Ceramic Resonators

Lead type
3.45 to 40MHz

FCR(Built-in load capacity/External load capacity) series

Issue date: August 2007

- All specifications are subject to change without notice.
- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

Ceramic Resonators(Lead)
FCR Series

Conformity to RoHS Directive

FEATURES

- The FCR series are samll leaded ceramic resonators that used thickness shear mode or 3rd over tone thickness mode element of piezo ceramics with both 3.45 to 10.0MHz and 16.0 to 50.0MHz.
- The products with built-in capacitances have a dielectric element formed two capacities. This eliminates the external loading capacitors, thus simplifying circuit requirements.
- Optimization of the temperature characteristics of both the piezoelectric materials and dielectric materials has resulted in stable oscillating frequency.
- Ammo packing is available for various automatic insert machine (1500pieces/box). Short lead type and L-bend lead type are also available, please contact TDK.
- Setting or matching of oscillating circuit condition which correspond to new models IC, application IC or custom IC are available, please contact TDK.
- The products don't contain Lead at solder of internal joint and solder plating oflead wire. You can use both Pb free solder (Sn-3Ag-0.5Cu) and Sn-Pb eutectic solder on your production.

TEMPERATURE RANGES

Operating/Storage	–40 to +85°C

OSCILLATING FREQUENCY DRIFT OVER TEMPERATURE

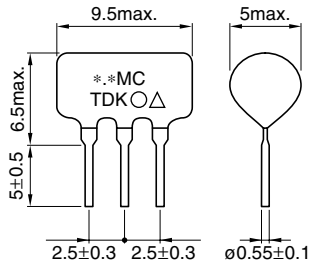
±0.3%/–40 to +85°C(Standard)

OSCILLATING FREQUENCY AGING

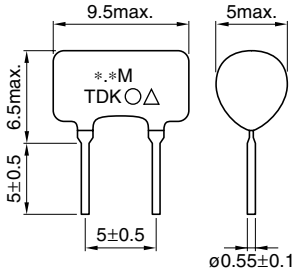
±0.3%/10years(Standard)

SHAPES AND DIMENSIONS

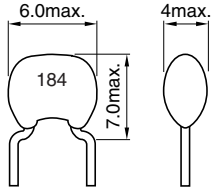
FCR∗∗.∗**MC5**
BUILT-IN LOADING TYPE



FCR∗∗.∗**M5**
EXTERNAL LOADING TYPE



FCR∗∗.∗**M6**
EXTERNAL LOADING TYPE



Dimensions in mm

PRODUCT IDENTIFICATIONS

FCR	4.0	MC5	□□	□□	□□	□□	□□
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

(1) Series name

FCR	Ceramic resonator (lead)

(2) Oscillating frequency

(3) Production type and dimensions

Symbol	Oscillating frequency range	Loading capacitors
M5	3.45 to 10.0 MHz	External
MC5	3.45 to 10.0 MHz	Internal
M6	16.0 to 50.0 MHz	External

(4) Initial oscillating frequency tolerance

Non	±0.5%	±0.5%	±0.5%
A	±0.3%	±0.3%	—
Others	Custom made		

(5) Oscillating frequency correlation

Non	Non correlation for TDK Standard
F	Custom made
F1	Custom made
F2	Custom made
Others	Custom made

(6) Loading capacitance

(7) Products thickness

Non	Standard
N	Custom made
Others	Custom made

(8) Packaging style and lead length

Symbol	Packaging style	Lead length
Non	Bulk (500pieces)	Standard (5mm)
M	Bulk (500pieces)	3.1mm
M3	Bulk (500pieces)	3.0mm
T	Taping (Ammo pack 16mm height,1500pieces)	—
T3	Taping (Ammo pack 18mm height,1500pieces)	—
Others	Custom made	

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ELECTRICAL CHARACTERISTICS

Part No.	Oscillating frequency Fosc (MHz)	Resonant impedance Ro(Ω)	Initial Fosc tolerance* (%)	Capacitance CL1/CL2 (pF)
FCR**.*MC5 type(Built-in loading type)				
FCR3.45MC5	3.45	20	±0.5	30/30
FCR3.52MC5	3.52	20	±0.5	30/30
FCR3.58MC5	3.58	20	±0.5/0.3	30/30
FCR3.64MC5	3.64	20	±0.5	30/30
FCR3.84MC5	3.84	20	±0.5	30/30
FCR4.0MC5	4.00	20	±0.5/0.3	30/30
FCR4.19MC5	4.19	20	±0.5/0.3	30/30
FCR5.0MC5	5.00	20	±0.5/0.3	30/30
FCR6.0MC5	6.00	20	±0.5/0.3	30/30
FCR8.0MC5	8.00	30	±0.5/0.3	20/20
FCR8.38MC5	8.38	30	±0.5/0.3	20/20
FCR10.0MC5	10.00	30	±0.5/0.3	20/20
FCR**.*M5 type(External loading type)				
FCR3.45M5	3.45	20	±0.5	
FCR3.52M5	3.52	20	±0.5	
FCR3.58M5	3.58	20	±0.5/0.3	
FCR3.64M5	3.64	20	±0.5	
FCR3.84M5	3.84	20	±0.5	
FCR4.0M5	4.00	20	±0.5/0.3	
FCR4.19M5	4.19	20	±0.5/0.3	
FCR5.0M5	5.00	20	±0.5/0.3	
FCR6.0M5	6.00	20	±0.5/0.3	
FCR8.0M5	8.00	30	±0.5/0.3	
FCR8.38M5	8.38	30	±0.5/0.3	
FCR10.0M5	10.00	30	±0.5/0.3	
FCR**.*M6 type(External loading type)				
FCR16.0M6	16.00	40	±0.5	
FCR18.0M6	18.00	40	±0.5	
FCR18.43M6	18.43	40	±0.5	
FCR24.0M6	24.00	40	±0.5	
FCR25.0M6	25.00	40	±0.5	
FCR33.86M6	33.86	40	±0.5	
FCR40.0M6	40.00	40	±0.5	

* ±0.5% is standard.

• These values are typical. Application frequency are also available. Please contact TDK.

RELIABILITY AND TEST CONDITIONS

The following test items are satisfied.

(1) Oscillating frequency change: within ±0.25%

(2) Resonant resistance change: within ±10Ω

(3) Appearance, serious abnormalities not to exist.

Test items	Test conditions
Low temperature storage characteristics	Temperature: –40±3°C Time: 1000h
High temperature storage characteristics	Temperature: +85±2°C Time: 1000h
Humidity resistance	Humidity: 90 to 95(%)RH Temperature: 60±2°C Time: 100h
Thermal shock	–40°C (30min), 85°C (30min) x 100 cycles
Soldering heat resistance	Solder temperature: peak 260°C, 10s flow
Drop	Drop 3 times onto the concrete from a height of 1m
Vibration	Frequency: 10 ⟺ 55 ⟺ 10Hz/min Amplitude: 1.5mm X, Y and Z directions for 2h each

SOLDERABILITY

The lead wires are adopted Pb free plating wire to apply Pb free soldering. You can also use current Sn-Pb eutectic solder.

Test conditions	Test result
With Rosin-ethanol 25% by weight,dip in Sn-Pb eutectic solder bath at 230±5°C for 3±0.5sec. or Pb free solder(Sn-3Ag-0.5Cu) bath at 245±2°C for 3±0.2sec.	95% minimum of surface should be covered by new solder.

RECOMMENDED SOLDERING CONDITIONS

This is the fit product for flow soldering.

FLOW SOLDERING CONDITION

Heat-resistant temperature	260±5°C
Heat-resistant time	10±1sec.
Number of times	1time

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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Данный компонент на территории Российской Федерации

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http://moschip.ru/get-element

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