

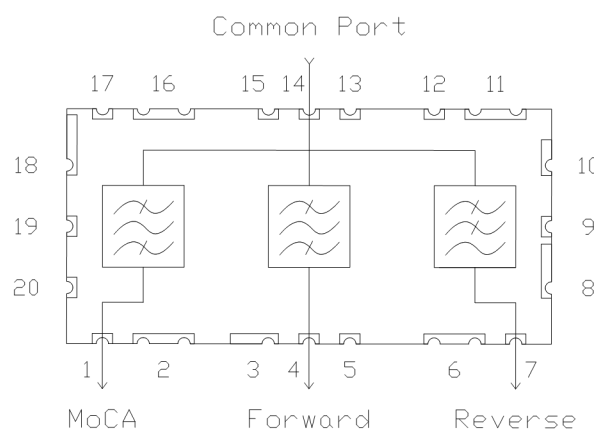
## Features

- 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.

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

Rev. V5

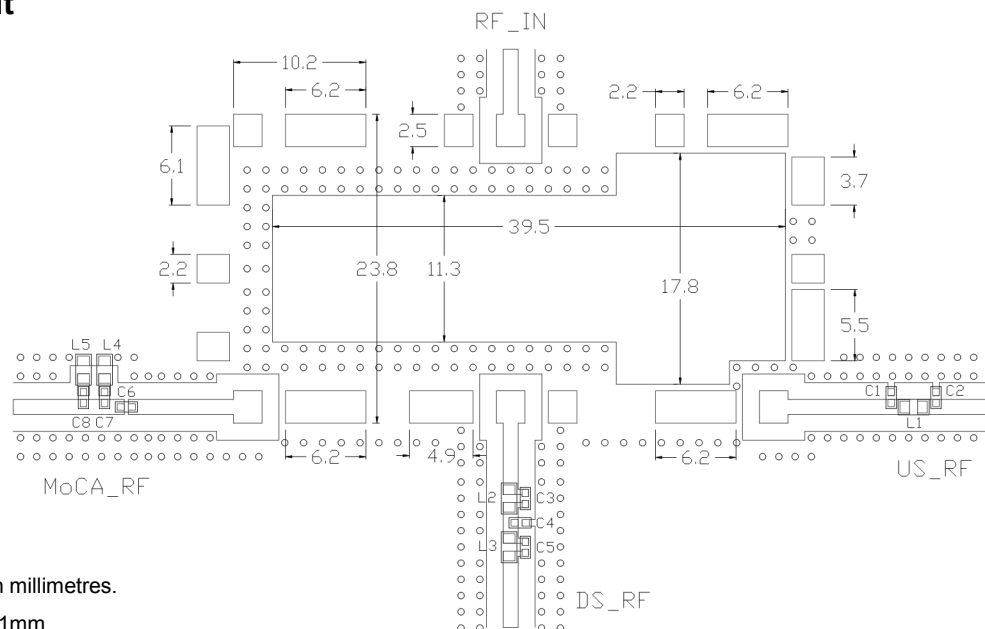
**Electrical Specifications:  $T_A = +25^\circ\text{C}$ ,  $Z_0 = 75\Omega$** 

| 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



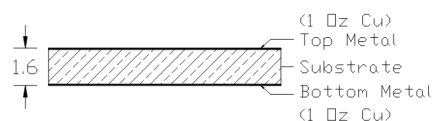
Dimensions are in millimetres.

Tolerance:  $\pm 0.1\text{mm}$

## 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       |

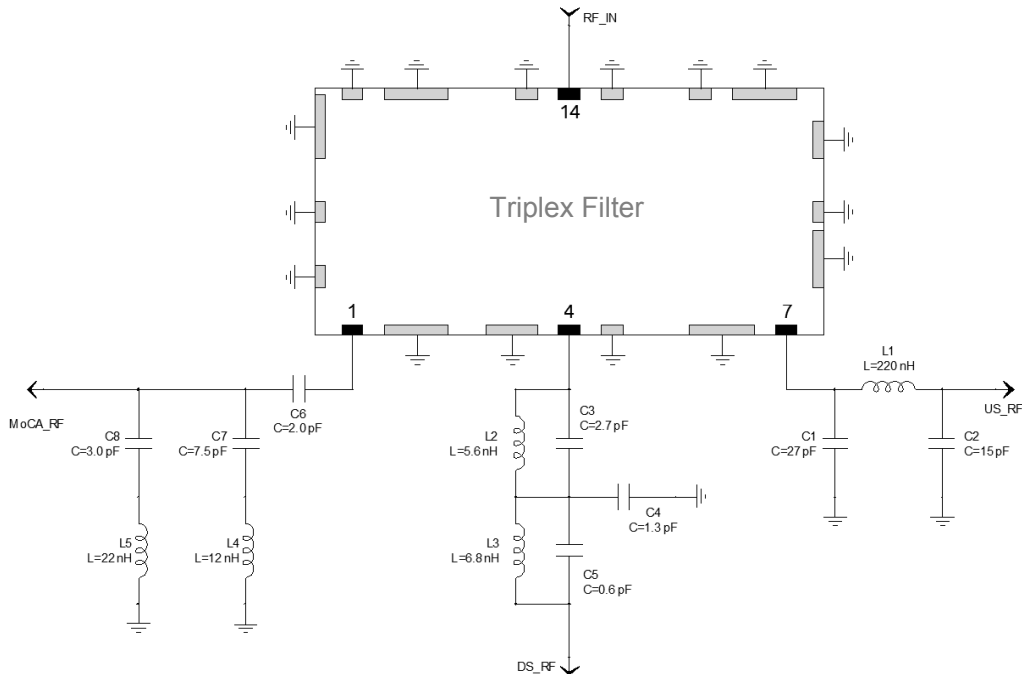
## PCB Stack-Up



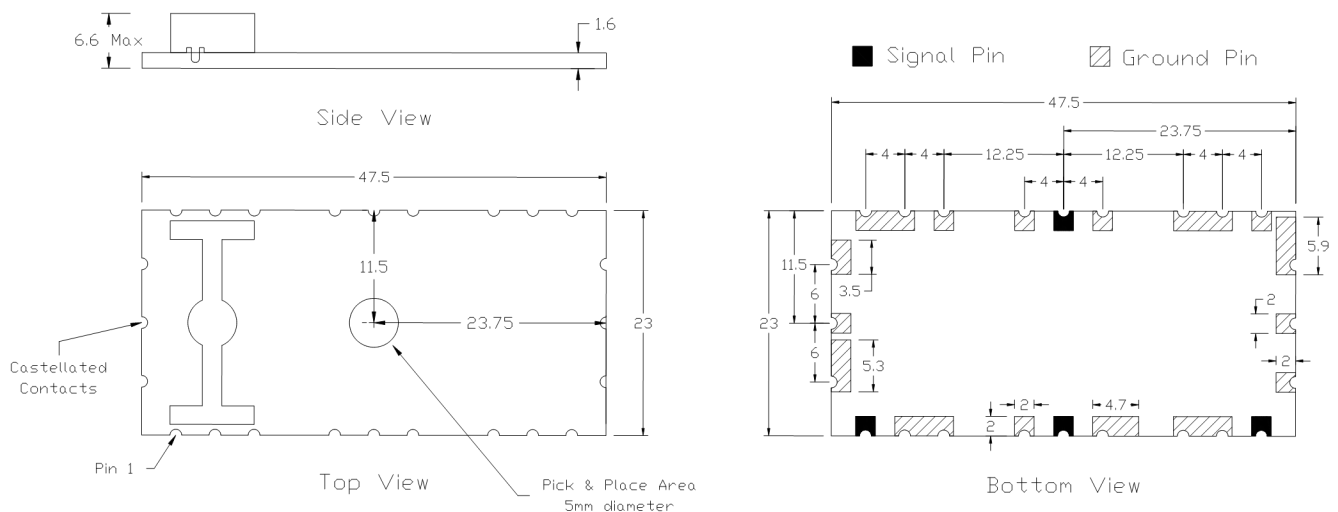
### Notes:

- 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

## Application Schematic



## Outline Dimensions

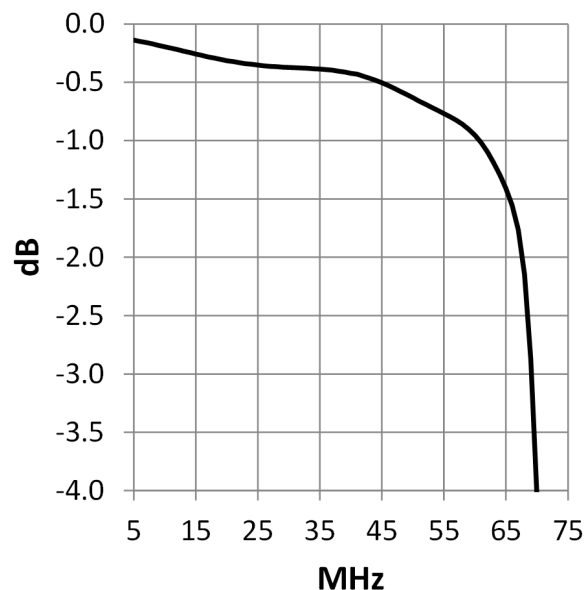


Dimensions are in millimetres.

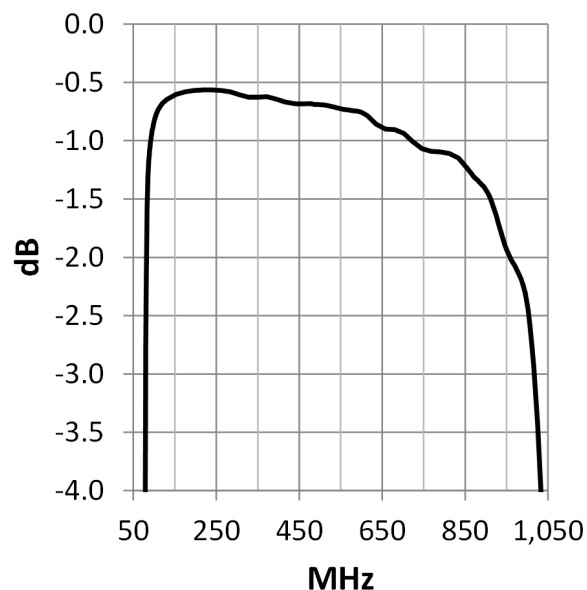
Tolerance:  $\pm 0.1$  mm, except where specified.

## Typical Performance Curves

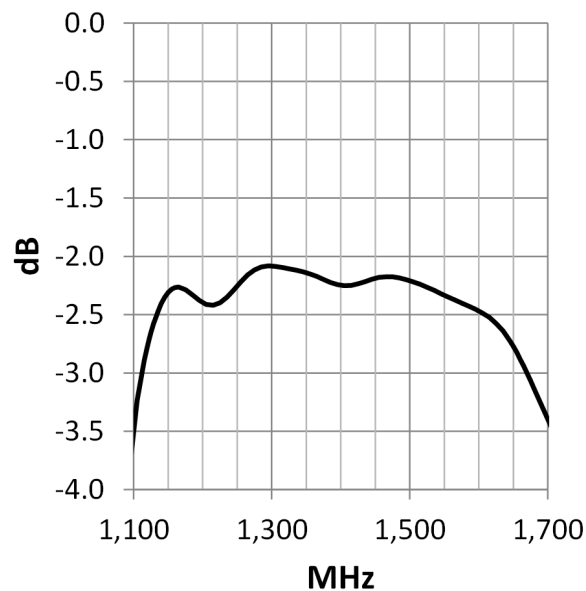
**Reverse Insertion Loss**



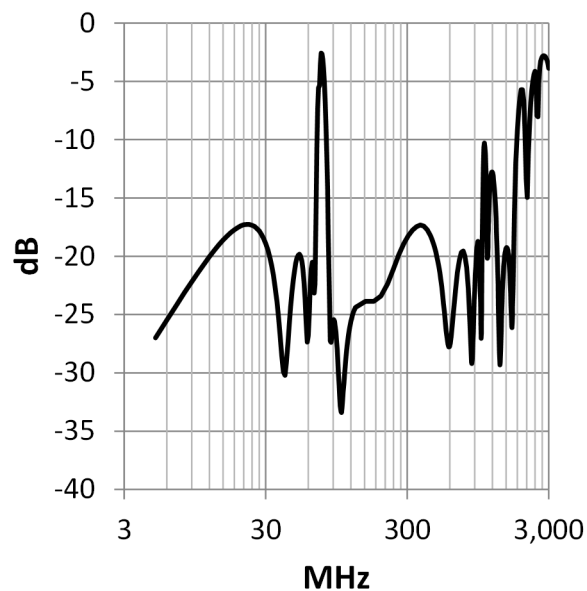
**Forward Insertion Loss**



**MoCA Insertion Loss**



**Common Port Return Loss**

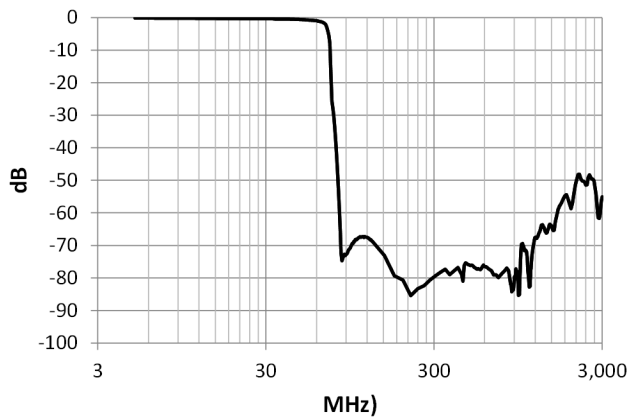


## MoCA Triplex Filter 5-65 / 88-1002 / 1125-1675 MHz

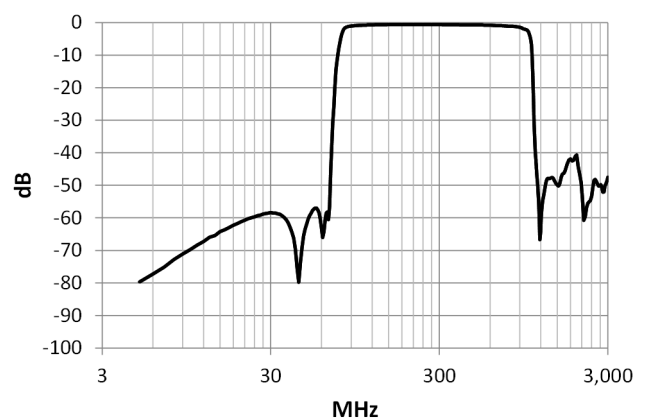
Rev. V5

### Typical Performance Curves

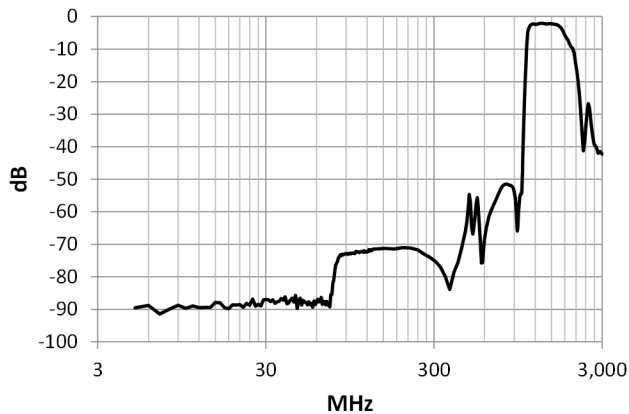
**Reverse Path**



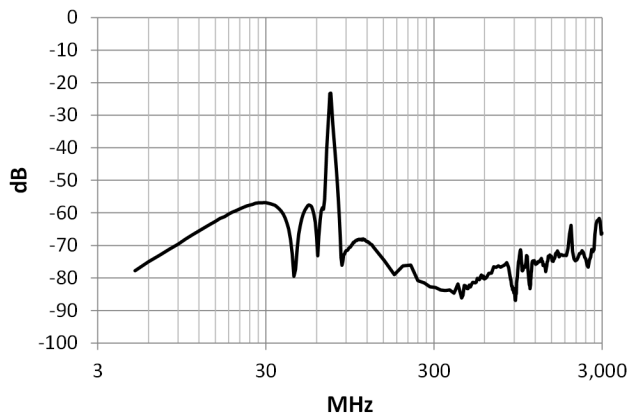
**Forward Path**



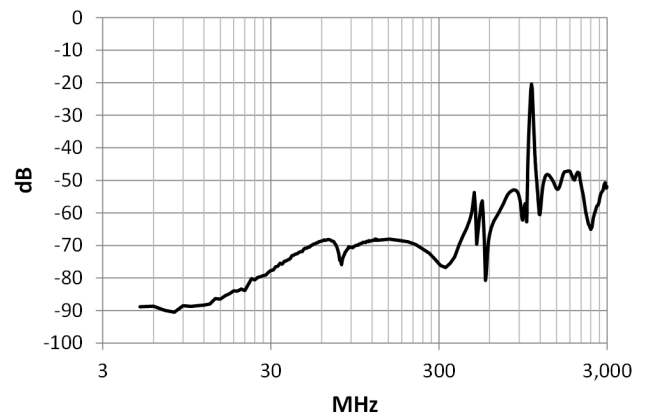
**MoCA Path**



**Reverse to Forward Isolation**



**Forward to MoCA Isolation**

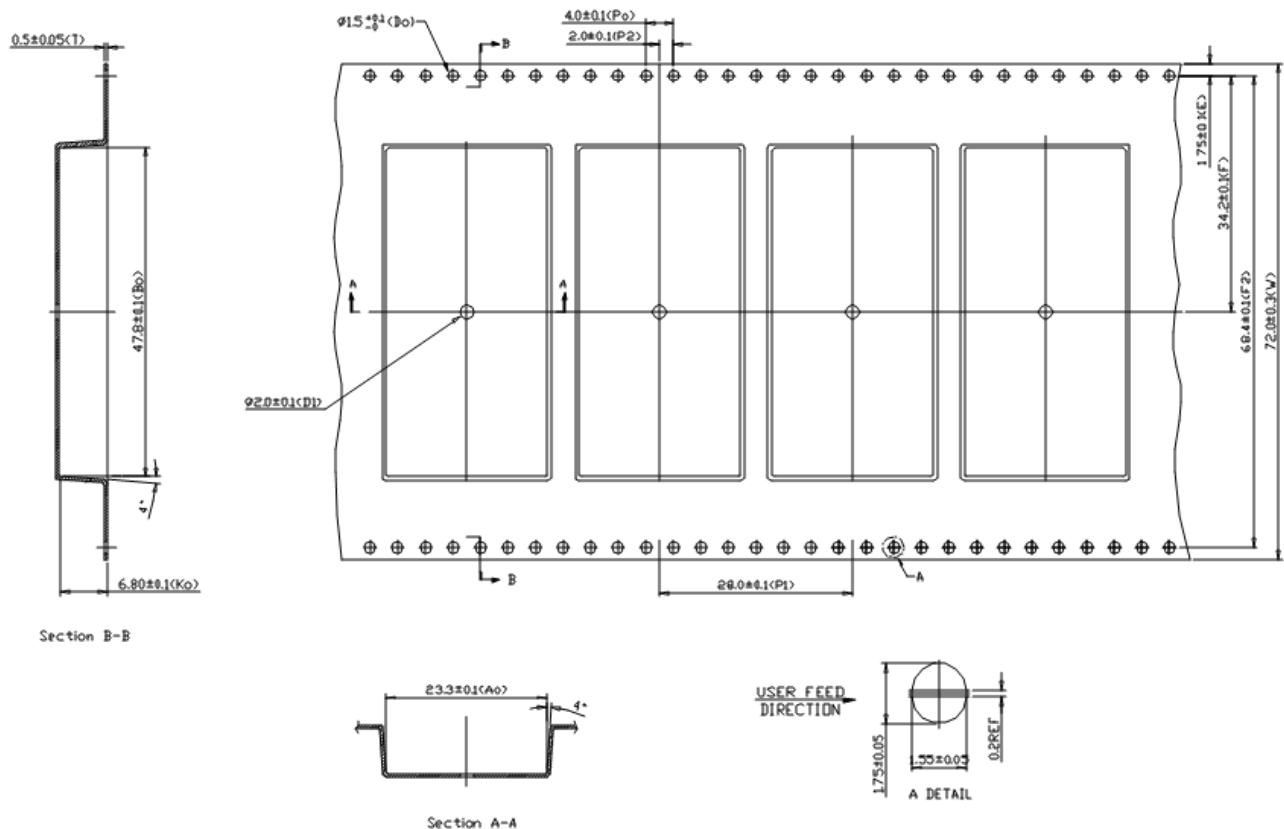


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Rev. V5

**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 |       |       |

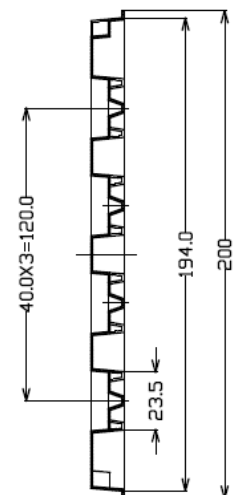
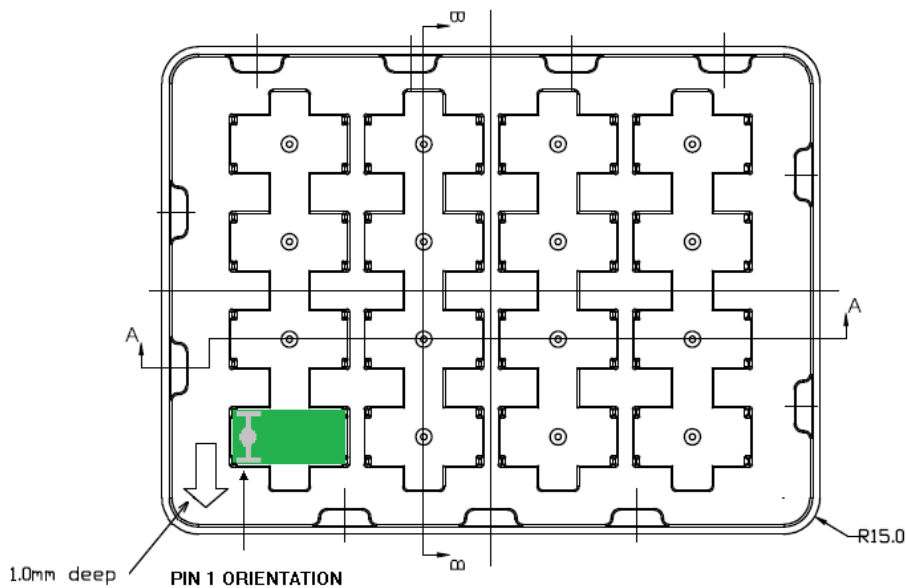


Dimensions are in millimetres.

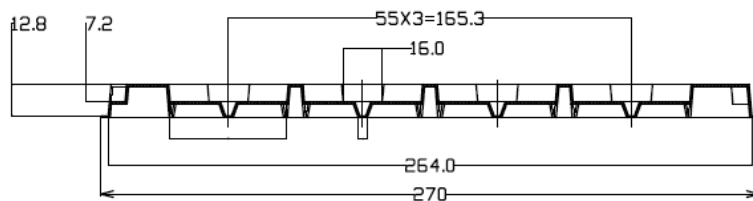
Tolerance:  $\pm 0.1$  mm, except where specified.

## 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:  $\pm 0.1$  mm, except where specified.



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