

Piezoelectronic Ceramic Filters

Lead type

10.7MHz

FFE 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.
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Ceramic Filters

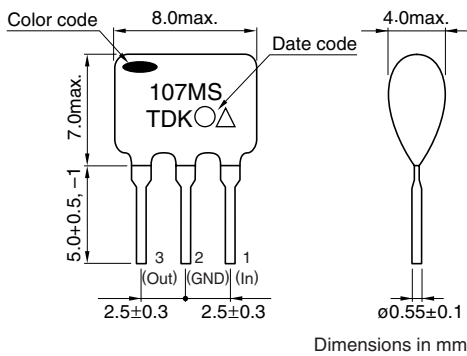
FFE Series(Lead)

Conformity to RoHS Directive

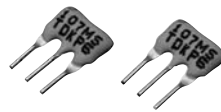
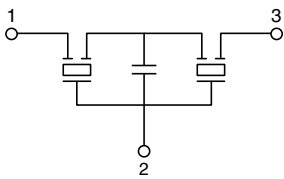
FEATURES

- To small dispersion of center frequency in our products, devices in a single rank can be supplied. Consequently, adjustment-free IC circuits are easy produced.
- Because of the small characteristic dependence on temperature, IF circuit can be made to have a highly stabilized temperature(Temperature coefficient of center frequency : $\pm 50\text{ppm}/^\circ\text{C}$).
- The size and weight are small and light.
- Because of the small loss dispersion as well as the low loss characteristics, a product of high sensitivity can be manufactured in the form of set.
- Ammo packing is available for various automatic insert machine (1800pieces/box). Short lead type and L-bend lead type are also available, please contact TDK.
- The products do not contain lead at solder of internal joint and solder plating of lead wire. You can use both Pb free solder (Sn-3Ag-0.5Cu) and Sn-Pb eutectic solder on your production.

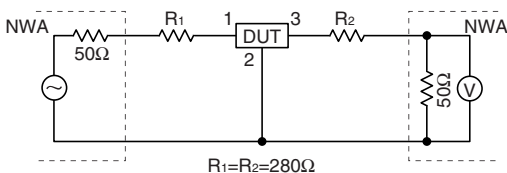
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



MEASUREMENT CIRCUIT



Reference Level: Short condition between 1 and 3 without DUT.

PRODUCT IDENTIFICATIONS

| FFE | 1070 | MA | 11 | U | X | L |
|-----|------|-----|-----|-----|-----|-----|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |

(1) Series name

| | |
|-----|----------------|
| FFE | Ceramic filter |
|-----|----------------|

(2) Center frequency

| | |
|------|-----------|
| 1060 | 10.600MHz |
| 1070 | 10.700MHz |
| 1080 | 10.800MHz |

(3) 3dB band width(BW3)

| | |
|----|-----------|
| MA | 280±50kHz |
| NA | 230±50kHz |
| MS | 180±40kHz |
| MJ | 150±40kHz |

(4) Center frequency tolerance

| | |
|----|--------|
| 10 | ±20kHz |
| 11 | ±30kHz |

(5) Packaging style for product type

| Symbol | Shapes dimensions (mm)max. | | Packaging style | BW3 symbol | | | |
|--------|----------------------------|--------|-----------------|------------|----|----|----|
| | Width | Height | | MA | NA | MS | MJ |
| U | 7.0 | 7.0 | Bulk | ✓ | ✓ | | |
| S | 8.0 | 7.0 | Bulk | | | | ✓ |
| F | 8.0 | 7.0 | Bulk | | | | ✓ |
| H | 7.0 | 7.0 | Ammo pack | ✓ | ✓ | | |
| R | 8.0 | 7.0 | Ammo pack | | | | ✓ |
| T | 8.0 | 7.5 | Ammo pack | | | | ✓ |

(6) Electrical characteristics

| Symbol | Classification | BW3 symbol | | | |
|--------|----------------|------------|----|----|----|
| | | MA | NA | MS | MJ |
| A | Low loss | ✓ | ✓ | ✓ | ✓ |
| B | Standard | ✓ | ✓ | | |
| X | Standard | ✓ | ✓ | | |
| Others | Custom made | | | | |

(7) Lead length

| | |
|--------|------------------------------------|
| L | 5.0+0.5, -1.0mm Taping (Ammo pack) |
| M | 3.0±0.5mm |
| Others | Custom made |

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ELECTRICAL CHARACTERISTICS

| Part No. | 3dB band width (kHz) | 20dB band width (kHz)max. | Insertion loss (dB)max. | SPR attenuation (dB)min. |
|-------------------------------|-------------------------|------------------------------|----------------------------|-----------------------------|
| Standard type | | | | |
| FFE1070MA11UXL | 280±50 | 600 | 6.0 | 35 |
| FFE1070NA11UXL | 230±50 | 570 | 6.0 | 35 |
| FFE1070MS11SBL | 180±40 | 520 | 7.0 | 35 |
| FFE1070MJ11FBL | 150±40 | 400 | 10.0 | 35 |
| Low loss type | | | | |
| FFE1070MA11UAL | 280±50 | 600 | 5.0 | 35 |
| FFE1070NA11UAL | 230±50 | 570 | 4.5 | 35 |
| FFE1070MS11SAL | 180±40 | 520 | 5.0 | 35 |
| FFE1070MJ11FAL | 150±40 | 400 | 7.0 | 35 |
| Group delay time control type | | | | |
| FFE1070NA10UGL* | 230±50 | 570 | 6.0 | 35 |
| FFE1070MS10SGL* | 180±40 | 520 | 7.0 | 35 |

* Group delay time: 0.50max.

RELIABILITY AND TEST CONDITIONS

The following test items are satisfied.

- (1) Center frequency: Within ±30kHz
- (2) 3dB band width: Within ±20kHz
- (3) 20dB band width: Within ±30kHz
- (4) Insertion loss: Within ±2dB
- (5) Attenuation: 25dB min.

| Test items | Test conditions |
|--|--|
| Low temperature storage characteristics | Temperature: -40±3°C Time: 100h |
| High temperature storage characteristics | Temperature: +85±2°C Time: 100h |
| Humidity resistance | Loading: DC.5V(between in/out and ground terminal) Humidity: 90 to 95(%)RH Temperature: 60±2°C Time: 100h |
| Thermal shock | -40°C (30min), 85°C (30min) x 5 cycles |
| Soldering heat resistance | Solder temperature: peak 260°C, 10s flow |
| Drop | Drop 3 times onto a hard wooden board from a height of 1m |
| Vibration | Frequency: 10 ⇔ 55 ⇔ 10Hz/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-methanol 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 |

AMEYA360

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