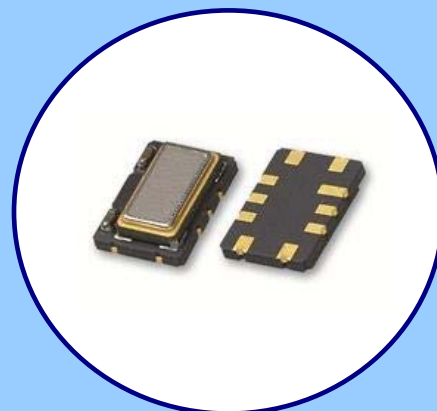


FEATURES

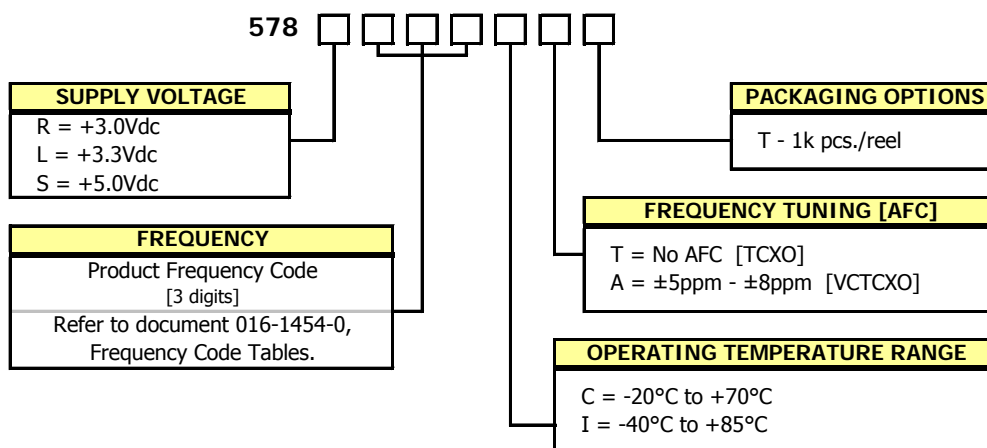
- **Clipped Sine Output**
- **Optional Voltage Control for Frequency Tuning [VCTCXO]**
- 7.0mmx5.0mm Surface Mount Package
- Frequency Range 5 – 40 MHz
- Fundamental Crystal Design
- Operating Voltage, +3.0Vdc, +3.3Vdc or +5.0Vdc
- Overall Frequency Stability ± 4.6 ppm
- Operating Temperature to -40°C to +85°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.

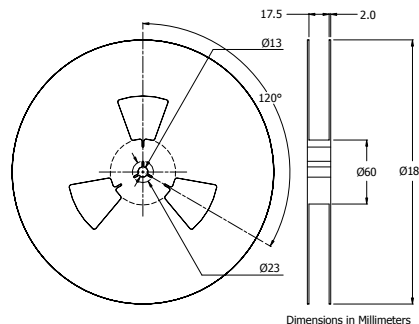
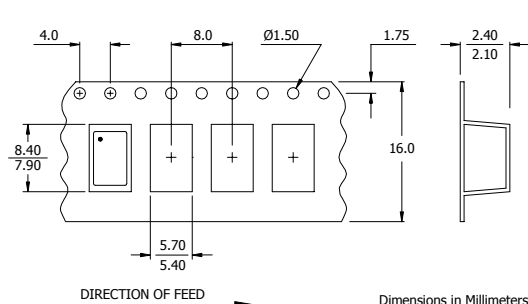
ORDERING INFORMATION



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.

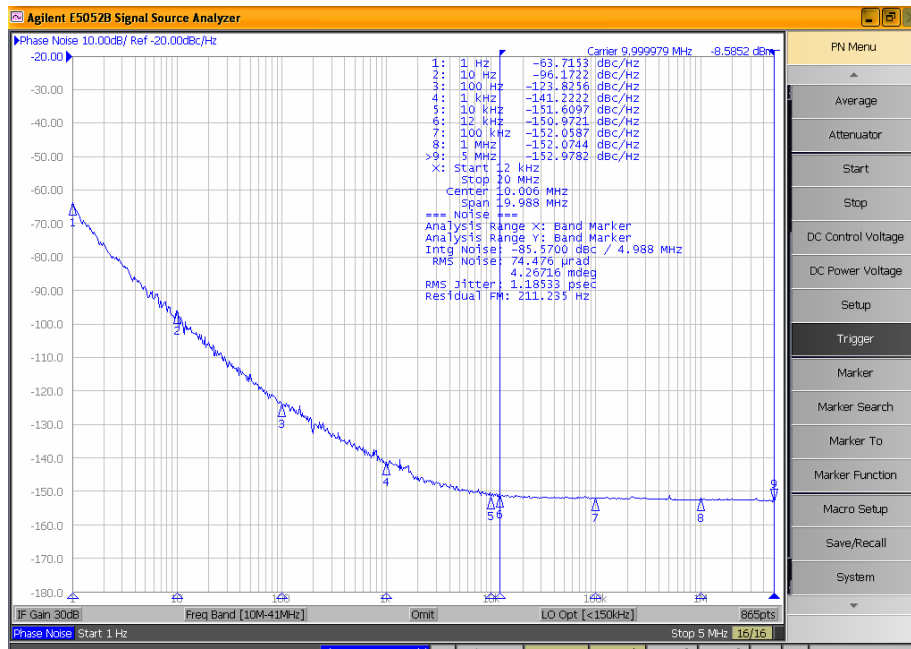


ELECTRICAL CHARACTERISTICS

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_0	-	5	-	40	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	$\Delta f/f_0$	Reference to f_0 , Including 20 years aging	-	-	4.60	± ppm
	Overall Frequency Stability		@ +25°C, at time of shipment	-	-	1.00	
	vs. Initial Calibration	$\Delta f/f_{25}$	[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		[Fmax. - Fmin.]/2, over 24 hours ¹	-	-	0.37	
	Holdover	$\Delta f/f_0$					
	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			± 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

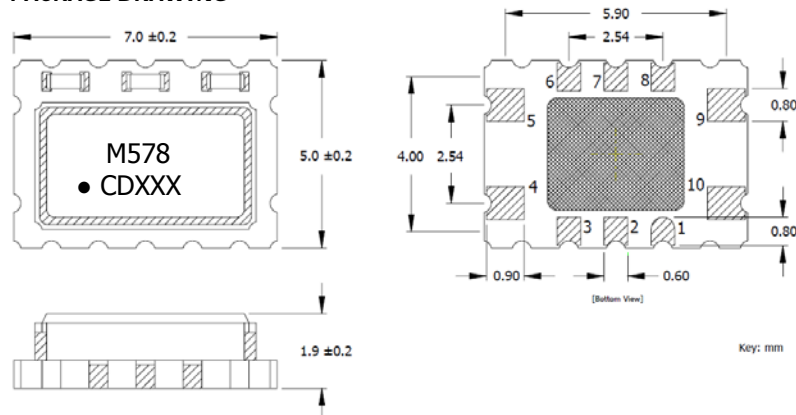
Notes:

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



MECHANICAL SPECIFICATIONS

PACKAGE DRAWING



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

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

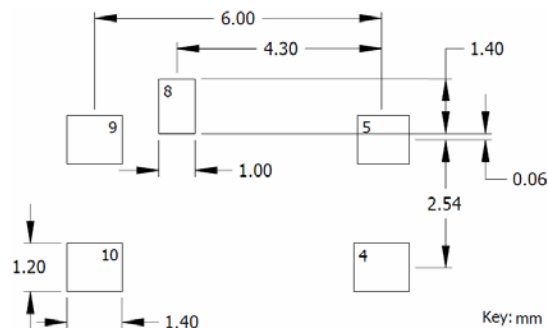
MARKING INFORMATION

- M578 – CTS Model Series.
 - – Pin 1 identifier.
 - C – CTS identifier.
 - D – Date code. See Table II for codes.
 - xxx – Frequency Code.
- Refer to document 016-1454-0, Frequency Code Tables.

NOTES

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

SUGGESTED SOLDER PAD GEOMETRY



TEST CIRCUIT – CLIPPED SINE LOAD

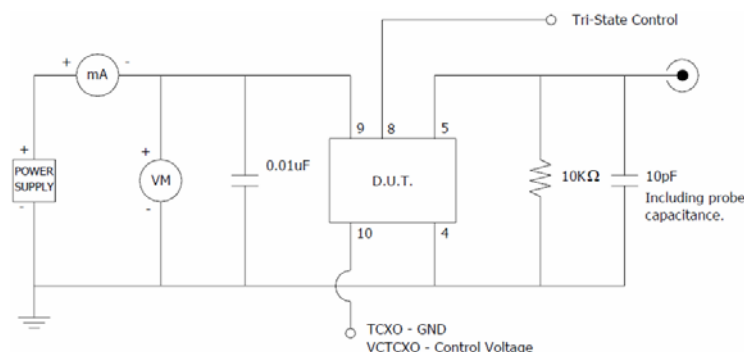


TABLE II – DATE CODE

YEAR					MONTH											
2001	2005	2009	2013	2017	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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

CTS:

[578R100ITT](#) [578R300CTT](#) [578S320CTT](#) [578S288ITT](#) [578L160IAT](#) [578L288ITT](#) [578R250CTT](#) [578S250CAT](#)
[578S130IAT](#) [578R200ITT](#) [578R400CAT](#) [578S320CAT](#) [578L200IAT](#) [578L192IAT](#) [578L307CAT](#) [578R250IAT](#)
[578S200IAT](#) [578R270ITT](#) [578S144CAT](#) [578L240CAT](#) [578L100IAT](#) [578S194IAT](#) [578R100CTT](#) [578S307ITT](#)
[578S160CAT](#) [578R128IAT](#) [578S260ITT](#) [578R100IAT](#) [578L192CAT](#) [578S288IAT](#) [578L130IAT](#) [578S130CTT](#)
[578R300CAT](#) [578R200CAT](#) [578R160ITT](#) [578S240IAT](#) [578R307ITT](#) [578R288ITT](#) [578L194IAT](#) [578L144CAT](#)
[578S260IAT](#) [578L160ITT](#) [578S160IAT](#) [578R320CAT](#) [578S270CAT](#) [578R194CAT](#) [578L320IAT](#) [578L307ITT](#)
[578S250ITT](#) [578S288CTT](#) [578S240CAT](#) [578L260IAT](#) [578R194ITT](#) [578R400ITT](#) [578R128ITT](#) [578R307CTT](#)
[578R400CTT](#) [578S200CTT](#) [578S192IAT](#) [578R144IAT](#) [578L144IAT](#) [578L288IAT](#) [578R128CTT](#) [578L300CTT](#)
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