



13.2 x 13.2 x 5.6mm
Metal DIP Package

Features

- Field Programmable with the [PG-3200](#) oscillator programming instrument within seconds.
- Can be programmed twice (single Frequency) or one time as Dual frequency
- CMOS Output (will interface with TTL devices)
- 3.3V or 5.0V nominal Supply Voltage
- Size: Half DIP
- Enable/Disable Function (optional Standby function) for single frequency program only

Applications

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

Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition
Programmable Frequency Range	1	-	133	MHz	(3.3V : 1-100MHz)
Frequency Stability ²	±25	-	±100	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	-20 -40	- -	+70 +85	°C	
Supply Voltage ^{1,2} V _{DD}	2.97	-	5.5	V	See Part Number options on page 2
Supply Current I _{DD} (No Load)	-	-	45 25	mA	V _{DD} = 5.0V V _{DD} = 3.3V
Output Type	CMOS				Cload = 50pF max, V _{DD} = 4.5~5.5V, ≤ 66MHz Cload = 25pF max, V _{DD} = 4.5~5.5V, > 66MHz Cload = 30pF max, V _{DD} = 2.97~3.63V, ≤ 40MHz Cload = 15pF max, V _{DD} = 2.97~3.63V, > 40MHz
	TTL				Cload = 50pF max; V _{DD} = 4.5~5.5V, ≤ 40MHz
Duty Cycle	-	-	-	%	See Page 2
Output V _{OH} (TTL Level) (CMOS Level)	2.4	-	-	V	V _{DD} = 4.5~5.5V
	V _{DD} - 0.4			V	All voltages
Output V _{OL}	-	-	0.4	V	See Load Circuit and waveform page
Output T _{RISE} and T _{FALL}	-	-	-	ns	See page 2
Startup Time	-	-	2	ms	Time for output to reach specified frequency
V _{DISABLE}	-	-	0.8 0.2V _{DD}	V	V _{DD} = 4.5~5.5V V _{DD} = 2.97~3.63V
V _{ENABLE}	2.0 0.7V _{DD}	-			V _{DD} = 4.5~5.5V V _{DD} = 2.97~3.63V
Enable Time	-	-	2	ms	
Disable Time - Pin 1 low to Output Hi-Z	-	T/2	T+10	ns	T = Frequency Period
Disable Current	-	-	-	mA	Enable/Disable: Pad 1 low, output disabled; See above Supply Current
	-	0.4	-		Standby option: Pad 1 low, output disabled, oscillator shutdown
RMS Period Jitter	-	11 8	13 11	ps	≤ 33MHz > 33MHz
Period Jitter, Pk-Pk		80 65	110 80	ps	>1,000,000 samples ≤ 33MHz > 33MHz
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

Duty Cycle

Parameter	Min	Typ	Max	Unit	
TTL @ 1.4V level; V _{DD} = 4.5~5.5V	45 45 40 40		55 55 60 60	%	Fo ≤ 50 MHz, CL ≤ 50pF 50 MHz < Fo ≤ 66MHz; CL ≤ 15pF 66 MHz < Fo ≤ 125MHz, CL ≤ 25pF 125 MHz < Fo ≤ 133MHz, CL ≤ 15pF

Parameter	Min	Typ	Max	Unit	
CMOS @ 0.5V _{DD} level; V _{DD} = 4.5~5.5V	45 40 40		55 60 60	%	Fo ≤ 66 MHz, CL ≤ 25pF 66 MHz < Fo ≤ 125MHz; CL ≤ 25pF 125 MHz < Fo ≤ 133MHz, CL ≤ 15pF

Parameter	Min	Typ	Max	Unit	
CMOS @ 0.5V _{DD} level; V _{DD} = 2.97~3.63V	45 40		55 60	%	Fo ≤ 40 MHz, CL ≤ 30pF 40 MHz < Fo ≤ 100MHz; CL ≤ 15pF

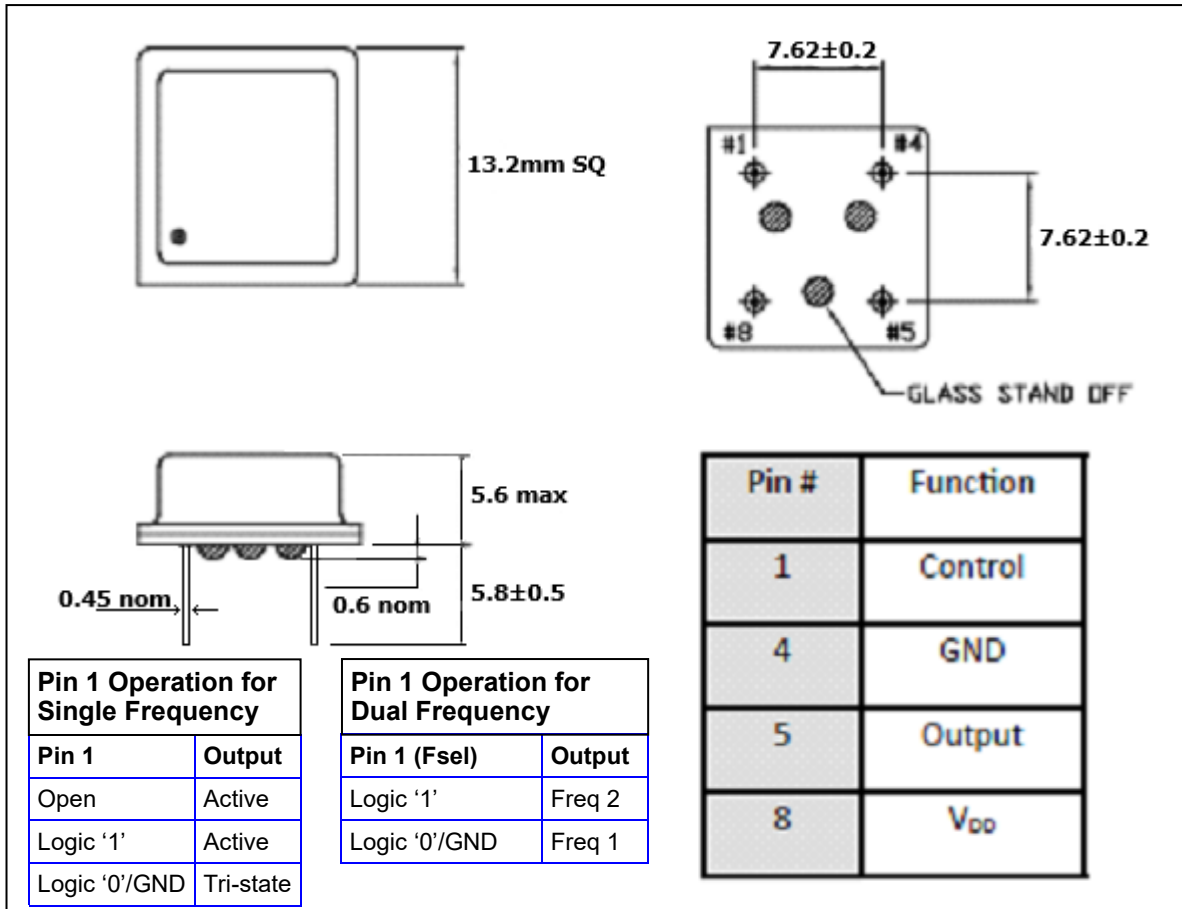
Rise/Fall Time

Parameter	Min	Typ	Max	Unit	
Rise/Fall Time			1.8 1.2 0.9 3.4 4.0 2.4	ns	0.8V~2.0V, V _{DD} = 4.5~5.5V, CL=50pF 0.8V~2.0V, V _{DD} = 4.5~5.5V, CL=25pF 0.8V~2.0V, V _{DD} = 4.5~5.5V, CL=15pF 0.2V _{DD} ~0.8V _{DD} , V _{DD} = 4.5~5.5V, CL=50pF 0.2V _{DD} ~0.8V _{DD} , V _{DD} = 2.97~3.63V, CL=30pF 0.2V _{DD} ~0.8V _{DD} , V _{DD} = 2.97~3.63V, CL=15pF

Part Number Example: CPPFX4-A7BP-XX.XXXNP

Series Model	Package Size		Operating Temperature Range	Frequency Stability (ppm)			
CPPFX4	4	-	A7	BR	-	XX.XXX	NP or NC
	4 = Half DIP		A5 = -20 to +70°C A7 = -40 to +85°C	BC = ±20 BR = ±25 BP = ±50 B6 = ±100			

Mechanical Dimensions (mm)



Termination coating: SnAgCu (SAC305): 2 ~ 7µm

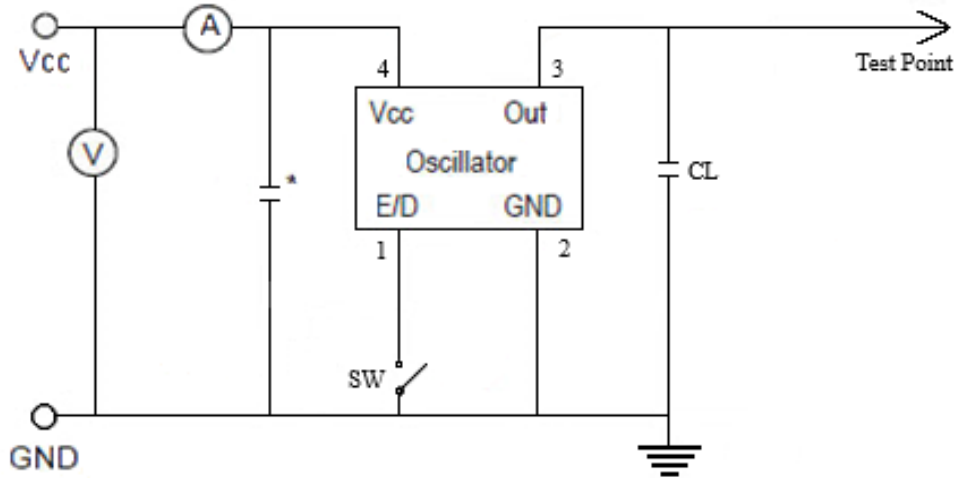
Cardinal Components Inc. certifies this device is in accordance with the RoHS and REACH directives.

Cardinal Components guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
 Weight of the Device: 2.2 grams
 Moisture Sensitivity Level: 1 As defined in J-STD-020D
 Second Level Interconnect code: e1

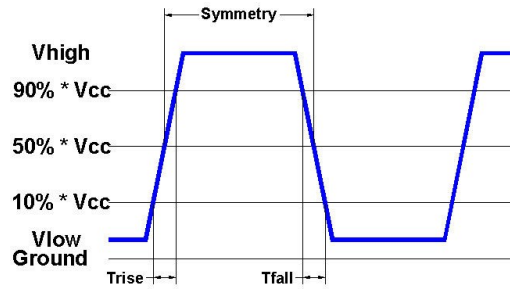
For Optimum Jitter Performance, Cardinal recommends:

- 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
 * 0.01~0.1μF 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 100°C

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