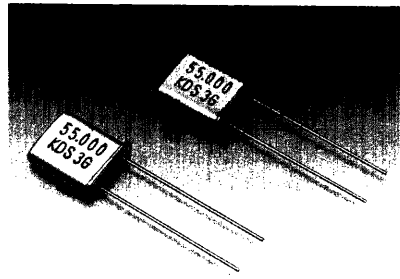


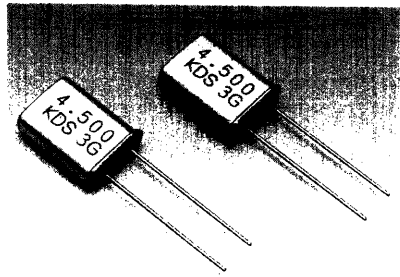
CRYSTAL RESONATORS

Resistance Weld Type 抵抗溶接型水晶振動子

UM-4, UM-5, UM-1, UM-2, HC-49/T, HC-50/T, HC-49/U, HC-50/U



UM-1



HC-49/U

UM series crystal resonators, which have outstanding frequency stability, are most suitable for pagers and mobile radiotelephone equipment.

These high-reliability crystal resonators offer miniaturization without downgrading electrical characteristics of the crystal resonators. These crystals also have excellent impact shock and vibration resistance.

HC series crystal resonators are used as a clock reference for microprocessors. They also offer frequency stability.

UMシリーズ振動子は、優れた周波数安定度を有し、ページャー、移動無線等用の振動子に最適です。振動子の電気的特性を劣化させることなく小型化を実現し、さらに優れた耐衝撃性を持つ高信頼性の水晶振動子です。

また、HCシリーズ振動子は、周波数安定度の優れた、マイクロプロセッサ等の基準クロック用の振動子です。

RESISTANCE OF SERIES RESONANCE 等価直列抵抗

FREQUENCY 周波数	TYPE 型式	Mode 振動モード	UM-4 Q max	UM-5 Q max	UM-1 Q max	UM-2 Q max	HC-49/T Q max	HC-50/T Q max	HC-49/U Q max	HC-50/U Q max
1.8~2.0 MHz	F	F	-	-	-	-	-	-	600	600
2.0~2.4 MHz	F	F	-	-	-	-	-	-	450	450
2.4~3.0 MHz	F	F	-	-	-	-	-	-	350	350
3.0~3.5 MHz	F	F	-	-	-	-	-	-	150	150
3.5~4.0 MHz	F	F	-	-	-	-	150	150	90	90
4.0~7.0 MHz	F	F	-	-	-	-	90	90	60	60
7.0~10 MHz	F	F	-	-	-	60	45	45	35	35
10~15 MHz	F	F	50	50	50	45	45	45	35	35
15~20 MHz	F	F	50	50	50	35	25	25	25	25
20~25 MHz	F/3	F/3	50	50	50	35	25/60	25/60	25/50	25/50
25~30 MHz	F/3	F/3	50	50	50	35	60	60	25	40
30~75 MHz	3	3	70	70	70	40	40	40	40	40
75~100MHz	3.5	3.5	70	70.80	70.80	-60	-60	-60	-60	-60
100~125MHz	5	5	80	80	80	60	60	60	60	60
125~150MHz	5	5	100	100	100	80	80	80	80	80
150~200MHz	7	7	-	120	120	120	120	120	120	120

FREQUENCY RANGE

周波数範囲

1.8~200MHz

MODE OF VIBRATION

振動モード

AT-cut, Thickness-shear

ATカット厚みすべり振動

Fund, 3rd, 5th, 7th

DRIVE LEVEL

励振レベル

10μW, 50μW, 100μW, 500μW

LOAD CAPACITANCE

負荷容量

Series resonance, 12pF, 16pF, 20pF, 32pF

FREQUENCY TOLERANCE

周波数偏差

±5ppm, ±10ppm, 15ppm,

±20ppm, 30ppm

FREQUENCY STABILITY

周波数温度特性

±5ppm, ±10ppm, ±20ppm,

±30ppm, ±50ppm

OPERATING TEMP. RANGE

動作温度範囲

-10°C~+60°C

STORAGE TEMP. RANGE

保存温度範囲

-30°C~+80°C

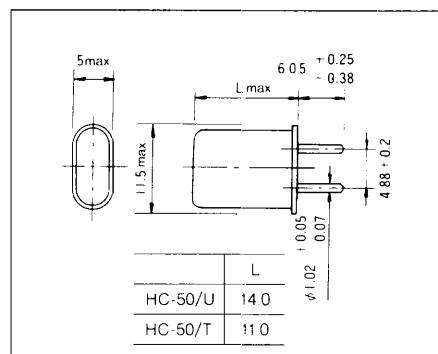
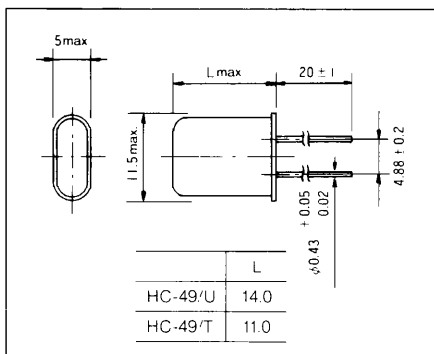
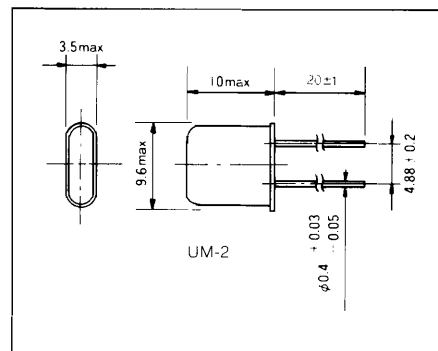
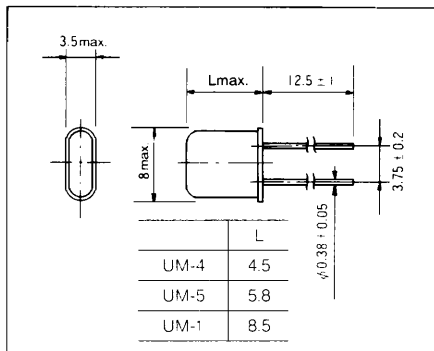
AGING

エージング特性

UM Series : ±2ppm, 3ppm/year(max.)

HC Series : ±5ppm/year(max.)

DIMENSIONS(mm) 外形寸法



Resistance Weld Type [Fundamental Resonance Controlled Overtone Crystal Resonator]

抵抗溶接型水晶振動子[基本波抑制型オーバートーン水晶振動子]

UM-5, UM-1, UM-2, HC-49/T, HC-49/U

The fundamental wave restrictive type crystal resonators are designed to selectively control the fundamental wave oscillation output in the overtone crystal oscillation is reached without complications.

Consequently, by employing these crystal resonators, the electric circuit can be made simple since oscillation is possible at the overtone frequency in the tuning coilless oscillation circuit. this eliminates the need for adjustments and allows the end customer to reach maximum compactness.

Since our design technique makes it possible to restrain the fundamental wave oscillation mode and also control spurious components in overtone oscillation at the same time, our unique crystal resonators can be used safely even for frequency shift components in overtone oscillation.

基本波抑制型水晶振動子は、3rdオーバートーン水晶振動子において、基本波振動モードを選択的に抑制し、確実にオーバートーン発振が得られるように設計された水晶振動子です。よって、本水晶振動子を用いることにより、同調コイル不用の発振回路においてオーバートーン周波数で発振可能なため、回路構成がシンプルになり、無調整化、小型化が可能になります。また、当社の設計手法は、基本波振動モードの抑制と同時にオーバートーン振動におけるスプリアス成分の抑制も可能にしていますので、オーバートーン振動におけるスプリアス成分への周波数ジャンプの問題に対しても、より安心して御使用頂けます。

DRIVE LEVEL

励振レベル
10μW, 50μW, 100μW

LOAD CAPACITANCE

負荷容量
Series resonance, 12pF, 16pF, 20pF, 32pF

FREQUENCY TOLERANCE

周波数偏差
±10ppm, ±15ppm, ±20ppm, ±30ppm,

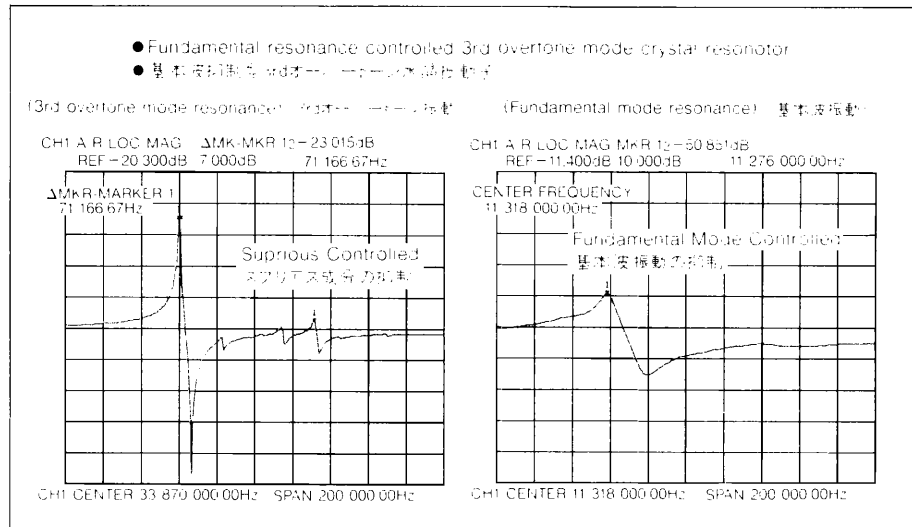
APPLICABLE FREQUENCY & RESISTANCE OF SERIES RESONANCE (CI) 対応可能周波数と等価直列抵抗値

FREQUENCY 周波数	TYPE 型名	UM-5	UM-1	HC-49/U HC-49/T	CI Ratio CI比
25~30MHz				60Ωmax.	10min.
30~35MHz		70Ωmax.	60Ωmax.	50Ωmax.	8min.
35~40MHz		70Ωmax.	60Ωmax.	50Ωmax.	5min.
40~45MHz		70Ωmax.	60Ωmax.	60Ωmax.	4min.
45~70MHz		70Ωmax.	60Ωmax.		3min.

$$*1: CI \text{ ratio} = \frac{\text{Equivalent series resistance at fundamental mode}}{\text{Equivalent series resistance at 3rd overtone mode}}$$

$$*1: CI \text{ 比} = \frac{\text{基本波の等価直列抵抗}}{\text{3rdオーバートーンの等価直列抵抗}}$$

SAMPLE CHARACTERISTICS (fo=33.8688MHz) 特性例(33.8688MHz)



OSCILLATION CIRCUIT EXAMPLE 発振回路例

