

## *Resonator*

# Piezoelectric Resonator (4 to 23.9 MHz)

## FAR Family (C4 series N type)

### ■ DESCRIPTION

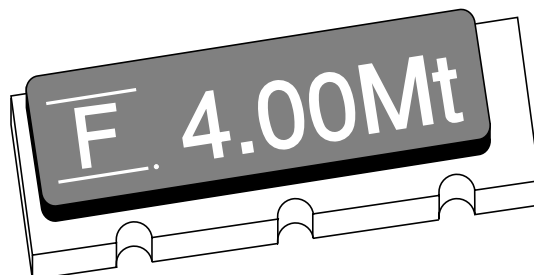
Fujitsu resonators C4 series (N type) feature originally developed single crystals with a high electro-mechanical coefficient (LiNbO<sub>3</sub>: lithium niobate), the result is very compact packaging.

C4 series (N type) with built-in capacitors for exclusive use in microcomputer clocks, and this series is ultra low profile CHIP type device for surface-mount (SMT).

### ■ FEATURES

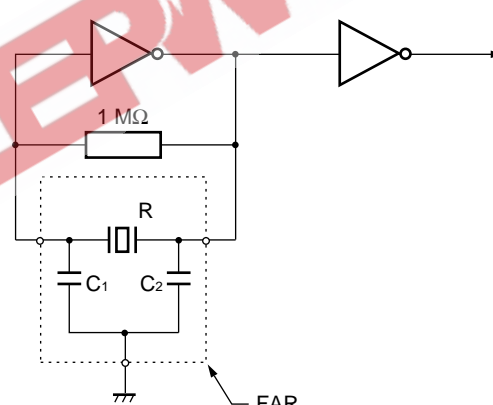
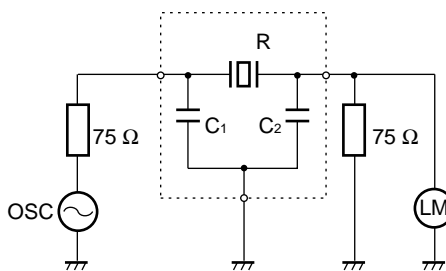
- Ultra low profile H = 1.6 mm
- Direct oscillation in 4 to 23.9 MHz frequency.
- Suitable for the source of microcomputer clock
- Emboss-typed pack for automatic mounting
- Superior shock and vibration resistance, preventing damage during automatic mounting

### ■ PACKAGE



# FAR Family (C4 series N type)

## STANDARD CHARACTERISTICS

Parameter	Series	C4 series (N type)	Remarks
Material		Lithium Niobate (LiNbO <sub>3</sub> )	
Frequency		4 to 17 MHz      17.1 to 23.9 MHz	
Standard frequency		See "Standard Frequency."	
Initial frequency deviation		±0.3% (K) ±0.5% (M) ±1.0% (L)	±1.0% (L)
Temperature characteristic (-20°C to +60°C)		±0.5%	
Capacity of built-in capacitor		20±8 pF (standard)	10±4 pF, 30±8 pF are also available. Capacity is specified by Fujitsu, considering matching data with applied IC (mainly microcomputer).
Aging stability		Within ±0.1%	
Operating temperature		-30°C to +85°C	
Storage temperature		-40°C to +100°C	
Standard measuring circuit		<ul style="list-style-type: none"> <li>Resonant frequency</li> </ul>  <ul style="list-style-type: none"> <li>Less than 4 MHz to 10 MHz IC: 1/6MB84069B×2</li> <li>10 MHz to 20.0 MHz IC: 1/6MC74HC04×2</li> <li>20.1 MHz to 23.9 MHz IC: 1/6MC74HCU04×2</li> <li>V<sub>CC</sub>: 5 V DC</li> <li>R: Resonator</li> <li>C<sub>1</sub>, C<sub>2</sub>: Loading capacitors (built-in)</li> </ul> <ul style="list-style-type: none"> <li>Serial resonant resistance</li> </ul>  <ul style="list-style-type: none"> <li>R: Resonator</li> <li>Measuring instrument: Network analyzer</li> </ul>	

# FAR Family (C4 series N type)

## ■ STANDARD FREQUENCY

Standard frequency (kHz)	Package size	Resonant resistance
4,000 4,194 4,915	N	300 Ω max. (Symbol: 0)
6,000 6,144 7,373 8,000 8,388 9,830 10,000 11,059 12,000 12,288 14,746 16,000 16,934 19,661 20,000	N	75 Ω max. (Symbol: 2)

- Notes:**
- Fujitsu can also develop applicable device in addition to standard devices if it's oscillation frequency is from 4 to 23.9 MHz.
  - Resonant resistance of the part other than standard, Fujitsu should specify its resonant resistance according to applied frequency. (See “• Frequency and standard resonant resistance.”)
  - Frequency and standard resonant resistance

Frequency	Standard resonant resistance
4.00 to 5.99 MHz	300 Ω max. (Symbol: 0)
6.00 to 23.99 MHz	75 Ω max. (Symbol: 2)

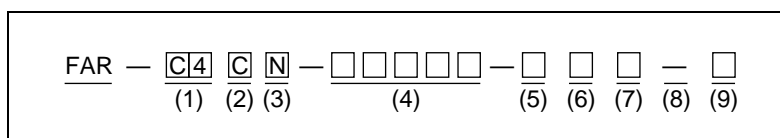
**Note:** Resonant resistance of custom designed part should be specified considering matching condition with applicable IC by Fujitsu.

## ■ NOTES ON USE

- Handle carefully
- Solder under the following conditions.  
5 seconds max. at 230°C (PCB)  
Recommended preheating is 150°C for one minute in order not to apply extreme heat to the resonator.
- Avoid extreme fluctuations in temperature.
- There is no specific direction in resonator mounting.
- Oscillation data should be examined when used in oscillation circuit with micon or other ICs.
- This is for reflow solder, not for flow solder.

# FAR Family (C4 series N type)

## ■ PART NUMBERING SYSTEM



### (1) Series

Series	Single crystal	Capacitor
C4	LiNbO <sub>3</sub>	With built-in capacitor

### (2) Package Type

Specification	Type
C	CHIP

### (3) Package Type

Specification	Size
N	8.0 × 3.2 × 1.6

### (4) Frequency

(Example) Unit: kHz (Specify in five digits.)

Frequency	Specification
7.373 MHz	07373

See “■ Standard Frequency”.

### (5) Initial Frequency Deviation

Specification	Deviation
K	±0.3%
M	±0.5%
L	±1.0%

### (6) Built-in Capacitor

Specification	Capacitance
0	20±8 pF
1	10±4 pF
2	30±8 pF

### (7) Resonant Resistance

Specification	Resonant resistance
0	300 Ω max.
2	75 Ω max.

## FAR Family (C4 series N type)

### (8) User-specific Special Symbols

Specification	Description
Name	No specifications, no taping specification
—	No specifications, with taping specification
A to Z	Serial number for custom design

### (9) Resonant Resistance

Specification	Description
R	16 mm wide emboss tape coiled 3,000 times

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# FAR Family (C4 series N type)

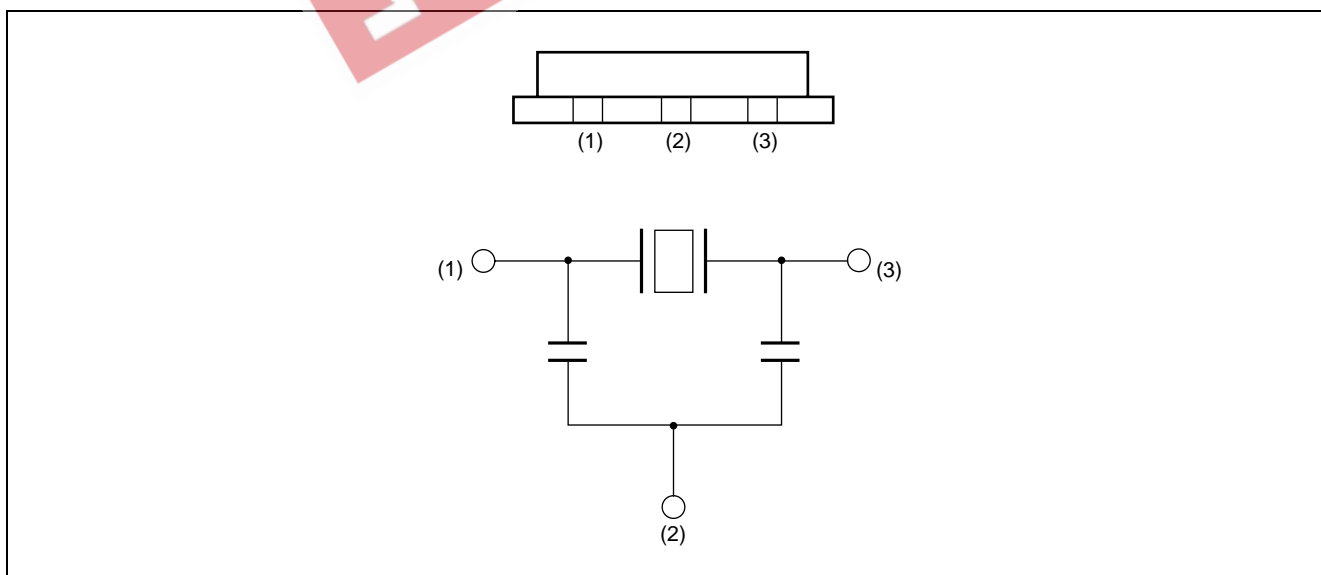
## MARKING

The diagram shows a rectangular marking area containing the text "F 12.0 MV". Arrows point from labels to specific parts of the marking: "Fujitsu logo" points to the "F", "Frequency (MHz)" points to "12.0", "Lot No. (Date of manufacture, conforms to EIAJ)" points to "MV", and "Initial frequency deviation" points to the space between "12.0" and "MV".

**Note:** The marking color varies with the capacitance of the built-in capacitor.

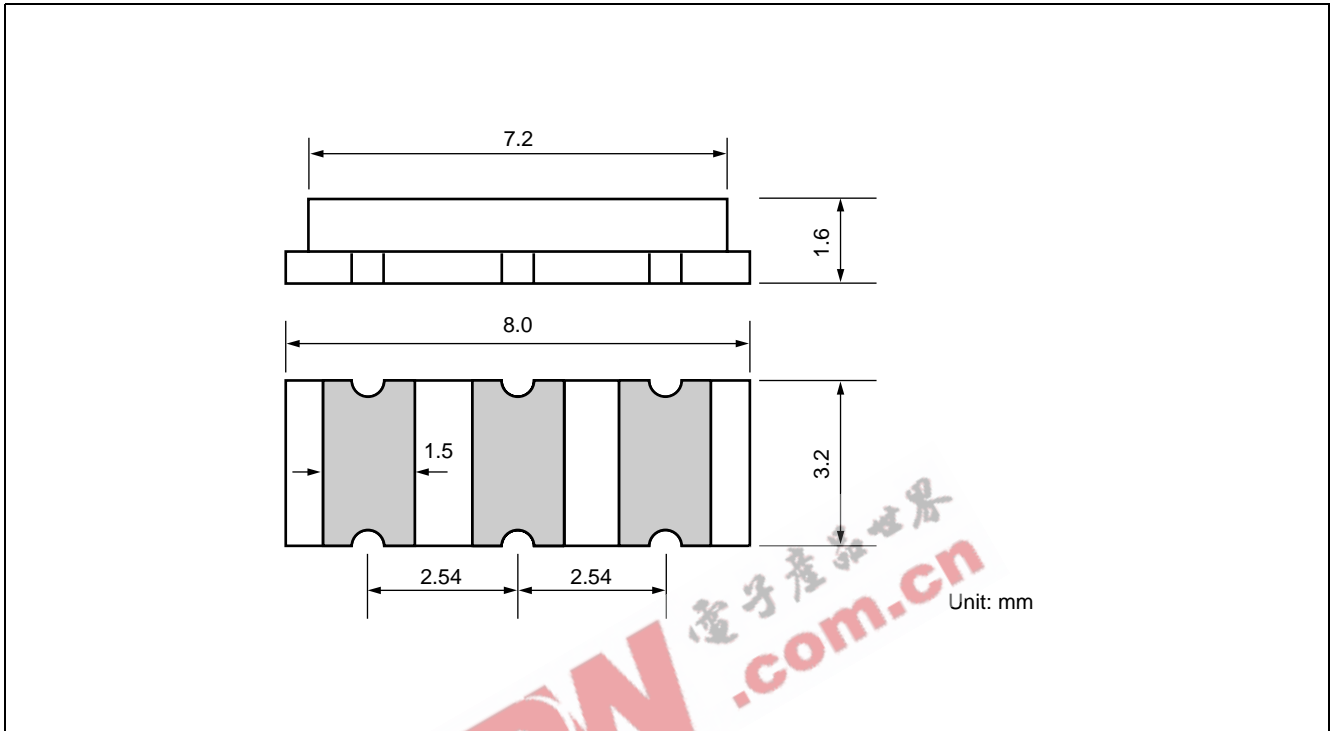
Capacitance	Marking color
10 pF	Yellow
20 pF	White
30 pF	Gray

## PIN ASSIGNMENT



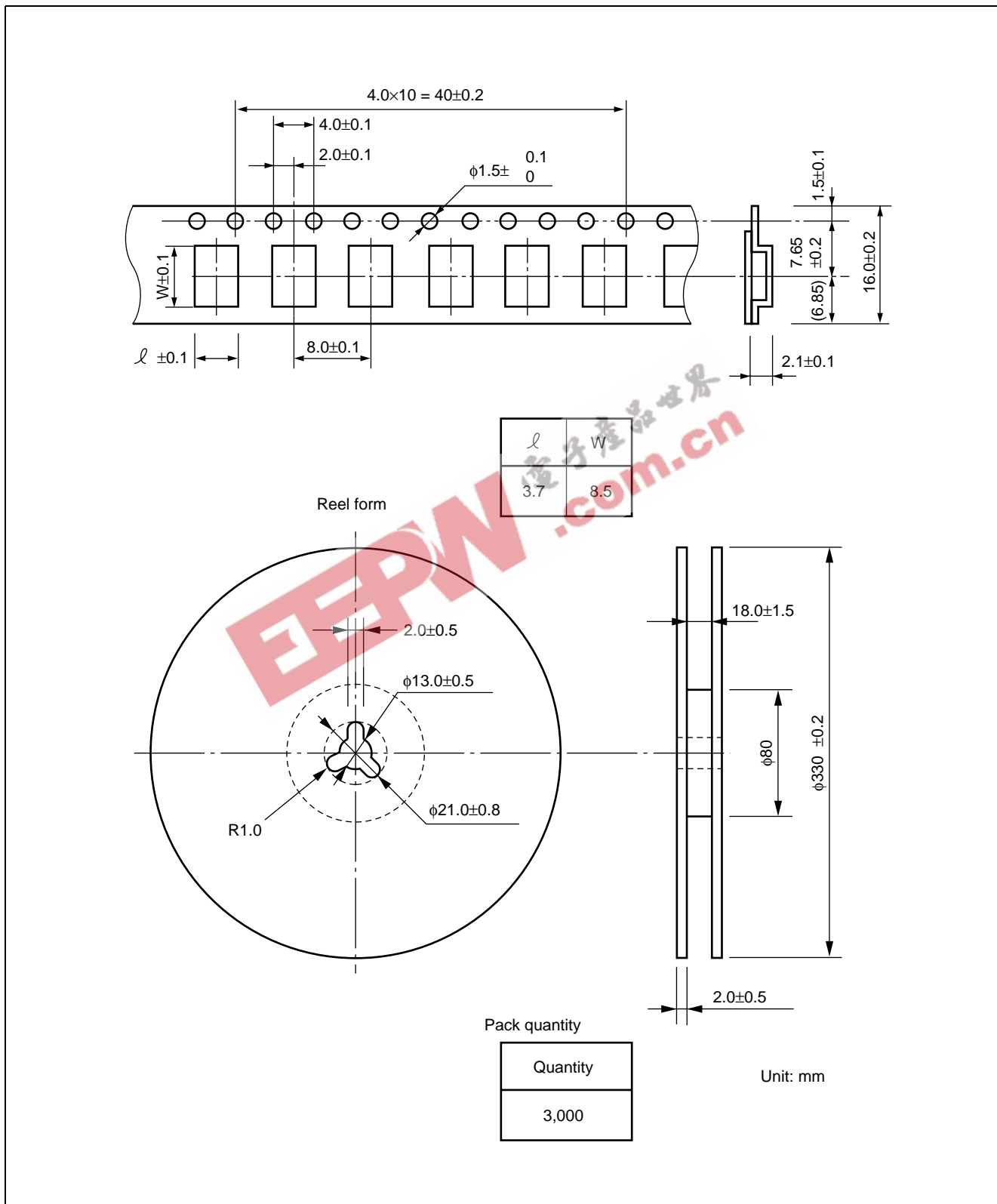
# FAR Family (C4 series N type)

## ■ DIMENSIONS



# FAR Family (C4 series N type)

## ■ TAPING FORM AND DIMENSIONS





# FAR Family (C4 series N type)

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