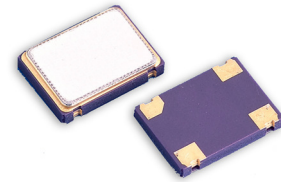


Model Stratum IV CB3 & CB3LV HCMOS/TTL Clock Oscillator



Part Dimensions:
7.0 × 5.0 × 1.8mm • 171.497mg

Features

- Ceramic Surface Mount Package
- Fundamental and 3rd Overtone Crystal Designs
- Frequency Range 1.0 – 80MHz
- +3.3V and +5.0V Operation
- Operating Temperature Range to -40°C to +85°C
- Output Enable Standard
- Tape and Reel Packaging, EIA-481

Applications

- Wireless Communication
- Networking Equipment
- Data Communications
- Computers and Peripherals
- Ethernet/GbE/SyncE
- Test and Measurement

Description

The Stratum IV CB3 and CB3LV are low cost, low voltage clock oscillators supporting HCMOS output. Employing the latest IC technology, Stratum IV CB3/CB3LV have excellent stability and low phase jitter performance.

Ordering Information

Model	Supply Voltage	Frequency Stability	Temperature Range	Frequency Code [MHz]
CB3	LV	- S4	C	- XXXMXXXXXX
	Code Voltage		Code Temp. Range	
	LV +3.3Vdc		C -20°C to +70°C	
	Blank +5.0Vdc		I -40°C to +85°C	
		Code Stability		Code Frequency
		S4 ±32ppm		Product Frequency Code ¹

Notes:

- 1] Frequency is recorded with 1, 2 or 3 leading significant digits before and 6 significant digits [including zeroes] after the "M".
 [Ex. 3.579545MHz = 3M579545, 14.31818MHz = 14M318180, 25MHz = 25M000000]
 [Ex. part numbers - CB3LV-S4-25M000000, CB3-S4-14M318180]

**Not all performance combinations and frequencies may be available.
 Contact your local CTS Representative or CTS Customer Service for availability.**

This product is specified for use only in standard commercial applications. Supplier disclaims all express and implied warranties and liability in connection with any use of this product in any non-commercial applications or in any application that may expose the product to conditions that are outside of the tolerances provided in its specification.



Electrical Specifications

Operating Conditions

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Maximum Supply Voltage	V_{CC}	-	-0.5	-	7.0	V
Supply Voltage	V_{CC}	$\pm 10\%$	2.97	3.3	3.63	V
Supply Current		Frequency Range @ Tested load for typical values				
CB3	I_{CC}	1.0MHz to 20MHz @ $C_L = 30pF$	-	10	25	mA
		20.001MHz to 80MHz @ $C_L = 30pF$	-	30	50	
CB3LV	I_{CC}	1.0MHz to 20MHz @ $C_L = 15pF$	-	7	12	mA
		20.001MHz to 80MHz @ $C_L = 15pF$	-	20	35	
Output Load	C_L	1.0MHz to 50MHz	-	30	50	pF
		50.001MHz to 80MHz	-	15	30	
Operating Temperature	T_A	-	-20	+25	+70	°C
			-40		+85	
Storage Temperature	T_{STG}	-	-55	-	+125	°C

Frequency Stability

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Frequency Range	f_0	CB3, CB3LV		1.0 - 80		MHz
Frequency Stability [Note 1]	$\Delta f/f_0$	20 years		32		\pm ppm
Aging	$\Delta f/f_{25}$	First Year @ +25°C, nominal V_{CC}	-5	± 3	5	ppm

1.] Inclusive of initial tolerance at time of shipment, changes in supply voltage, load, temperature and 20 years aging at an average operating temperature of +40°C.

Output Parameters

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Output Type	-	-		HCMOS		-
Output Voltage Levels	V_{OH}	Logic '1' Level, CMOS Load	0.9 V_{CC}	-	-	V
		Logic '1' Level, TTL Load	$V_{CC} - 0.6V$	-	-	
	V_{OL}	Logic '0' Level, CMOS Load	-	-	0.1 V_{CC}	
		Logic '0' Level, TTL Load	-	-	0.4	
Output Current Levels	I_{OH}	$V_{OH} = +2.2V/+3.9V$ $V_{CC} = +3.0V/+4.5V$	-	-	-8, -16	mA
	I_{OL}	$V_{OL} = 0.4V$ $V_{CC} = +3.0V, +4.5V$	-	-	+8, +16	
Output Duty Cycle	SYM	@ 50% Level	45	-	55	%
Rise and Fall Time [Note 2]		@ 10%/90% Levels, Frequency Range @ Tested load for typical values				
CB3	T_R, T_F	1.0MHz to 20MHz @ $C_L = 30pF$	-	8	10	ns
		20.001MHz to 80MHz @ $C_L = 30pF$	-	4	8	
		1.0MHz to 20MHz @ $C_L = 15pF$	-	6	8	
CB3LV		20.001MHz to 80MHz @ $C_L = 15pF$	-	3	4	
Start Up Time	T_S	Application of V_{CC}	-	5	10	ms

2.] Parameters are worst case and account for comprehensive range of product specification. Performance may vary by application and must be validated by end user.

Electrical Specifications

Output Parameters

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Enable Function		Tri-State				
Enable Input Voltage	V_{IH}	Pin 1 Logic '1', Output Enabled	2.0	-	-	V
Disable Input Voltage	V_{IL}	Pin 1 Logic '0', Output Disabled	-	-	0.8	V
Disable Current	I_{STB}	Pin 1 Logic '0', Output Disabled	-	-	10	μA
Enable Time	T_{PLZ}	Pin 1 Logic '1', Output Enabled	-	-	10	ms
Phase Jitter, RMS [Note 3]	t_{jrms}	Bandwidth 12 kHz - 20 MHz	-	0.5	< 1	ps

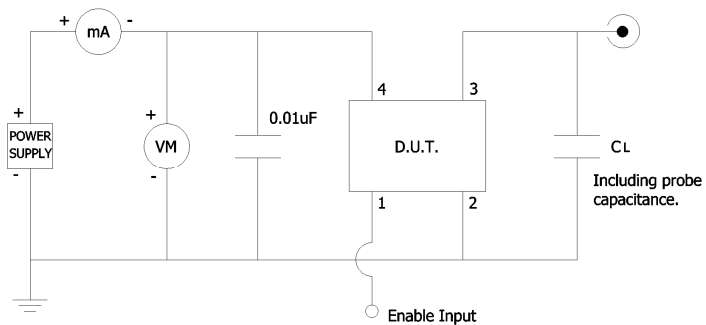
3.] For frequencies 10MHz - 40MHz, the measurement Bandwidth is 12kHz - 5MHz.

Enable Truth Table

Pin 1	Pin 3
Logic '1'	Output Enabled
Open	Output Enabled
Logic '0'	Output Disabled, High Impedance

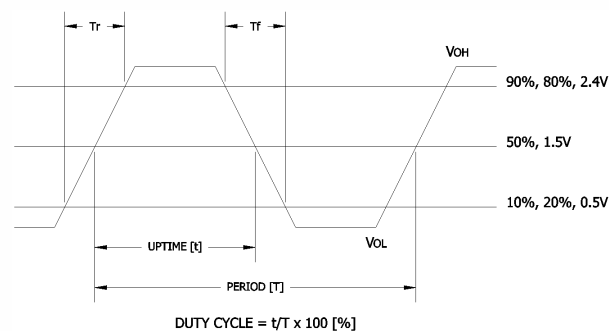
Test Circuit

HCMOS



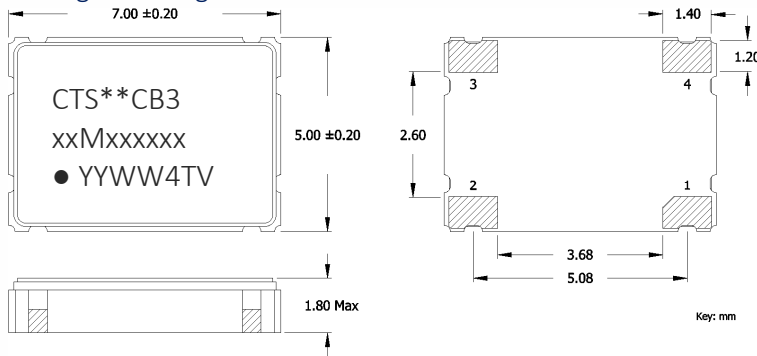
Output Waveform

HCMOS



Mechanical Specifications

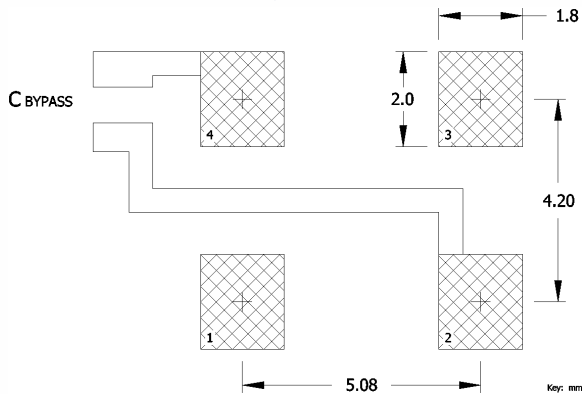
Package Drawing



Marking Information

- ** – Manufacturing Site Code.
[Note a dash may follow the site code and is acceptable.]
- xxMxxxxxx – Frequency is marked with 1 or 2 leading significant digits before the “M” and 6 digits after the “M” [including zeroes].
Ex. xMxxxxxx [3M579545]
xxMxxxxxx [14M318180]
xxMxxxxxx [25M000000]
- YYWW – Date Code; YY = year, WW = week.
- 4 – Stratum IV Stability.
- T – Temperature Code.
[Refer to ordering information for codes.]
- V – Voltage Code; 3 = +3.3V, 5 = +5.0V.

Recommended Pad Layout



Notes

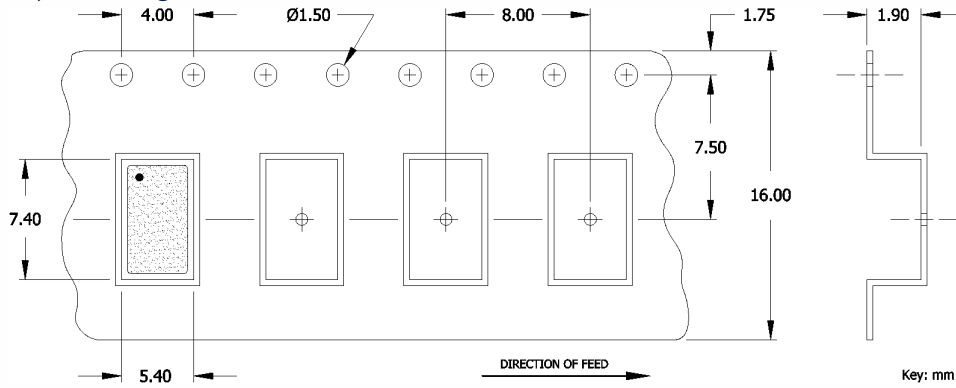
- JEDEC termination code (e4). Barrier-plating is nickel [Ni] with gold [Au] flash plate.
- Reflow conditions per JEDEC J-STD-020; +260°C maximum, 20 seconds.
- MSL = 1.

Pin Assignments

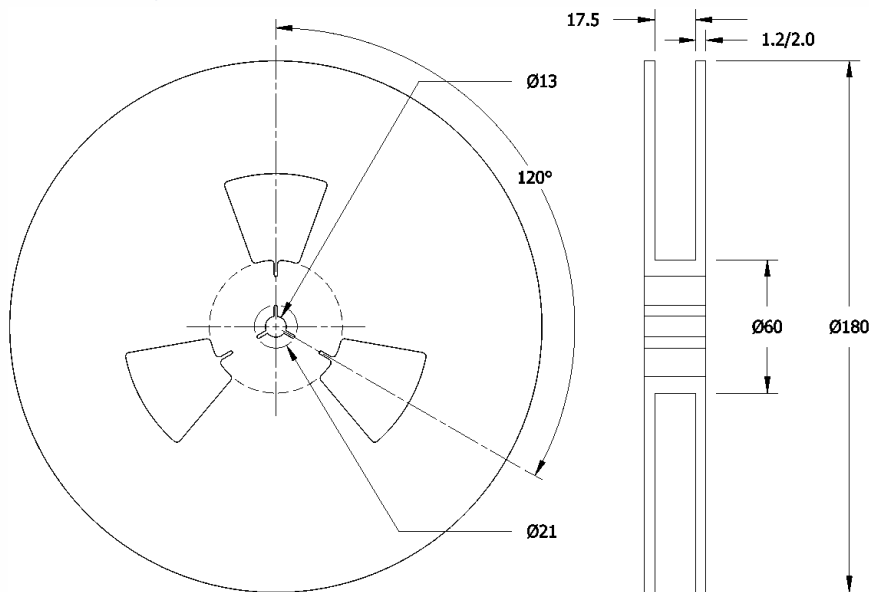
Pin	Symbol	Function
1	EOH	Enable
2	GND	Circuit & Package Ground
3	Output	RF Output
4	V _{CC}	Supply Voltage

Packaging - Tape and Reel

Tape Drawing



Reel Drawing



Notes

1. Device quantity is 1k pieces maximum per 180mm reel.
2. Complete CTS part number, frequency value and date code information must appear on reel and carton labels.