

## 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 90 MHz, Overtone: 60 to 150 MHz
- Also supports 3-pole MCF.



Pb Free

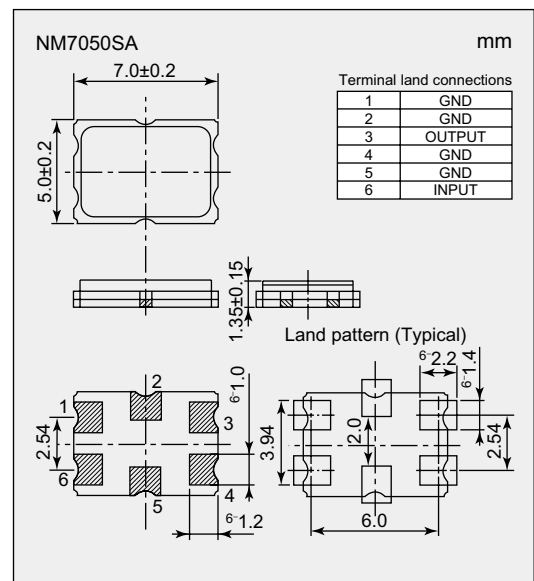
RoHS Compliant  
Directive 2011/65/EU

### ■ Specifications

Model	21E7.5AD	21E15AB	21E30AD	21E7.5A	21E15AA	21E30AF
Number of Poles	2					
Nominal Frequency	21.4 MHz			21.7 MHz		
3 dB Passband Width	Min. $\pm 3.75$ kHz	Min. $\pm 7.5$ kHz	Min. $\pm 15$ kHz	Min. $\pm 3.75$ kHz	Min. $\pm 7.5$ kHz	Min. $\pm 15$ kHz
Stop Bandwidth	Max. $\pm 12.5$ kHz at 15 dB	Max. $\pm 25$ kHz at 15 dB	Max. $\pm 50$ kHz at 15 dB	Max. $\pm 12.5$ kHz at 15 dB	Max. $\pm 25$ kHz at 15 dB	Max. $\pm 50$ kHz at 15 dB
Ripple	Max. 1 dB	Max. 1 dB	Max. 1.5 dB	Max. 1 dB	Max. 1 dB	Max. 1.5 dB
Insertion Attenuation (Insertion Loss)	Max. 2 dB	Max. 1.5 dB	Max. 1.5 dB	Max. 2 dB	Max. 1.5 dB	Max. 1.5 dB
Guaranteed Attenuation	Min. 60 dB at $-910$ kHz	Min. 60 dB at $-910$ kHz	Min. 50 dB at $-910$ kHz	Min. 60 dB at $-910$ kHz	Min. 60 dB at $-910$ kHz	Min. 50 dB at $-910$ kHz
Spurious Characteristics	Min. 15 dB Within $\pm 1$ MHz	Min. 15 dB Within $\pm 1$ MHz	Min. 15 dB Within $\pm 1$ MHz	Min. 15 dB Within $\pm 1$ MHz	Min. 15 dB Within $\pm 1$ MHz	Min. 15 dB Within $\pm 1$ MHz
Terminating Impedance	1.5 k $\Omega$ // 5 pF	1.5 k $\Omega$ // 1 pF	2.5 k $\Omega$ // 1.2 pF	850 $\Omega$ // 6 pF	1.5 k $\Omega$ // 1 pF	2 k $\Omega$ // 1.2 pF
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					
Specification Number	MN15-358	MN15-211	MN15-359	MN15-366	MN15-209	MN15-365

Model	45E7.5AB	45E15A	45E30AN	90E9A
Number of poles	2			
Nominal frequency	45 MHz			90 MHz
3 dB Passband width	Min. $\pm 3.75$ kHz	Min. $\pm 7.5$ kHz	Min. $\pm 15$ kHz	Min. $\pm 4$ kHz
Stop bandwidth	Max. $\pm 25$ kHz at 20 dB	Max. $\pm 25$ kHz at 13 dB	Max. $\pm 60$ kHz at 20 dB	Max. $\pm 50$ kHz at 25 dB
Ripple	Max. 1 dB	Max. 1 dB	Max. 1 dB	Max. 0.5 dB
Insertion loss (insertion attenuation)	Max. 2 dB	Max. 3 dB	Max. 2 dB	Max. 5 dB
Guaranteed attenuation	Min. 60 dB at $-910$ kHz	Min. 70 dB at $-910$ kHz	Min. 60 dB at $-910$ kHz	Min. 70 dB at $-910$ kHz
Spurious characteristics	Min. 10 dB Within $\pm 1$ MHz	Min. 10 dB Within $\pm 1$ MHz	Min. 5 dB Within $\pm 1$ MHz	Min. 20 dB Within $\pm 1$ MHz
Terminating impedance	200 $\Omega$ // 4 pF	1000 $\Omega$ // 4 pF	650 $\Omega$ // 1.5 pF	200 $\Omega$ // 8 pF
Operating temperature range	$-20$ to $+70$ °C	$-30$ to $+70$ °C	$-20$ to $+70$ °C	$-20$ to $+70$ °C
Package type	NM7050SA			
Specification Number	MN15-367	MN15-297	MN15-369	MN15-226

### ■ Dimensions



Please specify the model name, frequency, and specification number when you order products.  
For further questions regarding specifications, please feel free to contact us.

## ■ Characteristics

