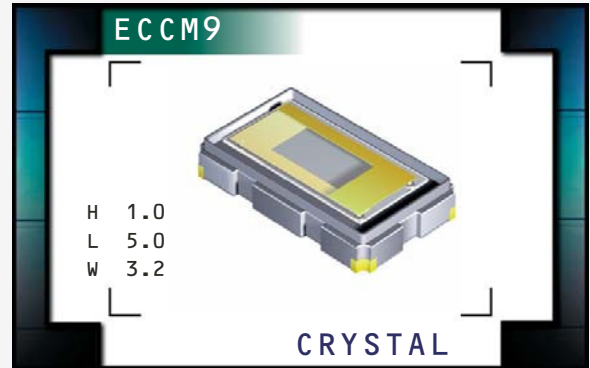


# ECCM9 Series



**ECLIPTEK**<sup>®</sup>  
CORPORATION

- RoHS Compliant (Pb-Free)
- Miniature four pad ceramic surface mount package
- Standard frequencies up to 53.125MHz
- AT Cut
- Tape and reel available



## NOTES

### ELECTRICAL SPECIFICATIONS

<b>Nominal Frequency (MHz)</b>	10.000, 11.059, 11.0592, 11.2896, 11.700, 12.000, 12.1875, 12.272715, 12.288, 12.800, 13.000, 13.125, 13.225, 13.400, 13.480, 13.500, 13.560, 13.5652, 13.568, 13.5705, 13.57375, 13.589, 13.824, 14.000, 14.318, 14.31818, 14.3228, 14.400, 14.478, 14.47826, 14.484, 14.4844, 14.660, 14.745, 14.7456, 15.360, 16.000, 16.367, 16.368, 16.384, 16.800, 16.934, 16.9344, 17.000, 18.432, 19.200, 19.3125, 19.440, 19.500, 19.660, 19.6608, 19.680, 19.800, 20.000, 20.480, 21.250, 22.000, 23.104, 24.000, 24.545, 24.545451, 24.553, 24.576, 25.000, 25.140, 26.000, 27.000, 27.134, 28.375, 28.636, 28.6363, 28.63636, 29.491, 30.000, 32.000, 32.110, 33.000, 35.328, 36.000, 38.400, 39.062, 40.000, 40.283, 44.000, 45.000, 48.000, 48.600, 53.125MHz
<b>Frequency Tolerance / Stability</b>	±50ppm / ±100ppm, ±30ppm / ±50ppm, ±15ppm / ±30ppm, ±15ppm / ±20ppm, or
<b>Over Operating Temperature Range</b>	±10ppm / ±15ppm
<b>Operating Temperature Range</b>	0°C to +70°C, -20°C to +70°C, or -40°C to +85°C
<b>Load Capacitance (C<sub>L</sub>)</b>	Series Resonant 10pF Parallel Resonant to 50pF Parallel Resonant
<b>Shunt Capacitance</b>	7pF Maximum
<b>Mode of Operation</b>	Fundamental
<b>Crystal Cut</b>	AT-Cut
<b>Aging (at 25°C)</b>	±3ppm / year Maximum
<b>Drive Level</b>	100µWatts Maximum, 10µWatts Correlation
<b>Storage Temperature Range</b>	-40°C to +125°C
<b>Insulation Resistance</b>	500 Megaohms Minimum at 100V <sub>DC</sub>
<b>Spurious Response</b>	-3dB Minimum; F <sub>0</sub> to F <sub>0</sub> +5000ppm
<b>Equivalent Series Resistance</b>	70 Ohms Maximum from 10.000MHz to 14.999MHz 60 Ohms Maximum from 15.000MHz to 19.999MHz 50 Ohms Maximum from 20.000MHz to 34.999MHz 40 Ohms Maximum from 35.000MHz to 53.125MHz

MANUFACTURER  
ECLIPTEK CORP.

CATEGORY  
CRYSTAL

SERIES  
ECCM9

PACKAGE  
CERAMIC

CLASS  
CR56

REV. DATE  
04/09

## PART NUMBERING GUIDE

### ECCM9 A A 10 - 32.000M TR

#### FREQUENCY TOLERANCE/STABILITY

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

#### PACKAGING OPTIONS

Blank=Bulk, TR=Tape and Reel

#### FREQUENCY

#### LOAD CAPACITANCE

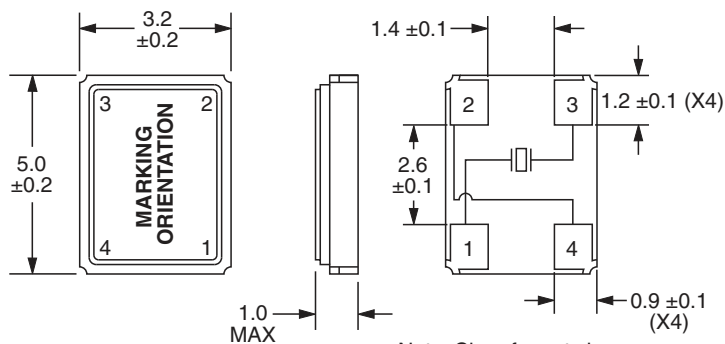
S=Series Resonant  
 XX=10pF Parallel Resonant to 50pF Parallel Resonant

#### MODE OF OPERATION

A=AT-Cut Fundamental

#### MECHANICAL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS

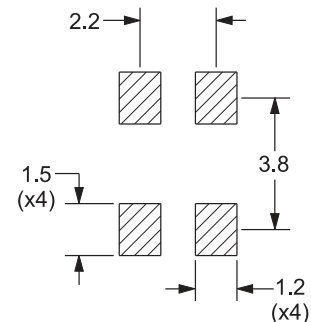


Note: Chamfer not shown.

Pad 1: Crystal Pad 2: Cover/Ground  
 Pad 3: Crystal Pad 4: Cover/Ground

#### SUGGESTED SOLDER PAD LAYOUT

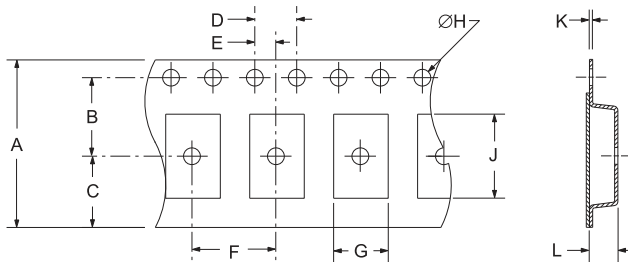
ALL DIMENSIONS IN MILLIMETERS



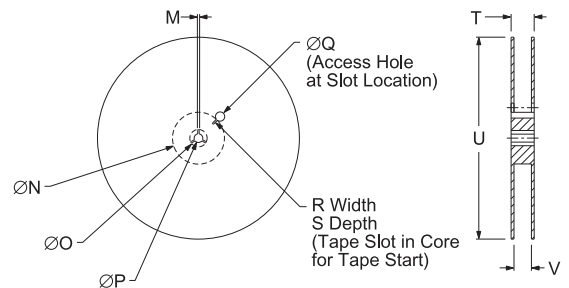
Tolerance = ±0.2

#### TAPE AND REEL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS



TAPE	A	B	C	D	E
	16±.3	7.5±.2	6.75±.2	4±.2	2±.2
F	G	H	J	K	L
8±.2	B0*	1.5±.1	A0*	.3±.05	K0*



REEL	M	N	O	P	Q
	1.5 MIN	50 MIN	20.2 MIN	13±.5	40 MIN
R	S	T	U	V	QTY/REEL
2.5 MIN	10 MIN	22.4 MAX	360 MAX	16.4+2-0	3,000

#### ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

PARAMETER	SPECIFICATION
ESD Susceptibility	MIL-STD-883, Method 3015, Class 1, HBM: 1500V
Fine Leak Test	MIL-STD-883, Method 1014, Condition A
Flammability	UL94-V0
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
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
Resistance to Solvents	MIL-STD-202, Method 215
Solderability	MIL-STD-883, Method 2003
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Vibration	MIL-STD-883, Method 2007, Condition A

#### MARKING SPECIFICATIONS

\*Compliant to EIA-481A

Line 1: E XX.XX  
 Frequency in MHz  
 (4 Digits Maximum + Decimal)

Line 2: XXXXX  
 Ecliptek Manufacturing Identifier

MANUFACTURER  
 ECLIPTEK CORP.

CATEGORY  
 CRYSTAL

SERIES  
 ECCM9

PACKAGE  
 CERAMIC

CLASS  
 CR56

REV. DATE  
 04/09