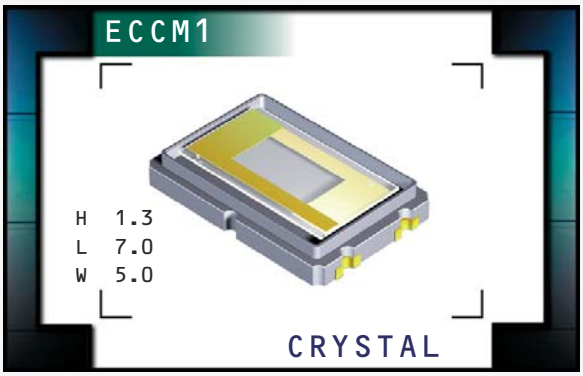
ECCM1 Series

- RoHS Compliant (Pb-Free)
- Four pad ceramic SMD package
- AT cut
- Tight tolerance/stability
- Frequencies to 70.000MHz available
- Tape and reel available



NOTES

ELECTRICAL SPECIFICATIONS

Frequency Range	7.680MHz to 70.000MHz
Frequency Tolerance / Stability	±50ppm / ±100ppm (Standard), ±30ppm / ±50ppm,
Over Operating Temperature Range	±15ppm / ±30ppm, ±15ppm / ±20ppm, or ±10ppm / ±15ppm
Operating Temperature Range	0°C to 70°C (Standard), -20°C to 70°C, or -40°C to 85°C
Aging (at 25°C)	±3ppm / year Maximum
Spurious Response	-3dB Minimum; F_0 to F_0 +5000ppm
Storage Temperature Range	-40°C to 85°C
Shunt Capacitance	7pF Maximum
Insulation Resistance	500 Megaohms Minimum at 100V_{DC}
Drive Level	50 µWatts Maximum, 50 µWatts Correlation
Load Capacitance (C_L)	18pF Parallel Resonant (Standard) Series Resonant 12pF Parallel Resonant to 50pF Resonant

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

Frequency Range	ESR (Ω)	Mode / Cut	Frequency Range	ESR (Ω)	Mode / Cut
7.680MHz to 9.999MHz	90 Max	Fundamental / AT	16.000MHz to 24.999MHz	30 Max	Fundamental / AT
10.000MHz to 10.999MHz	60 Max	Fundamental / AT	25.000MHz to 35.999MHz	30 Max	Fundamental / AT
11.000MHz to 13.999MHz	50 Max	Fundamental / AT	36.000MHz to 39.999MHz	100 Max	Third Overtone / AT
14.000MHz to 15.999MHz	40 Max	Fundamental / AT	40.000MHz to 70.000MHz	80 Max	Third Overtone / AT

MANUFACTURER	CATEGORY	SERIES	PACKAGE	CLASS	REV. DATE
ECLIPTEK CORP.	CRYSTAL	ECCM1	CERAMIC	CR08	01/08

PART NUMBERING GUIDE

ECCM1 C T - 20 - 40.000M 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
*P=±10ppm at 25°C, ±15ppm from -40°C to 85°C

PACKAGING OPTIONS
Blank=Bulk, TR=Tape and Reel

FREQUENCY

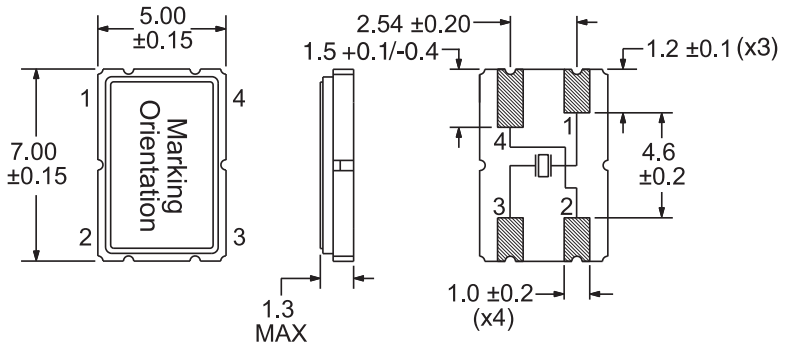
LOAD CAPACITANCE
Blank=18pF (Standard)
S=Series Resonant
XX=12pF Parallel Resonant to 50pF Parallel Resonant

MODE OF OPERATION / CRYSTAL CUT
Blank=Fundamental / AT, T=Third Overtone / AT

MECHANICAL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS

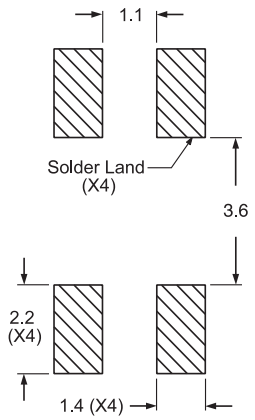
*Available only from 7.680MHz to 27.000MHz



Pad 1: Input/Output
Pad 2: Cover/Ground
Pad 3: Input/Output
Pad 4: Cover/Ground

SUGGESTED SOLDER PAD LAYOUT

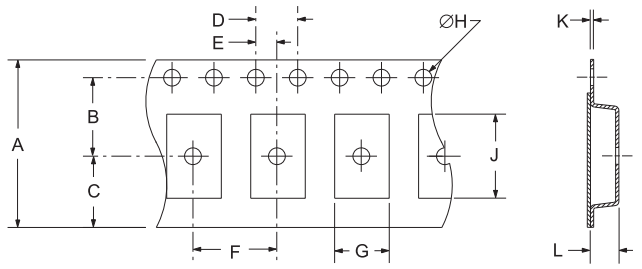
ALL DIMENSIONS IN MILLIMETERS

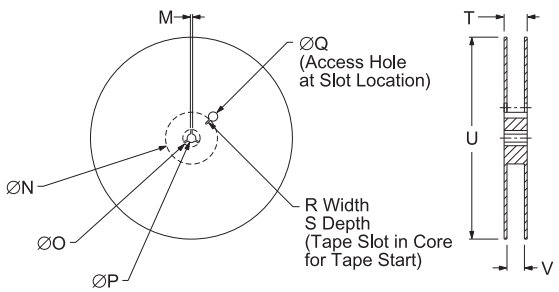


Tolerances = ±0.2

TAPE AND REEL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS





TAPE	A	B	C	D	E
	16±.3	7.5 ±.2	6.75±.2	4 ±.2	2±.2
F	G	H	J	K	L
8±.2	5.4±.1	1.5 +.1	7.9±.1	.3 ±.05	1.7±.1

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	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
Gross Leak Test	MIL-STD-883, Method 1014, Condition C
Flammability	UL94-V0
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 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)

Line2: XX Y ZZ
- Week of Year
- Last Digit of Year
- Ecliptek Manufacturing Identifier

MANUFACTURER	CATEGORY	SERIES	PACKAGE	CLASS	REV. DATE
ECLIPTEK CORP.	CRYSTAL	ECCM1	CERAMIC	CR08	01/08