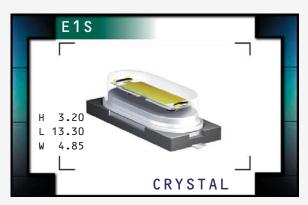
E1S Series

- RoHS Compliant (Pb-Free)
- HC-49/UP short 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	± 15 ppm / ± 20 ppm (AT cut only), or ± 10 ppm / ± 15 ppm (AT cut only)
Operating Temperature Range	0°C to 70°C, -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 125°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
Storage Temperature Range Shunt Capacitance Insulation Resistance Drive Level	±5ppm / year Maximum -40°C to 125°C 7pF Maximum 500 Megaohms Minimum at 100V _{DC} 1 mWatt Maximum

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	24.576MHz 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
MANUFACTURER	CATEGORY	SERIES	PACKAGE	CLASS	REV - DATE

E1S

CRYSTAL

ECLIPTEK CORP.

CR43

11/07

HC-49/UP Short

PART NUMBERING GUIDE

E1S A A 18 - 20.000M TR FREQUENCY TOLERANCE / STABILITY

A=±50ppm at 25°C, ±100ppm from 0°C to 70°C $B=\pm50$ ppm at 25°C, ±100 ppm from -20°C to 70°C $C=\pm50$ ppm at 25°C, ±100 ppm from -40°C to 85°C D=±30ppm at 25°C, ±50ppm from 0°C to 70°C $E=\pm30$ ppm at 25°C, ±50 ppm from -20°C to 70°C F=±30ppm at 25°C, ±50ppm from -40°C to 85°C G=±15ppm at 25°C, ±30ppm from 0°C to 70°C H=±15ppm at 25°C, ±30ppm from -20°C to 70°C $J=\pm15$ ppm at 25°C, ±30 ppm from -40°C to 85°C $K=\pm15$ ppm at 25°C, ±20 ppm from 0°C to 70°C L=±15ppm at 25°C, ±20ppm from -20°C to 70°C $M=\pm15$ ppm at 25°C, ±20 ppm from -40°C to 85°C N=±10ppm at 25°C, ±15ppm from 0°C to 70°C

P=±10ppm at 25°C, ±15ppm from -20°C to 70°C

PACKAGING OPTIONS

Blank=Bulk, TR=Tape and Reel

FREQUENCY

LOAD CAPACITANCE

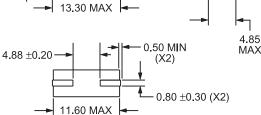
S=Series XX=XXpF (Custom)

MODE OF OPERATION / CRYSTAL CUT

A=Fundamental / AT B=Third Overtone / AT D=Fundamental / BT

MECHANICAL DIMENSIONS ALL DIMENSIONS IN MILLIMETERS

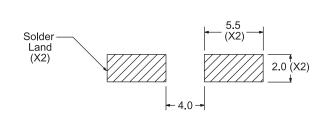
3.20 MAX 13,30 MAX



Coplanarity: 0.36mm Maximum

SUGGESTED SOLDER PAD LAYOUT

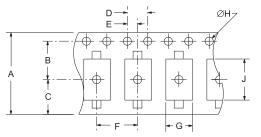
ALL DIMENSIONS IN MILLIMETERS



Tolerances = ± 0.2

TAPE AND REEL DIMENSIONS

ALL DIMENSIONS IN MILLIMETERS



TAPE	Α	В	С	D	Е
	24±.3	11.5±.1	0.75±.1	4 ±.2	2±.1
F	G	Н	J	K	L
12±.2	B0*	1.5 +.1	A0*	.4±.1	K0*

M-(Access Hole at Slot Location) U ØN R Width S Depth (Tape Slot in Core ØO for Tape Start) ØP

REE	L	M	N	U	<u> </u>	<u> </u>
		5 MIN	50 MIN	20.2 MIN	13±.2	40 MIN
R		S	T	U	٧	QTY/REEL
2.5 MI	N	10 MIN	30.4 MAX	360 MAX	24.4+2-0	1,000

ENVIRONMENTAL/MECHANICAL SPECIFICATIONS

PARAMETER **SPECIFICATION**

Fine Leak Test **Gross Leak Test** Lead Termination Mechanical Shock Resistance to Soldering Heat Resistance to Solvents Solderability

Temperature Cycling Vibration

MIL-STD-883, Method 1014, Condition A MIL-STD-883, Method 1014, Condition C

MIL-STD-202, Method 213, Condition C MIL-STD-202, Method 210 MIL-STD-202, Method 210 MIL-STD-202, Method 215

MIL-STD-883, Method 2002 MIL-STD-883, Method 1010

MIL-STD-883, Method 2007, Condition A

MARKING SPECIFICATIONS

*Compliant to EIA-481A

Line 1: E XX.XXX M

Frequency in MHz

(5 Digits Maximum + Decimal)

MANUFACTURER CATEGORY REV - DATE SERIES PACKAGE CLASS ECLIPTEK CORP. CRYSTAL HC-49/UP Short 11/07 F1S CR43