



**FEATURES**

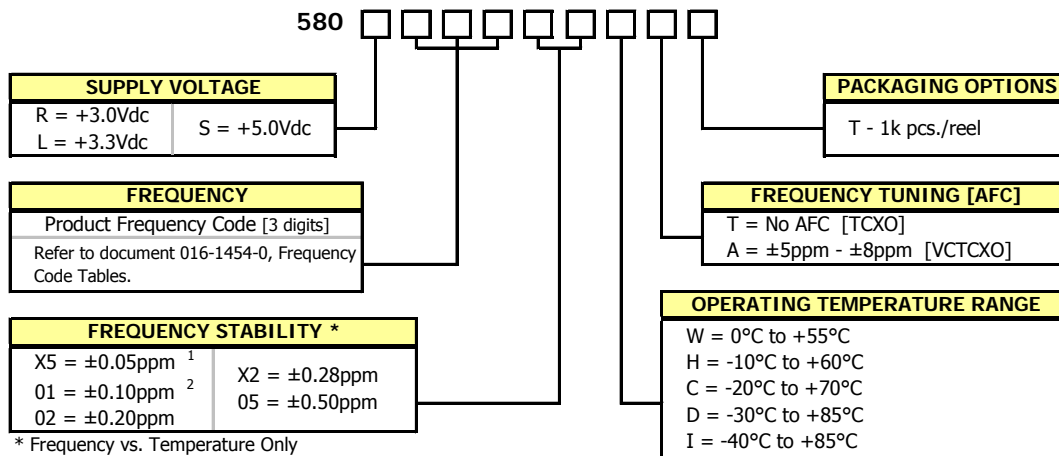
- **Clipped Sine Output**
- **Optional Voltage Control for Frequency Tuning [VCTCXO]**
- 5.0mm x 3.2mm Surface Mount Package
- Frequency Range 5 – 52 MHz
- Fundamental Crystal Design
- Operating Voltage, +3.3Vdc or +5.0Vdc
- Overall Frequency Stability  $\pm 4.6$ ppm
- Operating Temperature to  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Tape & Reel Packaging Standard, EIA-418
- **RoHS/Green Compliant [6/6]**



**APPLICATIONS**

The Model 580 is a quartz based analog TCXO with a Clipped Sine output and optional frequency tuning. M580 is suitable for applications requiring Stratum 3 performance such as base stations, small cells, 1588 and Synchronous Ethernet timing, wireless communications, test and measurement.

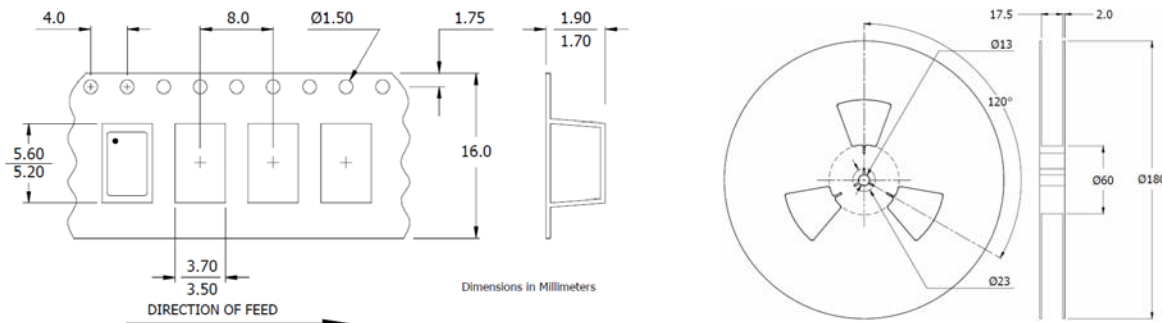
**ORDERING INFORMATION**



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

**PACKAGING INFORMATION [reference]**

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



**ELECTRICAL CHARACTERISTICS**

PARAMETER		SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT	
ELECTRICAL PARAMETERS	Maximum Supply Voltage	V <sub>CC</sub>	-	-0.6	-	6.0	V	
	Maximum Control Voltage	V <sub>C</sub>	-	-0.5	-	V <sub>CC</sub>	V	
	Storage Temperature	T <sub>STG</sub>	-	-40	-	+100	°C	
	Operating Temperature	T <sub>A</sub>	-	-20	+25	+70	°C	
	Order Code 'C'			-40		+85		
	Frequency Range	f <sub>O</sub>	-	5	-	52	MHz	
	Supply Voltage	V <sub>CC</sub>	±5%	2.85	3.0	3.15	V	
	Order Code 'R'			3.14	3.3	3.47		
	Order Code 'L'			4.75	5.0	5.25		
	Supply Current	I <sub>CC</sub>	-	-	-	3.5	mA	
	Frequency Stability	Δf/f <sub>O</sub>	Reference to f <sub>O</sub> , Including 20 years aging @ +25°C, at time of shipment	-	-	4.60	± ppm	
	Overall Frequency Stability vs. Initial Calibration			-	-	1.00		
	vs. Operating Temperature <sup>1</sup>			[Fmax. - Fmin.]/2, over -40°C to +85°C	-	-		0.28
	vs. Supply Voltage			±5% change @ +25°C	-	-		0.20
	vs. Load			±5% change	-	-		0.20
	vs. Aging			20 years @ +40°C	-	-		3.00
	Holdover	Δf/f <sub>O</sub>	[Fmax. - Fmin.]/2, over 24 hours	-	-	0.40		
	Control Voltage	V <sub>C</sub>	-	0.5	1.5	2.5	V	
	Frequency Tuning [VCTCXO Only]	-	V <sub>C</sub> = 1.5V ±1.0V, monotonic positive	5 - 8			± ppm	
	V <sub>C</sub> Input Impedance	ZV <sub>C</sub>	-	100	-	-	kOhm	
	Output Waveform		AC coupled Clipped Sinewave					
	Output Voltage Levels			0.8	-	-	Vp-p	
	Output Load	R <sub>L</sub> // C <sub>L</sub>	-	10kOhm // 10pF				
	Output Duty Cycle	SYM	@ 50% Level	45	-	55	%	
	Start Up Time	T <sub>S</sub>	-	-	-	2	ms	
	Phase Noise <sup>2</sup>	-	-				dBc/Hz	

Notes:

- See Ordering Information for stability options.
- Phase Noise performance may vary based on output frequency. See example plot at 10MHz below.



**MECHANICAL SPECIFICATIONS**

**PACKAGE DRAWING**



**MARKING INFORMATION**

1. M580 – CTS Model Series.
  2. ● – Pin 1 identifier.
  3. C – CTS identifier.
  4. D – Date code. See Table II for codes.
  5. xxx – Frequency Code.
- Refer to document 016-1454-0, Frequency Code Tables.

**NOTES**

1. DO NOT make connections to non-labeled pins. Castellation pins 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.
4. MSL = 1.

**D.U.T. PIN ASSIGNMENTS**

PIN	SYMBOL	DESCRIPTION
1	V <sub>C</sub>	Control Voltage – VCTCXO NC - TCXO
2	GND	Circuit & Package Ground
3	Output	Clipped Sine Wave Output
4	V <sub>CC</sub>	Supply Voltage

1. DC-Cut Capacitor Required.  
Add 1000pF capacitor between TCXO output and input of load.

**SUGGESTED SOLDER PAD GEOMETRY**



**TEST CIRCUIT – CLIPPED SINE LOAD**



\* DC-Cut Capacitor: Add 1000pF capacitor between the TCXO output and input of load.

**TABLE II – DATE CODE**

YEAR		MONTH				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		2001	2005	2009	2013												
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	