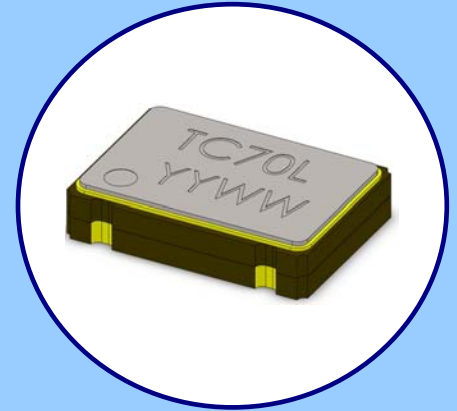




FEATURES

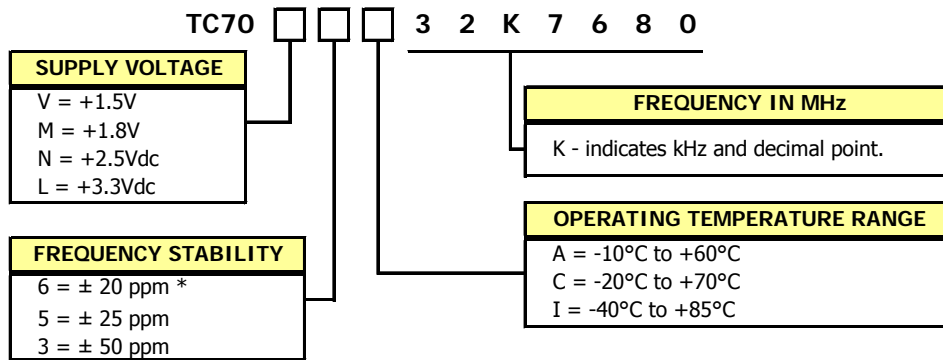
- 32.7680 kHz Frequency Reference
- Package Size 7.0mm x 5.0mm
- Fundamental Crystal Design
- Hermetic Ceramic Package
- Frequency Stability, ±50 ppm Standard
- Operating Temperature, -40°C to +85°C Standard
- Tape & Reel Packaging, EIA-418
- **RoHS/Green Compliant (6/6)**



APPLICATIONS

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

ORDERING INFORMATION



* Temperature codes A and C.

Example Part Numbers:

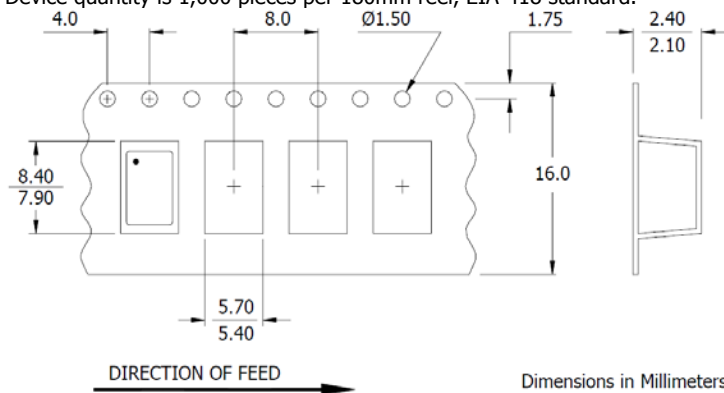
TC70L3I32K7680

TC70L5I32K7680

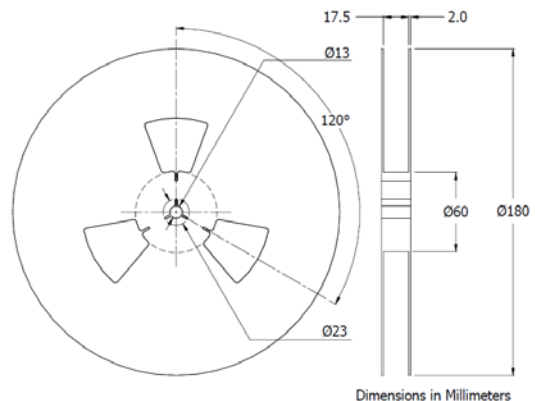
**Not all performance combinations and frequencies may be available.
Contact your local CTS Representative or CTS Customer Service for availability.**

PACKAGING INFORMATION [Reference Only]

Device quantity is 1,000 pieces per 180mm reel, EIA-418 standard.



Dimensions in Millimeters



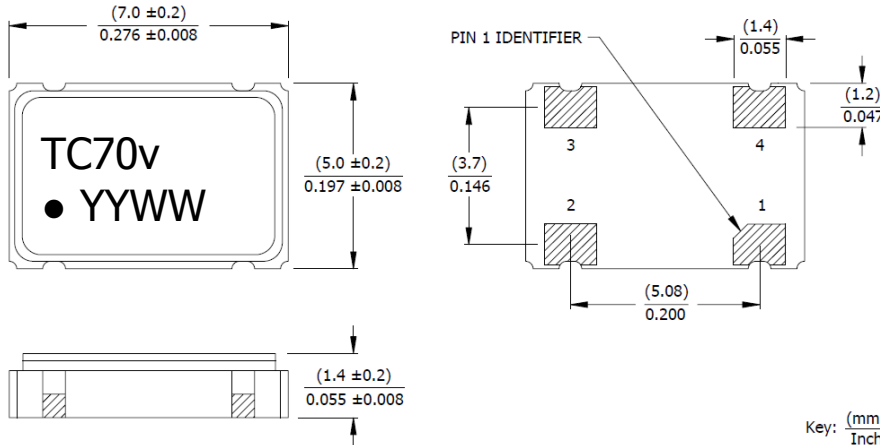
Dimensions in Millimeters

ELECTRICAL CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
ELECTRICAL PARAMETERS	Frequency	f_0			32.7680		kHz
	Operating Mode	-		AT Fundamental			-
	Output Type			CMOS			
	Supply Voltage		$\pm 10\%$	1.5, 1.8, 2.5, 3.3			V
	Current			-	-	3.0	mA
	Frequency Stability		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
	Voltage Level [V_{OH}]			$0.9V_{CC}$	-	-	V
	Voltage Level [V_{OL}]			-	-	$0.1V_{CC}$	V
	Rise and Fall Time	T_{r}, T_{f}		-	50	200	ns
	Symmetry			45	-	55	%
	Start-up Time			-	5.0	10	ms
	Tri-State Voltage [V_{OL}]			$0.7V_{CC}$	-	-	V
Tri-State Voltage [V_{OH}]			-	-	$0.3V_{CC}$	V	
Aging	$\Delta f/f_0$	@+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

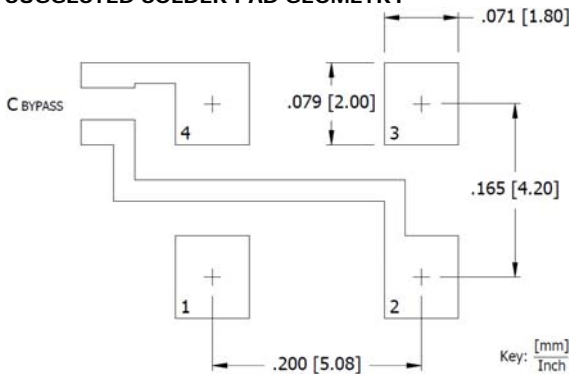
- TC70 – CTS Model Series.
- v – Voltage code.
[L=3.3V, N=2.5V, M=1.8V, V=1.5V]
- – Pin 1 identifier.
- YYWW – Date code, YY – year, WW – week.

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