

- **FEATURES**
- TEMPERATURE STABILITY  $\pm 0.5$  ppm ~  $\pm 2$ ppm
- OPERATING TEMPERATURE RANGE  $-40^{\circ}\text{C}$  ~  $+105^{\circ}\text{C}$
- 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	@ $-40 \sim +85^{\circ}\text{C}$	$\pm 0.5$ ppm
		@ $-40 \sim +105^{\circ}\text{C}$	$\pm 1.25$ ppm
		@ $-40 \sim +125^{\circ}\text{C}$	$\pm 5$ ppm
	vs. LOAD ( $\pm 10\%$ )		$\pm 0.2$ ppm max
	vs. SUPPLY VOLTAGE ( $V_{CC} \pm 5\%$ )		$\pm 0.2$ ppm max
AGING 1 <sup>st</sup> YEAR		$\pm 1.0$ ppm max	
INITIAL FREQUENCY CALIBRATION	MEASURED AT $25^{\circ}\text{C}$ , BEFORE SHIPMENT	$\pm 1.0$ ppm max	
REFLOW SHIFT	2 CONSECUTIVE REFLAWS, AFTER 2 HOURS RELAXATION	$\pm 1.0$ ppm max	
OPERATING TEMPERATURE RANGE <sup>1</sup>		$-40 \sim +85^{\circ}\text{C}$ $-40 \sim +105^{\circ}\text{C}$ $-40 \sim +125^{\circ}\text{C}$	
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)	-	2520	A: $\pm 0.5$ B: $\pm 1.0$ C: $\pm 1.5$ D: $\pm 2.0$ E: $\pm 2.5$	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-2520 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	@ $-40 \sim +85^{\circ}\text{C}$ $\pm 0.5$ ppm	
		@ $-40 \sim +105^{\circ}\text{C}$ $\pm 1.25$ ppm	
		@ $-40 \sim +125^{\circ}\text{C}$ $\pm 5$ ppm	
	vs. LOAD ( $\pm 10\%$ )		$\pm 0.2$ ppm max
	vs. SUPPLY VOLTAGE ( $V_{\text{DC}} \pm 5\%$ )		$\pm 0.2$ ppm max
AGING 1 <sup>ST</sup> YEAR		$\pm 1.0$ ppm max	
INITIAL FREQUENCY CALIBRATION	MEASURED AT $25^{\circ}\text{C}$ , BEFORE SHIPMENT	$\pm 1.0$ ppm max	
REFLOW SHIFT	2 CONSECUTIVE REFLAWS, AFTER 2 HOURS RELAXATION	$\pm 1.0$ ppm max	
OPERATING TEMPERATURE RANGE <sup>1</sup>		$-30 \sim +85^{\circ}\text{C}$	
		$-40 \sim +85^{\circ}\text{C}$	
		$-40 \sim +105^{\circ}\text{C}$	
		$-40 \sim +125^{\circ}\text{C}$	
STORAGE TEMPERATURE RANGE		$-55 \sim +125^{\circ}\text{C}$	
CLIPPED SINEWAVE OUTPUT VOLTAGE		0.8 Vp-p typ	
LOAD		10 k $\Omega$ // 10pF	
START-UP TIME		2 ms max	
FREQUENCY TUNING RANGE <sup>2</sup>		$\pm 5 \sim \pm 15$ ppm	
CONTROL VOLTAGE RANGE <sup>2</sup>	@ 1.8 V	$0.9\text{V} \pm 0.9\text{V}$	
	@ 2.5 V	$1.25\text{V} \pm 1.25\text{V}$	
	@ 3.3 V	$1.65 \pm 1.65\text{V}$	
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

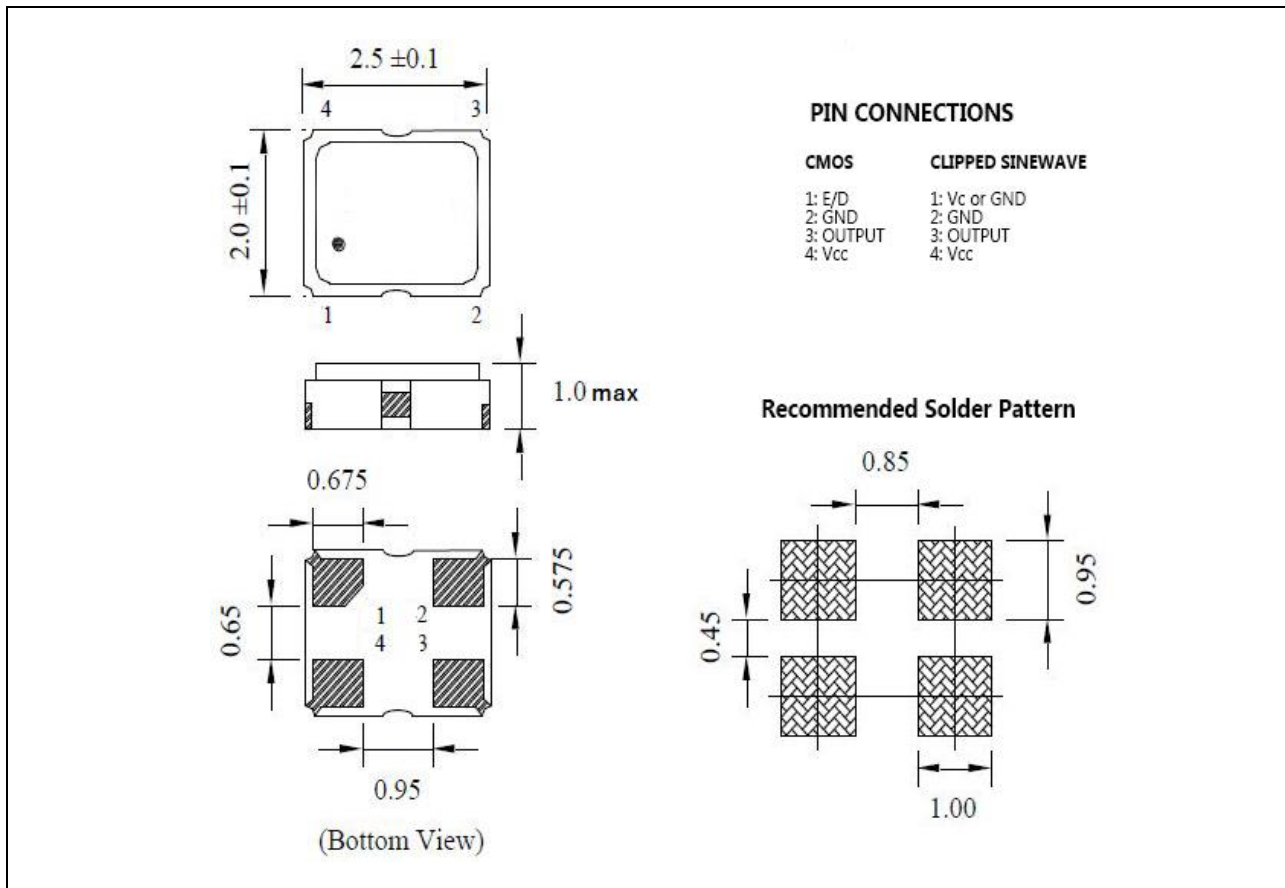
TYPE	-	SERIES	STABILITY (ppm)	TEMP RANGE ( $^{\circ}\text{C}$ )	VOLTAGE (V)	FREQ TUNING RANGE (ppm)	-	OUTPUT	-	FREQ (MHz)	-	TAPE & REEL
RTXA (TCXO) RTVA (VCTCXO)	-	104	A: $\pm 0.5$ B: $\pm 1.0$ C: $\pm 1.5$ D: $\pm 2.0$ E: $\pm 2.5$	LZ: $0 \sim +70$ HZ: $-20 \sim +70$ F3: $-30 \sim +85$ D3: $-40 \sim +85$	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.

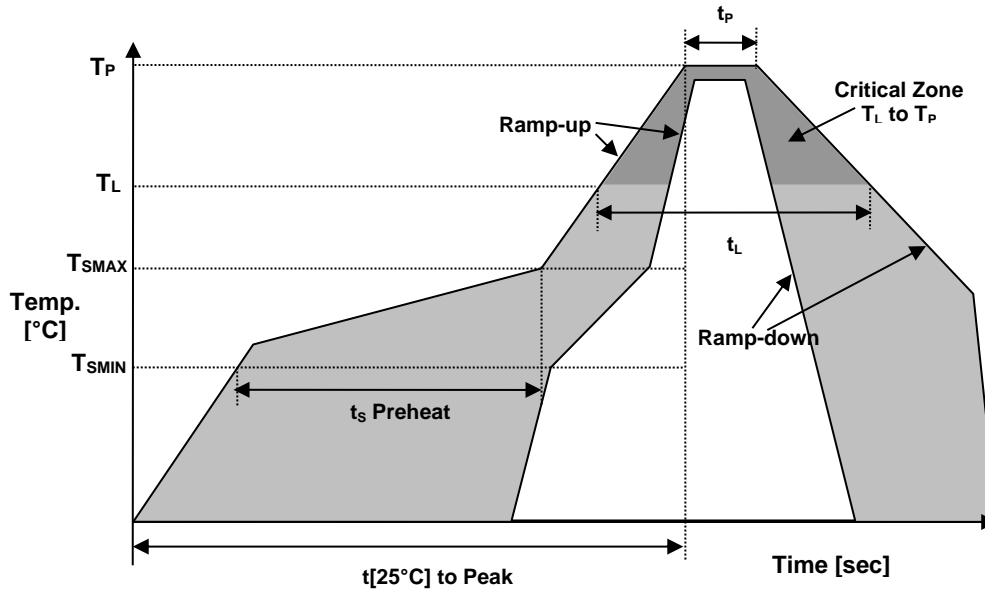
**EXAMPLE: RTXA-2520AF31-S-26.000-TR**

Surface Mount TCXO, 2.5 mm x 2.0 mm package,  $\pm 0.5$  ppm Stability over  $-30^{\circ}\text{C}$  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

