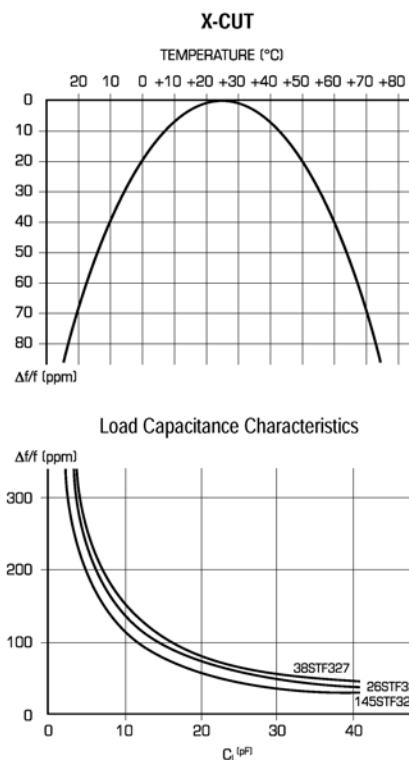
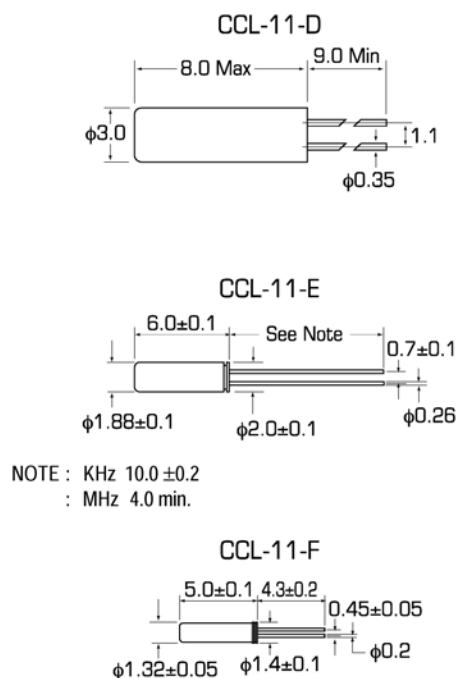


**RoHS
Compliant**

Electrical Specifications

Model	CCL-11-D	CCL-11-E	CCL-11-F
Nominal Frequency	32.768kHz	32.768kHz	32.768kHz
Frequency Stability	±15ppm ±20ppm ±30ppm	±15ppm ±20ppm ±30ppm	±15ppm ±20ppm ±30ppm
Operating Temperature Range	-10°C ~+60°C	-10°C ~+60°C	-10°C ~+60°C
Storage Temperature Range	-30°C ~+70°C	-30°C ~+70°C	-30°C ~+70°C
Series Resistance	35kΩ Max	35kΩ Max	40kΩ Max
Load Capacitance	12.5pF, Typical	12.5pF, Typical	8.0pF, Typical
Shunt Capacitance	1.6pF, Typical	1.35pF, Typical	1pF, Typical
Motional Capacitance	0.0035pF, Typical	0.003pF, Typical	0.0025pF, Typical
Capacitance Ratio	460, Typical	450, Typical	400, Typical
Drive Level	1μW Max	1μW Max	1μW Max
Aging in first year	3ppm Max @ +25°C	3ppm Max @ +25°C	3ppm Max @ +25°C
Parabolic Curvature Constant	-0.034ppm/°C ² , Typical	-0.034ppm/°C ² , Typical	-0.034ppm/°C ² , Typical

Mechanical Specifications



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Ver. 2.2 0806

Part Numbering Guide

CRYSTAL HOLDER STYLES

CCL-1..... HC-48/u
CCL-2..... HC-7 /u
CCL-3..... HC-51/u
CCL-6..... HC-49/u
CCL-7..... HC-50/u
CCL-7S..... HC-50/s
CCL-8..... UM-2
CCL-9..... UM-5
CCL-10..... UM-1
CCL-11..... Tuning Fork
CCL-SM1 .. Plastic SMD
CCL-SM2 .. Ceramic SMD
CCL-S2A... Ceramic SMD
CCL-SM3 .. HC-49/s SMD
CCL-SM4 .. Plastic SMD
CCL-SM5 .. Plastic SMD
CCL-SM7 .. Ceramic SMD
CCL-SM8 .. Plastic SMD
CCL-SM9 .. Ceramic SMD (see S9A)
CCL-S9A .. Ceramic SMD
CCL-S10 ... 2.0mm Metal SMD
CCL-S12 ... Ceramic SMD
CCL-S13 ... Metal SMD-6 Leaded
CCL-S14 ... Plastic SMD
CCL-S15 ... Ultra Miniature 5X3.2X0.8
CCL-S16 ... Ultra Miniature 4X2.5X0.75

CALIBRATION TOLERANCE @ ROOM TEMPERATURE / TEMPERATURE RANGE

A ... 100ppm / 100ppm
B ... 50ppm / 100ppm
C ... 50ppm / 50ppm
D ... 25ppm / 100ppm
E ... 25ppm / 50ppm
F.... 25ppm / 25ppm
G... 10ppm / 50ppm
H ... 10ppm / 25ppm
I.... 10ppm / 10ppm
J Customer Specified

OPERATING TEMPERATURE

1 ... 0°C to +70°C
2 ... -10°C to +60°C
3 ... -20°C to +70°C
4 ... -40°C to +85°C
5 ... Customer Specified

CCL-6 – 10.000 B 2 5 F A

LOAD CAPACITANCE

S ... Series
1.... 50 pF
2.... 32 pF
3.... 30 pF
4.... 20 pF
5.... 18 pF
6.... 15 pF
7.... 10 pF
8.... 7.5 pF
P ... Pullability Spec.
X ... Customer Specified

MODE OF OPERATION

F Fundamental
3 3RD Overtone
5 5TH Overtone
7 7TH Overtone
9 9TH Overtone
11 11TH Overtone

OPTIONS

* Blank No Option
A.... Ground Wire
B.... Vinyl Sleeve
C ... Base Insulators
D ... 8.0mm x 3.0mm (Tuning)
E.... 6.0mm x 2.0mm (Tuning)
F.... 5.0mm x 1.5mm (Tuning)
G ... Gull Wing
H ... 13.0mm x 4.2mm (SM4)
I.... 13.1mm x 5.0mm (SM4)
J BT Cut
K.... AT Cut
R ... RoHS Compliant
S.... Metal Jacket / Gull Wing (UM Series)
T.... Tape & Reel
Z.... Customer Specified