



CMOS/TTL CLOCK OSCILLATOR

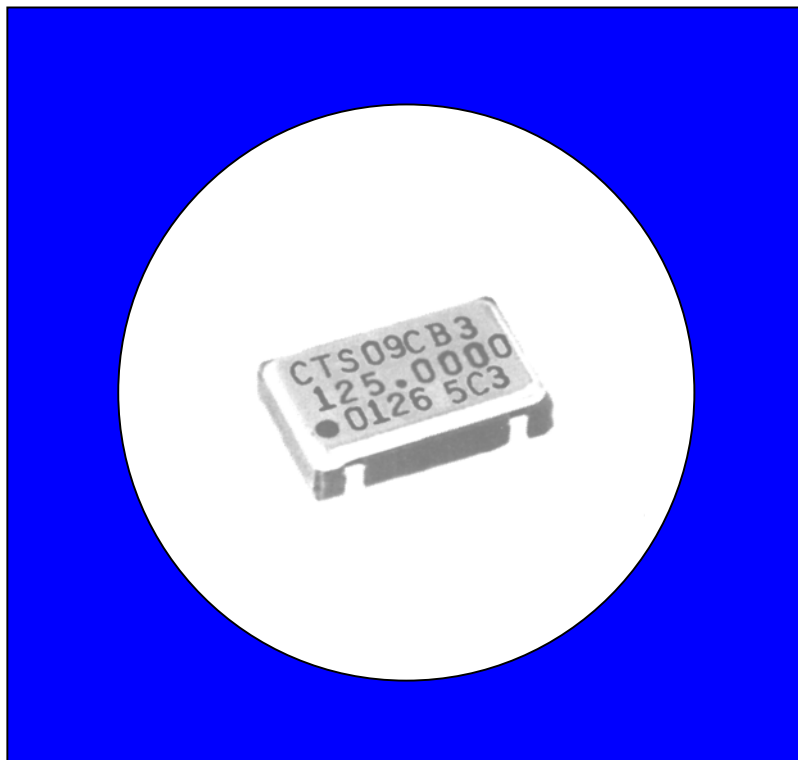
Model CB3 & CB3LV Technical Data

FEATURES

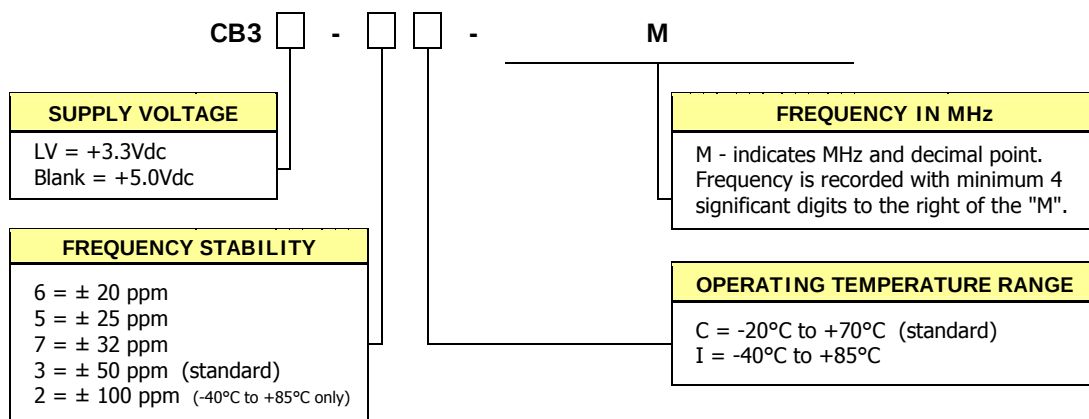
- Standard 7.5x5mm Surface Mount Footprint
- CMOS/TTL Compatible
- Frequency Range 1.5 – 160 MHz
- Frequency Stability, ± 50 ppm Standard (± 25 ppm and ± 20 ppm available)
- +3.3Vdc or +5.0Vdc Operation
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Output Enable Standard
- Tape & Reel Packaging
- **RoHS Compliant**

DESCRIPTION

The CB3/CB3LV is a ceramic packaged Clock oscillator offering reduced size and enhanced stability. The small size means it is perfect for any application. The enhanced stability means it is the perfect choice for today's communications applications that require tight frequency control.



ORDERING INFORMATION



Example Part Number: CB3LV-3C-32M7680 or CB3-3I-32M7680



Model CB3 & CB3LV
7.5x5mm Low Cost
CMOS/TTL Clock Oscillator

ELECTRICAL CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Absolute Maximums	Maximum Supply Voltage	V_{CC}	-	-0.5	-	7.0	V
	Storage Temperature	T_{STG}	-	-55	-	125	°C
	Frequency Range	f_o	-	1.5	-	160	MHz
	Frequency Stability (See Note 1 and Ordering Information)	$\Delta f/f_o$	-	-	-	20,25,32, 50 or 100	± ppm
	Operating Temperature Commercial Industrial	T_A	-	-20 -40	25	70 85	°C
	Supply Voltage CB3 CB3LV	V_{CC}	± 10 %	4.5 3.0	5.0 3.3	5.5 3.6	V
	Supply Current CB3	I_{CC}	1.5 MHz to 20 MHz $C_L=50pF$	-	10	25	mA
			20.1 MHz to 80 MHz $C_L=50pF$	-	30	50	
			80.1 MHz to 160 MHz $C_L=15pF$	-	40	100	
	CB3LV		1.5 MHz to 20 MHz $C_L=15pF$	-	7	12	
			20.1 MHz to 80 MHz $C_L=15pF$	-	20	40	
			80.1 MHz to 160 MHz $C_L=15pF$	-	30	60	
Electrical and Waveform Parameters	Output Load	C_L	1.5 MHz to 50 MHz 50.1 MHz to 80 MHz 80.1 MHz to 160 MHz	- - -	- - -	50 30 15	pF
	Output Voltage Levels Logic '1' Level	V_{OH}	CMOS Load 10 TTL LOAD	$V_{CC} - 0.5V$ $V_{CC} - 0.6V$	-	-	V
	Logic '0' Level	V_{OL}	CMOS or TTL Load	-	-	0.4	
	Output Current Logic '1' Level	I_{OH}	$V_{OH} = 3.9V/2.2V$ $V_{CC} = 4.5V/3.0V$	-	-	-16/-8	mA
	Logic '0' Level	I_{OL}	$V_{OL} = 0.4V$ $V_{CC} = 4.5V/3.0V$	-	-	+16/+8	
	Output Duty Cycle	SYM	@ 50% Level	45	-	55	%
	Rise and Fall Time CB3	$T_{R, F}$	@ 10% - 90% Levels 1.5 MHz to 20 MHz $C_L=50pF$	-	8	10	ns
			20.1 MHz to 80 MHz $C_L=50pF$	-	4	8	
			80.1 MHz to 160 MHz $C_L=15pF$	-	2.5	5	
	CB3LV		1.5 MHz to 20 MHz $C_L=15pF$	-	6	8	
			20.1 MHz to 80 MHz $C_L=15pF$	-	3	4	
			80.1 MHz to 160 MHz $C_L=15pF$	-	1.5	3	
	Start Up Time	T_S	Application of V_{CC}	-	-	10	ms
	Enable Function (See Note 2)						
	Enable Input Voltage	V_{IH}	Pin 1 Logic '1', Output Enabled	2	-	-	V
	Disable Input Voltage	V_{IL}	Pin 1 Logic '0', Output Disabled	-	-	0.8	
	Enable Time CB3	T_{PLZ}	Pin 1 Logic '1'	-	-	100	ns
	CB3LV			-	-	10	ms
	Phase Jitter	t_{jms}	Bandwidth 12 KHz - 20 MHz	-	< 1	-	ps RMS

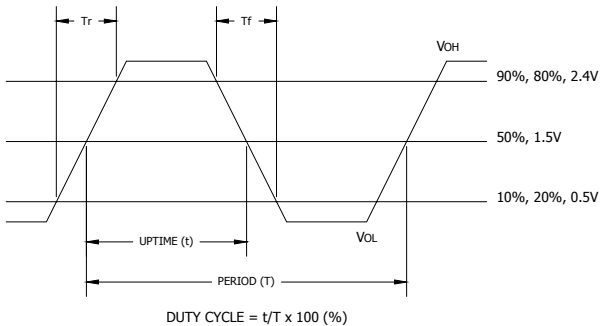
Notes:

- Inclusive of initial tolerance at time of shipment, changes in supply voltage, load, temperature and first year aging at an average operating temperature of +40 °C.
- Reference CTS Application Note 014-0002-0.



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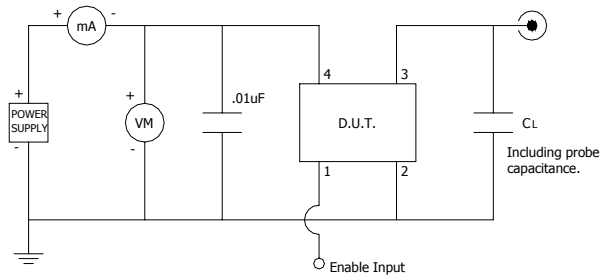
CMOS/TTL OUTPUT WAVEFORM



ENABLE TRUTH TABLE

PIN 1	PIN 3
Logic '1'	Output
Open	Output
Logic '0'	High Imp.

TEST CIRCUIT, CMOS LOAD

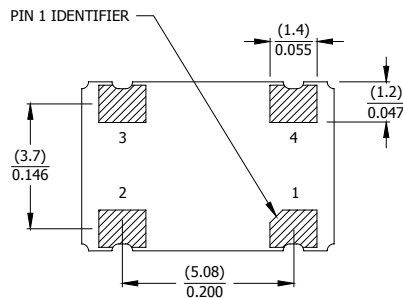
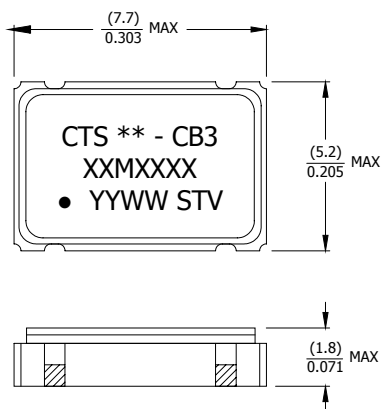


D.U.T. PIN ASSIGNMENTS

PIN	SYMBOL	DESCRIPTION
1	EOH	Enable Input
2	GND	Circuit & Package Ground
3	Output	RF Output
4	V _{CC}	Supply Voltage

MECHANICAL SPECIFICATIONS

PACKAGE DRAWING

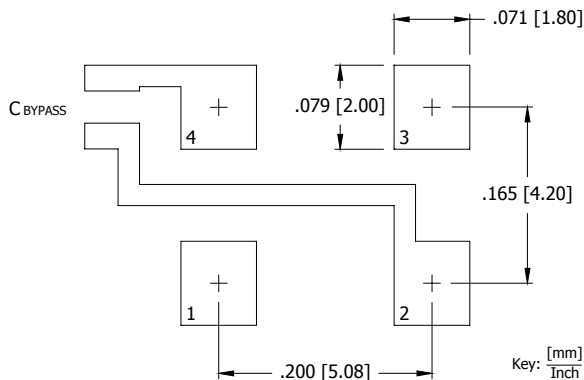


MARKING INFORMATION

1. ** - Manufacturing Site Code.
2. XXMXXXX - Frequency marked with 4 significant digits after the 'M'.
3. YYWW - Date code, YY - year, WW - week.
4. ST - Frequency stability/temperature code. (Reference Ordering Information.)
5. V - Voltage code. 3 = 3.3V, 5 = 5.0V.

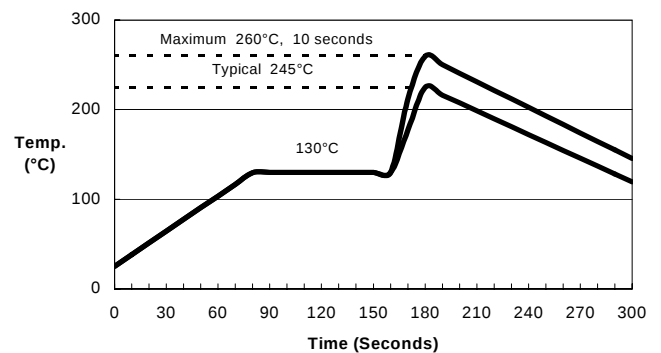
Key: (mm)
Inch

SUGGESTED SOLDER PAD GEOMETRY



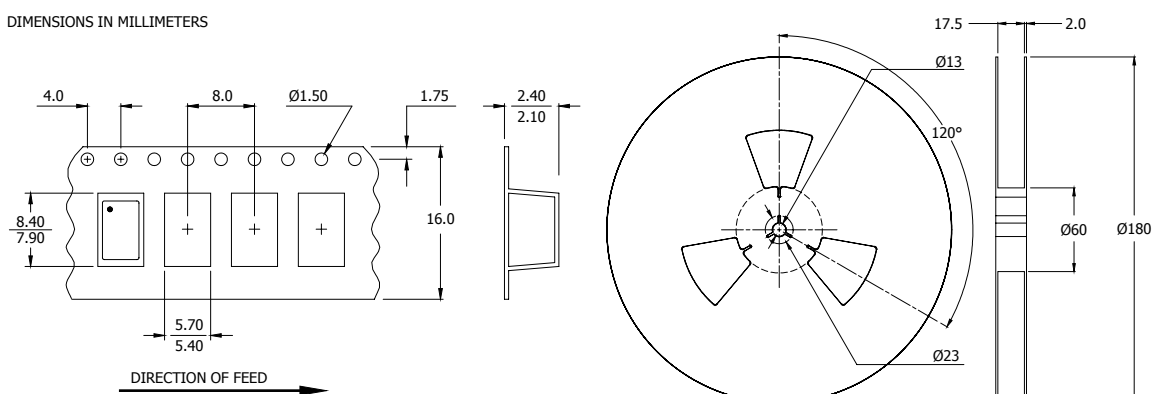
C_{BYPASS} should be ≥ 0.01 uF.

SUGGESTED REFLOW PROFILE



TAPE AND REEL INFORMATION

DIMENSIONS IN MILLIMETERS



Device quantity is 1,000 pieces per 180mm reel.

ENVIRONMENTAL SPECIFICATIONS

Temperature Cycle:	400 cycles from -55°C to +125°C, 10 minute dwell at each temperature, 1 minute transfer time between temperatures.
Mechanical Shock:	1,500g's, 0.5mS duration, ½ sinewave, 3 shocks each direction along 3 mutually perpendicular planes (18 total shocks).
Sinusoidal Vibration:	0.06 inches double amplitude, 10 to 55 Hz and 20g's, 55 to 2,000 Hz, 3 cycles each in 3 mutually perpendicular planes (9 times total).
Gross Leak:	No leak shall appear while immersed in an FC40 or equivalent liquid at +125°C for 20 seconds.
Fine Leak:	Mass spectrometer leak rates less than 2×10^{-8} ATM cc/sec air equivalent.
Resistance to Solder Heat:	Product must survive 3 reflows of +260°C peak, 10 seconds maximum.
High Temperature Operating Bias:	2,000 hours at +125°C, maximum bias, disregarding frequency shift.
Frequency Aging:	1,000 hours at +85°C, full bias, less than ±5 ppm shift.

QUALITY AND RELIABILITY

Quality systems meet or exceed the requirements of ISO 9000:2000 standards. Reliability audits are performed on this or similar products with results available upon request.