# OT028

## WR2.8 orthomode transducer

MicroHarmonics
Superior mm-Wave Components

### Description

The OMT is a three-port device. It has a square waveguide common mode port (“antenna port” or “A-port”) supporting two orthogonal modes (“H-pol” and “V-pol”) and a pair of rectangular waveguide ports (“H-port” and “V-port) that each support a single mode.

### Mechanical Specifications

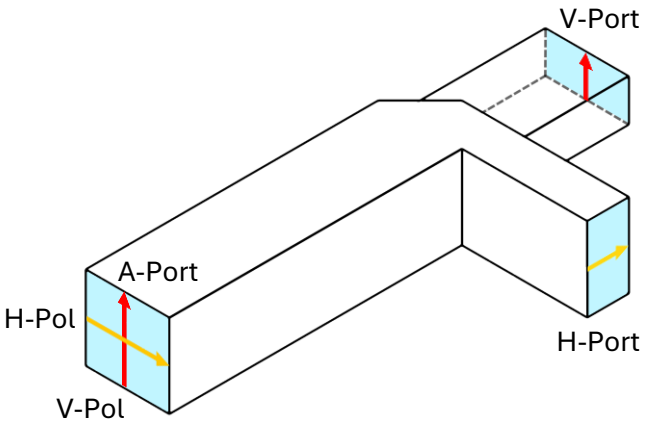
| Parameter | Description |
|---|---|
| Flange \| H-Port and V-Port | WR-2.8<br>UG-387/UM |
| Flange \| A-Port | 0.028” square<br>UG-387/UM |
| Weight (Oz [g]) | 0.54 [15.5] |
| Specification Temp (°C)<br>Operation Temp (°C) | 22<br>-40 to +85 |

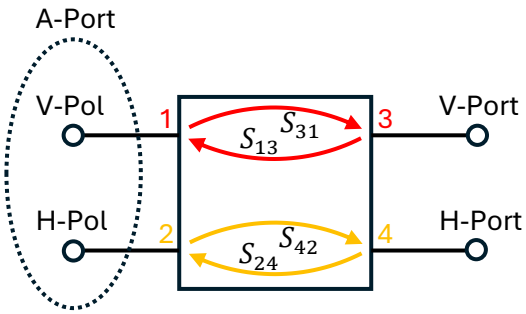
- Lowest insertion loss
- High cross-polarization and isolation
- Anti-cocking waveguide flanges

### Electrical Specifications

| Parameter | Value | Units |
|---|---|---|
| Frequency | 260-400 | GHz |
| Insertion Loss \| H-Port<br>Insertion Loss \| V-Port | 2.0<br>2.0 | dB, max |
| Insertion Loss \| H-Port<br>Insertion Loss \| V-Port | 1.0<br>1.0 | dB, avg |
| Cross-Polarization \| H-Port to A-Port, V-Pol<br>Cross-Polarization \| V-Port to A-Port, H-Pol | 35<br>35 | dB, typ min |
| Isolation \| H-Port to V-Port | 35 | dB, typ min |
| Return Loss \| H-Port<br>Return Loss \| V-Port<br>Return Loss \| A-Port, H-Pol<br>Return Loss \| A-Port, V-Pol | 15<br>16<br>15<br>16 | dB, typ min |

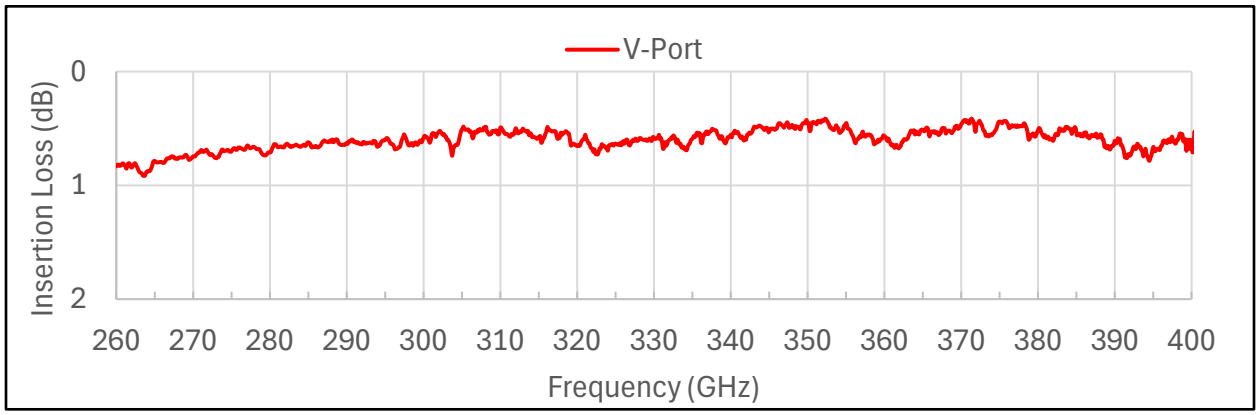
## Insertion Loss

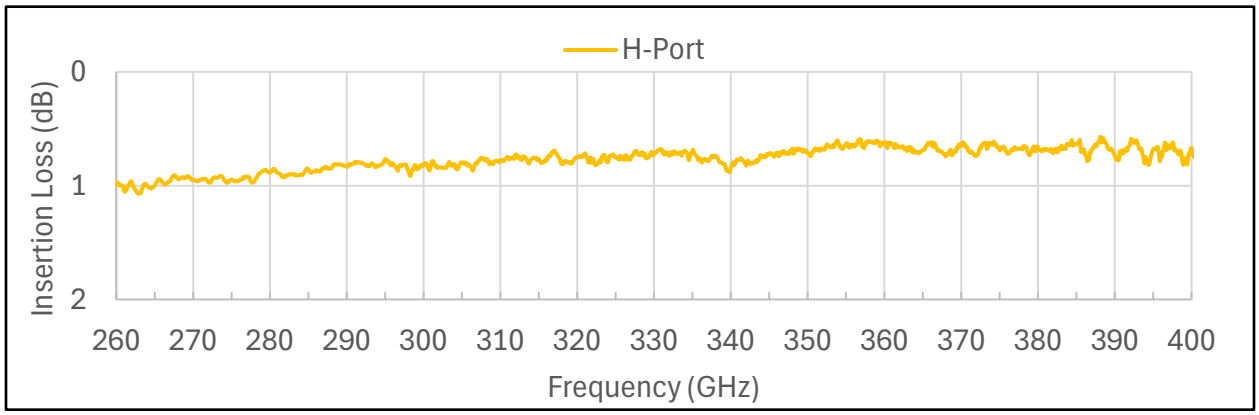


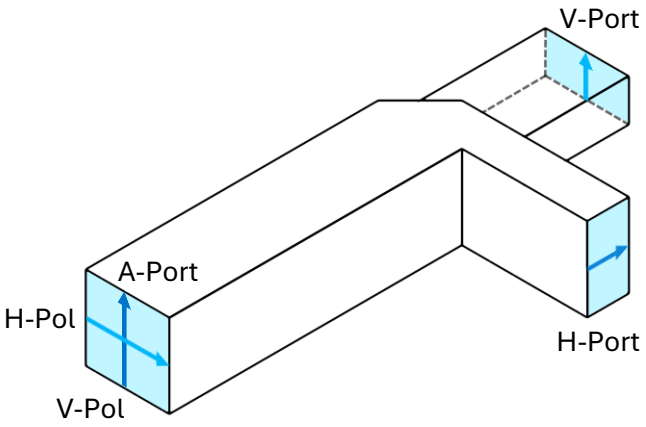

$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

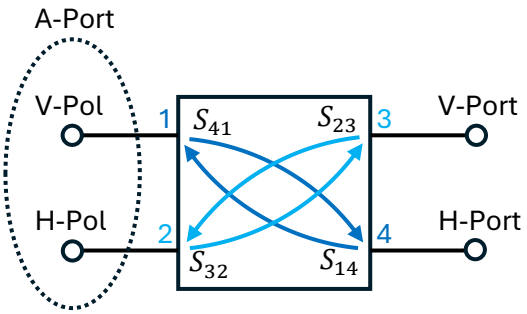
Insertion loss between a single mode rectangular port and the corresponding polarization on the common port



## Cross-Polarization

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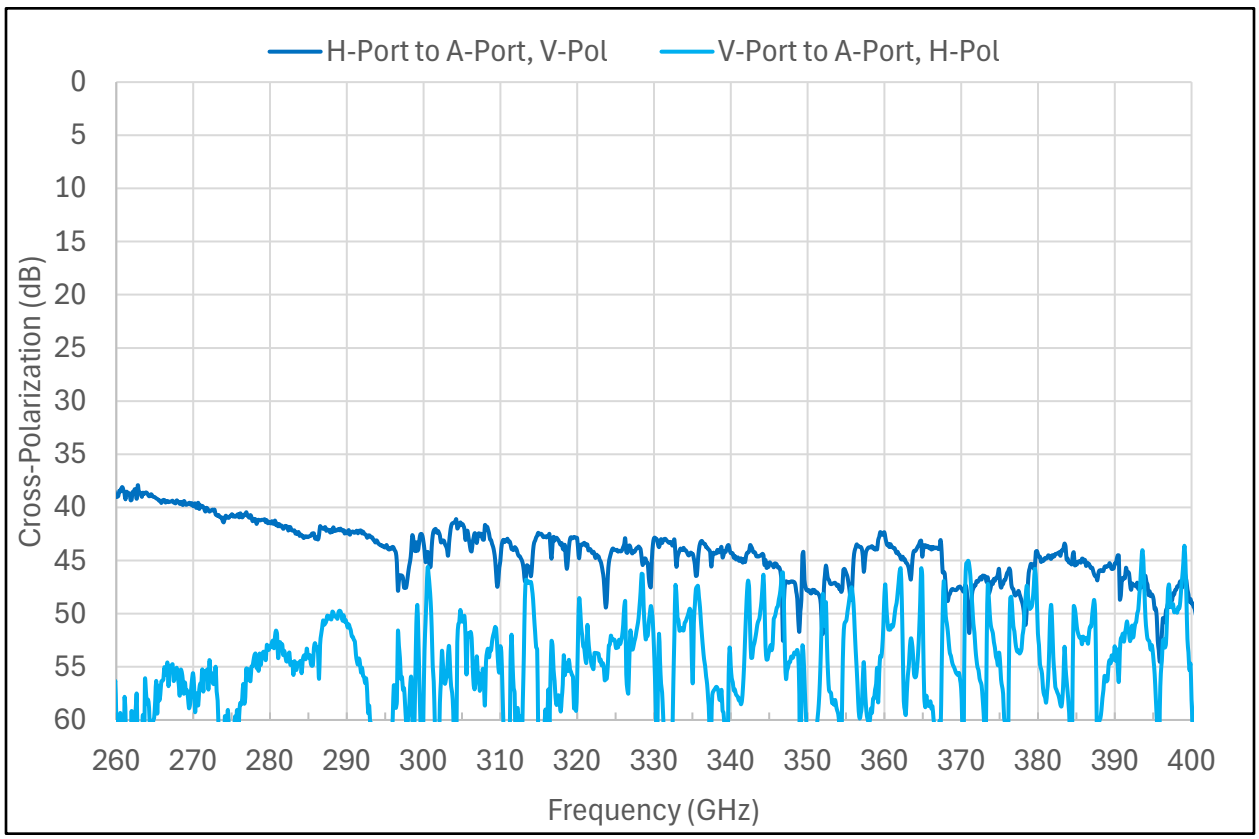
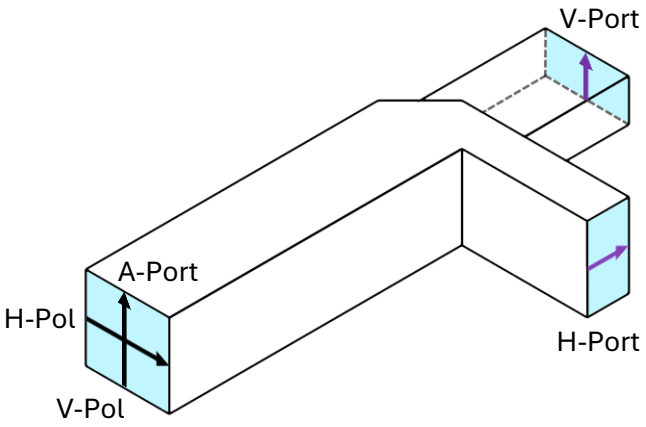
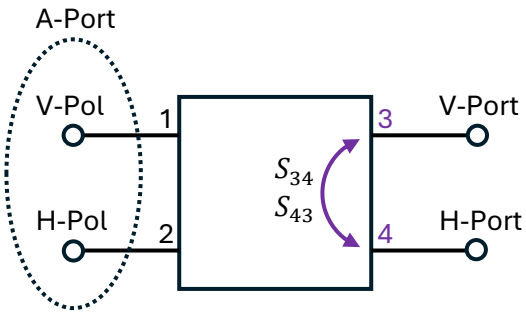
Cross-polarization coupling between a rectangular waveguide port and the opposite mode on the common port



## Isolation

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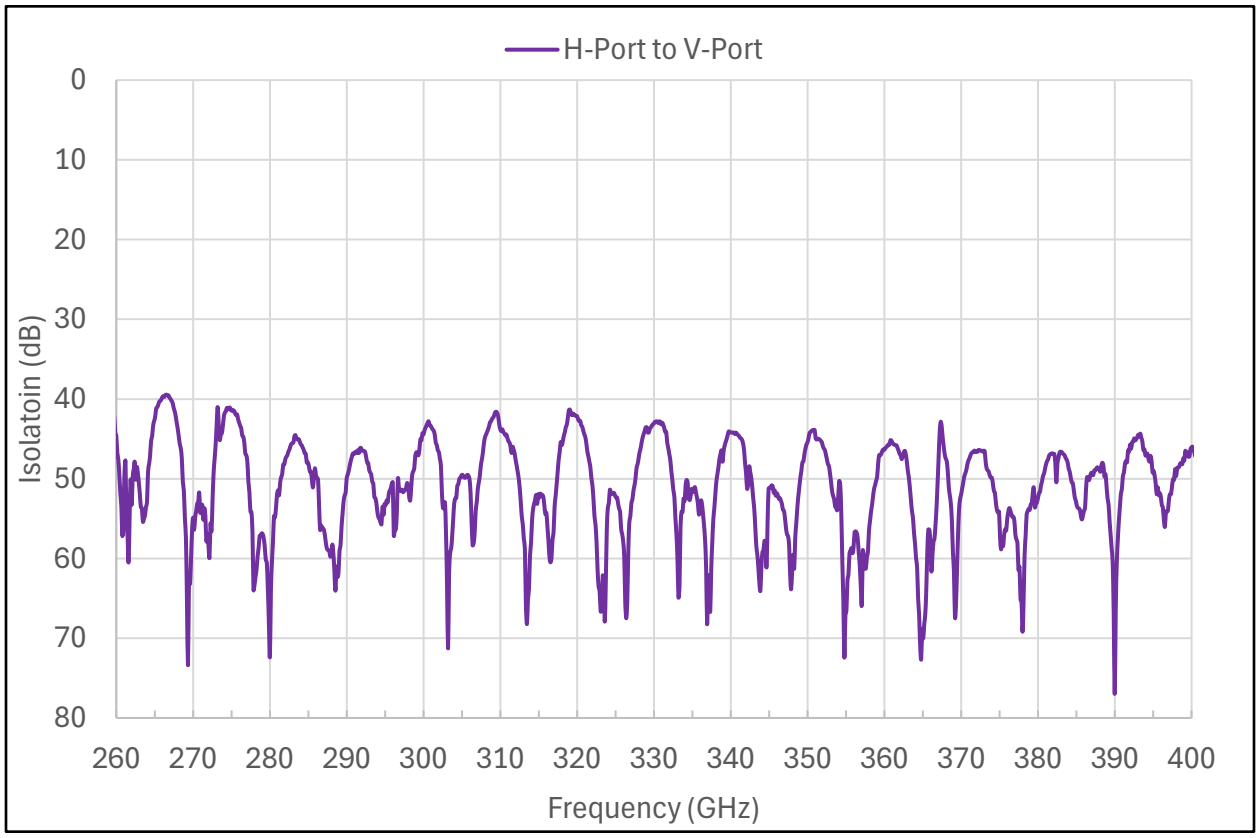
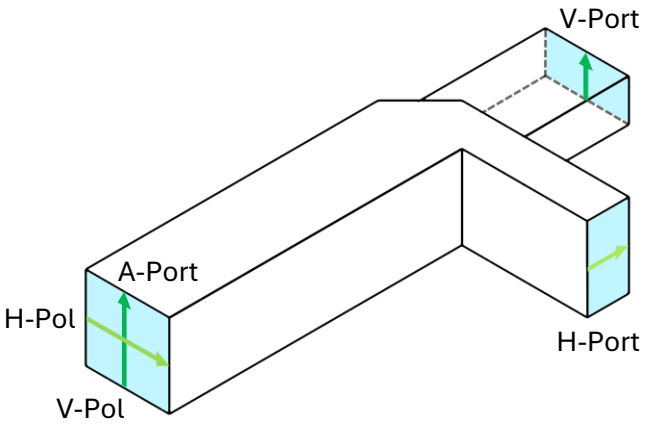
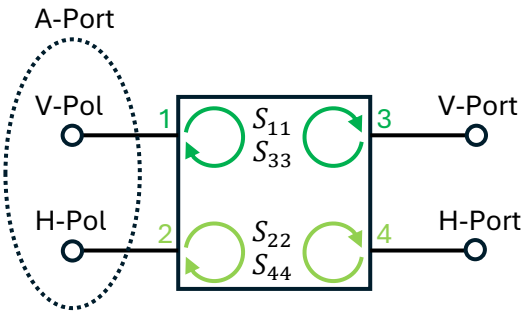
Isolation between the two rectangular waveguide ports



## Return Loss

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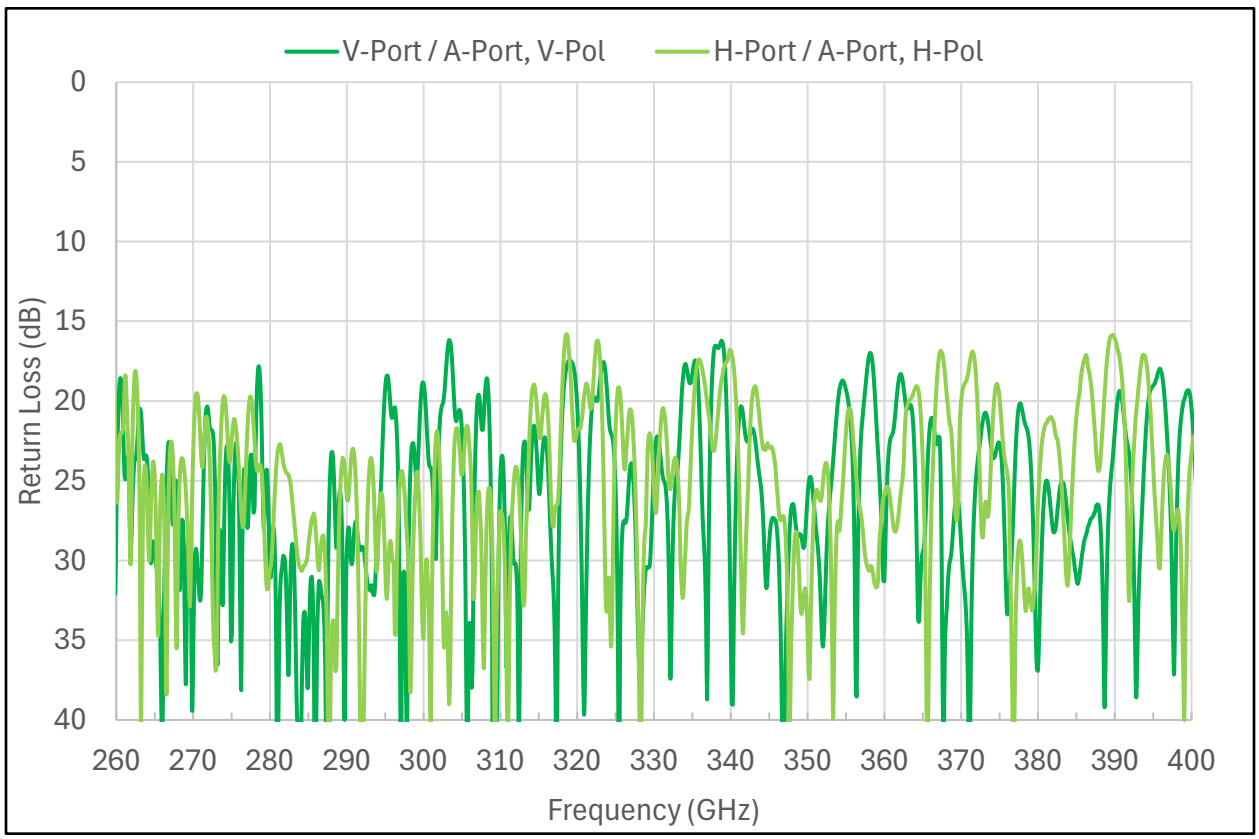
Return loss for each rectangular port and each mode on the common port



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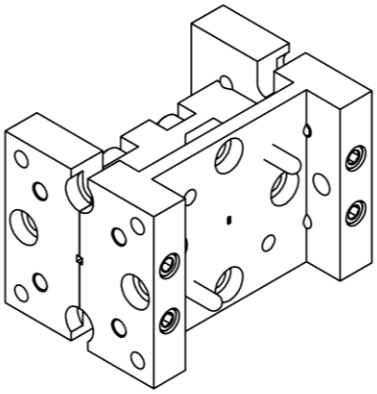

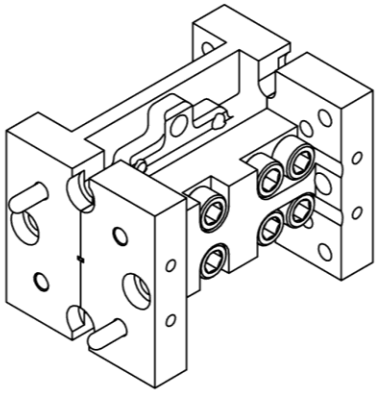

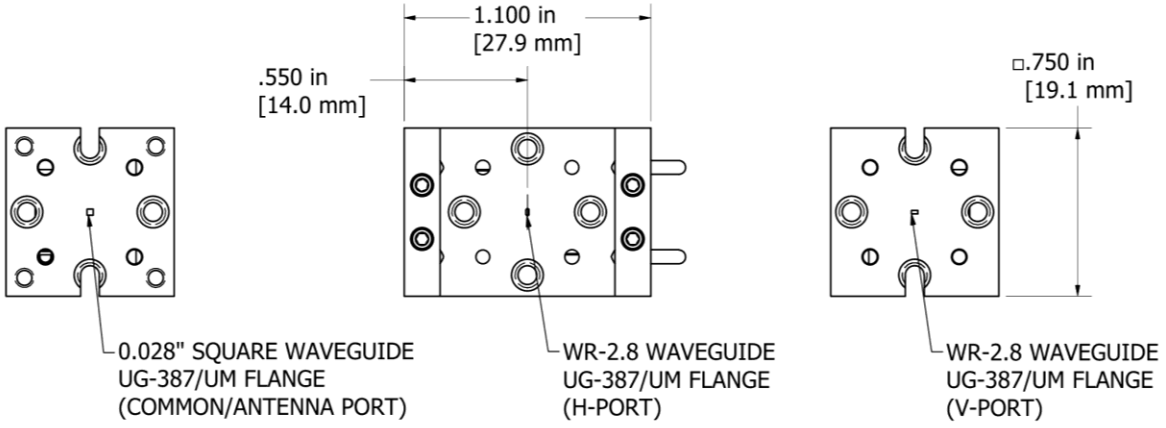


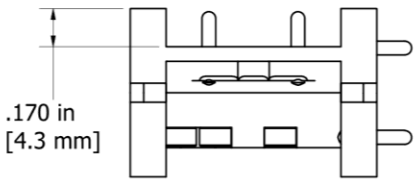


NOTE: ALL FLANGES ARE ANTI-COCKING

| | | | |
|---|---|---|---|
| PART NUMBER - DESCRIPTION: OT028 Dimension Drawing | | | Micro Harmonics Corporation<br>20 S Roanoke St, Ste 202<br>Fincastle, VA 24090<br>ph. 540.473.9983<br>fax 844.449.1561 |
| PAGE NUMBER: 1 of 1 | DRAWN BY: RKH | DWG. UNITS: INCHES [mm] | REV: - |
| APPROVAL: DPK - 3/26/26 | COMPONENT WEIGHT: 15.45 GRAMS 0.54 OUNCES | | |