

7.0 x 5.0 x 1.3mm
LCC Ceramic Package

Features

- Field Programmable with the [PG-3200](#) oscillator programming instrument within seconds.
- CMOS Output (will interface with TTL devices)
- Enable/Disable Function (low standby power option)
- 1.8V, 2.5V, or 3.3V nominal Supply Voltage
- 1-160 MHz Frequency Range (1-125MHz at 1.8V)
- Size: 7.0 x 5.0mm

Applications

Driving A/Ds, D/As, FPGAs
Digital Video
Ethernet, GbE
Medical
Storage Area Networking
COTS
Broadband Access
SONET/ SDH/ DWDM
Test & Measurement

Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition
Configurable Frequency Range ²	1	-	160	MHz	(1.8V frequency range 1-125MHz)
Frequency Stability ²	±20	-	±50	ppm	For all supply voltages, load changes, aging for 1 year at 25°C ± 2°C, shock, vibration and temperatures.
Operating Temperature Range options ²	0 -20 -40 -40	- - - -	+70 +70 +85 +105	°C	
Supply Voltage ^{1,2} V _{CC}	1.8	-	3.3	V	± 5%, See Part Number options on page 2
Supply Current I _{CC}	-	-	-	mA	See page 2
Output Waveform	CMOS				Clload = 15 pF
Duty Cycle	45	-	55	%	At 50%V _{CC} level See Load Circuit and waveform page
Output V _{OH}	90	-	-	%V _{CC}	
Output V _{OL}	-	-	10	%V _{CC}	
Output T _{RISE} and T _{FALL}	-	-	2	ns	
Startup Time	-	-	8	ms	Time for output to reach specified frequency
V _{DISABLE}	-	-	30	%	Of V _{CC} applied to Pad 1
V _{ENABLE}	70	-			
Enable Time	-	-	100	ns	Time for output to reach a logic state
Disable Time	-	-	100	ns	Time for output to reach a high Z state
Disable Current	- -	- 0.4	- -	mA	Enable/Disable: Pad 1 low, output disabled; See page 2 Standby option: Pad 1 low, output disabled, oscillator shutdown
Jitter	-	1.0	-	ps	12 kHz to 20 MHz @ 110 MHz
Storage Temperature Range	-55	-	+125	°C	

Notes: Specifications with Pad 1 E/D open circuit

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

² Specified by part number

Input Current

Parameter	Min	Typ	Max	Unit	Condition Vcc = 3.3V	
Supply Current I_{cc}			27 30 35	mA	1MHz ≤ Fo < 75MHz 75MHz ≤ Fo < 125MHz 125MHz ≤ Fo < 160MHz	15pF load

Parameter	Min	Typ	Max	Unit	Condition Vcc = 2.5V	
Supply Current I_{cc}			27 30 35	mA	1MHz ≤ Fo < 75MHz 75MHz ≤ Fo < 125MHz 125MHz ≤ Fo ≤ 160MHz	15pF load

Parameter	Min	Typ	Max	Unit	Condition Vcc = 1.8V	
Supply Current I_{cc}			25	mA	1MHz ≤ Fo ≤ 125MHz	15pF load

Part Number Example: CPPYX7-A7BP-XX.XXXNP

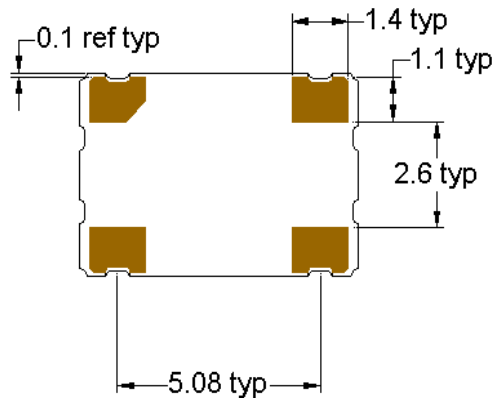
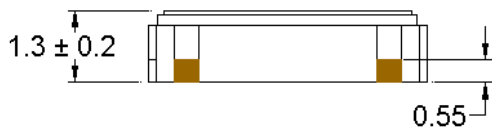
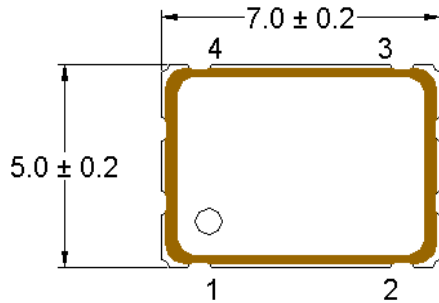
Series Model	Package Size (mm)		Operating Temperature Range	Frequency Stability			
CPPYX	7	-	A7	BP	-	XX.XXX	NP
	7 = 7.0 x 5.0		Blank = 0 to +70°C A5 = -20 to +70°C A7 = -40 to +85°C AJ = -40 to +105°C	BD = ±20 ppm BR = ±25 ppm BP = ±50 ppm B6 = ±100 ppm			

Frequency Stability selection chart

	±20	±25	±50
0 - +70°C	•	•	•
-20 - +70°C	•	•	•
-40 - +85°C	△	•	•
-40 - +105°C		△	•

• - Available △ - Check with Cardinal

Mechanical Dimensions

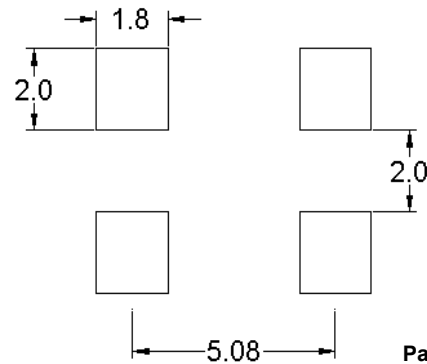


Dimensions in mm

Pad Connections

Pad	Function
1	Enable/Disable
2	Ground
3	Output
4	Vcc

ENABLE/DISABLE	
Pad 1	Output
V _{IH} / Open	Active
V _{IL} / Gnd	Disabled / Tristate



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

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

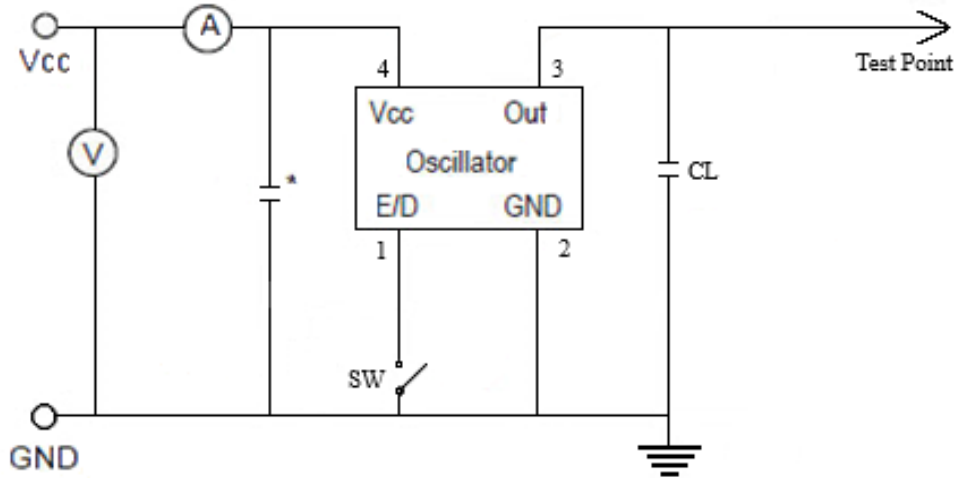
Cardinal Components Inc. certifies this device is in accordance with the RoHS and REACH directives.

Cardinal Components guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
 Weight of the Device: 0.15 grams
 Moisture Sensitivity Level: 1 As defined in J-STD-020D
 Second Level Interconnect code: e4

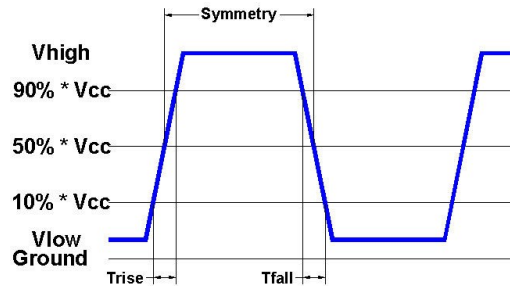
For Optimum Jitter Performance, Cardinal recommends:

- 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

Electrical Test / Load Circuit



Notes:
 CL: 15pF Includes the input capacitance of oscilloscope
 * 0.01~0.1 μ F external by-pass filter is recommended



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	MIL-STD-883 3015.7
Machine Model	200V	EIAJ ED-4701/304

Absolute Maximum Ratings

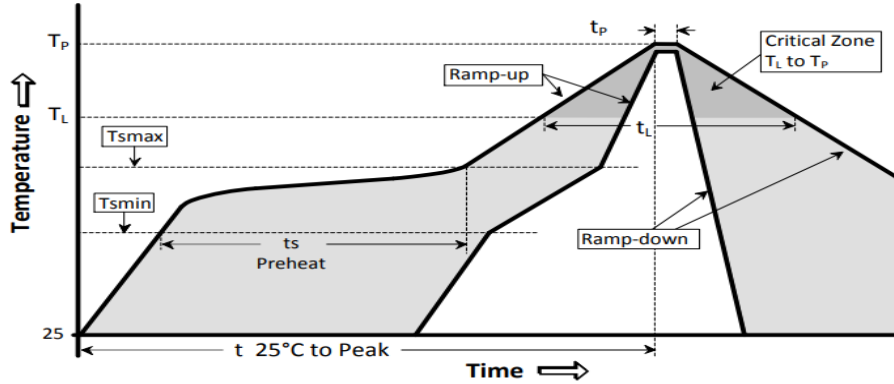
Parameter	Unit
V _{CC} Supply Voltage	-0.5V to +7.0V
V _i Input Voltage	-0.5V to V _{CC} + 0.5V
V _o Output Voltage	-0.5V to V _{CC} + 0.5V

Thermal Characteristics:

The maximum die or junction temperature is 125°C

Reflow Cycle

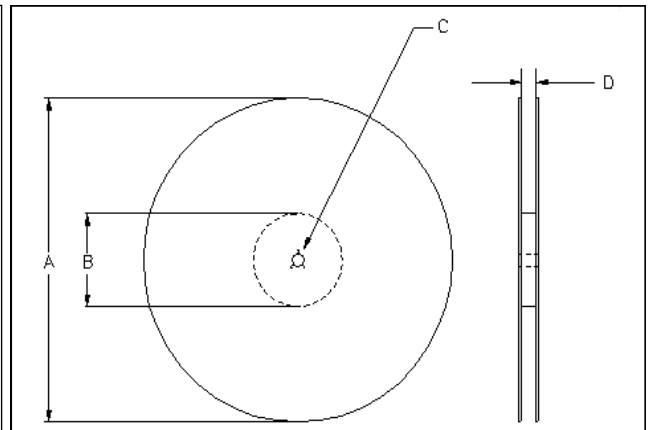
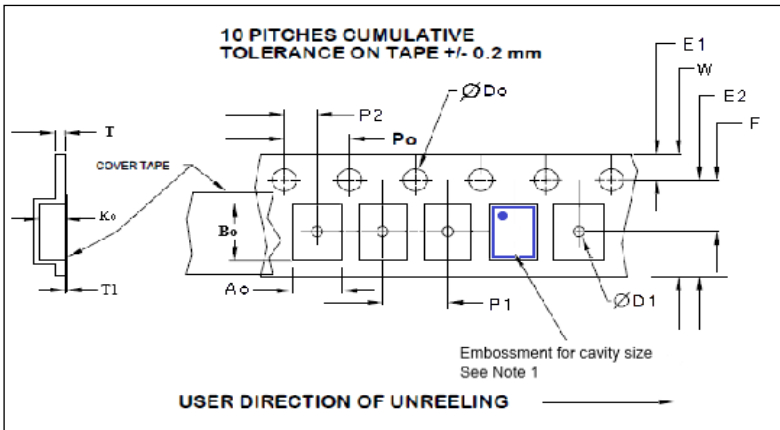
Maximum Reflow Conditions in accordance with IPC/JEDEC J-STD-020C "Pb-free"



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

Temperature Profile	Symbol	Condition	Unit
Average ramp-up rate	(T _{Smax} to T _P)	3°C / second max	°C / s
Ramp down Rate	T _{cool}	6°C / second max	°C / s
Time 25°C to Peak Temperature	T _{to-peak}	8 minutes max	min
Preheat			
Temperature min	T _{Smin}	150	°C
Temperature max	T _{Smax}	200	°C
Time T _{Smin} to T _{Smax}	t _s	60 – 180	sec
Soldering above liquidus			
Temperature liquidus	T _L	217	°C
Time above liquidus	t _L	60 – 150	sec
Peak temperature			
Peak Temperature	T _p	260	°C
Time within 5°C of peak temperature	t _p	20 – 40	sec

Tape and Reel



Part Size	Tape Size	E2 typ	F	P1	W max	Ao	Bo	Ko	Qty/reel standard
7050	16mm	14.25	7.5 ±0.05	8.0 ±0.1	16.3	5.56±0.1	7.85±0.1	2±0.1	1K

Reel Size	A		B		C	D
	Inches	mm	Inches	mm	mm	mm
7	7.0	180	2.50	60	13.0 +0.5 -0.2	Tape size +0.4
13	13.0	330	4.00	100		+2.0 -0.0

Dimensions in mm Drawings Not to scale
Note 1: Embossed cavity to conform to EIA- 481-B

Tape Size	Do	D1 typ	E1	Po	P2	T typ	T1 max
16mm	1.5 +0.1 -0.0	1.5	1.75 ±0.1	4.0 ±0.1	2.0 ±0.1	0.3	0.1

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