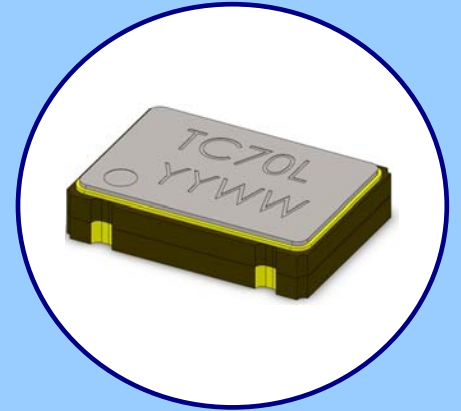


MODEL TC70

32.7680KHZ CLOCK OSCILLATOR

FEATURES

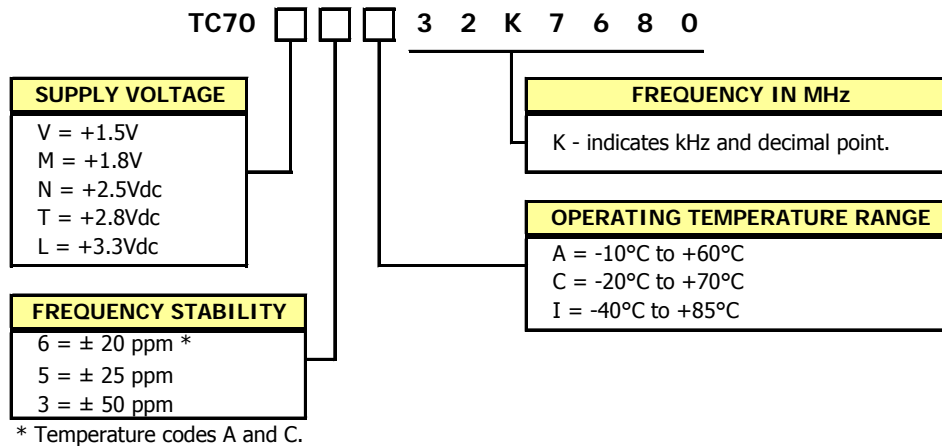
- 32.7680kHz Frequency Reference
- Package Size 7.0mm x 5.0mm
- Fundamental Crystal Design
- Hermetic Ceramic Package
- Frequency Stability, ± 50 ppm Standard
- Operating Temperature, -40°C to $+85^{\circ}\text{C}$ Standard
- Tape & Reel Packaging, EIA-418
- **RoHS/Green Compliant [6/6]**



APPLICATIONS

Model TC70 is ideal for use in a wide range of communication equipment, measurement equipment, industrial applications, automotive electronics, wireless communications, PDAs and notebooks.

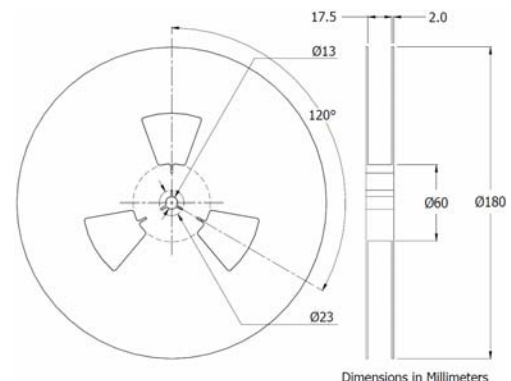
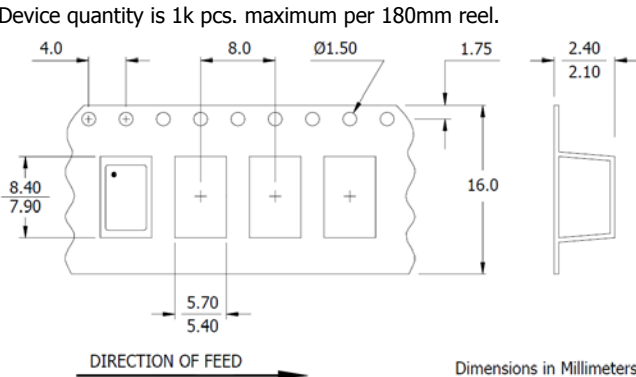
ORDERING INFORMATION



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

PACKAGING INFORMATION [Reference Only]

Device quantity is 1k pcs. maximum per 180mm reel.

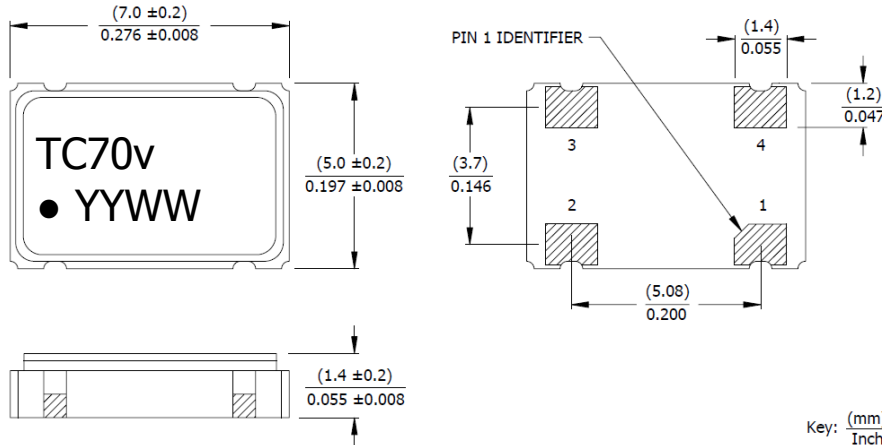


ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Frequency	f_o	-		32.7680		kHz
Operating Mode	-	-	AT Fundamental			-
Output Type	-	-	HCMOS			
Supply Voltage	V_{CC}	$\pm 10\%$	1.5, 1.8, 2.5, 2.8, 3.3			V
Current	I_{CC}	15pF Load	-	-	3.0	mA
Frequency Stability	$\Delta f/f_o$	See Ordering Information	20, 25, 50			ppm
Operating Temperature Range	T_A	-	-10	-	+60	°C
			-20	-	+70	
			-40	-	+85	
Load Capacitance	C_L	CMOS	-	15	-	pF
Output Voltage Levels						
Logic '1' Level	V_{OH}	CMOS Load	$0.9V_{CC}$	-	-	V
Logic '0' Level	V_{OL}	CMOS Load	-	-	$0.1V_{CC}$	
Rise and Fall Time	T_r, T_f	-	-	50	200	ns
Output Duty Cycle	SYM	@ 50% Level	45	-	55	%
Start-up Time	T_S	Application of V_{CC}	-	5.0	10	ms
Enable Function						
Enable Input Voltage	V_{IH}	Pin 1 Logic '1', Output Enabled	$0.7V_{CC}$	-	-	V
Disable Input Voltage	V_{IL}	Pin 1 Logic '0', Output Disabled	-	-	$0.3V_{CC}$	
Aging	$\Delta f/f_o$	@ +25°C, 1st year	-	3.0	5.0	\pm ppm
Storage Temperature Range	T_{STR}	-	-55	-	+125	°C

MECHANICAL SPECIFICATIONS

TC70 PACKAGE DRAWING



MARKING INFORMATION

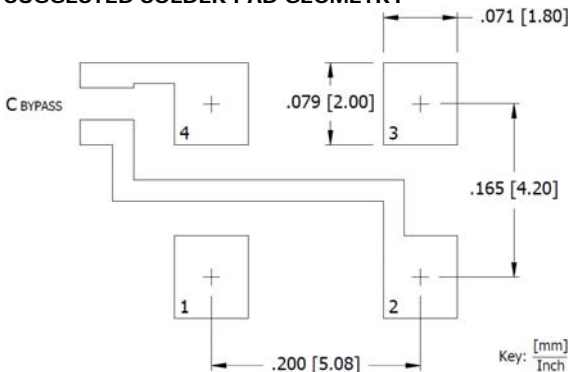
- TC70 – CTS Model Series.
- v – Voltage code.
[L=3.3V, T=2.8V, N=2.5V, M=1.8V, V=1.5V]
- – Pin 1 identifier.
- YYWW – Date code, YY – year, WW – week.

Complete CTS part number, frequency value, date code and manufacturing site code information must appear on reel and carton labels.

NOTES

- Termination pads (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.

SUGGESTED SOLDER PAD GEOMETRY



C_{BYPASS} should be $\geq 0.01 \mu F$.

PIN ASSIGNMENTS

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