Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

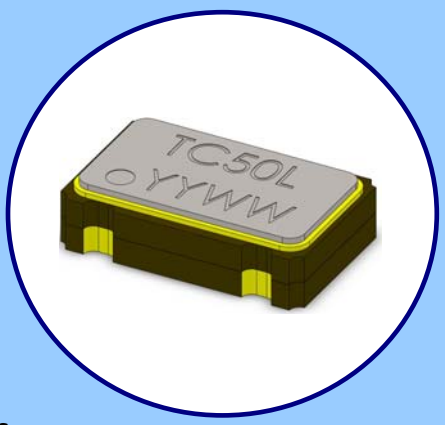
Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Model TC50

32.7680 kHz Clock Oscillator

FEATURES

- **32.7680 kHz Frequency Reference**
- **Package Size 5.0mm x 3.2mm**
- **Fundamental Crystal Design**
- **Hermetic Ceramic Package**
- Frequency Stability, ±50 ppm Standard
- Operating Temperature, -40°C to +85°C Standard
- Tape & Reel Packaging, EAI-418
- **RoHS/ Green Compliant [6/ 6]**



APPLICATIONS

Model TC50 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

TC50 ☐ ☐ ☐ 3 2 K 7 6 8 0

SUPPLY VOLTAGE
- V = +1.5V
- M = +1.8V
- N = +2.5Vdc
- L = +3.3Vdc

FREQUENCY STABILITY
- 6 = ± 20 ppm *
- 5 = ± 25 ppm
- 3 = ± 50 ppm

* Temperature codes A and C.

FREQUENCY IN MHz
- K - indicates kHz and decimal point.

OPERATING TEMPERATURE RANGE
- A = -10°C to +60°C
- C = -20°C to +70°C
- I = -40°C to +85°C

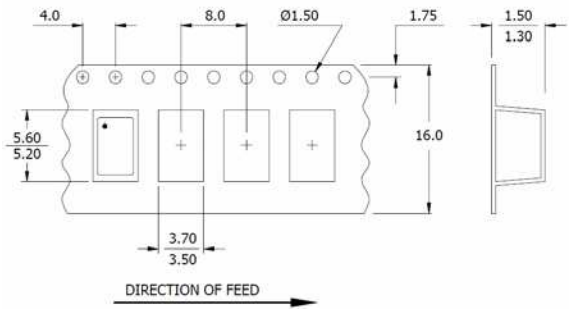
Example Part Numbers:
TC50L3I32K7680
TC50L5I32K7680

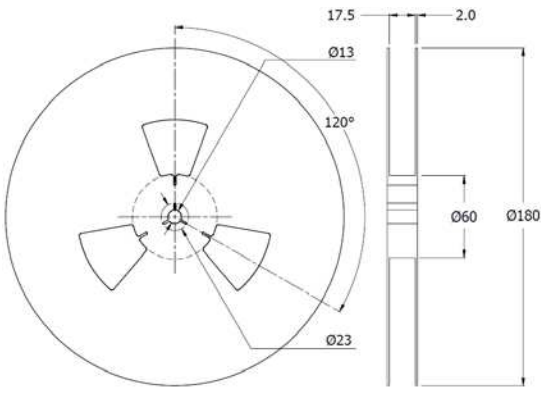
Not all performance combinations and frequencies may be available.
Contact your local CTS Representative or CTS Customer Service for availability.

PACKAGING INFORMATION [Reference Only]

Device quantity is 1k pcs minimum and 3k pcs. maximum per 180mm reel.

DIMENSIONS IN MILLIMETERS



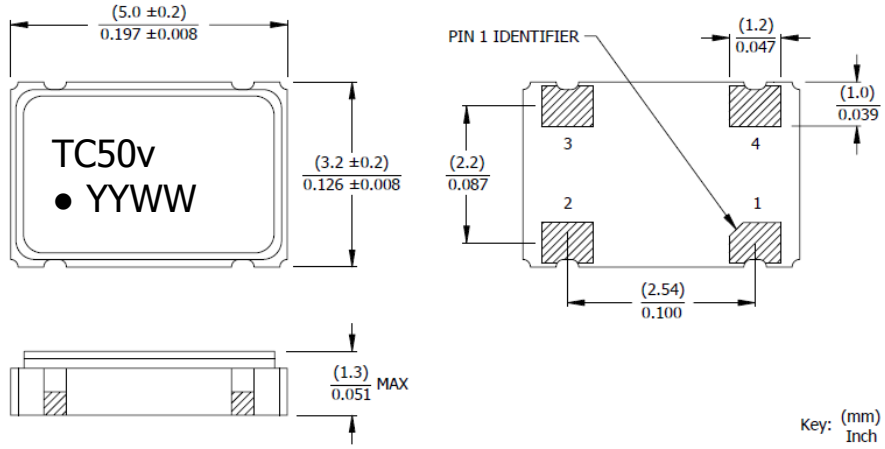


ELECTRICAL CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
ELECTRICAL PARAMETERS	Frequency	f_o	-		32.7680		kHz
	Operating Mode	-	-		AT Fundamental		-
	Output Type	-	-		HCMOS		
	Supply Voltage	V_{CC}	±10%		1.5, 1.8, 2.5, 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 -20 -40	- - -	+60 +70 +85	°C
	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	± ppm
	Storage Temperature Range	T_{STR}	-	-55	-	+125	°C

MECHANICAL SPECIFICATIONS

TC50 PACKAGE DRAWING



MARKING INFORMATION

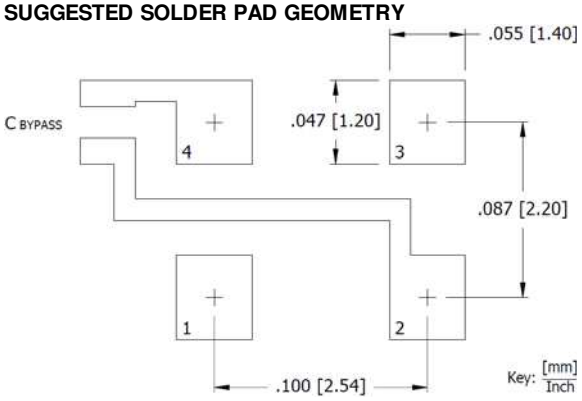
1. TC50 – CTS Model Series.
4. v – Voltage code.
   [L=3.3V, N=2.5V, M=1.8V, V=1.5V]
2. ● – Pin 1 identifier.
3. YYWW – Date code, YY – year, WW – week.

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

NOTES

1. Termination pads (e4); barrier plating is nickel [Ni] with gold [Au] flash plate.
2. Reflow conditions per JEDEC J-STD-020; 260°C maximum, 20 seconds.
3. MSL = 1.

SUGGESTED SOLDER PAD GEOMETRY



C_{BYPASS} should be ≥ 0.01 uF.

PIN ASSIGNMENTS

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