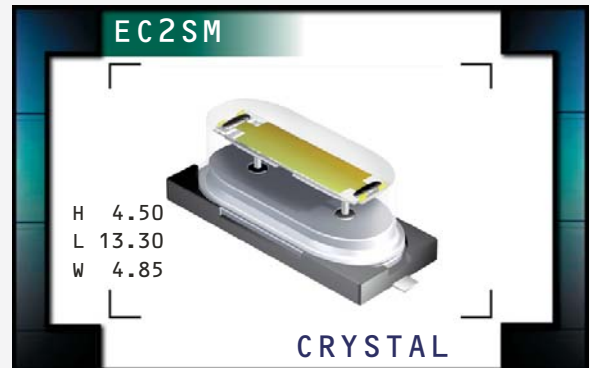


EC2SM Series

- HC-49/UP package
- AT or BT cut available
- Resistance weld seal
- Tight tolerance/stability
- Tape and reel available



NOTES

ELECTRICAL SPECIFICATIONS

| | |
|---|--|
| Frequency Range | 3.579545MHz to 50.000MHz |
| Frequency Tolerance / Stability | ±50ppm / ±100ppm (Standard), ±30ppm / ±50ppm (AT cut only), ±15ppm / ±30ppm (AT cut only), |
| Over Operating Temperature Range | ±15ppm / ±20ppm (AT cut only), or ±10ppm / ±15ppm (AT cut only) |
| Operating Temperature Range | 0°C to 70°C (Standard), -20°C to 70°C (AT cut only), or -40°C to 85°C (AT cut only) |
| Aging (at 25°C) | ±5ppm / year Maximum |
| Storage Temperature Range | -40°C to 85°C |
| Shunt Capacitance | 7pF Maximum |
| Insulation Resistance | 500 Megaohms Minimum at 100V _{DC} |
| Drive Level | 1 mWatt Maximum |
| Load Capacitance (C_L) | 18pF (Standard), Custom C _L ≥10pF, or Series Resonant |

EQUIVALENT SERIES RESISTANCE (ESR), MODE OF OPERATION (MODE), AND CUT

| Frequency Range | ESR (Ω) | Mode / Cut | Frequency Range | ESR (Ω) | Mode / Cut |
|-------------------------|---------|------------------|-------------------------|---------|---------------------|
| 3.579545MHz to 4.999MHz | 200 Max | Fundamental / AT | 15.000MHz to 15.999MHz | 60 Max | Fundamental / AT |
| 5.000MHz to 5.999MHz | 150 Max | Fundamental / AT | 16.000MHz to 23.999MHz | 50 Max | Fundamental / AT |
| 6.000MHz to 7.999MHz | 120 Max | Fundamental / AT | 24.000MHz to 30.000MHz | 40 Max | Fundamental / AT |
| 8.000MHz to 8.999MHz | 90 Max | Fundamental / AT | 24.000MHz to 40.000MHz | 40 Max | Fundamental / BT |
| 9.000MHz to 9.999MHz | 80 Max | Fundamental / AT | 28.6363MHz to 29.999MHz | 150 Max | Third Overtone / AT |
| 10.000MHz to 14.999MHz | 70 Max | Fundamental / AT | 30.000MHz to 50.000MHz | 100 Max | Third Overtone / AT |

PART NUMBERING GUIDE

EC2SM A - T - 20 - 30.000 TR

FREQUENCY TOLERANCE / STABILITY

Blank=±50ppm at 25°C, ±100ppm from 0°C to 70°C
 A=±50ppm at 25°C, ±100ppm from -20°C to 70°C
 B=±50ppm at 25°C, ±100ppm from -40°C to 85°C
 C=±30ppm at 25°C, ±50ppm from 0°C to 70°C
 D=±30ppm at 25°C, ±50ppm from -20°C to 70°C
 E=±30ppm at 25°C, ±50ppm from -40°C to 85°C
 F=±15ppm at 25°C, ±30ppm from 0°C to 70°C
 G=±15ppm at 25°C, ±30ppm from -20°C to 70°C
 H=±15ppm at 25°C, ±30ppm from -40°C to 85°C
 J=±15ppm at 25°C, ±20ppm from 0°C to 70°C
 K=±15ppm at 25°C, ±20ppm from -20°C to 70°C
 L=±15ppm at 25°C, ±20ppm from -40°C to 85°C
 M=±10ppm at 25°C, ±15ppm from 0°C to 70°C
 N=±10ppm at 25°C, ±15ppm from -20°C to 70°C

PACKAGING OPTIONS

Blank=Bulk, TR=Tape and Reel

FREQUENCY

LOAD CAPACITANCE

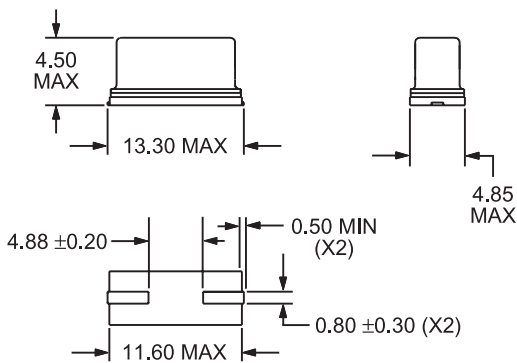
Blank=18pF (Standard), S=Series
 XX=XXpF (Custom)

MODE OF OPERATION / CRYSTAL CUT

Blank=Fundamental / AT,
 B=Fundamental / BT
 T=Third Overtone / AT

MECHANICAL DIMENSIONS

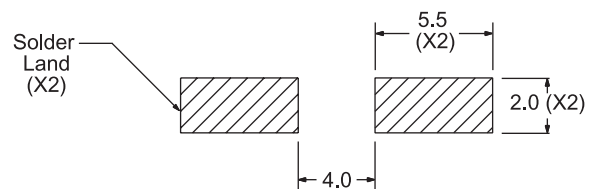
ALL DIMENSIONS IN MILLIMETERS



Coplanarity: 0.36mm Maximum

SUGGESTED SOLDER PAD LAYOUT

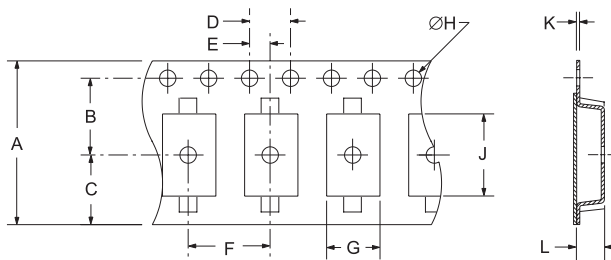
ALL DIMENSIONS IN MILLIMETERS



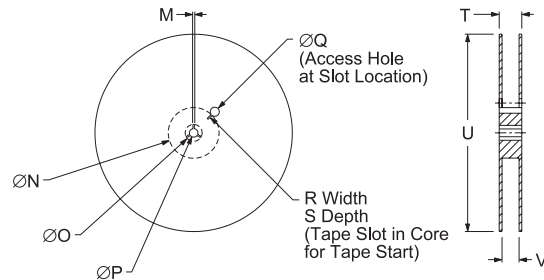
Tolerances = ±0.2

TAPE AND REEL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS



| TAPE | A | B | C | D | E |
|-------|-------|---------|----------|-------|------|
| | 24±.3 | 11.5±.1 | 10.75±.1 | 4±.2 | 2±.1 |
| F | G | H | J | K | L |
| 12±.2 | B0* | 1.5+.1 | A0* | .4±.1 | K0* |



| REEL | M | N | O | P | Q |
|---------|---------|----------|----------|----------|----------|
| | 1.5 MIN | 50 MIN | 20.2 MIN | 13±.2 | 40 MIN |
| R | S | T | U | V | QTY/REEL |
| 2.5 MIN | 10 MIN | 30.4 MAX | 360 MAX | 24.4+2-0 | 1,000 |

*Compliant to EIA-481A

ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

PARAMETER

Fine Leak Test
 Gross Leak Test
 Mechanical Shock
 Vibration
 Solderability
 Temperature Cycling
 Resistance to Soldering Heat
 Resistance to Solvents

SPECIFICATION

MIL-STD-883, Method 1014, Condition A
 MIL-STD-883, Method 1014, Condition C
 MIL-STD-202, Method 213, Condition C
 MIL-STD-883, Method 2007, Condition A
 MIL-STD-883, Method 2002
 MIL-STD-883, Method 1010
 MIL-STD-883, Method 210
 MIL-STD-883, Method 215

MARKING SPECIFICATIONS

Line 1: E XX.XXX M

M or Blank (No Marking)
 Frequency in MHz
 (5 Digits Maximum + Decimal)

MANUFACTURER
 ECLIPTEK CORP.

CATEGORY
 CRYSTAL

SERIES
 EC2SM

PACKAGE
 HC-49/UP

CLASS
 CR03

REV. DATE
 03/06