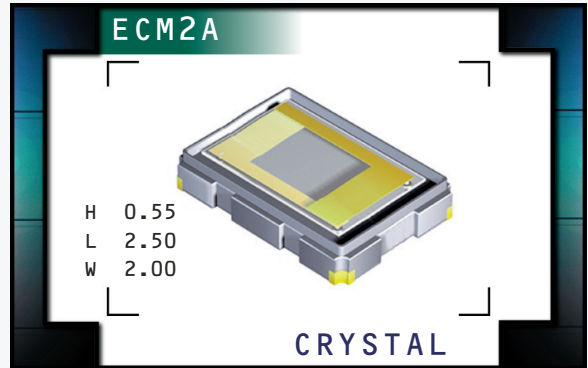


ECM2A Series



- RoHS Compliant (Pb-Free)
- Miniature four pad ceramic SMD package
- AT cut
- Tight tolerance/stability
- Tape and reel available



NOTES

TABLE 1: PART NUMBERING CODES

Temperature Range	Code	Frequency Stability (X Denotes Availability)			
		±30ppm	±20ppm	±15ppm	±10ppm
		C	D	E	F
0°C to +70°C	1	X	X	X	X
-20°C to +70°C	2	X	X	X	X
-30°C to +85°C	3	X	X	X	

ELECTRICAL SPECIFICATIONS

Frequency Range	16MHz, 19.66MHz, 20MHz, 24MHz, 24.576MHz, 25MHz, 26MHz, 27MHz, 29.4912MHz, 29.939MHz, 30MHz, 30.72MHz, 32MHz, 34.4MHz, 38.4MHz, 40MHz, 44MHz, 48MHz, and 50MHz
Frequency Tolerance	±15ppm or ±10ppm
Frequency Stability	±30ppm, ±20ppm, ±15ppm, or ±10ppm (See Table 1)
Operating Temperature Range	0°C to +70°C, -20°C to +70°C, or -30°C to +85°C (See Table 1)
Aging (at 25°C)	±3ppm / year Maximum
Storage Temperature Range	-40°C to 90°C
Shunt Capacitance	5pF Maximum
Insulation Resistance	500 Megaohms Minimum at 100V _{DC}
Drive Level	100 µWatts Maximum
Load Capacitance (C_L)	Series Resonant, 8pF Parallel Resonant to 32pF Parallel Resonant
Spurious Response	-3dB Minimum; F ₀ to F ₀ +5000ppm

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

Frequency Range	ESR (Ω)	Mode / Cut
16.000MHz to 19.999999MHz	100 Maximum	Fundamental / AT
20.000MHz to 29.999999MHz	80 Maximum	Fundamental / AT
30.000MHz to 39.999999MHz	60 Maximum	Fundamental / AT
40.000MHz to 50.000MHz	50 Maximum	Fundamental / AT

MANUFACTURER
ECLIPTEK CORP.

CATEGORY
CRYSTAL

SERIES
ECM2A

PACKAGE
CERAMIC

CLASS
CR60

REV. DATE
07/10

PART NUMBERING GUIDE

ECM2A 4 C 3 A 18 - 20.000M TR

FREQUENCY TOLERANCE (AT 25°C)

4=±15ppm Maximum
5=±10ppm Maximum

FREQUENCY STABILITY

C=±30ppm Maximum
D=±20ppm Maximum
E=±15ppm Maximum
F=±10ppm Maximum

OPERATING TEMPERATURE RANGE

1= 0°C to +70°C
2=-20°C to +70°C
3=-30°C to +85°C

PACKAGING OPTIONS

Blank=Bulk, TR=Tape and Reel

FREQUENCY

LOAD CAPACITANCE

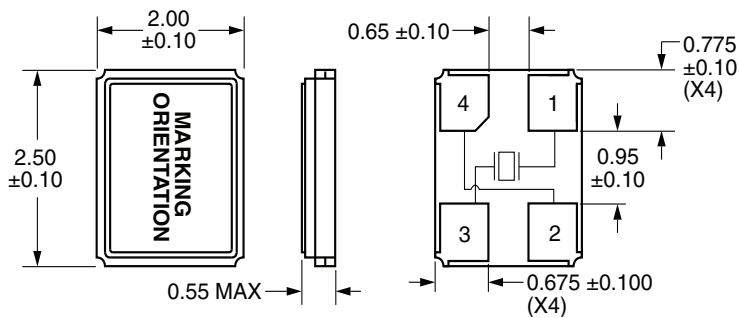
S=Series Resonant
XX=8pF Parallel Resonant to 32pF Parallel Resonant

MODE OF OPERATION

A=Fundamental

MECHANICAL DIMENSIONS

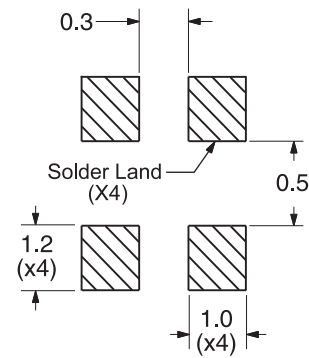
ALL DIMENSIONS IN MILLIMETERS



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

SUGGESTED SOLDER PAD LAYOUT

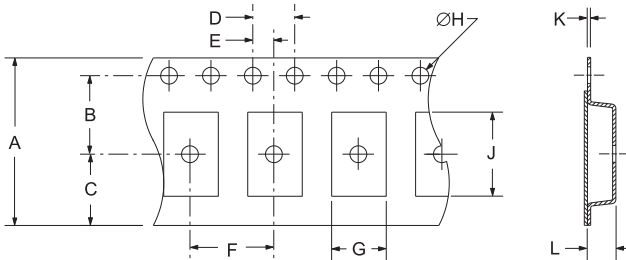
ALL DIMENSIONS IN MILLIMETERS



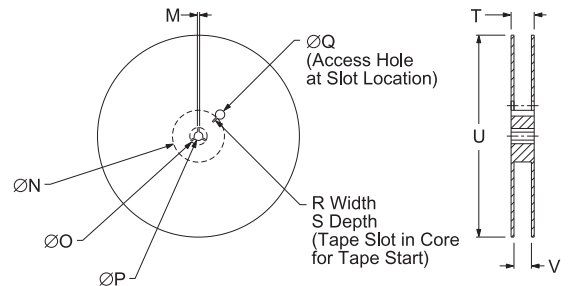
Tolerance = ±0.2

TAPE AND REEL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS



TAPE	A	B	C	D	E
	8±.2	3.5±.1	2.75±.1	4±.1	2±.05
	F	G	H	J	K
	4±.1	A0	1.5±.1	B0	.25±.05



REEL	M	N	O	P	Q
	1.5 MIN	50 MIN	20.2 MIN	13±.2	40 MIN
	R	S	T	U	V
	2.5 MIN	10 MIN	13.0 MAX	180 MAX	8.4+1.5-0
					QTY/REEL
					1,000

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 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: **XX.X**
Frequency in MHz
(3 Digits Maximum + Decimal)

Line 2: **XXX**
Ecliptek Manufacturing Identifier

MANUFACTURER
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