





TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

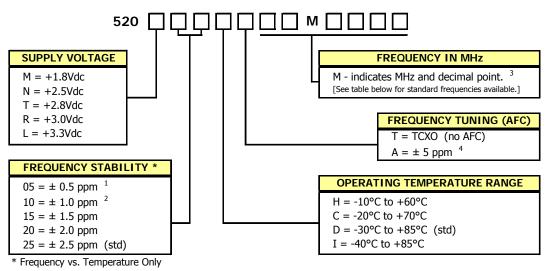
FEATURES

- 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 ±0.5ppm ~ ±2.5ppm
- 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



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.

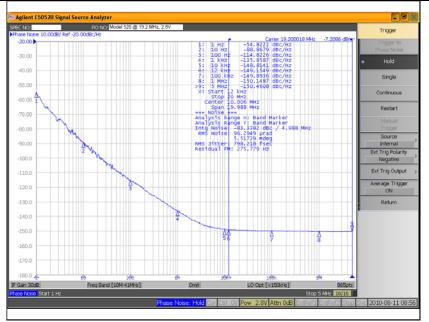
M520 Standard Frequencies											
13.000000	16.368000	19.200000	26.000000	40.000000							
16.367667	16.369000	20.000000	38.400000								



MODEL 520 TCXO/VCTCXO - CLIPPED SINE WAVE

ELECTRICAL CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT		
	Maximum Supply Voltage	V _{CC}	-	-0.5	-	6.0	V		
	Maximum Control Voltage	V _C	-	-0.5	-	V _{CC}	V		
	Storage Temperature	T _{STG}	-	-40	-	85	°C		
	Frequency Range	f _o	Std frequencies listed in Ordering Information	10	-	52	MHz		
	Frequency Stability	∆f/f _o	Frequency vs. Temperature Only	0.	± ppm				
	Frequency Stability vs. Initial Calibration vs. Supply Voltage vs. Load vs. Reflow Shift vs. Aging	-	@25°C ±5% change ±10% change After 2 reflows 1st year 10 year			2.0 0.2 0.2 2.0 1.0 10.0	± ppm		
ELECTRICAL PARAMETERS	Operating Temperature Order Code 'W' Order Code 'H' Order Code 'C' Order Code 'D' Order Code 'I'	T _A	-	0 -10 -20 -30 -40	25	55 60 70 85 85	°C		
ELECTRICA	Supply Voltage Order Code 'M' Order Code 'N' Order Code 'T' Order Code 'R' Order Code 'L'	V _{cc}	±5%	1.77 2.38 2.66 2.85 3.14	1.8 2.5 2.8 3.0 3.3	1.83 2.63 2.94 3.15 3.47	v		
	Supply Current	I _{CC}	10.00 MHz - 25.99 MHz 26.00 MHz - 52.00 MHz		-	2 2.5	mA		
	Control Voltage	V _C	2.5V, 2.8V, 3.0V, 3.3V 1.8V	0.4 0.3	1.5 0.9	2.4 1.5	V		
	Frequency Tuning [VCTCXO Only]	-	Specified V _C Range	5.0	-	-	± ppm		
	V _C Input Impedance	ZV _C	-	500	-	-	kOhm		
	Output Waveform		AC coupled Clipped Sinewave				Vp-p		
	Output Voltage Levels	Vo		0.8					
	Output Load R _L // C _L - 10 kOhm // 10 pF								
	Start Up Time	Ts	-	-	-	2	ms		
	Phase Noise	-	Varies based on output frequency. See exam	nple plot @	19.2 MHz	z below.	dBc/Hz		





ELECTRICAL CHARACTERISTICS

D.U.T. PIN ASSIGNMENTS

PIN	SYMBOL DESCRIPTION						
1	Vc	GND – TCXO [Note 1]					
1	٧C	Control Voltage – VCTCXO					
2	GND	Circuit & Package Ground					
3	Output	Clipped Sine Wave Output [Note 2]					
4	V _{CC}	Supply Voltage					

NOTES

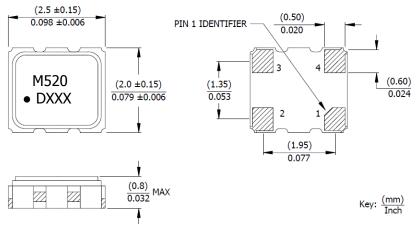
1. Connect to ground for TCXO (no AFC) option.

2. DC-Cut Capacitor Required.

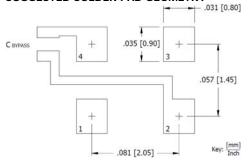
Add 1000pF capacitor between TCXO output and input of load.

MECHANICAL SPECIFICATIONS

PACKAGE DRAWING



SUGGESTED SOLDER PAD GEOMETRY



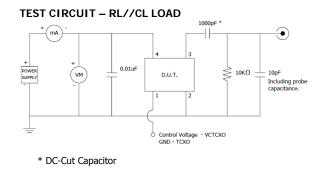
 C_{BYPASS} should be ≥ 0.01 uF.

TABLE I – DATE CODE

\sim	MONTH			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC	
	YEAR				5711	. 20	100 UK	70 K		5011	301	nee	021	001	nov	520
2001	2005	2009	2013	2017	Α	В	С	D	E	F	G	Н	J	K	L	М
2002	2006	2010	2014	2018	Ν	Р	Q	R	S	Т	U	V	W	Х	Y	Z
2003	2007	2011	2015	2019	а	b	с	d	е	f	g	h	j	k	Ι	m
2004	2008	2012	2016	2020	n	р	q	r	S	t	u	v	W	х	у	z

TCXO/VCTCXO - CLIPPED SINE WAVE

MODEL 520



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

- DO NOT make connections to nonlabeled 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.



MODEL 520 TCXO/VCTCXO - CLIPPED SINE WAVE

PACKAGING INFORMATION [Reference]

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

