# MAFL-011023

![MACOM logo]

## MoCA Triplex Filter
## 5-65 / 88-1002 / 1125-1675 MHz

Rev. V5

## Features

- 75 Ohm
- SMT unit
- RoHS* Compliant

## Description

The MAFL-011023 is a low profile, surface mount filter with 3 transmission paths allowing full triplexer operation. The CATV reverse and forward bands are provided along with a further band meeting the MoCA specification. This filter is specifically designed for CATV and MoCA applications.

## Functional Schematic
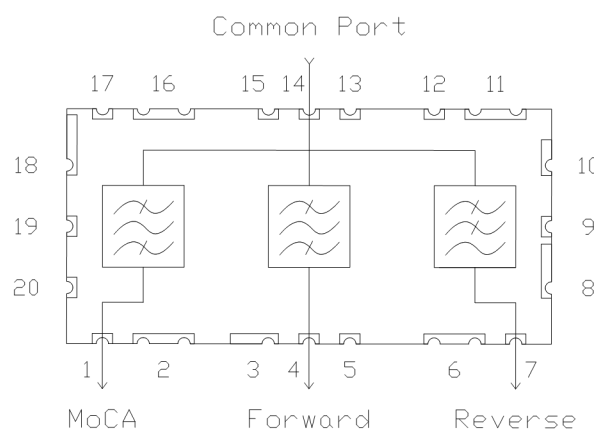


## Ordering Information

| Part Number | Package |
|---|---|
| MAFL-011023 | 200 piece reel |
| MAFL-011023-Tray | 480 piece tray |

## Pin Configuration

| Pin Number | Function |
|---|---|
| 1 | MoCA Port |
| 4 | Forward Port |
| 7 | Reverse Port |
| 14 | Common Port |
| 2, 3, 5, 6, 8-13, 15-20 | Ground |

* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

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## Electrical Specifications: $T_A$ = +25°C, $Z_0$ = 75Ω

| Parameter | Test Conditions | Units | Min. | Typ. | Max. |
|---|---|---|---|---|---|
| Reverse Path Insertion Loss | 5 - 65 MHz | dB | — | 1.2 | 1.5 |
| Reverse Path Rejection | 88 - 1002 MHz<br>1125 - 1600 MHz<br>1600 - 1675 MHz<br>1675 - 3000 MHz | dB | 64<br>60<br>56<br>30 | 70<br>64<br>60<br>50 | — |
| Forward Path Insertion Loss | 88 - 126 MHz<br>126 - 860 MHz<br>860 - 1002 MHz | dB | — | 1.50<br>0.75<br>2.5 | 2.00<br>1.50<br>2.75 |
| Forward Path Rejection | 5 - 38 MHz<br>38 - 65 MHz<br>1125 - 1675 MHz<br>1675 - 3000 MHz | dB | 50<br>43<br>43<br>20 | 55<br>45<br>45<br>30 | — |
| MoCA Path Insertion Loss | 1125 - 1150 MHz<br>1150 - 1650 MHz<br>1650 - 1675 MHz | dB | — | 2.8<br>2.5<br>2.5 | 3.0<br>2.7<br>3.0 |
| MoCA Path Rejection | 5 - 65 MHz<br>88 - 1002 MHz<br>2300 - 3000 MHz | dB | 49<br>49<br>25 | 70<br>55<br>35 | — |
| Input Return Loss | 5 - 65 MHz<br>88 - 860MHz<br>860 - 1002MHz<br>1125 - 1675 MHz | dB | 16<br>16<br>12<br>12 | 18<br>18<br>16<br>16 | — |
| Isolation - Forward to Reverse | 5 - 38 MHz<br>38 - 65 MHz<br>88 - 1002 MHz | dB | 55<br>43<br>60 | 58<br>45<br>65 | — |
| Isolation Forward to MoCA | 5 - 65 MHz<br>88 - 1002 MHz<br>1125 - 1675 MHz | dB | 49<br>49<br>43 | 70<br>55<br>45 | — |

## Recommended Maximum Ratings

| Parameter | Absolute maximum |
|---|---|
| RF Power | 250 mW |
| DC Current | 30 mA |
| Operating temperature | -40°C to +85°C |
| Storage temperature | -40°C to +85°C |

## PCB Layout
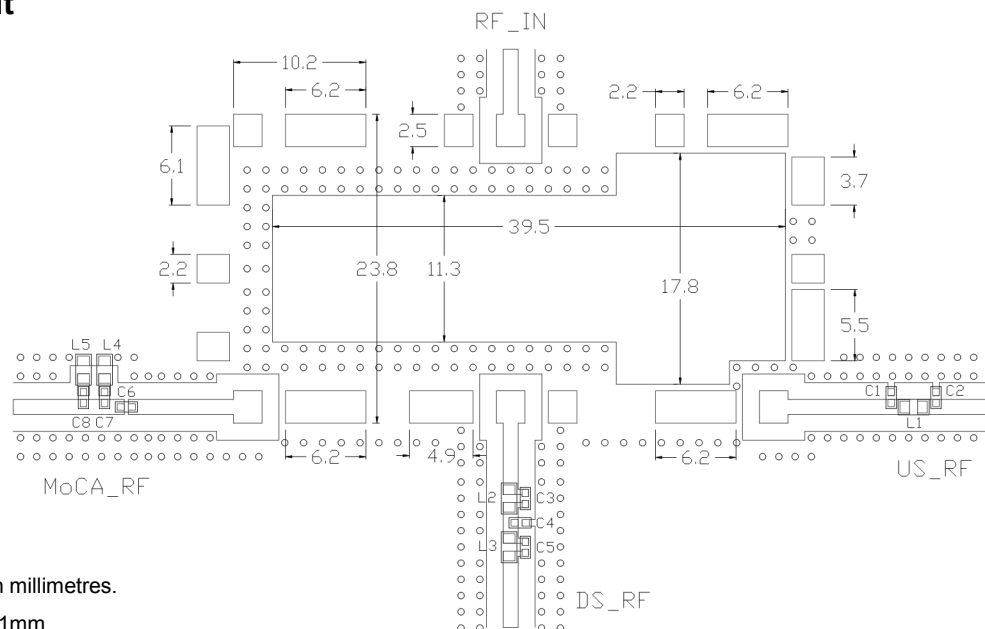


Dimensions are in millimetres.

Tolerance: .x ± 0.1mm

## Parts List

| Part | Value | Case Style |
|------|-------|-----------|
| C1 | 27pF +/- 2% | 0402 |
| C2 | 15pF +/- 2% | 0402 |
| C3 | 2.7pF +/- 0.25pF | 0402 |
| C4 | 1.3pF +/- 0.1pF | 0402 |
| C5 | 0.6pF +/- 0.1pF | 0402 |
| C6 | 2.0pF +/- 0.1pF | 0402 |
| C7 | 7.5pF +/- 0.25pF | 0402 |
| C8 | 3.0pF +/- 0.25pF | 0402 |
| L1 | 220nH +/- 2% | 0603 |
| L2 | 5.6nH +/- 2% | 0603 |
| L3 | 6.8nH +/- 2% | 0603 |
| L4 | 12nH +/- 2% | 0603 |
| L5 | 22nH +/- 2% | 0603 |

## PCB Stack-Up
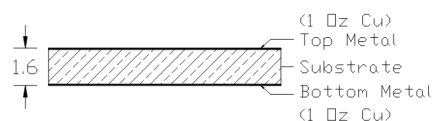


Notes:

- Gap dimension = 1.3mm
- Track dimension = 1.15mm
- Substrate is 1.6mm thick FR4
- It is not recommended to run tracks under the filter
- A ground is required on the top layer of the application PCB
- RF shield should be kept a minimum of 10mm above the filter
- Any deviation from recommended footprint may compromise the filter performance
- For optimal filter performance the 4 transmission lines need to be at 75Ω impedance

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## MoCA Triplex Filter
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## Application Schematic
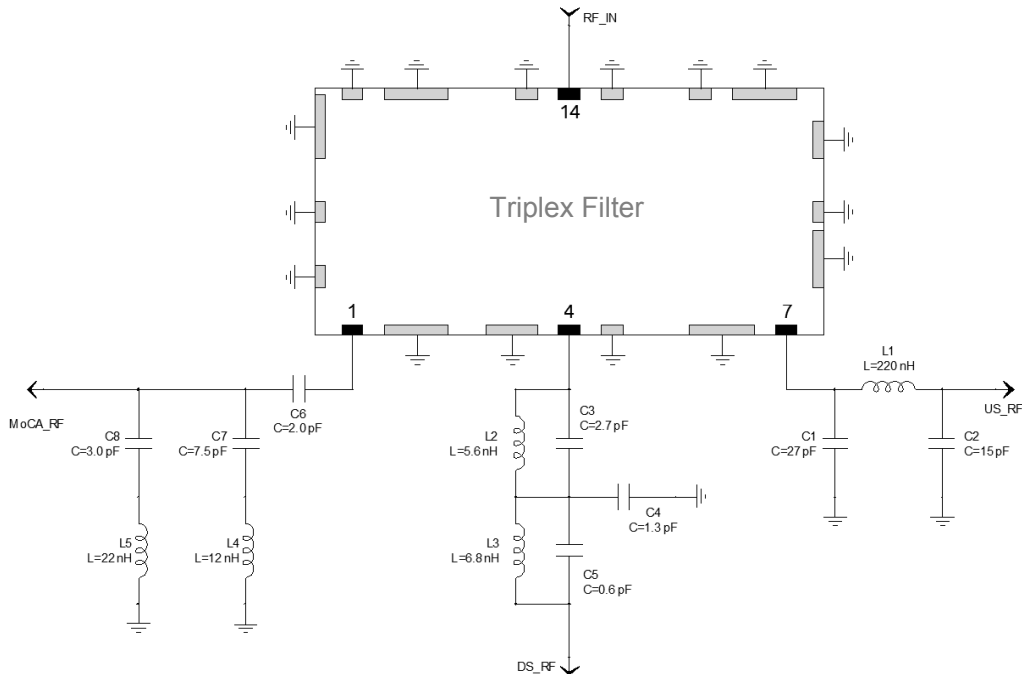


## Outline Dimensions
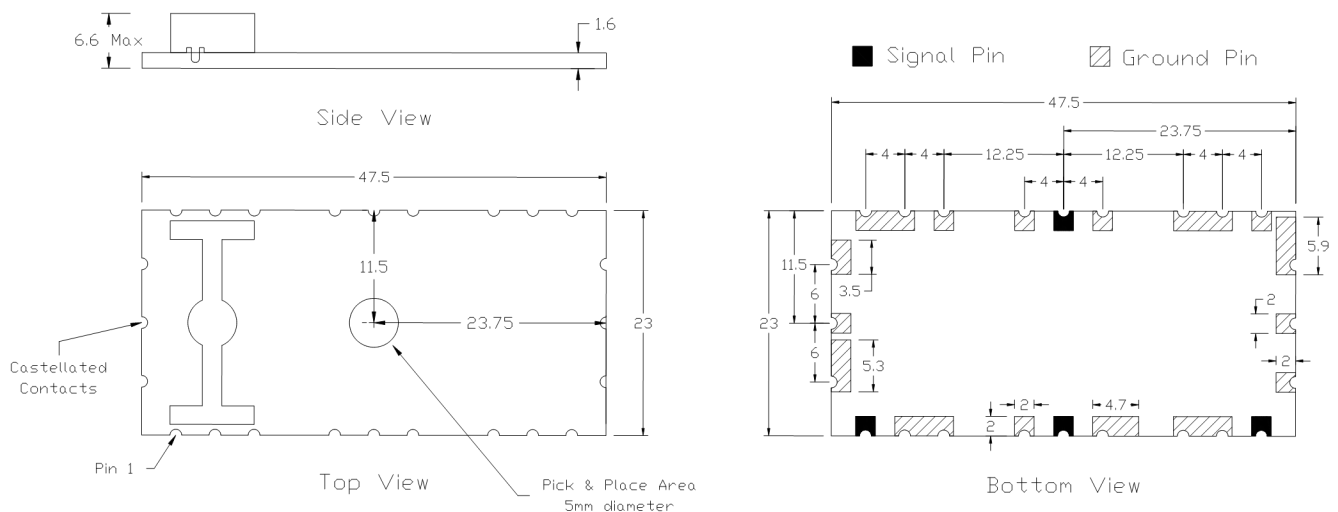


Dimensions are in millimetres.

Tolerance: .x ± 0.1 mm, except where specified.

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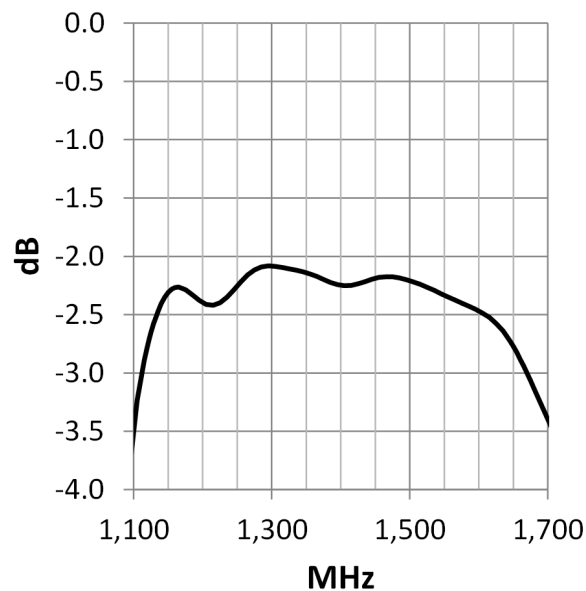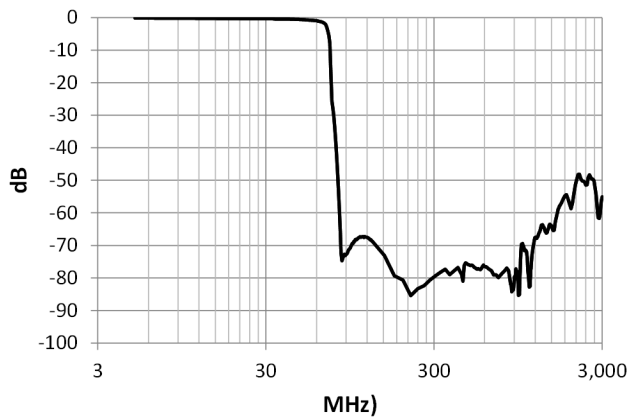
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## MoCA Triplex Filter
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Rev. V5

## Typical Performance Curves

### Reverse Insertion Loss
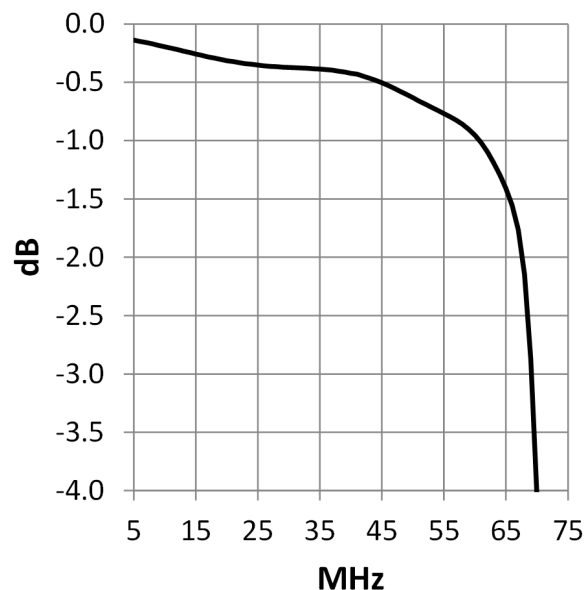


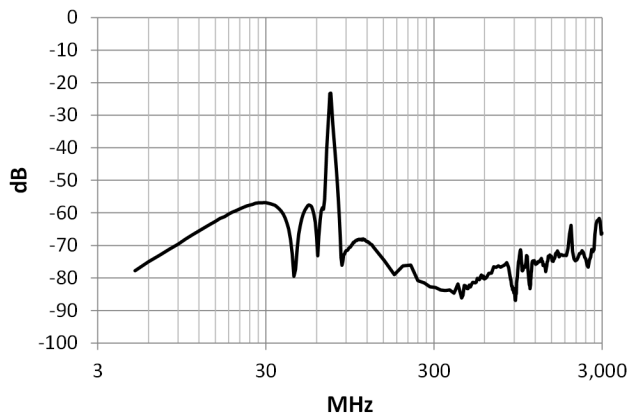### Forward Insertion Loss
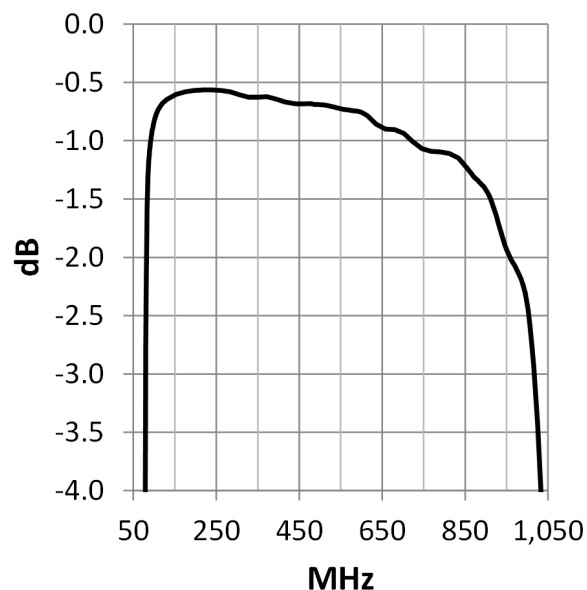


### MoCA Insertion Loss



### Common Port Return Loss

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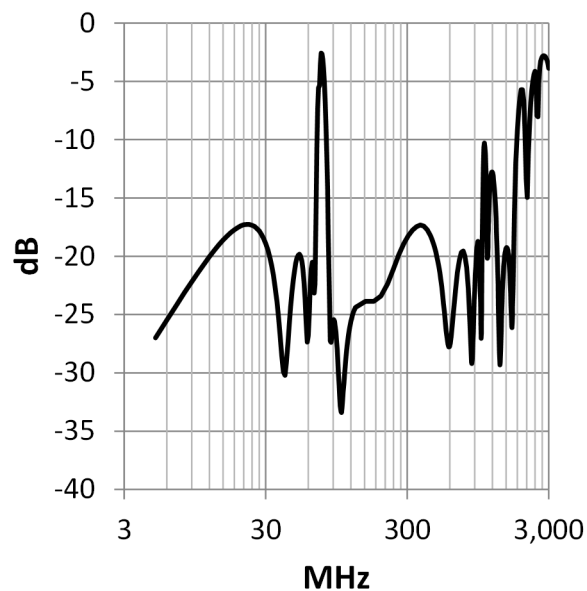
**MoCA Triplex Filter**
**5-65 / 88-1002 / 1125-1675 MHz**

Rev. V5

## Typical Performance Curves

### Reverse Path



### Forward Path
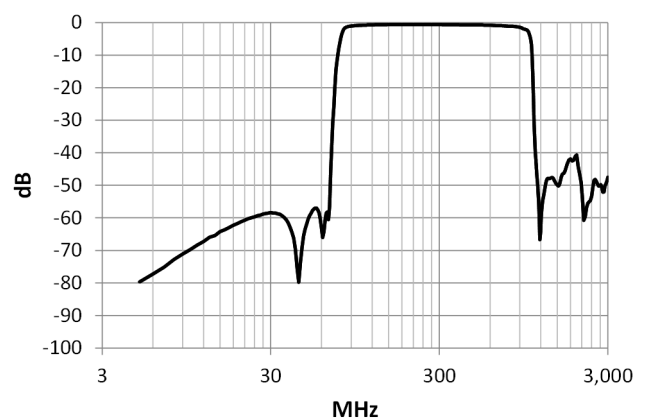


### MoCA Path
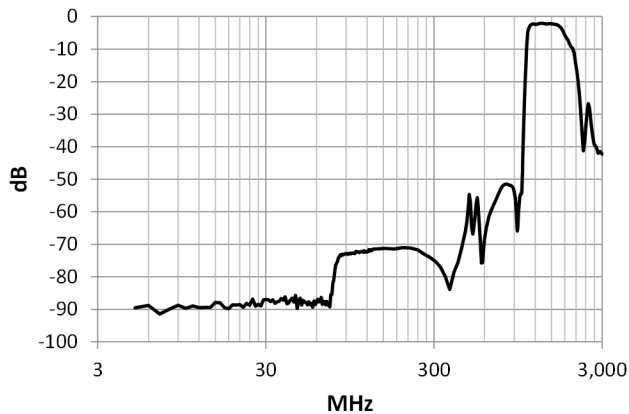


### Reverse to Forward Isolation



### Forward to MoCA Isolation

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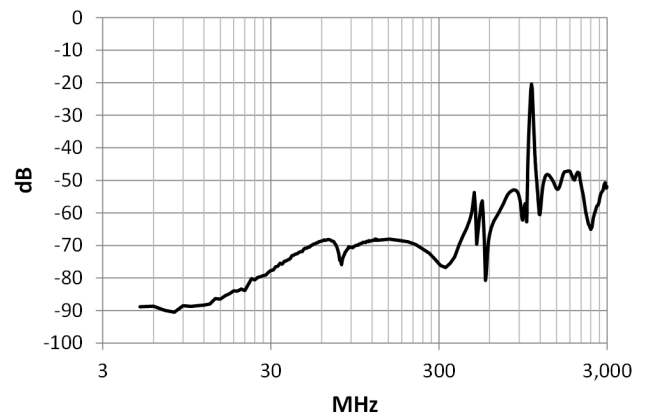
## Tape & Reel Information

| Parameter | Units | Value |
|---|---|---|
| Qty per reel | - | 200 |
| Reel Size | mm | 330 |
| Tape Width | mm | 72.0 |
| Pitch | mm | 28.0 |
| Ao | mm | 23.3 |
| Bo | mm | 47.8 |
| Ko | mm | 6.8 |
| Orientation | - | F54 |
| Reference Application Note ANI-019 for orientation | | |



Section B-B

Section A-A

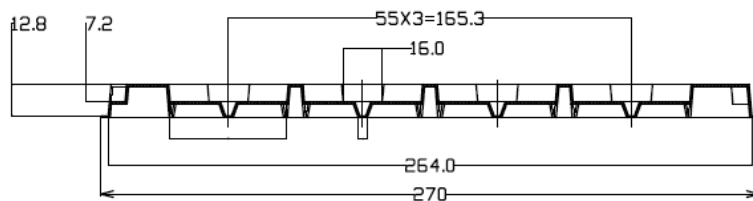A DETAIL

Dimensions are in millimetres.

Tolerance: .x ± 0.1 mm, except where specified.

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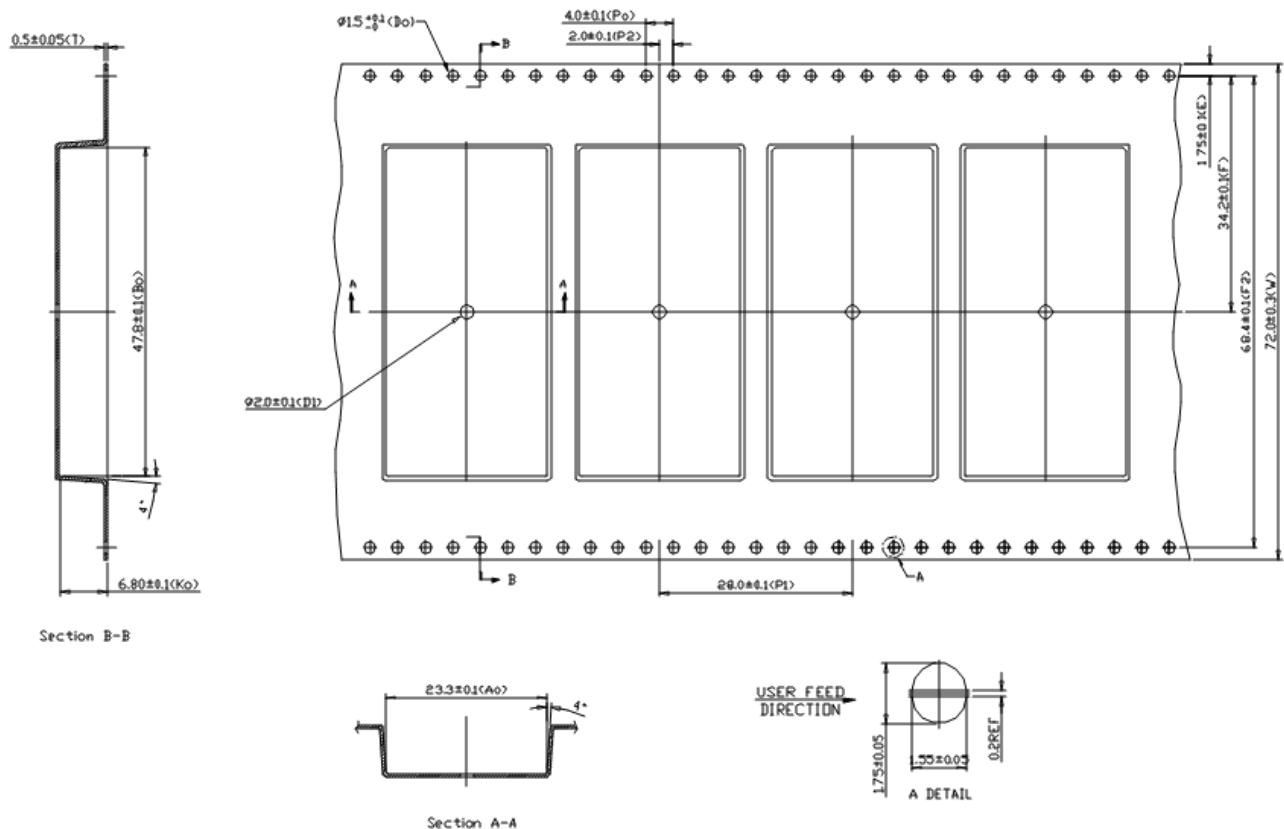
## Tray Information

| Parameter | Units | Value |
|---|---|---|
| Min Order Qty | - | 480 |
| Tray Length | mm | 270 |
| Tray Width | mm | 200 |
| Height | mm | 20.8 |
| Ao | mm | 35 |
| Bo | mm | 50 |
| Ko | mm | 14.4 |
| Orientation | - | See below |
| Consecutive trays will be stacked alternately at 180° | | |
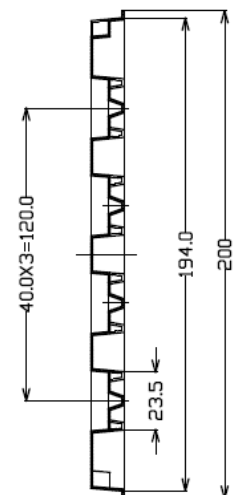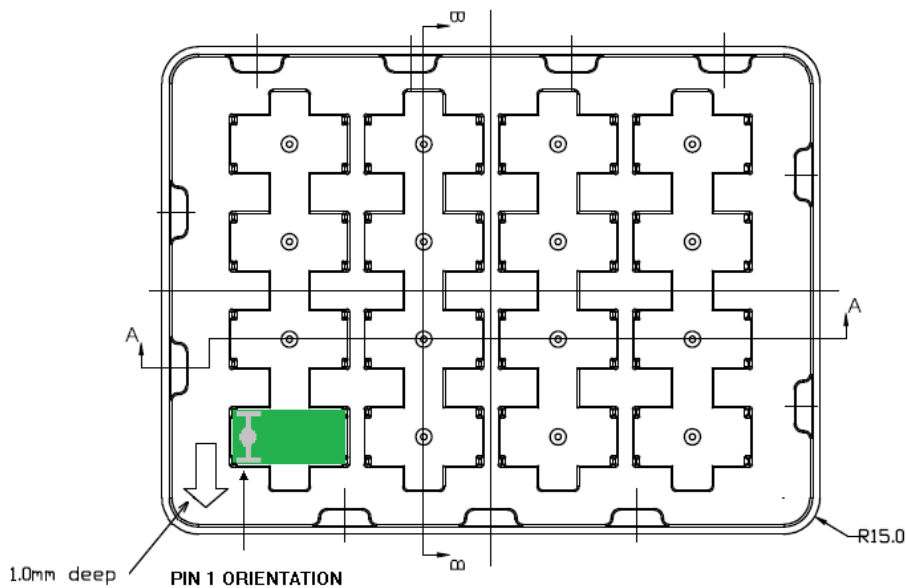


Section B-B



Section A-A

Dimensions are in millimetres.

Tolerance: .x ± 0.1 mm, except where specified.

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