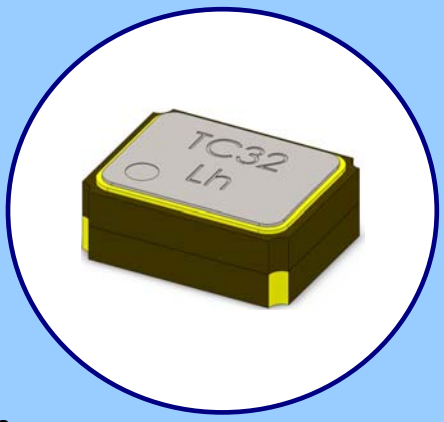
Model TC32

32.7680 kHz Clock Oscillator

FEATURES

- **32.7680 kHz Frequency Reference**
- **Package Size 3.2mm x 2.5mm**
- **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 TC32 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

TC32 □ □ □ 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.

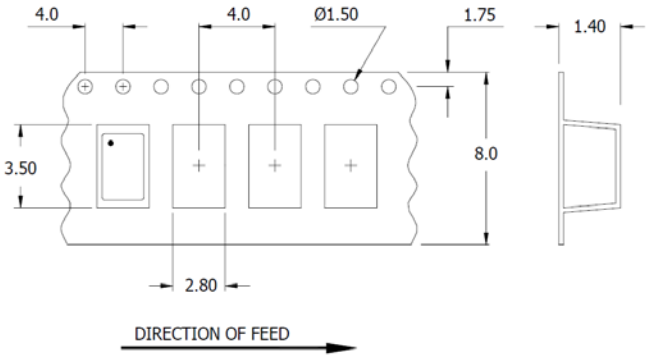
OPERATING TEMPERATURE RANGE
- C = -20°C to +70°C
- I = -40°C to +85°C

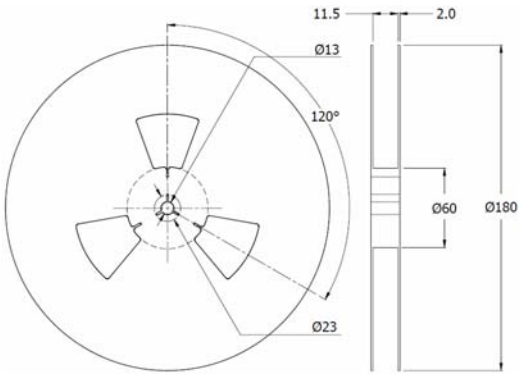
Example Part Numbers:
TC32L3I32K7680
TC32L5I32K7680

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 minimum per 180mm reel, EIA-418 standard.



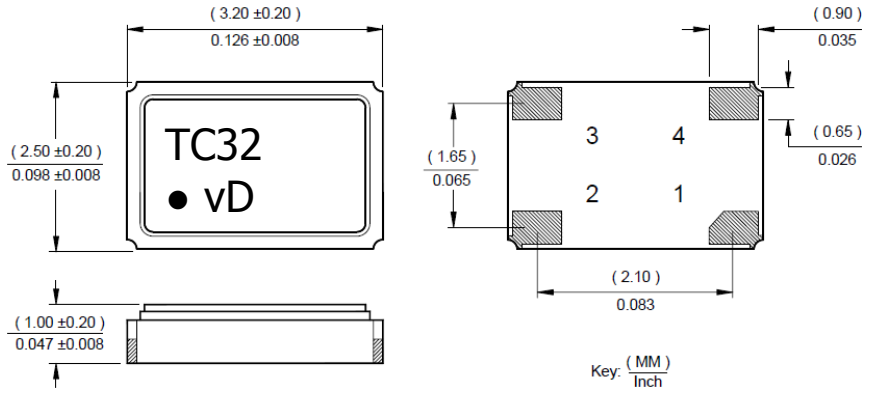


ELECTRICAL CHARACTERISTICS

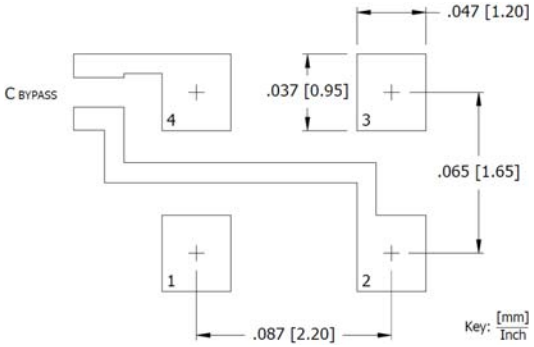
	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
ELECTRICAL PARAMETERS	Frequency	f_0			32.7680		kHz
	Operating Mode	-			AT Fundamental		-
	Output Type				CMOS		
	Supply Voltage		±10%		1.5, 1.8, 2.5, 3.3		V
	Current			-	-	3.0	mA
	Frequency Stability		See Ordering Information		20, 25, 50		ppm
	Operating Temperature Range	T_A		-20 -40	- -	+70 +85	°C
	Load Capacitance	C_L	CMOS	-	15	-	pF
	Voltage Level [V_{OH}] Voltage Level [V_{OL}]			$0.9V_{CC}$ -	- -	- $0.1V_{CC}$	V
	Rise and Fall Time	T_r,T_f		-	-	50	ns
	Symmetry			45	-	55	%
	Start-up Time			-	5.0	10	ms
	Tri-State Voltage [V_{OL}] Tri-State Voltage [V_{OH}]			$0.7V_{CC}$ -	- -	- $0.3V_{CC}$	V
	Aging	$\Delta f/f_0$	@+25°C, 1st year	-	3.0	5.0	± ppm
	Storage Temperature Range	T_{STR}		-55	-	+125	°C

MECHANICAL SPECIFICATIONS

TC32 PACKAGE DRAWING



SUGGESTED SOLDER PAD GEOMETRY



C_{BYPASS} should be ≥ 0.01 uF.

MARKING INFORMATION

1. TC32 – CTS Model Series.
2. ● – Pin 1 identifier.
3. v – Voltage code.
   [L=3.3V, N=2.5V, M=1.8V, V=1.5V]
4. D – Date code. See Table I for codes.

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.

PIN ASSIGNMENTS

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

TABLE I – DATE CODE

YEAR \ MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2001 2005 2009 2013 2017	A	B	C	D	E	F	G	H	J	K	L	M
2002 2006 2010 2014 2018	N	P	Q	R	S	T	U	V	W	X	Y	Z
2003 2007 2011 2015 2019	a	b	c	d	e	f	g	h	j	k	l	m
2004 2008 2012 2016 2020	n	p	q	r	s	t	u	v	w	x	y	z