

**FEATURES**

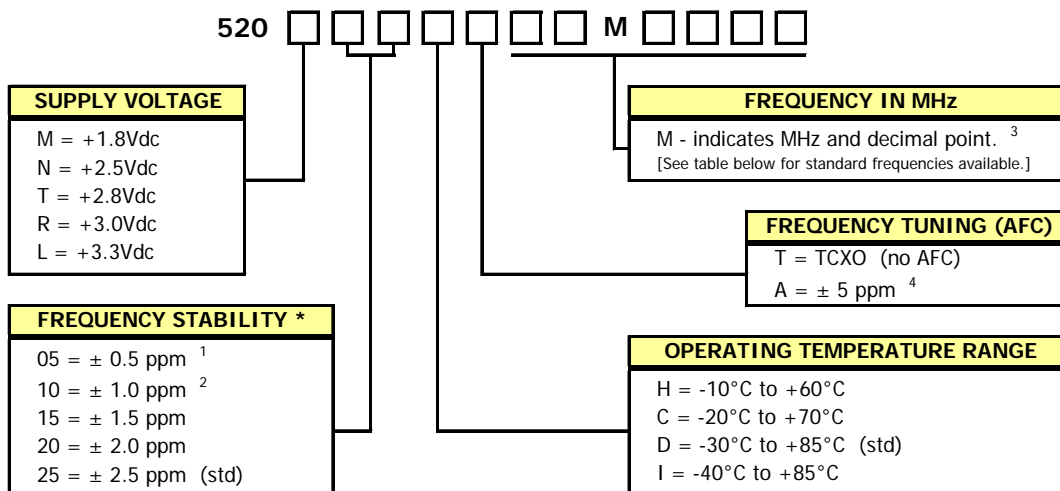
- **Clipped Sine Wave Output**
- **Optional Voltage Control for Frequency Tuning [VCTCXO]**
- 2.5mmx2.0mm Surface Mount Package
- Frequency Range 10 – 52 MHz [Standard Frequencies List Shown Below]
- Fundamental Crystal Design
- Frequency Stability, several options to choose from  $\pm 0.5\text{ppm} \sim \pm 2.5\text{ppm}$
- Operating Voltage, +1.8Vdc ~ +2.5Vdc
- Operating Temperature to -40°C to +85°C
- Tape & Reel Packaging Available
- **RoHS/Green Compliant (6/6)**



**APPLICATIONS**

The Model 520 Temperature Compensated Crystal Oscillator (TCXO) is a quartz based, clipped sine wave output, with optional frequency tuning, in a hermetically sealed ceramic package. M520 is suitable for wireless communications, broadband access, WLAN/WiMax/WIFI, portable equipment, test and measurement and mobile applications.

**ORDERING INFORMATION**



\* Frequency vs. Temperature Only

- 1] Only available with temperature range codes "H" and "C".
- 2] Only available with temperature range codes "H", "C" and "D".
- 3] Frequency is recorded with two leading digits before the 'M' and 4 significant digits after the 'M' (including zeros).  
[Ex. XXMXXXX (10M0000), XXMXXXX (16M3840)]
- 4] See Electrical Characteristics for Control Voltage range per Supply Voltage selected.

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

M520 Standard Frequencies				
13.000000	16.368000	19.200000	26.000000	40.000000
16.367667	16.369000	20.000000	38.400000	

## ELECTRICAL CHARACTERISTICS

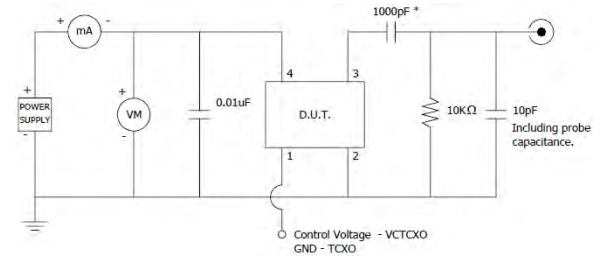
### D.U.T. PIN ASSIGNMENTS

PIN	SYMBOL	DESCRIPTION
1	$V_C$	GND – TCXO [Note 1] Control Voltage – VCTCXO
2	GND	Circuit & Package Ground
3	Output	Clipped Sine Wave Output [Note 2]
4	$V_{CC}$	Supply Voltage

### NOTES

1. Connect to ground for TCXO (no AFC) option.
2. DC-Cut Capacitor Required.  
Add 1000pF capacitor between TCXO output and input of load.

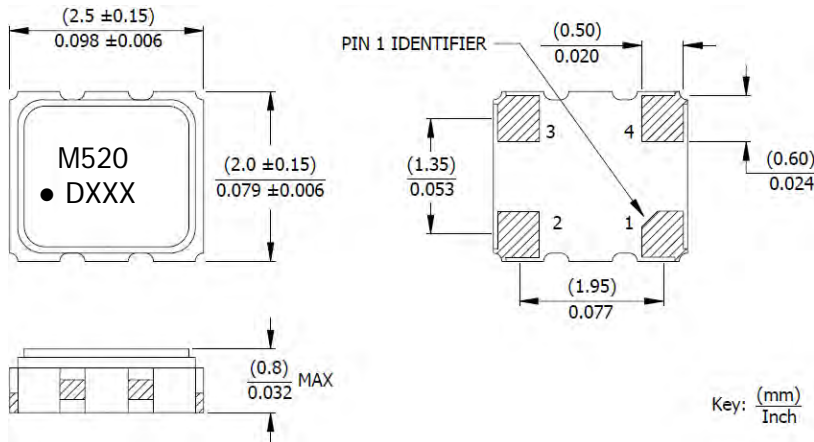
### TEST CIRCUIT – RL//CL LOAD



\* DC-Cut Capacitor

## MECHANICAL SPECIFICATIONS

### PACKAGE DRAWING



Key:  $\frac{\text{mm}}{\text{Inch}}$

### MARKING INFORMATION

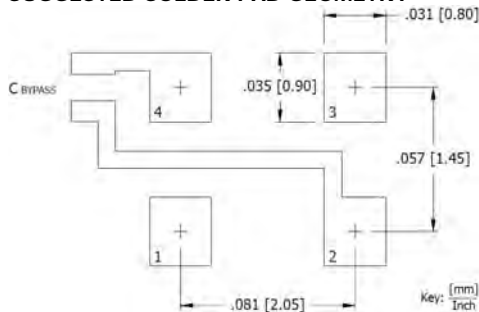
1. M520 - CTS Model Series.
2. ● – Pin 1 identifier.
3. D – Date code. See Table I for codes.
4. XXX – Frequency code. Reference CTS document 016-1454-01.

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

### NOTES

1. DO NOT make connections to non-labeled pins and castellations, as they may have internal connections used in the manufacturing process.
2. Termination pads (e4); barrier plating is nickel (Ni) with gold (Au) flash plate.
3. Reflow conditions per JEDEC J-STD-020, 260°C maximum.

### SUGGESTED SOLDER PAD GEOMETRY



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

### 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