

## 2 Pole MCF

**(Surface-mount Type)**

## ■ Features

This is a crystal filter that supports surface mounting. Adoption of a ceramic container has enabled the dimensions of the filter to be 7 x 5 x 1.35 mm. Supports a wide frequency range.

- Supports IR reflow and VSP.  
(Contact us for information on the temperature profile.)
- Supports surface mounting. (Packed with embossed tape)
- Excellent heat- and shock-resistance.
- Good guaranteed attenuation.
- Frequency range Fundamental: 20 to 100 MHz, Overtone: 45 to 150 MHz
- Also supports 3-pole MCF.



Pb  
Free

**RoHS Compliant**  
Directive 2002/95/EC

## ■ Specifications

| Model                                     | 21E7.5AD                   | 21E15AB                   | 21E30AD                   | 21E7.5A                    | 21E15AA                   | 21E30AF                   |
|-------------------------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|
| Number of poles                           | 2                          | 2                         | 2                         | 2                          | 2                         | 2                         |
| Nominal frequency                         | 21.4MHz                    | 21.4MHz                   | 21.4MHz                   | 21.7MHz                    | 21.7MHz                   | 21.7MHz                   |
| 3dB Passband width                        | ±3.75kHz min.              | ±7.5kHz min.              | ±15kHz min.               | ±3.75kHz min.              | ±7.5kHz min.              | ±15kHz min.               |
| Stop bandwidth                            | ±12.5 kHz max.<br>at 15 dB | ±25 kHz max.<br>at 15 dB  | ±50 kHz max.<br>at 15 dB  | ±12.5 kHz max.<br>at 15 dB | ±25 kHz max.<br>at 15 dB  | ±50 kHz max.<br>at 15 dB  |
| Ripple                                    | 1dB max.                   | 1dB max.                  | 1.5dB max.                | 1dB max.                   | 1dB max.                  | 1.5dB max.                |
| Insertion loss<br>(insertion attenuation) | 2dB max.                   | 1.5dB max.                | 1.5dB max.                | 2dB max.                   | 1.5dB max.                | 1.5dB max.                |
| Guaranteed attenuation                    | 60 dB min.<br>at –910 kHz  | 60 dB min.<br>at –910 kHz | 50 dB min.<br>at –910 kHz | 60 dB min.<br>at –910 kHz  | 60 dB min.<br>at –910 kHz | 50 dB min.<br>at –910 kHz |
| Spurious characteristics                  | 15 dB min.                 | 15 dB min.                | 15 dB min.                | 15 dB min.                 | 15 dB min.                | 15 dB min.                |
| Terminating impedance                     | 1500Ω//5pF                 | 1500Ω//1pF                | 2500Ω//1.2pF              | 850Ω//6pF                  | 1500Ω//1pF                | 2000Ω//1.2pF              |
| Operating temperature range               | –20 to +70°C               | –20 to +70°C              | –20 to +70°C              | –20 to +70°C               | –20 to +70°C              | –20 to +70°C              |
| Package type                              | NM7050SA                   | NM7050SA                  | NM7050SA                  | NM7050SA                   | NM7050SA                  | NM7050SA                  |
| Code for placing an order                 | 21E7.5AD-21.4M-MN15-358    | 21E15AB-21.4M-MN15-211    | 21E30AD-21.4M-MN15-359    | 21E7.5A-21.7M-MN15-366     | 21E15AA-21.7M-MN15-209    | 21E30AF-21.7M-MN15-365    |

| Model                                     | 45E7.5AB                  | 45E15A                    | 45E30AN                   | 90E9A                     |
|-------------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Number of poles                           | 2                         | 2                         | 2                         | 2                         |
| Nominal frequency                         | 45MHz                     | 45MHz                     | 45MHz                     | 90MHz                     |
| 3dB Passband width                        | ±3.75kHz min.             | ±7.5kHz min.              | ±15kHz min.               | ±4kHz min.                |
| Stop bandwidth                            | ±25 kHz max.<br>at 20 dB  | ±25 kHz max.<br>at 13 dB  | ±60 kHz max.<br>at 20 dB  | ±50 kHz max.<br>at 25 dB  |
| Ripple                                    | 1dB max.                  | 1dB max.                  | 1dB max.                  | 0.5dB max.                |
| Insertion loss<br>(insertion attenuation) | 2dB max.                  | 3dB max.                  | 2dB max.                  | 5dB max.                  |
| Guaranteed attenuation                    | 60 dB min.<br>at –910 kHz | 70 dB min.<br>at –910 kHz | 60 dB min.<br>at –910 kHz | 70 dB min.<br>at –910 kHz |
| Spurious characteristics                  | 10 dB min.                | 10 dB min.                | 5 dB min.                 | 20 dB min.                |
| Terminating impedance                     | 200Ω//4pF                 | 1000Ω//4pF                | 650Ω//1.5pF               | 200Ω//8pF                 |
| Operating temperature range               | –20 to +70°C              | –30 to +70°C              | –20 to +70°C              | –20 to +70°C              |
| Package type                              | NM7050SA                  | NM7050SA                  | NM7050SA                  | NM7050SA                  |
| Code for placing an order                 | 45E7.5AB-45M-MN15-367     | 45E15A-45M-MN15-297       | 45E30AN-45M-MN15-369      | 90E9A-90M-MN15-226        |

## ■ Dimensions

