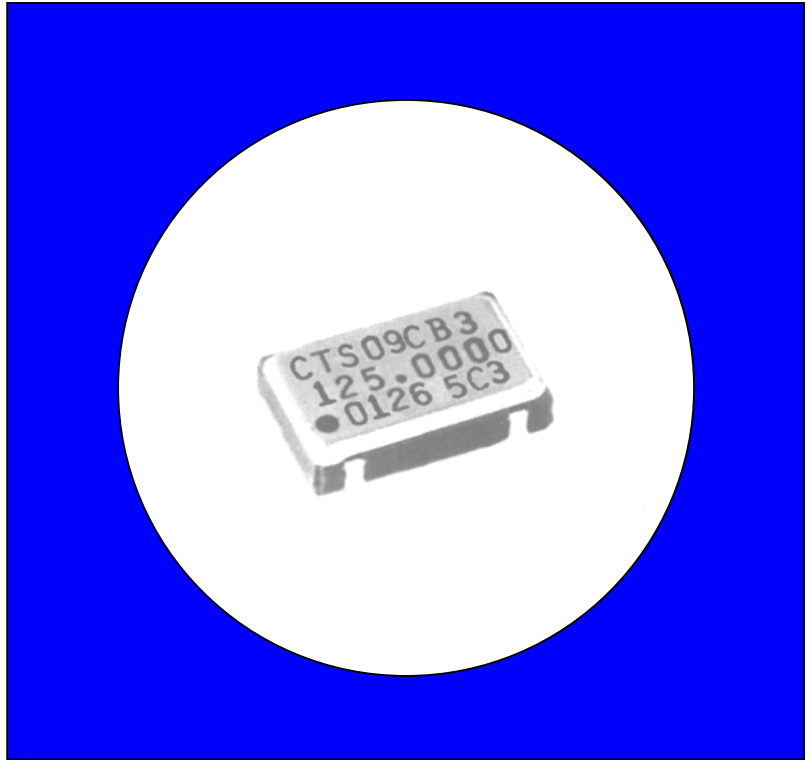


### FEATURES

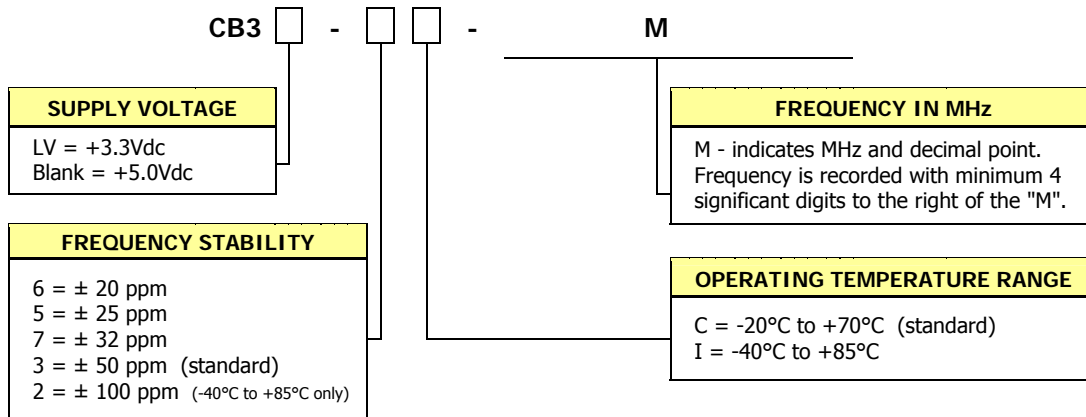
- Standard 7.5x5mm Surface Mount Footprint
- CMOS/TTL Compatible
- Frequency Range 1.5 – 160 MHz
- Frequency Stability,  $\pm 50$  ppm Standard ( $\pm 25$  ppm and  $\pm 20$  ppm available)
- +3.3Vdc or +5.0Vdc Operation
- Operating Temperature to  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Output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

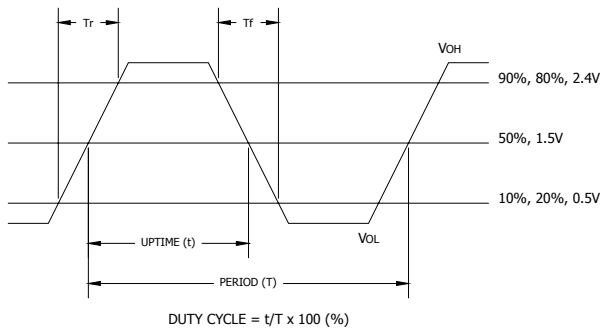
## ELECTRICAL CHARACTERISTICS

	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	
Electrical and Waveform Parameters	Supply Voltage CB3 CB3LV	$V_{CC}$	± 10 %	4.5 3.0	5.0 3.3	5.5 3.6	V	
	Supply Current CB3 CB3LV	$I_{CC}$	1.5 MHz to 20 MHz 20.1 MHz to 80 MHz 80.1 MHz to 160 MHz $C_L=50pF$ $C_L=50pF$ $C_L=15pF$ 1.5 MHz to 20 MHz 20.1 MHz to 80 MHz 80.1 MHz to 160 MHz $C_L=15pF$ $C_L=15pF$ $C_L=15pF$	- - - - - - - -	10 30 40 7 20 30	25 50 100 12 40 60	mA	
	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	V	
	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	mA
	Output Duty Cycle	SYM	@ 50% Level	45	-	55	%	
	Rise and Fall Time CB3 CB3LV	$T_{Rr}, T_{Ff}$	@ 10% - 90% Levels 1.5 MHz to 20 MHz 20.1 MHz to 80 MHz 80.1 MHz to 160 MHz $C_L=50pF$ $C_L=50pF$ $C_L=15pF$ 1.5 MHz to 20 MHz 20.1 MHz to 80 MHz 80.1 MHz to 160 MHz $C_L=15pF$ $C_L=15pF$ $C_L=15pF$	- - - - - - - -	8 4 2.5 6 3 1.5	10 8 5 8 4 3	ns	
	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	V	
	Enable Time CB3 CB3LV	$T_{PLZ}$	Pin 1 Logic '1'	- -	- -	100 10	ns 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.

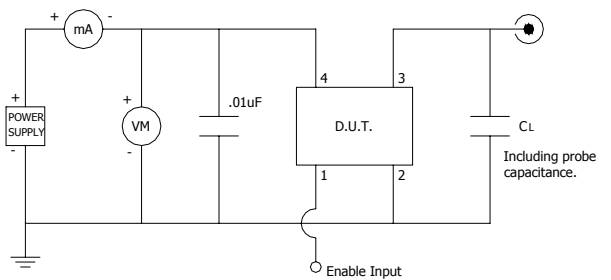
### CMOS/TTL OUTPUT WAVEFORM



### ENABLE TRUTH TABLE

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

### TEST CIRCUIT, CMOS LOAD

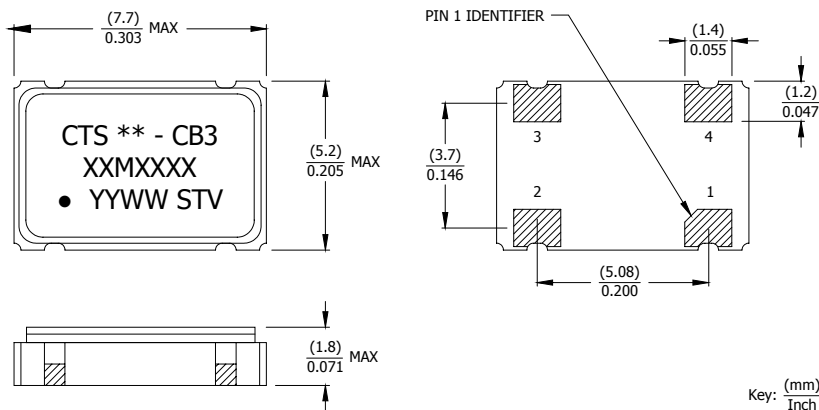


### D.U.T. PIN ASSIGNMENTS

PIN	SYMBOL	DESCRIPTION
1	EOH	Enable Input
2	GND	Circuit & Package Ground
3	Output	RF Output
4	V <sub>CC</sub>	Supply Voltage

## MECHANICAL SPECIFICATIONS

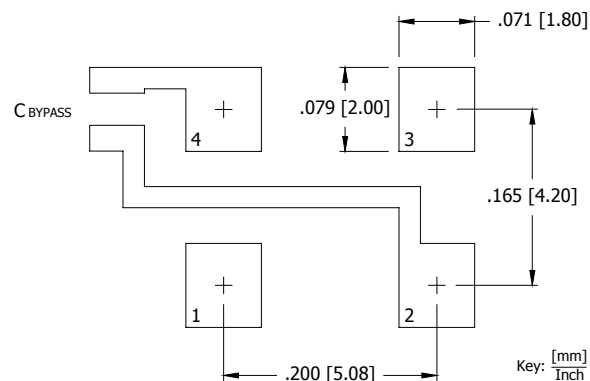
### PACKAGE DRAWING



### MARKING INFORMATION

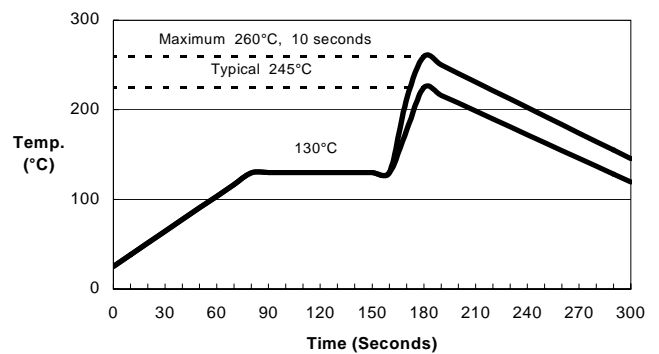
- \*\* - Manufacturing Site Code.
- XXMXXXX - Frequency marked with 4 significant digits after the 'M'.
- YYWW - Date code, YY - year, WW - week.
- ST - Frequency stability/temperature code. (Reference Ordering Information.)
- V - Voltage code. 3 = 3.3V, 5 = 5.0V.

### SUGGESTED SOLDER PAD GEOMETRY



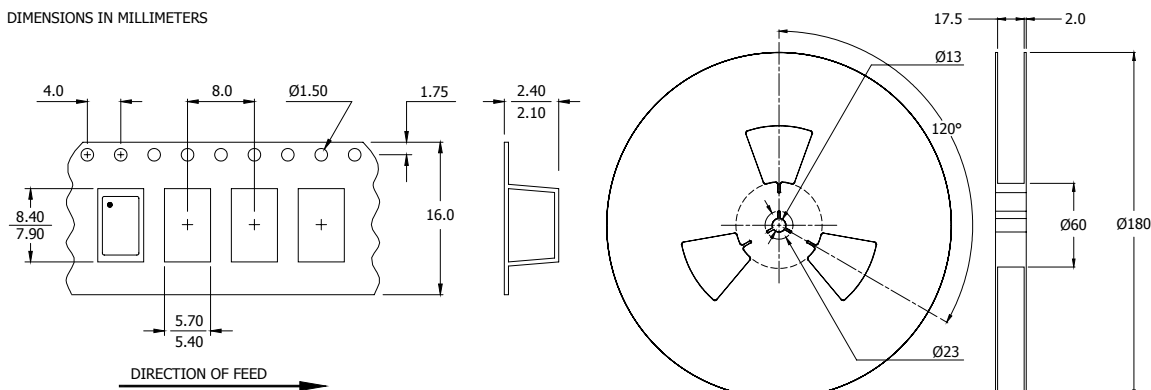
C<sub>BYPASS</sub> should be ≥ 0.01 uF.

### 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 $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ , 10 minute dwell at each temperature, 1 minute transfer time between temperatures.
Mechanical Shock:	1,500g's, 0.5mS duration, $\frac{1}{2}$ 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 $+125^{\circ}\text{C}$ for 20 seconds.
Fine Leak:	Mass spectrometer leak rates less than $2 \times 10^{-8}$ ATM cc/sec air equivalent.
Resistance to Solder Heat:	Product must survive 3 reflows of $+260^{\circ}\text{C}$ peak, 10 seconds maximum.
High Temperature Operating Bias:	2,000 hours at $+125^{\circ}\text{C}$ , maximum bias, disregarding frequency shift.
Frequency Aging:	1,000 hours at $+85^{\circ}\text{C}$ , full bias, less than $\pm 5$ 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.