

FEATURES

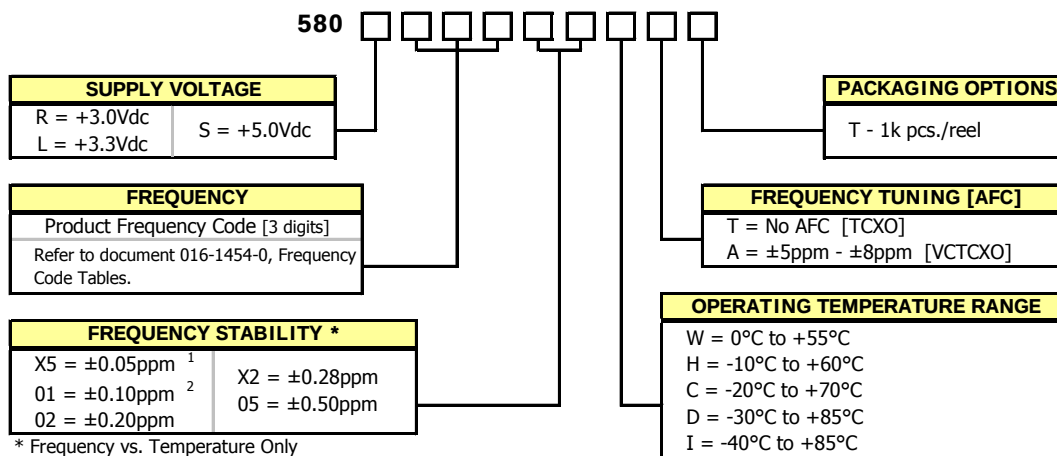
- **Clipped Sine Output**
- **Optional Voltage Control for Frequency Tuning [VCTCXO]**
- 5.0mm x 3.2mm Surface Mount Package
- Frequency Range 5 – 52 MHz
- Fundamental Crystal Design
- Operating Voltage, +3.3Vdc or +5.0Vdc
- Overall Frequency Stability ± 4.6 ppm
- Operating Temperature to -40°C to +85°C
- 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



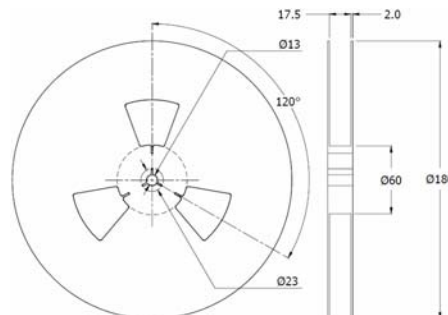
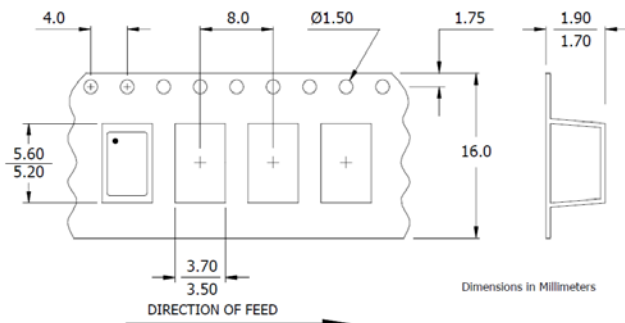
1] Only available with temperature range codes "W" and "H".

2] Only available with temperature range codes "W", "H" and "C".

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.

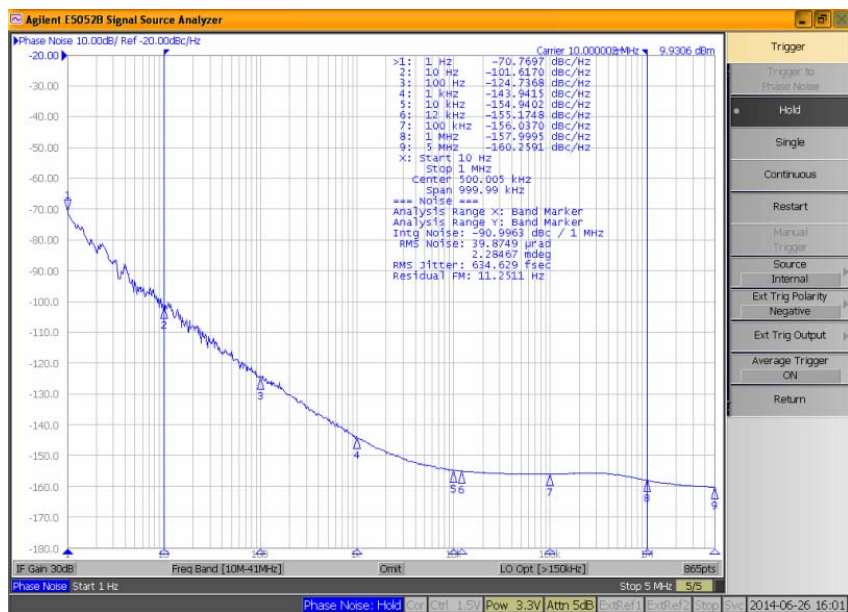


ELECTRICAL CHARACTERISTICS

ELECTRICAL PARAMETERS	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
	Maximum Supply Voltage	V_{CC}	-	-0.6	-	6.0	V
	Maximum Control Voltage	V_C	-	-0.5	-	V_{CC}	V
	Storage Temperature	T_{STG}	-	-40	-	+100	°C
	Operating Temperature	T_A	-	-20	+25	+70	°C
	Order Code 'C'			-40		+85	
	Order Code 'I'						
	Frequency Range	f_o	-	5	-	52	MHz
	Supply Voltage	V_{CC}	$\pm 5\%$	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	
	Order Code 'S'						
	Supply Current	I_{CC}	-	-	-	3.5	mA
	Frequency Stability	$\Delta f/f_o$	Reference to f_o , Including 20 years aging @ +25°C, at time of shipment	-	-	4.60	$\pm$ ppm
	Overall Frequency Stability			-	-	1.00	
	vs. Initial Calibration			-	-	0.28	
	vs. Operating Temperature ¹			-	-	0.20	
	vs. Supply Voltage			-	-	0.20	
	vs. Load			-	-	3.00	
	vs. Aging	$\Delta f/f_{25}$	[Fmax. - Fmin.]/2, over -40°C to +85°C	-	-	0.20	$\pm$ ppm
	vs. Load			-	-	0.20	
	vs. Aging	$\Delta f/f_{25}$	±5% change @ +25°C	-	-	0.20	$\pm$ ppm
	vs. Load			-	-	0.20	
	vs. Aging	$\Delta f/f_{25}$	±5% change	-	-	0.20	$\pm$ ppm
	vs. Load			-	-	0.20	
	vs. Aging	$\Delta f/f_{25}$	20 years @ +40°C	-	-	3.00	$\pm$ ppm
	vs. Load			-	-	3.00	
	Holdover	$\Delta f/f_o$	[Fmax. - Fmin.]/2, over 24 hours	-	-	0.40	$\pm$ ppm
	Control Voltage	V_C	-	0.5	1.5	2.5	V
	Frequency Tuning [VCTCXO Only]	-	$V_C = 1.5V \pm 1.0V$, monotonic positive	5 - 8			$\pm$ ppm
	V_C Input Impedance	ZV_C	-	100	-	-	kOhm
	Output Waveform		AC coupled Clipped Sinewave				
	Output Voltage Levels			0.8	-	-	Vp-p
	Output Load	$R_L // C_L$	-	10kOhm // 10pF			
	Output Duty Cycle	SYM	@ 50% Level	45	-	55	%
	Start Up Time	T_S	-	-	-	2	ms
	Phase Noise ²	-	-				dBc/Hz

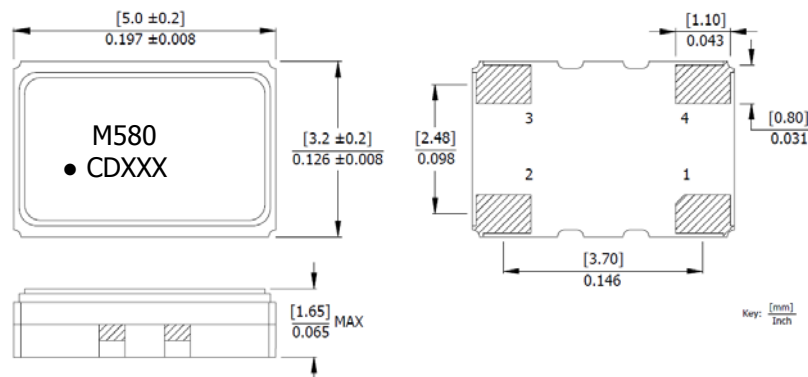
Notes:

- 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

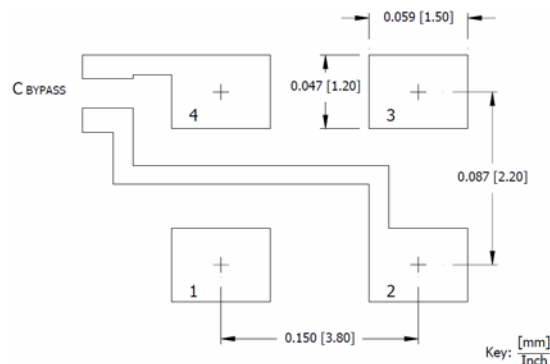
1. DO NOT make connections to non-labeled pins. Castellation pins may have internal connections used in the manufacturing process.
2. Termination pads (e4); barrier plating is nickel [Ni] with gold [Au] flash plate.
3. Reflow conditions per JEDEC J-STD-020, 260°C maximum.
4. MSL = 1.

D.U.T. PIN ASSIGNMENTS

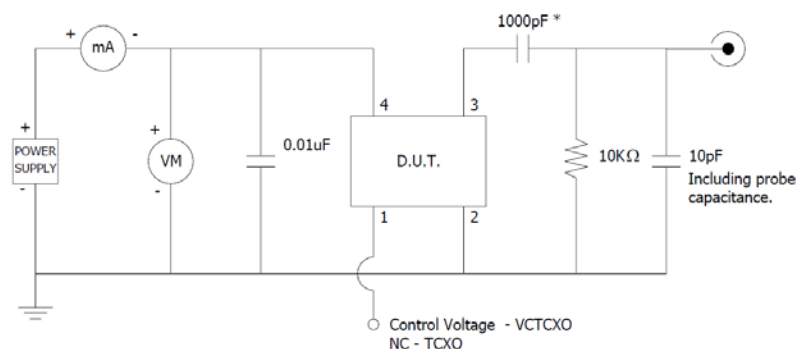
PIN	SYMBOL	DESCRIPTION
1	V _C	Control Voltage – VCTCXO NC - TCXO
2	GND	Circuit & Package Ground
3	Output	Clipped Sine Wave Output
4	V _{CC}	Supply Voltage

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	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