

## CRYSTAL UNIT

# ATS SERIES

## ATS-49/U, ATS-25/U, ATS-51/U

- ATS Holder Type Package
- AT-Cut or BT-Cut Available
- Resistance Weld Seal
- Tape and Reel, Insulator Tab, Three Leads and Custom Lead Length Options Available
- Tight Tolerance / Stability
- Pb-free and RoHS Compliance



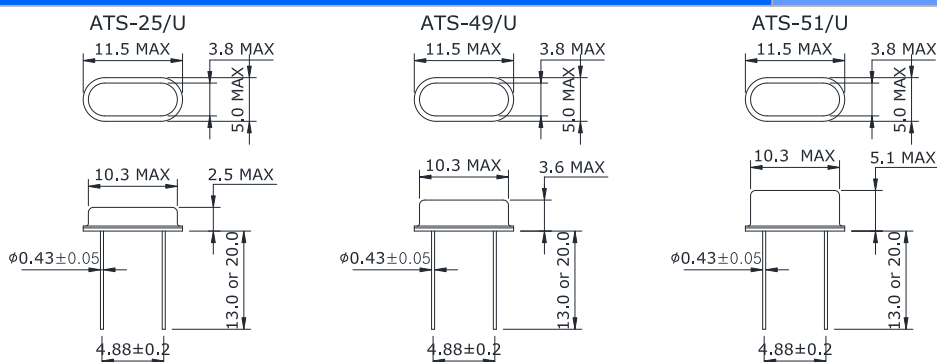
## ■ ELECTRICAL SPECIFICATIONS

| Frequency Range                  | 3.2768 to 60.000 MHz                           |
|----------------------------------|------------------------------------------------|
| Operating Temperature Range      | -20 to +70 °C, -40 to +85 °C, or specify       |
| Storage Temperature Range        | -40 to +85 °C                                  |
| Frequency Tolerance (at 25 °C)   | ±15, ±30, ±50 ppm(STD), or specify             |
| Frequency Stability              | ±10 to ±50 ppm(-20 to +70 °C)                  |
| Over Operating Temperature Range | ±20 to ±100 ppm(-40 to +85 °C)                 |
| Load Capacitance (CL)            | 18 pF(STD), Custom CL≥10 pF or Series Resonant |
| Drive Level                      | 100 μW(1000 μW Max.)                           |
| Shunt Capacitance (C0)           | 7.0 pF Max.                                    |
| Aging (at 25 °C)                 | ±3 ppm/year Max.                               |
| Insulation Resistance            | 500 MΩ Min. at 100 V <sub>DC</sub>             |

### ■ EQUIVALENT SERIES RESISTANCE(ESR)

| Frequency Range(MHz) | ESR( $\Omega$ Max.) | Mode of Oscillation  |
|----------------------|---------------------|----------------------|
| 3.2768 ~ 3.999       | 150                 | Fundamental / AT-Cut |
| 4.000 ~ 4.999        | 120                 | Fundamental / AT-Cut |
| 5.000 ~ 5.999        | 100                 | Fundamental / AT-Cut |
| 6.000 ~ 7.999        | 90                  | Fundamental / AT-Cut |
| 8.000 ~ 9.999        | 70                  | Fundamental / AT-Cut |
| 10.000 ~ 11.999      | 60                  | Fundamental / AT-Cut |
| 12.000 ~ 14.999      | 50                  | Fundamental / AT-Cut |
| 15.000 ~ 19.999      | 40                  | Fundamental / AT-Cut |
| 20.000 ~ 27.000      | 30                  | Fundamental / AT-Cut |
| 27.000 ~ 32.999      | 50                  | Fundamental / BT-Cut |
| 33.000 ~ 45.158      | 40                  | Fundamental / BT-Cut |
| 24.576 ~ 47.999      | 80                  | 3rd Overtone         |
| 48.000 ~ 60.000      | 60                  | 3rd Overtone         |

## MECHANICAL DIMENSIONS (mm)



## PART NUMBERING GUIDE

## TABLE 1.

| FREQUENCY STABILITY VS. TEMPERATURE RANGE |           | Stability |     |     |     |     |      |  |
|-------------------------------------------|-----------|-----------|-----|-----|-----|-----|------|--|
| Temp                                      | Stability | ±10       | ±15 | ±20 | ±30 | ±50 | ±100 |  |
|                                           |           | 3         | 4   | 5   | 6   | 7   | 8    |  |
| -10~70°C                                  | D         | *         | *   | *   | *   | *   | *    |  |
| -20~70°C                                  | E         | *         | *   | *   | *   | *   | *    |  |
| -30~60°C                                  | F         | *         | *   | *   | *   | *   | *    |  |
| -20~85°C                                  | G         |           | *   | *   | *   | *   | *    |  |
| -30~70°C                                  | H         |           |     | *   | *   | *   | *    |  |
| -30~85°C                                  | I         |           |     |     | *   | *   | *    |  |
| -40~85°C                                  | J         |           |     |     | *   | *   | *    |  |
| -40~90°C                                  | K         |           |     |     | *   | *   | *    |  |
| -40~105°C                                 | L         |           |     |     | *   | *   | *    |  |
| -40~125°C                                 | M         |           |     |     |     |     |      |  |

**PACKAGE TYPE**  
C : ATS-25/U  
D : ATS-49/U, E : ATS-51/U  
**LOAD CAPACITANCE**  
18 : 18pF  
**SR : SERIES**  
**MODE OF OSCILLATION**  
1 : FUNDAMENTAL  
3 : 3<sup>RD</sup> OVERTONE  
**FREQUENCY**  
**TOLERANCE AT 25 °C**  
50 : ±50 ppm  
XX : Two digit for Tolerance

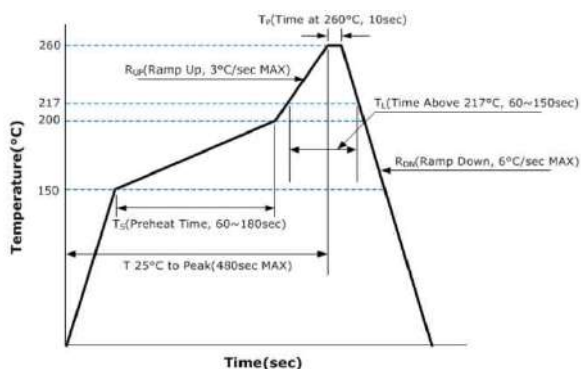
**PACKAGE OPTION**  
BLANK : BULK  
T&R : TAPE & REEL  
**FREQUENCY**  
**TABLE 1.**  
XX : Two digit for Stability

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                       |
|------------------------------|---------------------------------------|
| Temperature Cycling          | MIL-STD-883, Method 1010, Condition B |
| Fine Leak Test               | MIL-STD-883, Method 1014, Condition A |
| Gross Leak Test              | MIL-STD-883, Method 1014, Condition C |
| Mechanical Shock             | MIL-STD-202, Method 213, Condition C  |
| Vibration                    | MIL-STD-883, Method 2007, Condition A |
| Moisture Resistance          | MIL-STD-883, Method 1004              |
| Moisture Sensitivity         | J-STD-020, MSL 1                      |
| Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition K  |
| Solderability                | MIL-STD-883, Method 2003              |

## REFLOW PROFILE

## MARKING GUIDE



A: AT-CUT FUND.  
B: BT-CUT FUND.  
C: AT-CUT 3RD OVERTONE

LINE 1 : SC XX.XXX

LINE 2 : A YY WW

Year \_\_\_\_\_  
Week \_\_\_\_\_  
Frequency in MHz

## TAPE AND REEL DIMENSIONS

1,000pcs/reel

