

- **FEATURES**
- TEMPERATURE STABILITY ± 0.5 ppm ~ ± 2 ppm
- OPERATING TEMPERATURE RANGE -40°C ~ $+105^{\circ}\text{C}$
- RELIABILITY TESTING PER AEC-Q200



- **SPECIFICATIONS FOR OUTPUT CMOS**

PARAMETER		VALUE	
FREQUENCY RANGE		8 ~ 70 MHz	
SUPPLY VOLTAGE		1.8, 2.5, 3.3, 1.8 ~ 3.3 V	
INPUT CURRENT		10 mA max	
FREQUENCY STABILITY	vs. TEMPERATURE	@ $-40 \sim +85^{\circ}\text{C}$	± 0.5 ppm
		@ $-40 \sim +105^{\circ}\text{C}$	± 1.25 ppm
		@ $-40 \sim +125^{\circ}\text{C}$	± 5 ppm
	vs. LOAD ($\pm 10\%$)		± 0.2 ppm max
	vs. SUPPLY VOLTAGE ($V_{CC} \pm 5\%$)		± 0.2 ppm max
AGING 1 st YEAR		± 1.0 ppm max	
INITIAL FREQUENCY CALIBRATION	MEASURED AT 25°C , BEFORE SHIPMENT	± 1.0 ppm max	
REFLOW SHIFT	2 CONSECUTIVE REFLAWS, AFTER 2 HOURS RELAXATION	± 1.0 ppm max	
OPERATING TEMPERATURE RANGE ¹		$-40 \sim +85^{\circ}\text{C}$	
		$-40 \sim +105^{\circ}\text{C}$	
		$-40 \sim +125^{\circ}\text{C}$	
STORAGE TEMPERATURE RANGE		$-55 \sim +125^{\circ}\text{C}$	
OUTPUT WAVEFORM		CMOS	
OUTPUT SYMMETRY ($V_T = 1/2V_{CC}$)		45 ~ 55%	
LOAD		15 pF	
START-UP TIME		2 ms max	
ENABLE / DISABLE FUNCTION	PIN 1: HIGH, PIN 3 – OSCILLATION (ENABLED), min	$0.7 \times V_{CC}$	
	PIN 1: LOW, PIN 3 – HIGH IMPEDANCE (DISABLED), max	$0.3 \times V_{CC}$	
RISE / FALL TIME		5ns, max	
PHASE NOISE at 10 kHz OFFSET		-150 dBc/Hz max	



NOTE: 1. NOT ALL STABILITIES ARE AVAILABLE FOR ALL OPERATING TEMPERATURE RANGES. CONTACT FACTORY FOR AVAILABILITY.

- **PART NUMBERING SYSTEM**

TYPE	-	SERIES	STABILITY (ppm)	TEMP RANGE ($^{\circ}\text{C}$)	VOLTAGE (V)	-	OUTPUT	-	FREQ (MHz)	-	TAPE & REEL
RTXEA (TCXO with E/D)	-	104	A: ± 0.5 B: ± 1.0 C: ± 1.5 D: ± 2.0 E: ± 2.5	LZ: $0 \sim +70$ HZ: $-20 \sim +70$ F3: $-30 \sim +85$ D3: $-40 \sim +85$	1: 1.8 2: 2.8 33: 3.3 F*: 1.8 ~ 3.3	-	C: CMOS	-	8 ~ 70	-	TR

*Other ranges available. Please contact factory.

- **FEATURES**
- TEMPERATURE STABILITY $\pm 0.5\text{ppm} \sim \pm 2.0\text{ppm}$
- OPERATING TEMPERATURE RANGE $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
- VOLTAGE CONTROL AVAILABLE (RTVA-104 SERIES)
- RELIABILITY TESTING PER AEC-Q200



● SPECIFICATIONS FOR CLIPPED SINEWAVE OUTPUT VOLTAGE

PARAMETER		VALUE
FREQUENCY RANGE		9.500 ~ 52.000 MHz
SUPPLY VOLTAGE		1.8, 2.5, 3.3, 1.8 ~ 3.3 V
CURRENT		@ Freq. $\leq 26\text{MHz}$ 2.0 mA max
		@ Freq. $\geq 26\text{MHz}$ 2.5 mA max
FREQUENCY STABILITY	vs. TEMPERATURE	@ $-40 \sim +85^{\circ}\text{C}$ ± 0.5 ppm
		@ $-40 \sim +105^{\circ}\text{C}$ ± 1.25 ppm
		@ $-40 \sim +125^{\circ}\text{C}$ ± 5 ppm
	vs. LOAD ($\pm 10\%$) ± 0.2 ppm max	
	vs. SUPPLY VOLTAGE ($V_{\text{DC}} \pm 5\%$) ± 0.2 ppm max	
AGING 1 ST YEAR		± 1.0 ppm max
INITIAL FREQUENCY CALIBRATION	MEASURED AT 25°C , BEFORE SHIPMENT	± 1.0 ppm max
REFLOW SHIFT	2 CONSECUTIVE REFLAWS, AFTER 2 HOURS RELAXATION	± 1.0 ppm max
OPERATING TEMPERATURE RANGE ¹		$-30 \sim +85^{\circ}\text{C}$
		$-40 \sim +85^{\circ}\text{C}$
		$-40 \sim +105^{\circ}\text{C}$
		$-40 \sim +125^{\circ}\text{C}$
STORAGE TEMPERATURE RANGE		$-55 \sim +125^{\circ}\text{C}$
CLIPPED SINEWAVE OUTPUT VOLTAGE		0.8 Vp-p typ
LOAD		10 k Ω // 10pF
START-UP TIME		2 ms max
FREQUENCY TUNING RANGE ²		$\pm 5 \sim \pm 15$ ppm
CONTROL VOLTAGE RANGE ²		@ 1.8 V 0.9V \pm 0.9V
		@ 2.5 V 1.25V \pm 1.25V
		@ 3.3 V 1.65 \pm 1.65V
PHASE NOISE at 10 kHz OFFSET		-148 dBc/Hz max



NOTE: 1. NOT ALL STABILITIES ARE AVAILABLE FOR ALL OPERATING TEMPERATURE RANGES. CONTACT FACTORY FOR AVAILABILITY.

■ PART NUMBERING SYSTEM

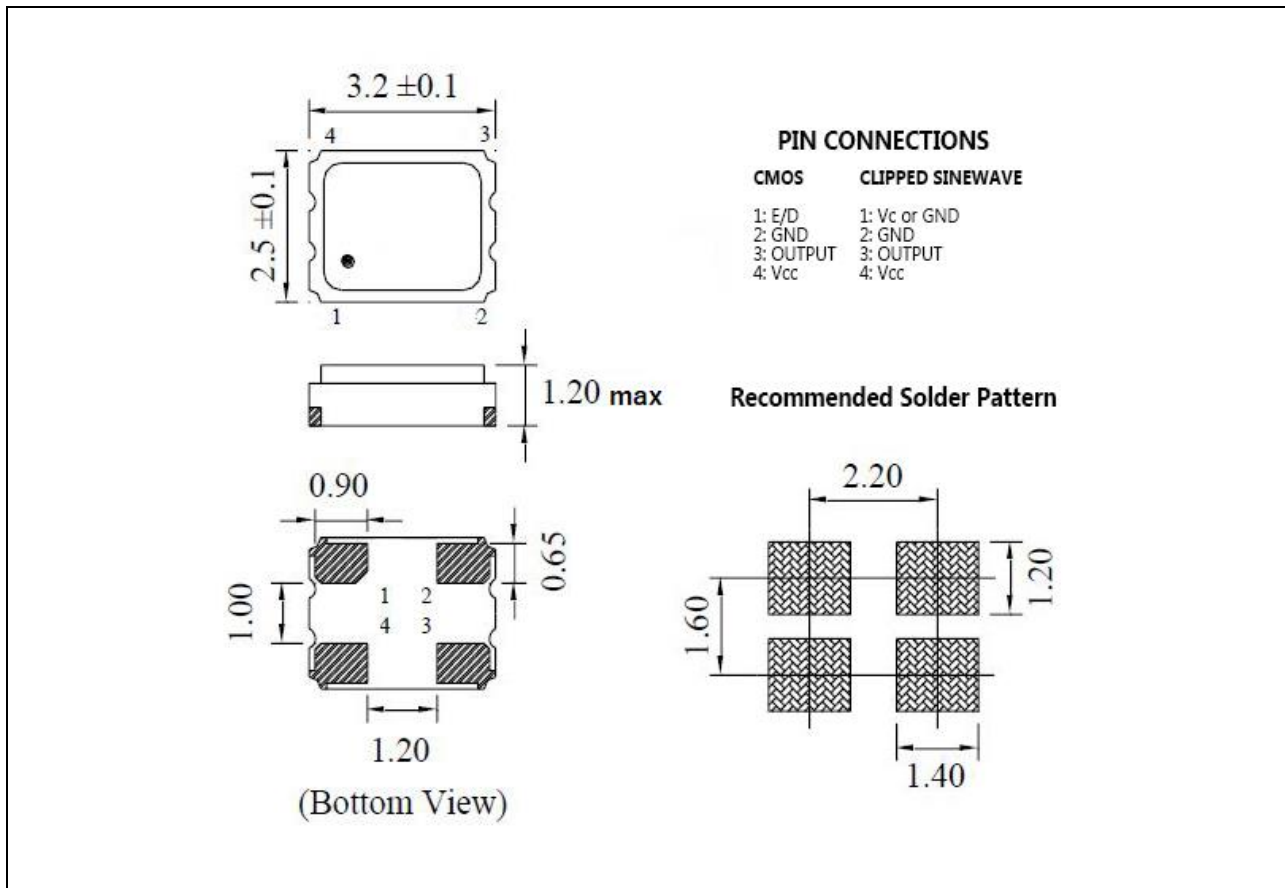
TYPE	-	SERIES	STABILITY (ppm)	TEMP RANGE ($^{\circ}\text{C}$)	VOLTAGE (V)	FREQ TUNING RANGE (ppm)	-	OUTPUT	-	FREQ (MHz)	-	TAPE & REEL
RTXA (TCXO) RTVA (VCTCXO)	-	104	A: ± 0.5 B: ± 1.0 C: ± 1.5 D: ± 2.0 E: ± 2.5	LZ: $0 \sim +70$ HZ: $-20 \sim +70$ F3: $-30 \sim +85$ D3: $-40 \sim +85$	1: 1.8 2: 2.8 33: 3.3 F*: 1.8 ~ 3.3	RTXA: Blank RTVA: 26: $\pm 7 \sim \pm 16$	-	S: Clipped Sine wave	-	9.50 ~ 52.00	-	TR

*Other ranges available. Please contact factory.

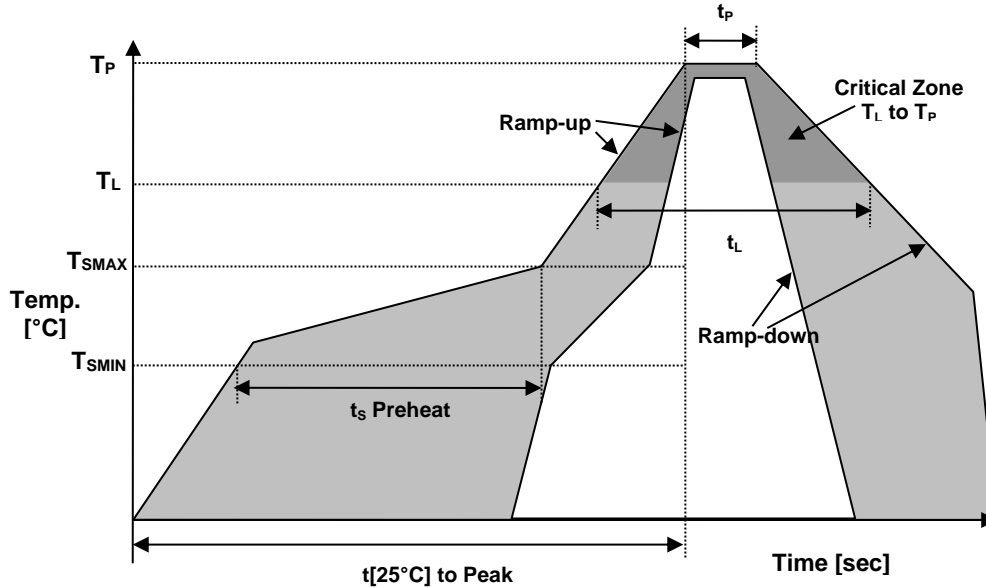
EXAMPLE: RTXA-104AF31-S-26.000-TR

Surface Mount TCXO, 3.2 mm x 2.5 mm package, ± 0.5 ppm Stability over -30°C to $+85^{\circ}\text{C}$, 1.8V, Clipped Sinewave, 26.000 MHz, Tape and Reel Packaging

• **MECHANICAL SPECIFICATION**



REFLOW PROFILE



Reflow profile		
Temperature Min Preheat	T_{SMIN}	150°C
Temperature Max Preheat	T_{SMAX}	200°C
Time (T_{SMIN} to T_{SMAX})	t_s	60-180 sec.
Temperature	T_L	217°C
Peak Temperature	T_P	260°C
Ramp-up rate	R_{UP}	3°C/sec max.
Ramp-down rate	R_{DOWN}	6°C/sec max.
Time within 5°C of Peak Temperature	t_p	10 sec.
Time $t[25^\circ\text{C}]$ to Peak Temperature	$t[25^\circ\text{C}]$ to Peak	480 sec.
Time	t_L	60-150 sec.

ENVIRONMENTAL

PARAMETER	VALUE
MOISTURE SENSITIVITY LEVEL	1
RoHS	COMPLIANT
REACH SVHC	COMPLIANT
HALOGEN-FREE	COMPLIANT
TERMINATION FINISH	Au

