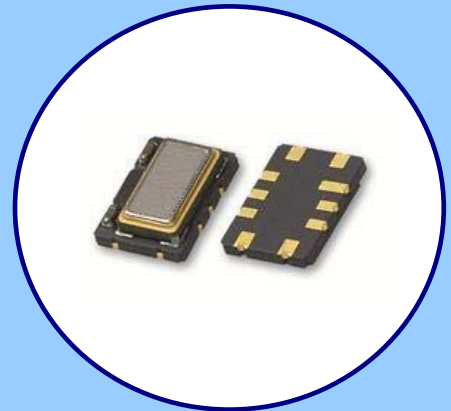


**FEATURES**

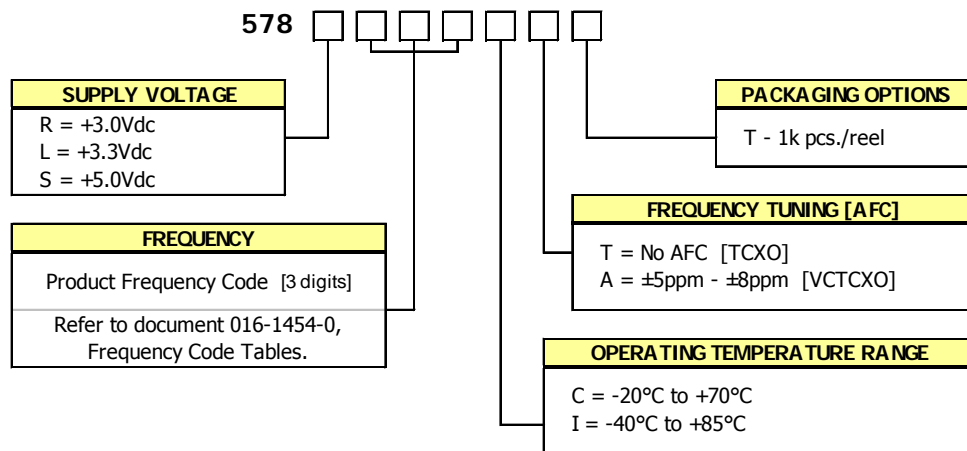
- **Clipped Sine Output**
- **Optional Voltage Control for Frequency Tuning [VCTCXO]**
- 7.0mmx5.0mm Surface Mount Package
- Frequency Range 5 – 52 MHz
- Fundamental Crystal Design
- Operating Voltage, +3.0Vdc, +3.3Vdc or +5.0Vdc
- Overall Frequency Stability  $\pm 4.6$ ppm
- Operating Temperature to  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Tape & Reel Packaging Standard, EIA-418
- **RoHS/Green Compliant [6/6]**



**APPLICATIONS**

The Model 578, a quartz based analog TCXO with Clipped Sine output and optional frequency tuning, is suitable for applications requiring Stratum 3 performance such as base stations, Microcells, Femtocells, 1588 and Synchronous Ethernet timing, wireless communications, test and measurement.

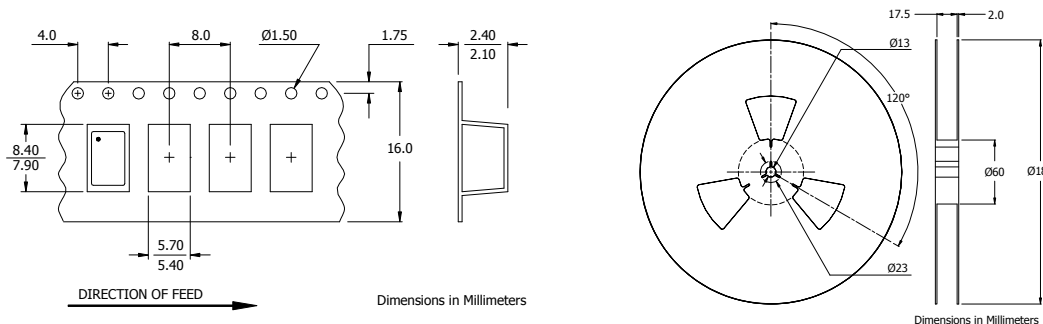
**ORDERING INFORMATION**



**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.

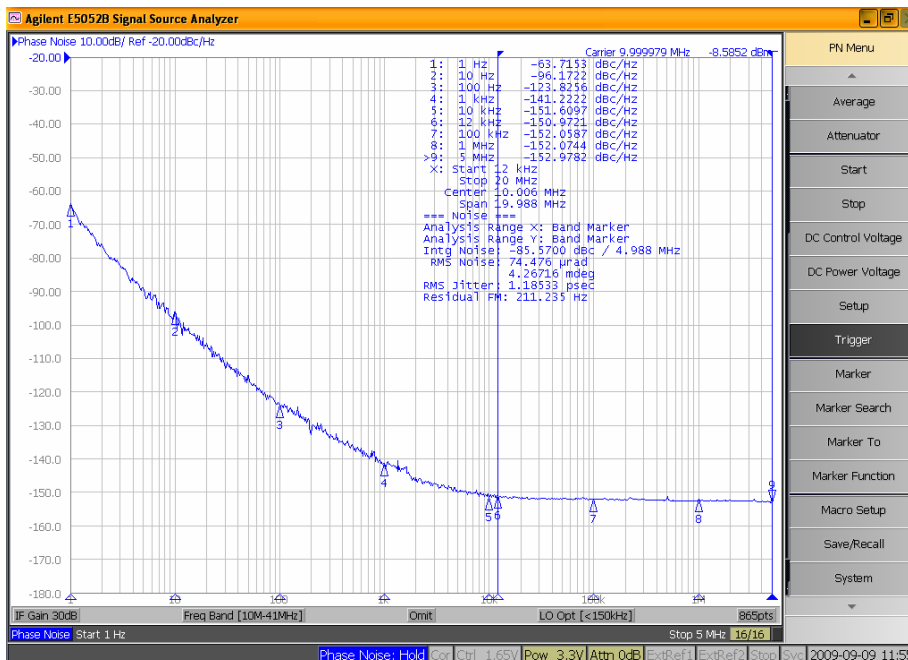


**ELECTRICAL CHARACTERISTICS**

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT		
<b>ELECTRICAL PARAMETERS</b>	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>0</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			
	Order Code 'S'			-	-	3.5			
	Supply Current	I <sub>CC</sub>	-	-	-	-	mA		
	Frequency Stability	Δf/f <sub>0</sub>	Reference to f <sub>0</sub> , Including 20 years aging @ +25°C, at time of shipment [Fmax. - Fmin.]/2, over -40°C to +85°C	-	-	4.60	± ppm		
	Overall Frequency Stability			-	-	1.00			
	vs. Initial Calibration			-	-	0.28			
	vs. Operating Temperature			Δf/f <sub>25</sub>	±5% change @ +25°C	-		-	0.40
	vs. Supply Voltage			±5% change	-	-		0.10	
	vs. Load			-	-	-		2.80	
	vs. Aging			Δf/f <sub>0</sub>	[Fmax. - Fmin.]/2, over 24 hours	-		-	0.37
	Holdover	V <sub>C</sub>	-	0.5	1.5	2.5	V		
	Control Voltage	-	V <sub>C</sub> = 1.5V ±1.0V, monotonic positive	5 - 8			± ppm		
	Frequency Tuning [VCTCXO Only]	ZV <sub>C</sub>	-	100	-	-	kOhm		
	V <sub>C</sub> Input Impedance	AC coupled Clipped Sinewave							
	Output Waveform	10kOhm // 10pF							
	Output Voltage Levels	0.8 - - - Vp-p							
	Output Load	R <sub>L</sub> // C <sub>L</sub>	- - -						
	Output Duty Cycle	SYM	@ 50% Level						
	Start Up Time	T <sub>S</sub>	- - -						
	Enable Function	V <sub>IH</sub>	Pin 8 Logic '1', Output Enabled						
Enable Input Voltage	V <sub>IL</sub>	Pin 8 Logic '0', Output Disabled [High Imp]							
Disable Input Voltage	0.7*V <sub>CC</sub> - - - -								
Phase Noise <sup>1</sup>	-	- - - -							

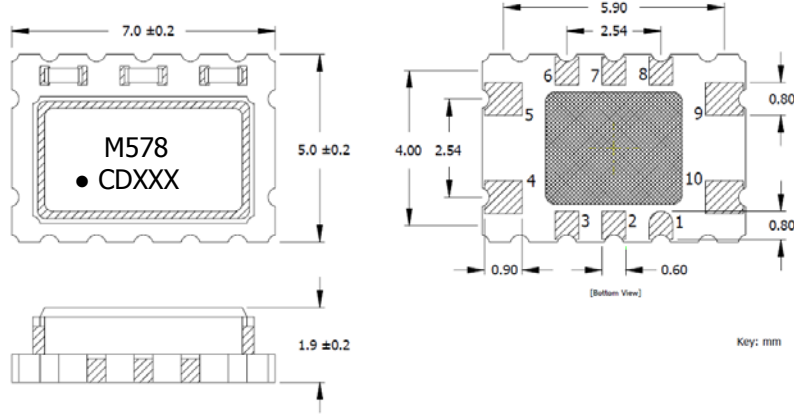
Notes:

1. Phase Noise performance may vary based on output frequency. See example plot at 10 MHz below.



**MECHANICAL SPECIFICATIONS**

**PACKAGE DRAWING**



**MARKING INFORMATION**

1. M578 – 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.

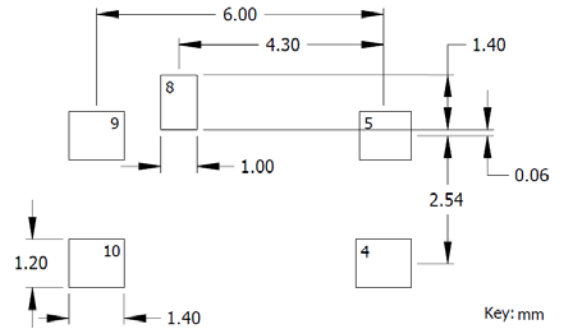
**D.U.T. PIN ASSIGNMENTS**

PIN	SYMBOL	DESCRIPTION
4	GND	Circuit & Package Ground
5	Output	Clipped Sine Wave Output
8	EOH	Tri-State Enable
9	V <sub>CC</sub>	Supply Voltage
10	V <sub>C</sub>	Control Voltage – VCTCXO [Note 1] GND - TCXO

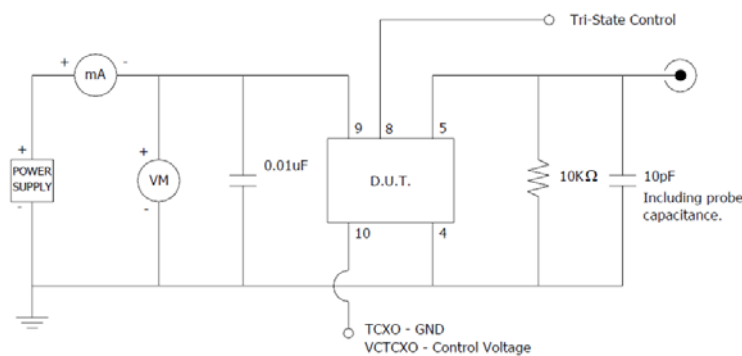
**NOTES**

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

**SUGGESTED SOLDER PAD GEOMETRY**



**TEST CIRCUIT – CLIPPED SINE 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
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	