

ECN/PCN No.: 3707

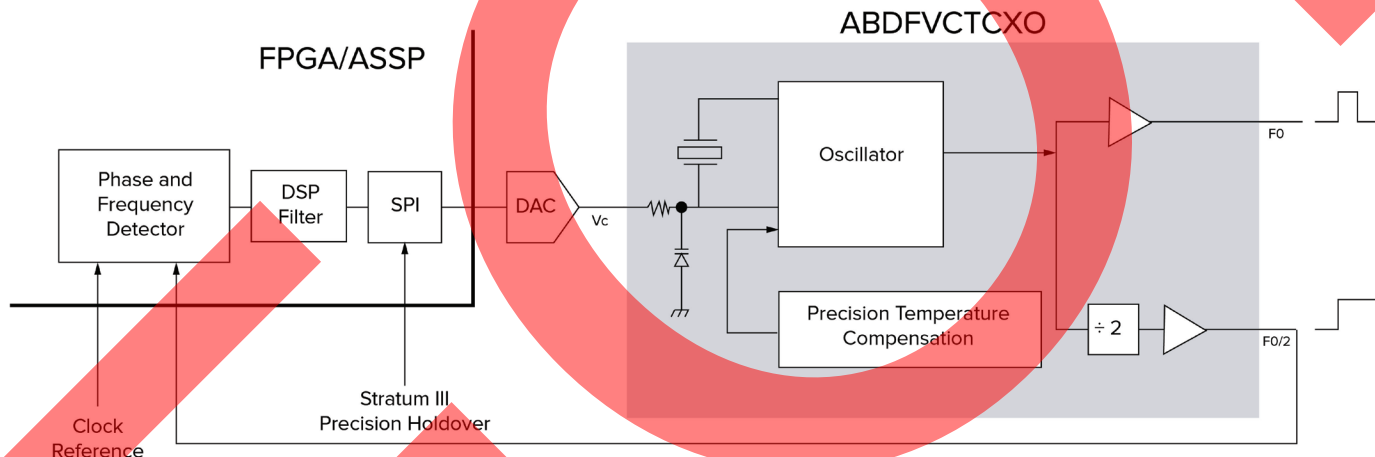
For Manufacturer		
Product Description: SMD TCXO/VCTCXO	Abracon Part Number / Part Series: ABDFTCXO & ABDFVCTCXO	<input checked="" type="checkbox"/> Series <input type="checkbox"/> Part Number
Affected Revision: INITIAL RELEASE	New Revision: EOL	Application: <input type="checkbox"/> Safety <input checked="" type="checkbox"/> Non-Safety
Prior to Change: ABDFTCXO & ABDFVCTCXO INITIAL RELEASE 02/28/2017		
After Change: EOL		
Cause/Reason for Change: Discontinuation of production capability		
Change Plan		
Effective Date: 11/10/2020	Additional Remarks:	
Change Declaration: End of Life		
Issued Date: 11/10/2020	Issued By: <i>Stephanie Lopez</i>	Issued Department: Engineering
Approval: <i>Thomas Culhane</i> Engineering Director	Approval: <i>Reuben Quintanilla</i> Quality Director	Approval: <i>Ying Huang</i> Purchasing Director
For Abracon EOL only		
Last Time Buy (if applicable): <i>None</i>	Alternate Part Number / Part Series: <i>AK7</i>	
Additional Approval: <i>Swati Srivastava - PLM</i>	Additional Approval:	Additional Approval:
Customer Approval (If Applicable)		
Qualification Status: <div style="text-align: center;"> <input type="checkbox"/> Approved <input type="checkbox"/> Not accepted </div> <i>Note: It is considered approved if there is no feedback from the customer 1 month after ECN/PCN is released.</i>		
Customer Part Number:	Customer Project:	
Company Name:	Company Representative:	Representative Signature:
Customer Remarks:		

- Meets ± 280 ppb Stratum-III stability requirements
- Excellent ± 1 ppm aging with ± 4.6 ppm guaranteed lifetime accuracy
- 5 to 52MHz standard and custom frequencies available
- TCXO or VCTCXO functionality available
- ± 5 ppm minimum pull with 0.5% typ linearity (VCTCXO only)
- LVCMOS outputs
- 10pin package
- -40°C to 85°C operation

- PLL with Holdover
- Geolocation, RTLS, GPS
- Synchronous Ethernet
- IEEE1588
- Instrumentation, test and measurement
- Femtocells, picocells (BTS)
- Oil and gas exploration

TYPICAL OPERATING CIRCUIT

DIGITAL FPGA BASED PLL WITH PRECISION STRATUM-III HOLDOVER



OPTIONS AND PART IDENTIFICATION

ABDFTCXO OR ABDFVCTCXO - MHz - - -

OUTPUT 1 (F₀) IN MHZ
Please specify the frequency
Output 1 (F0) in MHz e.g.
16.384MHz

*F0 > 40MHz, available in Q4-2017

OPERATING TEMP. RANGE
E: -20°C to $+70^{\circ}\text{C}$
L: -40°C to $+85^{\circ}\text{C}$

FREQ. STABILITY
1: ± 100 ppb*
2: ± 280 ppb

*Available Q4-2017

**Bulk
compl

***Cu
25pc, 5
(MSL-

PARAMETERS	RATING
Storage Temperature Range (Ts)	-55°C to +125°C
Supply Voltage (Vdd)	-0.5V to 6V
Control Voltage (Vc)	0V to 3V
ESD, HBM/CDM/MM	4kV/2kV/200V

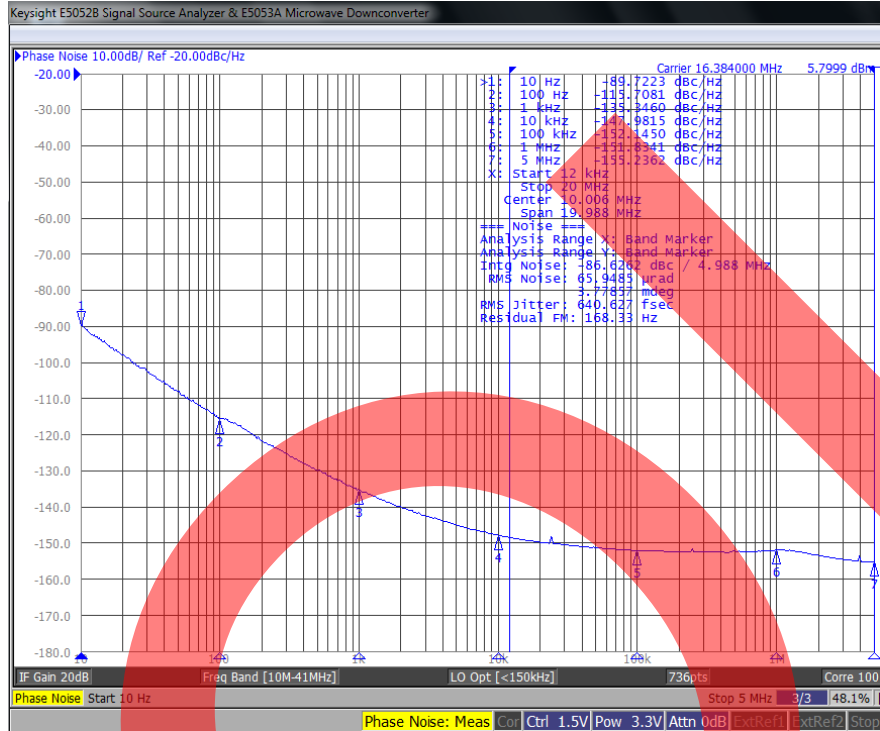
PARAMETERS	MINIMUM	TYPICAL	MAXIMUM	UNITS
Frequency Range	5.000		52.000	MHz
Standard Frequencies [Output 1(F ₀)/Output 2 (F ₀ /2)]	10.000/5.000	12.800/6.400	16.000/8.000	MHz
	16.384/8.192	19.200/9.600	19.440/9.720	
	20.000/10.000	24.576/12.288	25.000/12.500	
	26.000/13.000	30.000/15.000	30.720/15.360	
	38.400/19.200	38.880/19.440	40.000/20.000	
	50.000/25.000	52.000/26.000		
Supply Voltage (Vdd)	+3.135	+3.3	+3.465	V
Supply Current (Icc) (into 15pF load)			20	mA
Initial Frequency Tolerance @ +25°C	-0.50		+0.50	ppm
Operating Temperature	-20		+70	°C
	-40		+85	
Frequency Stability vs. Operating Temperature (ref. to +25°C)	-100		+100	ppb
	-280		+280	ppb
Frequency Stability vs. Vdd Change	-100		+100	ppb
Frequency Stability vs. Load Change	-200		+200	ppb
Aging (1 st year @ +25°C)	-1.0		+1.0	ppm
Aging (10 years @ +25°C)	-3.0		+3.0	ppm
All-inclusive frequency stability over 10 years product life (Stratum-III Compliant)	-4.60		+4.60	ppm
LVC MOS Output (Square wave)				
V _{OH}	2.4			V
V _{OL}			0.4	V
Load			15	pF
Duty Cycle	45		55	%
Rise/Fall Time			6	ns
Control Port (Applicable for VCTCXO only)				
Center Control Voltage (Vc)		+1.50		V
Control Voltage Range (Vc)	+0.50		+2.50	V
Frequency Pull	±5.00		< ±13.00	ppm
Tuning Slope		Positive		
Linearity Error		< 0.5	10	%

*Note 1: F0 > 40MHz, available in Q4-2017 | *Note 2: Available Q4-2017

20.000 MHz Carrier		525	1,300	fs
10.000 MHz Carrier		650	1,300	fs
26.000 MHz Carrier		450	1,300	fs
13.000 MHz Carrier		775	1,300	fs
40.000 MHz Carrier		325	1,300	fs
20.000 MHz Carrier		450	1,300	fs

Phase Noise

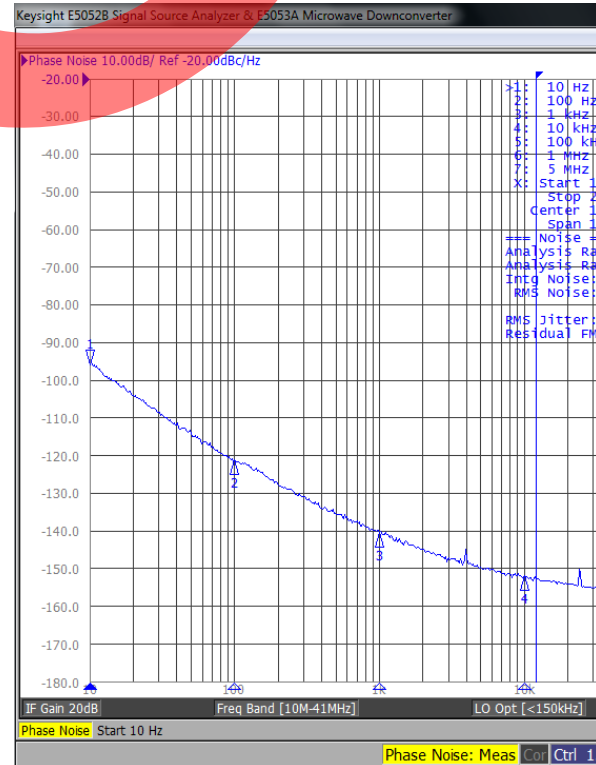
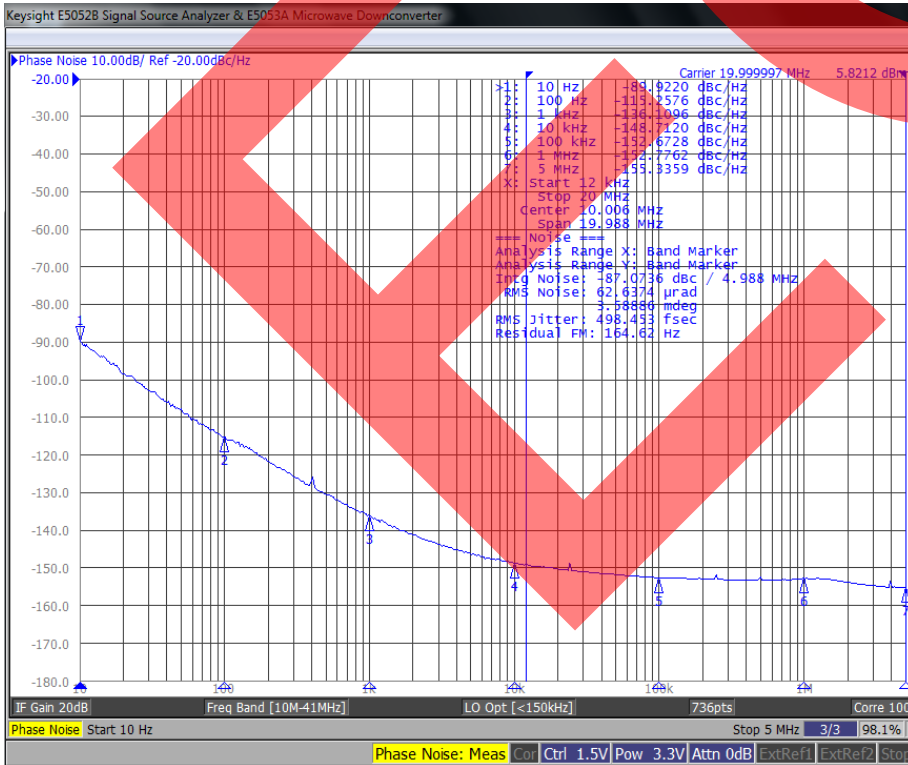
F ₀ @ 20.000 MHz		-85		dBc/Hz
		-100		
		-135		
		-145		
		-150		
F ₀ /2 @ 10.000 MHz		-90		dBc/Hz
		-100		
		-135		
		-145		
		-150		
F ₀ @ 26.000 MHz		-85		dBc/Hz
		-100		
		-135		
		-145		
		-150		
F ₀ /2 @ 13.000 MHz		-75		dBc/Hz
		-100		
		-135		
		-150		
		-155		
F ₀ @ 40.000 MHz		-80		dBc/Hz
		-100		
		-125		
		-140		
		-150		
F ₀ /2 @ 20.000 MHz		-80		dBc/Hz
		-100		
		-135		
		-140		
		-145		



20.000MHz

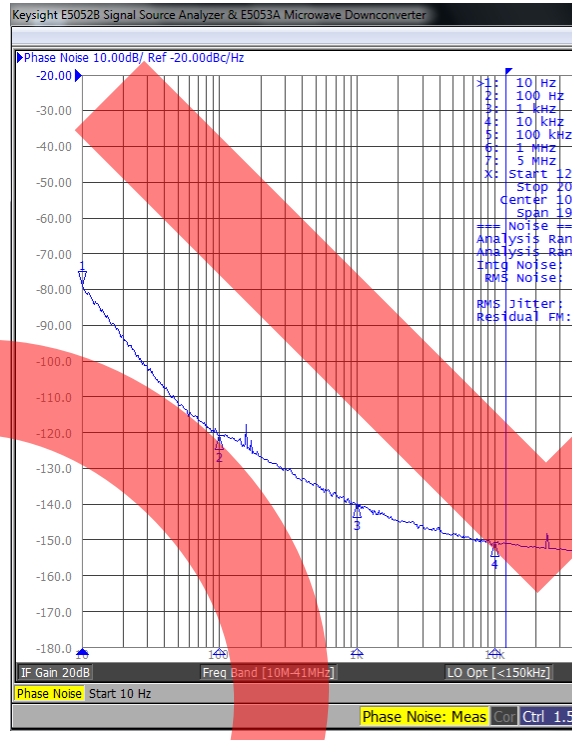
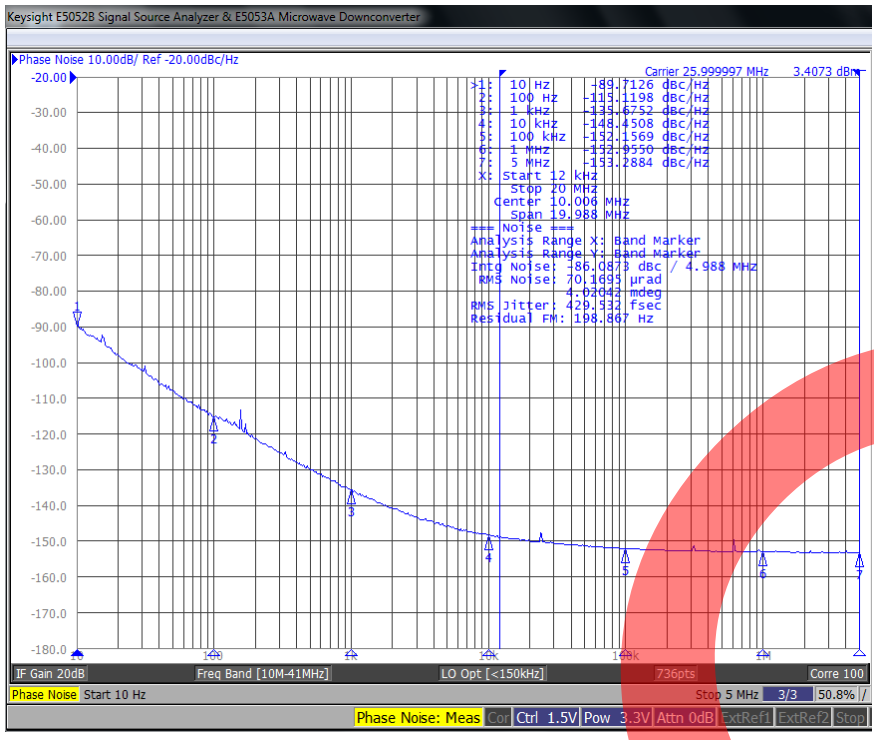
20.000MHz / 10.000MHz
[Output 1 (F0) / Output 2 (F0/2)]

10.000MHz



26.000MHz

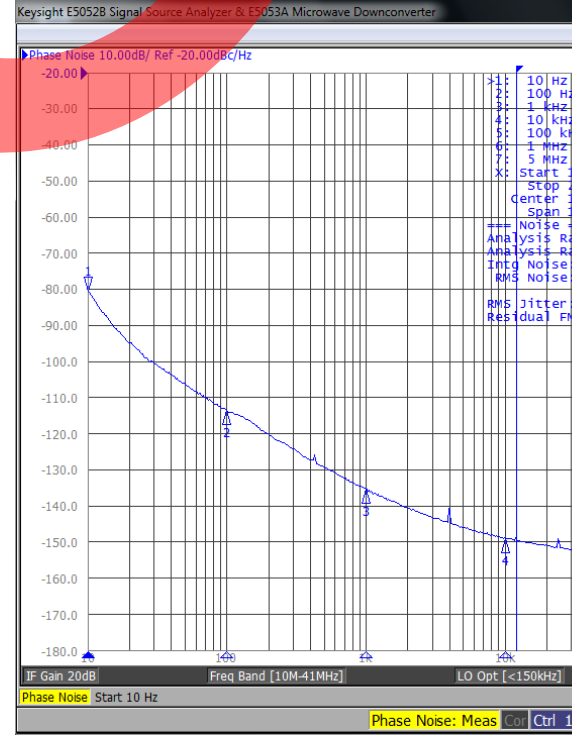
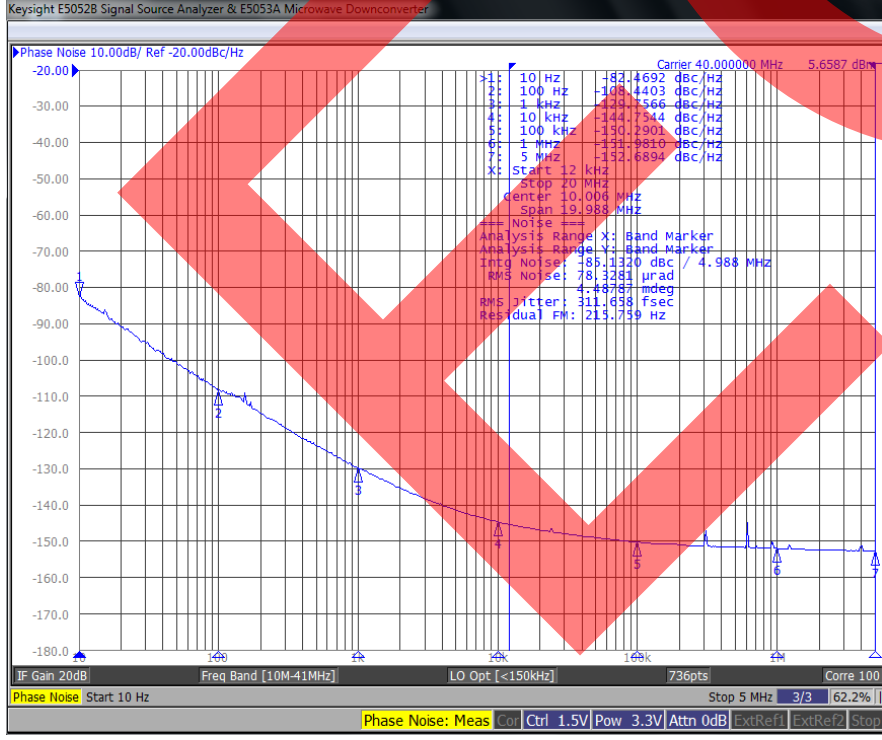
13.000MHz



40.000MHz

40.000MHz / 20.000MHz
[Output 1 (F0) / Output 2 (F0/2)]

20.000MHz

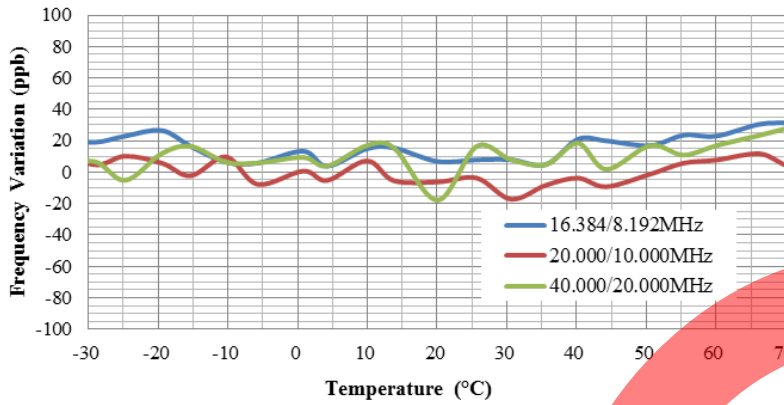


Frequency	16.384MHz	20MHz	10MHz	26MHz	13MHz	40MHz
Typical rms Phase Jitter (12kHz to 20MHz BW)	640 fs	498 fs	643 fs	429 fs	752 fs	311 fs

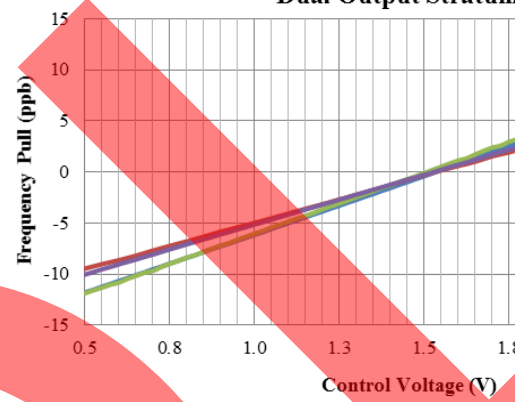


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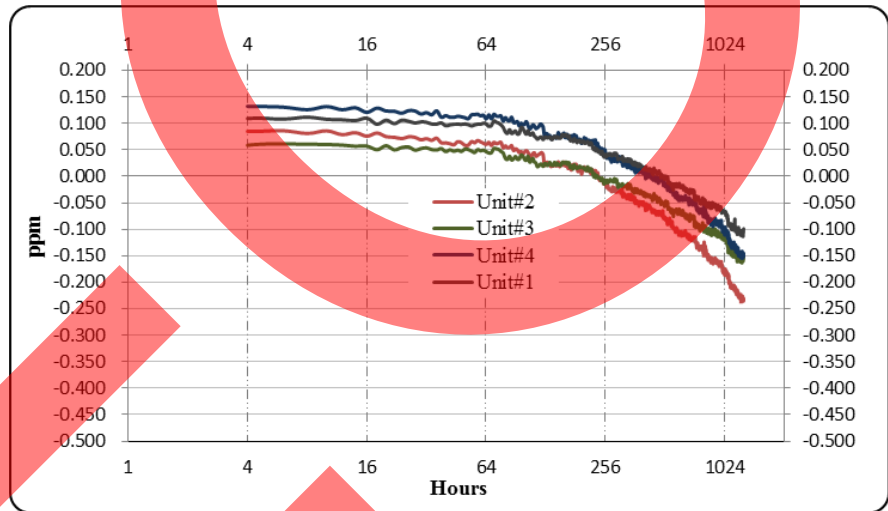
**Frequency Stability vs. Temperature
Dual Output Stratum-III**

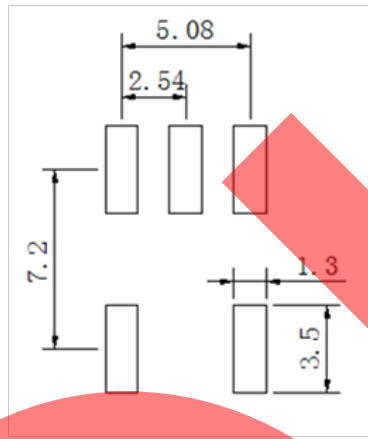
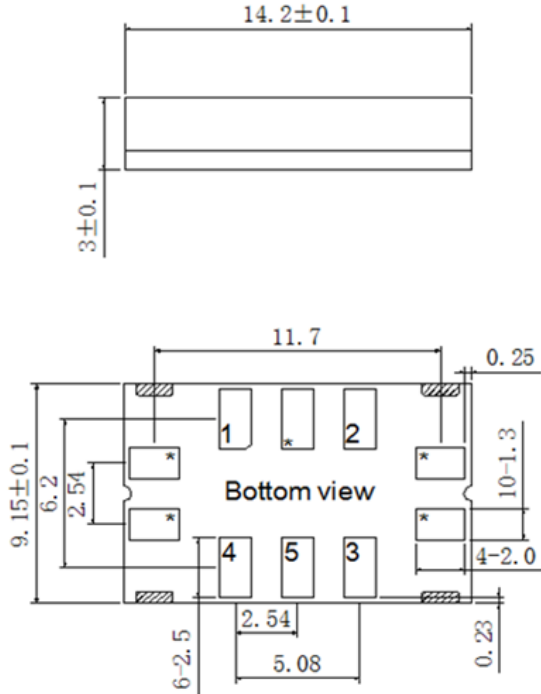


**Frequency Pull vs. Control Voltage
Dual Output Stratum-III**



AGING PROFILE (ACCELERATED AGING @ +85°C)

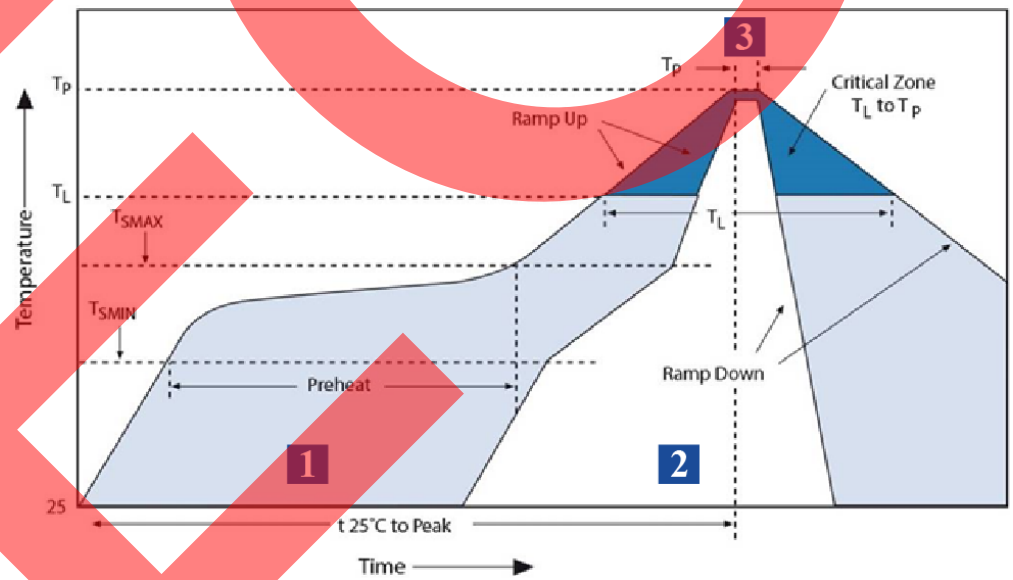




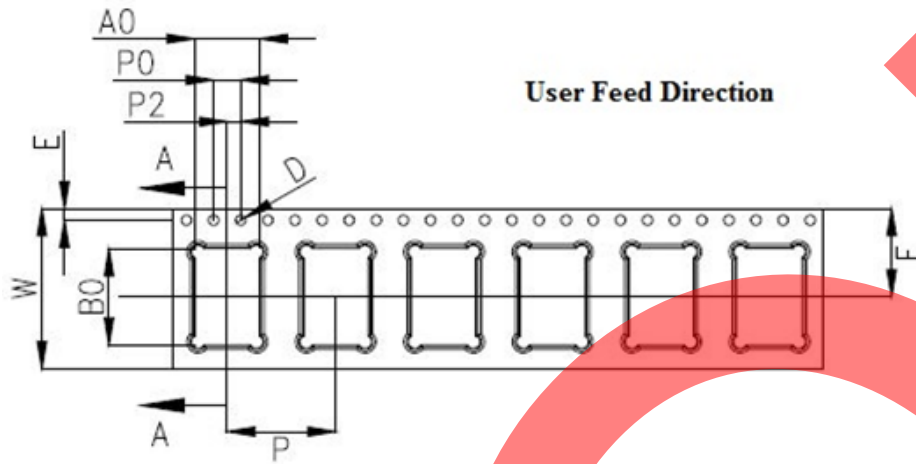
Pin	Function
1	NC (for TC) Vc (for VC)
2	GND
3	Output #1 (
4	Vdd
5	Output #2 (
*	For factory

Dimensions: mm

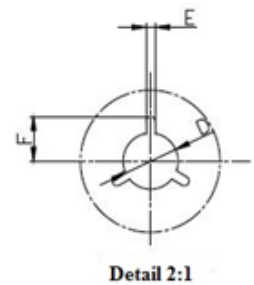
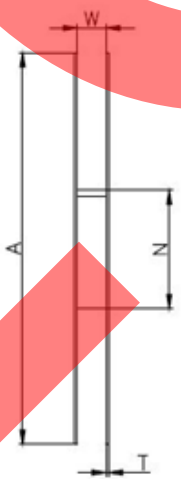
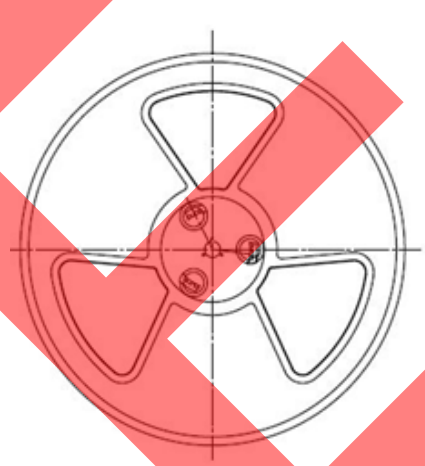
REFLOW PROFILE



Zone	Description	Temperature	Time
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 150°C ~ 200°C	60 ~ 120 sec.
2	Reflow	T_L 220°C	60 ~ 150 sec.
3	Peak Heat	T_p 260°C	25 sec. MAX



W	A0	B0	K0	P	
24.0±0.3	9.6±0.10	14.5±0.10	3.9±0.10	16.0±0.1	
F	E	D	P0	P2	T
13.25±0.1	1.75±0.1	1.5±0.1	4.0±0.1	2.0±0.1	0.3±0.05



W	A	N	T	E	F	D
24.5±0.4	330±0.5	100±0.3	1.8±0.2	2.1±0.3	10.75±0.3	13.5+0.5/-0.2

Dimensions

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