability (APR)	Frequency MHz	Enable/Disable
CJVH	E	5	L	Z	A7	BP	100.0	TS
	E = LVPECL	5 = 5 x 3.2mm	L = 3.3V	Blank = Tape Only Z = Tape/Reel	A5 = -20 to +70°C A7 = -40 to +85°C	BP = ±50 ppm min	10 - 1500 MHz	TS=Tristate

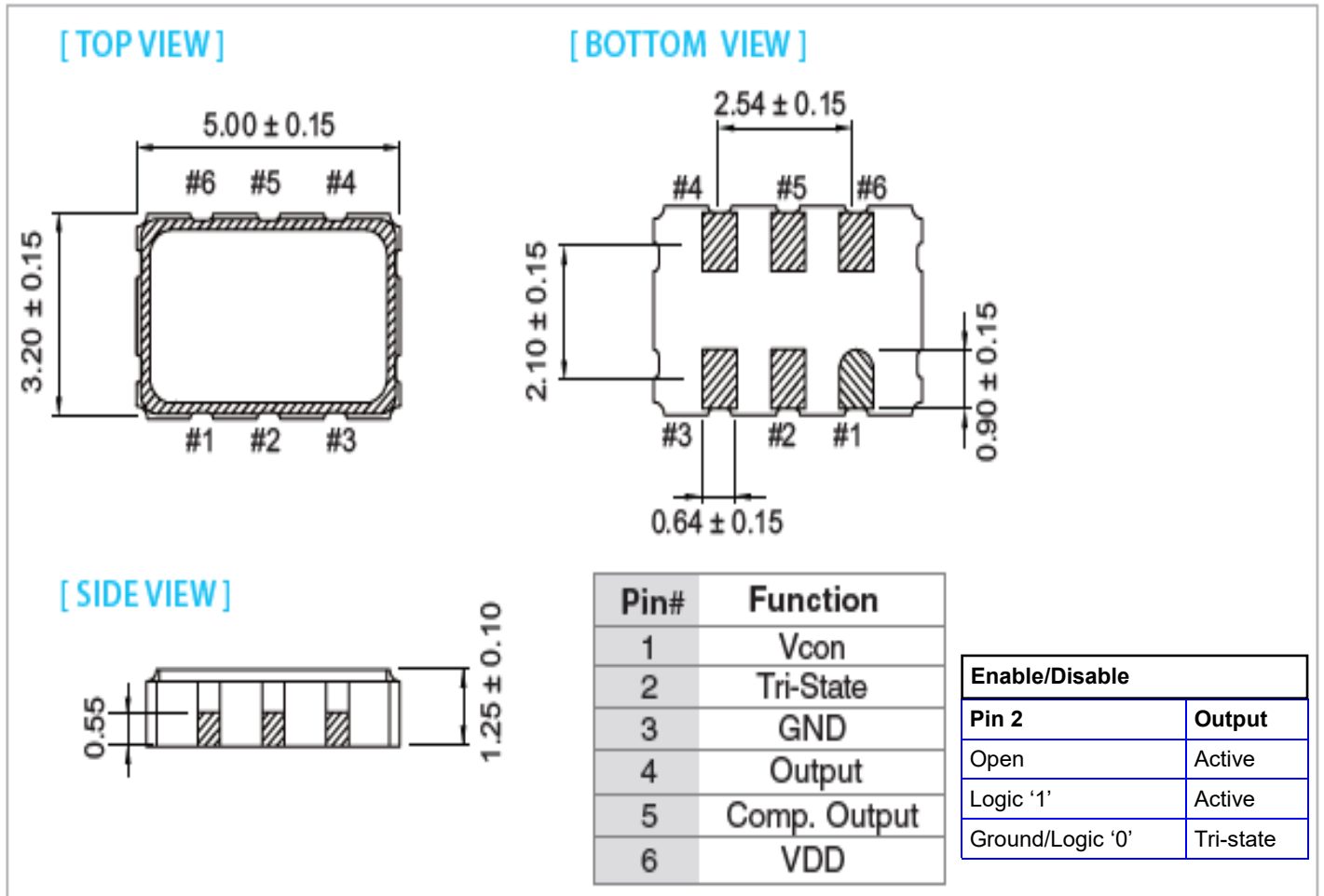
Cardinal Components Inc. certifies this device is in accordance with the RoHS and REACH directives.

Cardinal Components guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
 Weight of the Device: 0.09 grams
 Moisture Sensitivity Level: 1 As defined in J-STD-020D
 Second Level Interconnect code: e4

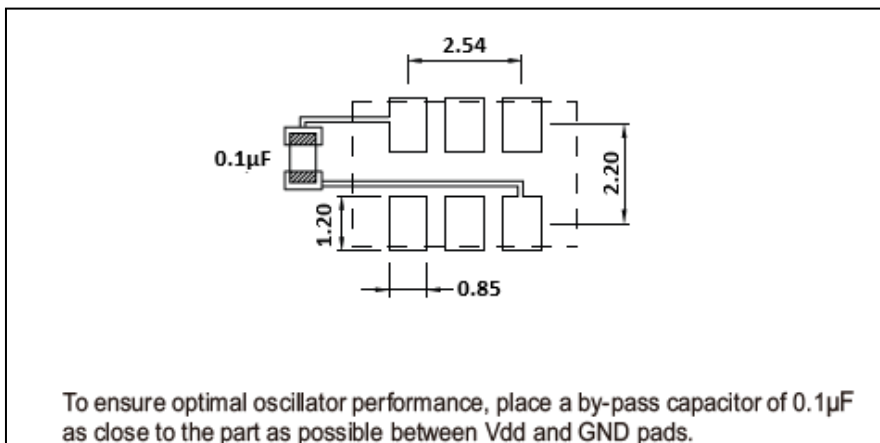
For Optimum Jitter Performance, Cardinal recommends:

- A ground plane under the device
- Do not route large transient signals (both current and voltage) under the device
- Do not place near a large magnetic field such as a high frequency switching power supply
- Do not place near piezoelectric buzzers or mechanical fans

Mechanical Dimensions (mm)



Contacts (pads): Gold (0.3 to 1.0 μm) over Nickel (1.27 to 8.89 μm)



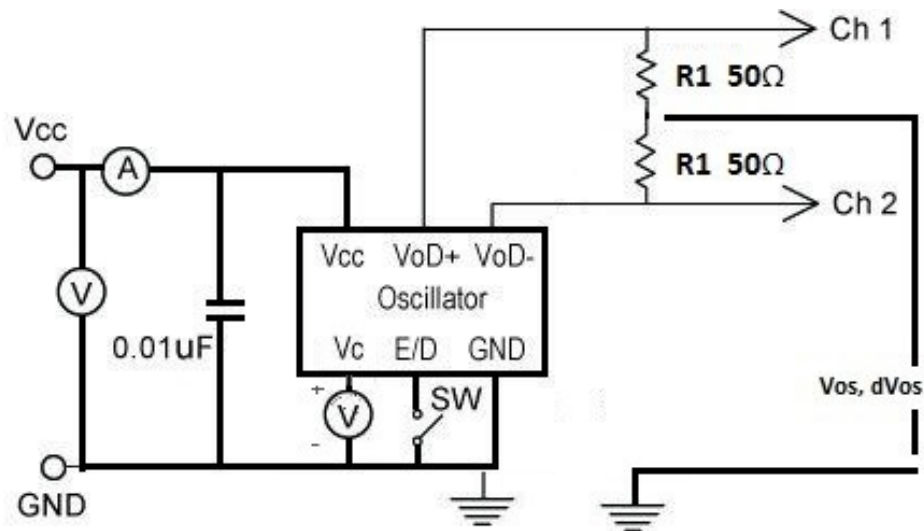
Pad Layout mm shown

Disclaimer: Recommended layout shown. Adjust layout as needed for individual process requirements.

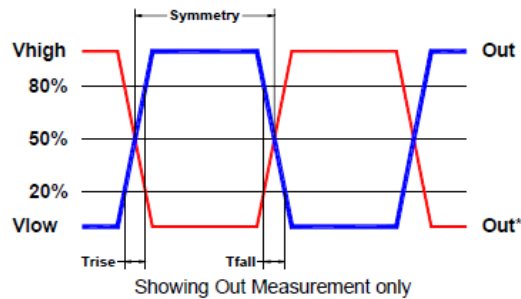
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Electrical Test /Load Circuit



Test Waveform



Environmental / ESD Ratings

Reliability: Environmental

Parameter	Condition
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A
Solderability	IPC J-STD-002
Thermal Cycle	MIL-STD-883 Method 1010, Condition B

ESD Rating

Model	Min. Voltage	Condition
Human Body Model	2000V	JESD22-A114
Charged Device Model	1000V	JESD22-C101
Machine Model	120V	JESD22-A115

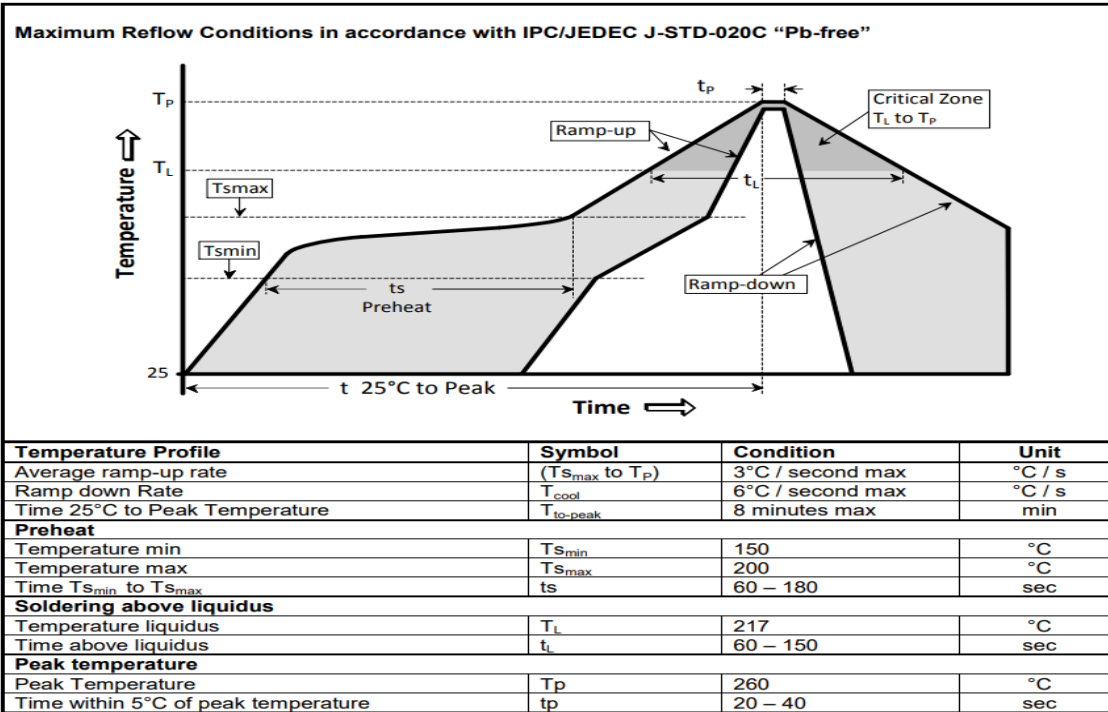
Absolute Maximum Ratings

Parameter	Unit
V _{cc} Supply Voltage	-0.5V to +4.2V
V _i Input Voltage	-0.5V to V _{cc} + 0.5V
V _o Output Voltage	-0.5V to V _{cc} + 0.5V

Thermal Characteristics:

The maximum die or junction temperature is 125°C

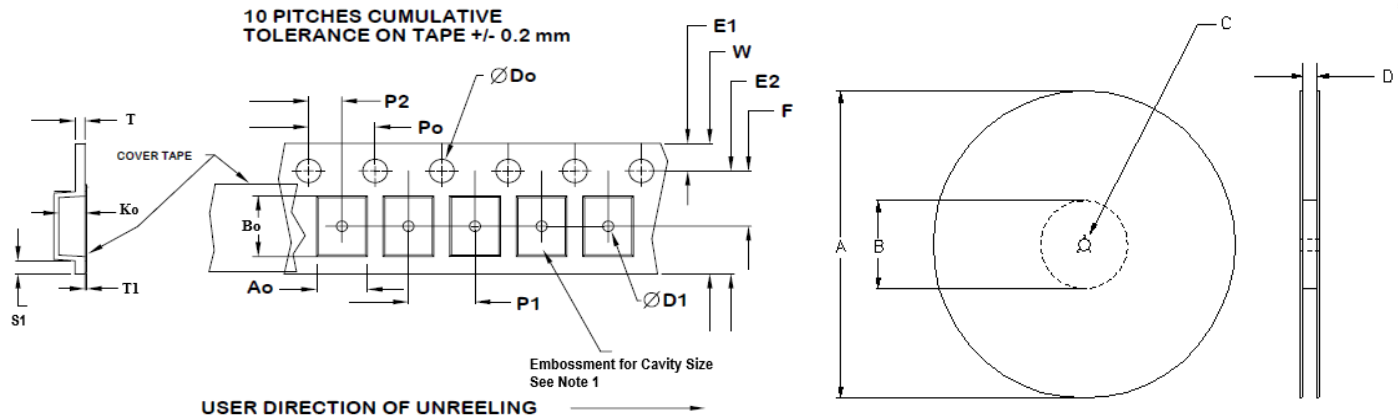
Reflow Cycle



The part may be reflowed 2 times without degradation (typical for lead free processing).

Tape and Reel

Tape and Reel available for quantities of 250 to 1000 per reel, cut tape for < 250. 12mm tape, 8mm pitch.



Tape Size	E2 typ	F	P1	W max	Ao	Bo	Ko
12mm	10.25	5.5 ±0.05	8.0 ±0.1	12.2	3.6±0.1	5.4±0.1	1.4±0.1

Dimensions in mm Drawing Not to scale

Note 1: Embossed cavity to conform to EIA- 481-B

Tape Size	Do	D1	E1	Po	P2	S1 min	T max	T1 max
12mm	1.5 +0.1 -0.0	1.5	1.75 ±0.1	4.0 ±0.1	2.0 ±0.1	0.6	0.3	0.1

Reel Size	A		B		C	D
	Inches	mm	Inches	mm		
7	7.0	177.8	2.50	63.5	13.0 +0.5 -0.2	Tape size +0.4 +2.0 -0.0
10	10.0	254.0	4.00	101.6		
13	13.0	330.2	3.75	95.3		

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