



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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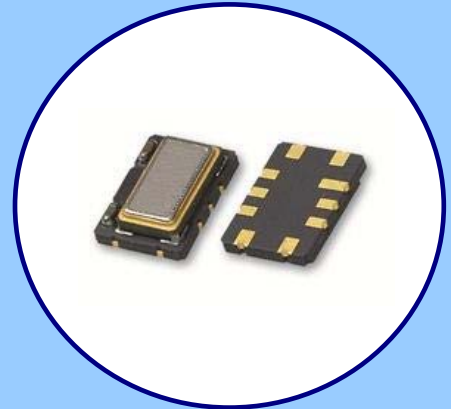
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FEATURES

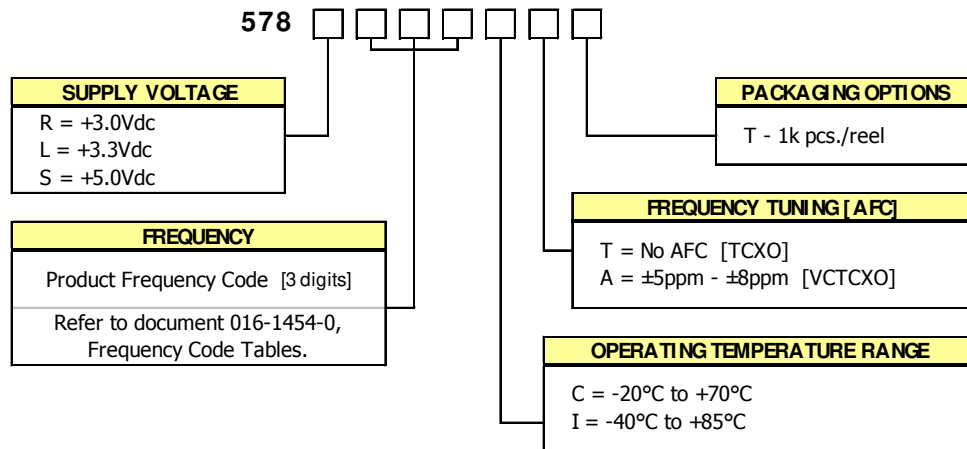
- **Clipped Sine Output**
- **Optional Voltage Control for Frequency Tuning [VCTCXO]**
- 7.0mmx5.0mm Surface Mount Package
- Frequency Range 5 – 52 MHz
- Fundamental Crystal Design
- Operating Voltage, +3.0Vdc, +3.3Vdc or +5.0Vdc
- Overall Frequency Stability ± 4.6 ppm
- Operating Temperature to -40°C 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.

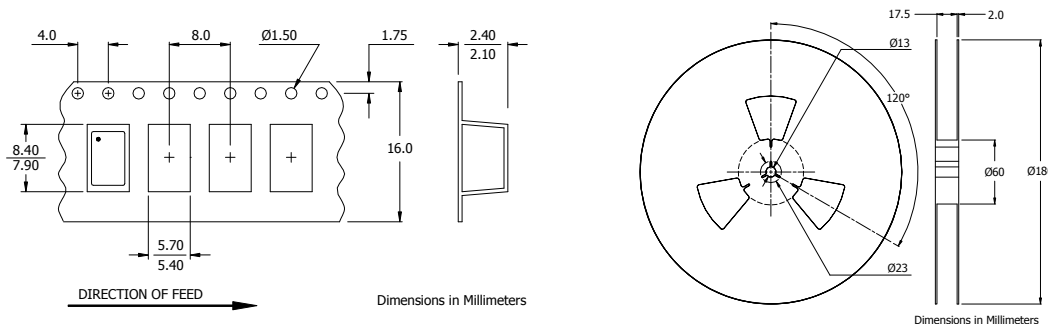
ORDERING INFORMATION



**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.

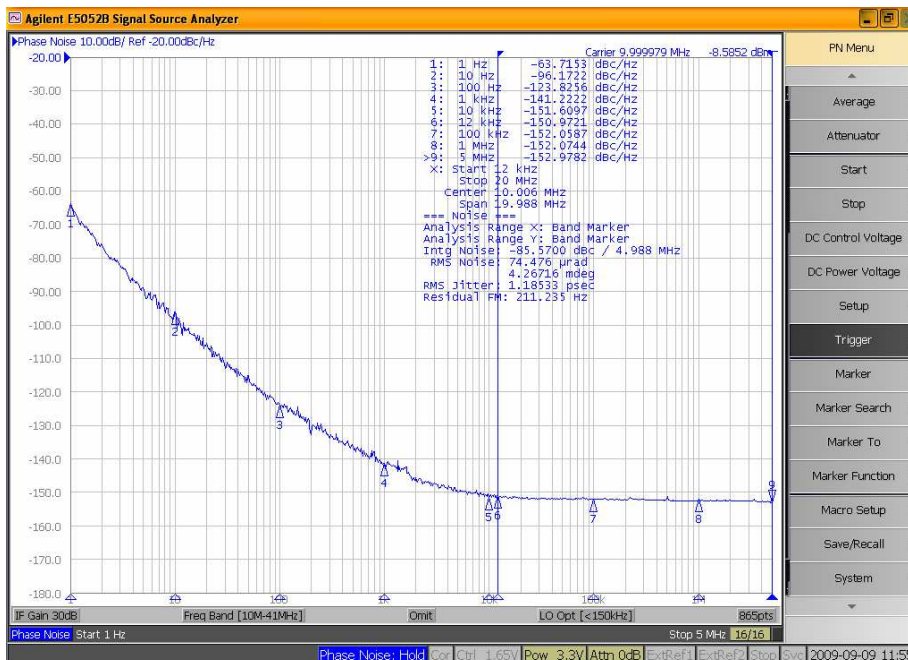


ELECTRICAL CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT	
ELECTRICAL PARAMETERS	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		
	Frequency Range	f ₀	-	5	-	52	MHz	
	Supply Voltage	V _{CC}	±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	Δf/f ₀	Reference to f ₀ , Including 20 years aging @ +25°C, at time of shipment	-	-	4.60	± ppm	
	Overall Frequency Stability			-	-	1.00		
	vs. Initial Calibration			[Fmax. - Fmin.]/2, over -40°C to +85°C	-	-		0.28
	vs. Operating Temperature			±5% change @ +25°C	-	-		0.40
	vs. Supply Voltage			±5% change	-	-		0.10
	vs. Load			20 years @ +40°C	-	-		2.80
	vs. Aging	Δf/f ₂₅	[Fmax. - Fmin.]/2, over 24 hours	-	-	0.37		
	Holdover							
	Control Voltage	V _C	-	0.5	1.5	2.5	V	
	Frequency Tuning [VCTCXO Only]	-	V _C = 1.5V ±1.0V, monotonic positive	5 - 8			± 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		
Enable Function								
Enable Input Voltage	V _{IH}	Pin 8 Logic '1', Output Enabled	0.7*V _{CC}	-	-	V		
Disable Input Voltage	V _{IL}	Pin 8 Logic '0', Output Disabled [High Imp]	-	-	0.3*V _{CC}			
Phase Noise ¹	-	-				dBc/Hz		

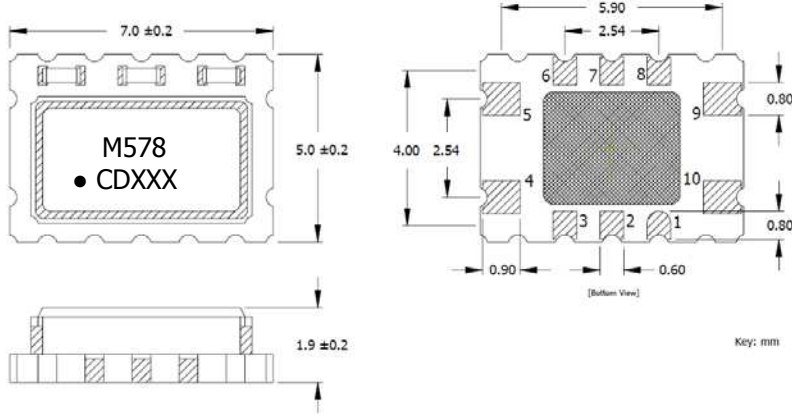
Notes:

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.

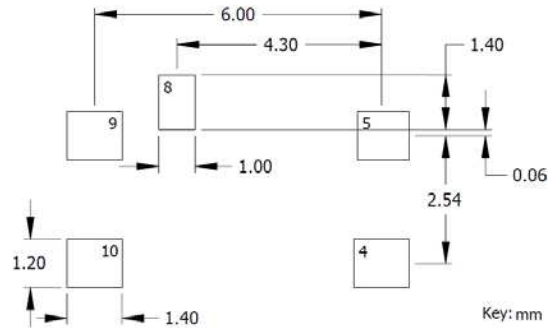
D.U.T. PIN ASSIGNMENTS

PIN	SYMBOL	DESCRIPTION
4	GND	Circuit & Package Ground
5	Output	Clipped Sine Wave Output
8	EOH	Tri-State Enable
9	V _{CC}	Supply Voltage
10	V _C	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

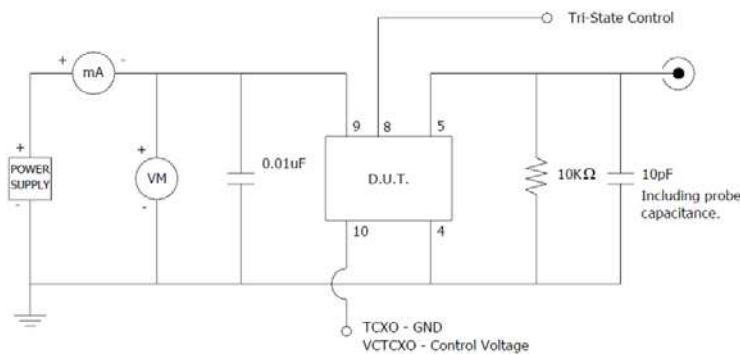


TABLE II – DATE CODE

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