

**SERIES H130B**

● **FEATURES**

- SMALL PACKAGE OF 5.0 x 3.2 x 1.0 mm
- EXCELLENT TOLERANCE AND STABILITY
- CUSTOM SPECIFICATIONS AVAILABLE

● **APPLICATIONS**

- PAGERS
- CORDLESS TELEPHONES
- GPS
- BLUETOOTH



● **SPECIFICATIONS**

PARAMETER		VALUE
FREQUENCY RANGE		8.000 MHz TO 150.000 MHz
MODE OF OSCILLATION	FUNDAMENTAL	8.000 MHz TO 50.000 MHz
	THIRD OVERTONE	40.000 MHz TO 150.000 MHz
FREQUENCY TOLERANCE AT 25°C		±50 PPM MAXIMUM (±10, ±20, AND ±30 PPM AVAILABLE)
FREQUENCY STABILITY OVER TEMPERATURE		±50 PPM MAXIMUM (±10, ±20, AND ±30 PPM AVAILABLE)
OPERATING TEMPERATURE RANGE		-20°C TO +70°C STANDARD -40°C TO +85°C EXTENDED <sup>1</sup>
STORAGE TEMPERATURE RANGE		-40°C TO +90°C
AGING		±3 PPM PER YEAR MAXIMUM
LOAD CAPACITANCE		8 pF to 32 pF OR SERIES
EQUIVALENT SERIES RESISTANCE		SEE TABLE 1
SHUNT CAPACITANCE		5.0 pF MAXIMUM
DRIVE LEVEL		100 µW TYP, 300 µW MAX
SHOCK RESISTANCE		±5 PPM MAXIMUM 75 cm DROP TEST IN 3 AXES ONTO A HARD WOOD SURFACE
REFLOW CONDITIONS		260°C ±5°C FOR 10s MAXIMUM



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

**TABLE 1**

FREQUENCY (MHz)	MODE	MAX ESR (OHMS)
8.00 TO 9.99	FUND	85
10.00 TO 11.99	FUND	60
12.00 TO 15.99	FUND	35
16.00 TO 19.99	FUND	25
20.00 TO 50.00	FUND	20
40.00 TO 59.99	3OT	70
60.00 TO 150.00	3OT	60

## SERIES H130B

### ■ PART NUMBERING SYSTEM

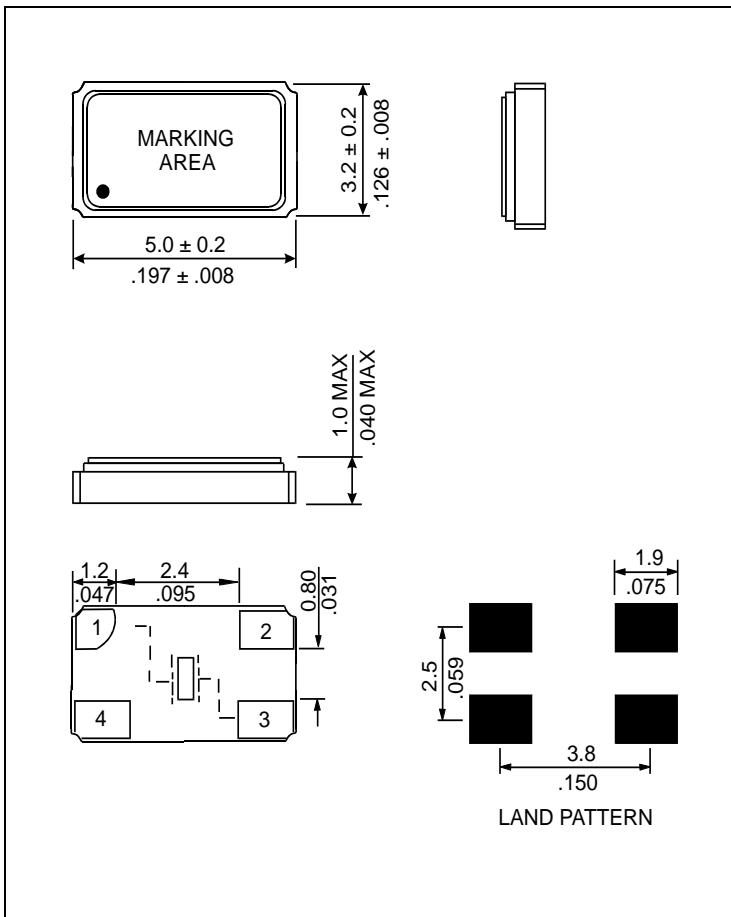
TYPE	-	FREQUENCY	-	LOAD CAPACITANCE	-	MODE	-	TOLERANCE/STABILITY (PPM/PPM)
H130B	-	IN MHZ	-	8 TO 32 pF FOR PARALLEL S FOR SERIES	-	Blank FOR < 24.576 MHz F FOR ≥ 24.576 MHz 3OT THIRD OVERTONE	-	Blank FOR MAXIMUM PPM/PPM Example: 1020, 2050

-	EXTENDED TEMPERATURE	-	TAPE & REEL
-	Blank FOR STANDARD EXT FOR EXTENDED	-	TR

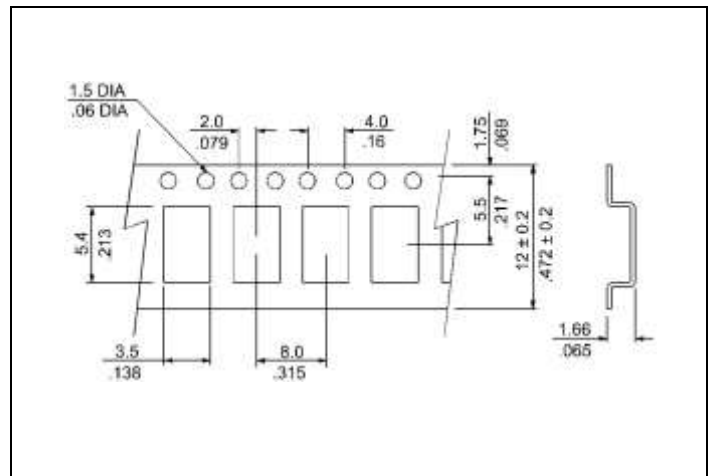
#### EXAMPLE: H130B-24.000-18-TR

Surface Mount Microprocessor Crystal, H130B package, 24.000 MHz, Fundamental mode, 18 pF load, ±50 ppm Tolerance, ±50 ppm Stability, from -20°C to +70°C, Tape and reel packaging

### ● MECHANICAL SPECIFICATION



### ● CARRIER TAPE DIMENSIONS



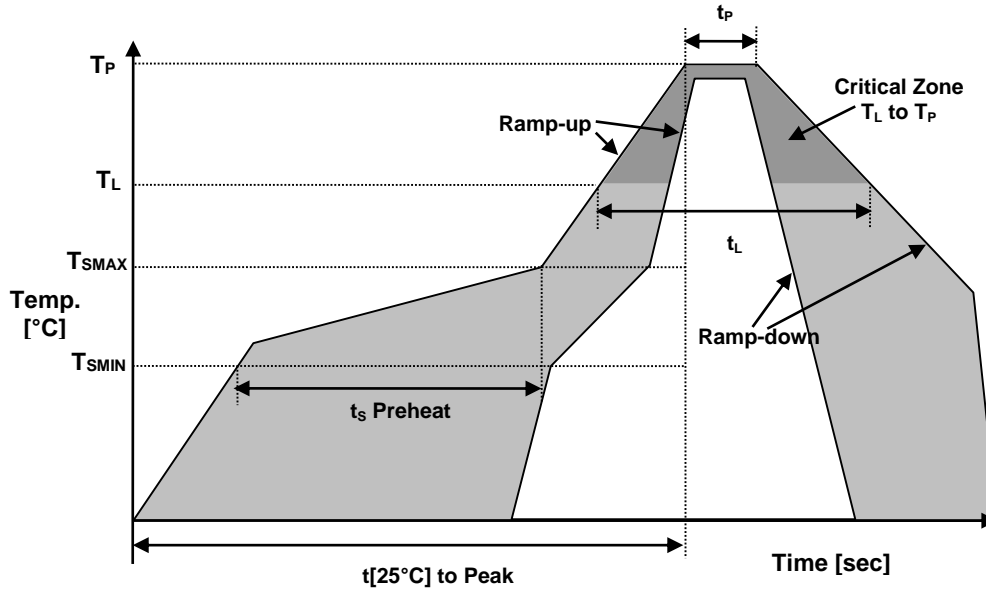
NOTE: REFER TO EIA-481 FOR NON-SPECIFIED DIMENSIONS

### ● PACKAGING

180 mm REEL DIAMETER  
12 mm TAPE WIDTH, 8 mm PITCH  
QUANTITY: 1000 PIECES PER REEL

IN ACCORDANCE WITH EIA-481

## REFLOW PROFILE



Reflow profile (Reference IPC/JEDEC J-STD-020)		
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 $t_{[25^\circ\text{C}] \text{ to Peak Temperature}}$	$t_{[25^\circ\text{C}] \text{ to Peak}}$	480 sec.
Time	$t_L$	60-150 sec.

## ENVIRONMENTAL

PARAMETER	VALUE
MOISTURE SENSITIVITY LEVEL	1
RoHS	6/6 COMPLIANT & LEAD FREE
REACH SVHC	COMPLIANT
HALOGEN-FREE	COMPLIANT
ESD CLASSIFICATION LEVEL	N/A
TERMINATION FINISH	Au
UNIT WEIGHT (GRAMS)	0.048



**Declaration of Conformity Recast Directive 2011/65/EU  
Certificate of Compliance**

**Reference: H130B family of SMD Crystal**

**Raltron / RAMI Technology** hereby certifies that the part(s)/product(s) listed above are compliant with the Recast Directive 2011/65/EU for the Restriction of the use of certain Hazardous Substances in electrical equipment as passed on July 21<sup>st</sup>, 2011. Any trace impurities of the RoHS substances in the part(s)/product(s) listed above are below the Recast specified levels.

The following table lists the restricted materials and their respective allowable limits:

<b>Recast Restricted Substance</b>	<b>Threshold Level (at homogenous material level)</b>
Cadmium (Cd)	0.01% or 100ppm
Hexavalent Chromium (Cr+6 )	0.1% or 1000ppm
Lead (Pb)	0.1% or 1000ppm
Mercury (Hg)	0.1% or 1000ppm
Polybrominated Biphenyl (PBB)	0.1% or 1000ppm
Polybrominated Diphenyl Ether (PBDE)	0.1% or 1000ppm

January 2016

*John D. Ivens*

**John D. Ivens**  
**Quality Assurance Director**  
**Raltron/RAMI Technology**

## Certificate of REACH SVHC

Revised 12/21/2015

**Date:** 21 December 2015

**Ref:** H130B family of Crystals

**Raltron / RAMI Technology** hereby certifies that its products, identified by the product family listed above; do not contain any of the REACH Substances of Very High Concern (SVHC) according to the Candidate list published by ECHA (European Chemical Agency) dated:

28 October 2008  
13 January 2010  
30 March 2010  
18 June 2010  
15 December 2010  
20 June 2011  
19 December 2011  
18 June 2012  
19 December 2012  
20 June 2013  
16 December 2013  
16 June 2014  
17 December 2014  
15 June 2015  
17 December 2015

Regards,

*Frank Parra*

Frank Parra  
Quality Assurance Director  
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