

## PSF1033127 Datasheet

SMT AQ208, 8th Order, 42.0 GHz Center Frequency and 6.0% Bandwidth Filter

### General Description

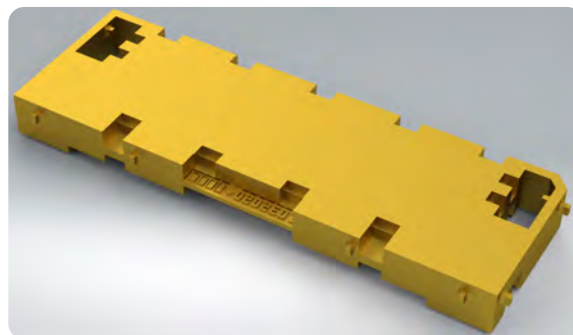
The PSF1033127 is a 8th order interdigital filter, with a pass-band of 41.03–42.94 GHz. It provides <4.3dB insertion loss with high out of band rejection. The mounting interface provided is a SMT interface compatible with standard attach processes.

### Applications

- General Purpose BPF

### Benefits

- Low Loss
- High Rejection
- High Repeatability
- Compact Size
- CTE matched to PCB



| Features               |                                                                             |
|------------------------|-----------------------------------------------------------------------------|
| <b>Frequency Range</b> | 41.03–42.94 GHz, BPF                                                        |
| <b>Insertion Loss</b>  | <4.3 dB across pass-band                                                    |
| <b>Rejection</b>       | >30 dB out-of-band                                                          |
| <b>Package</b>         | 8 x 2.4 x 1.1 mm,<br>bottom-side SMT launches<br>for reflow or epoxy attach |

## Performance Specifications

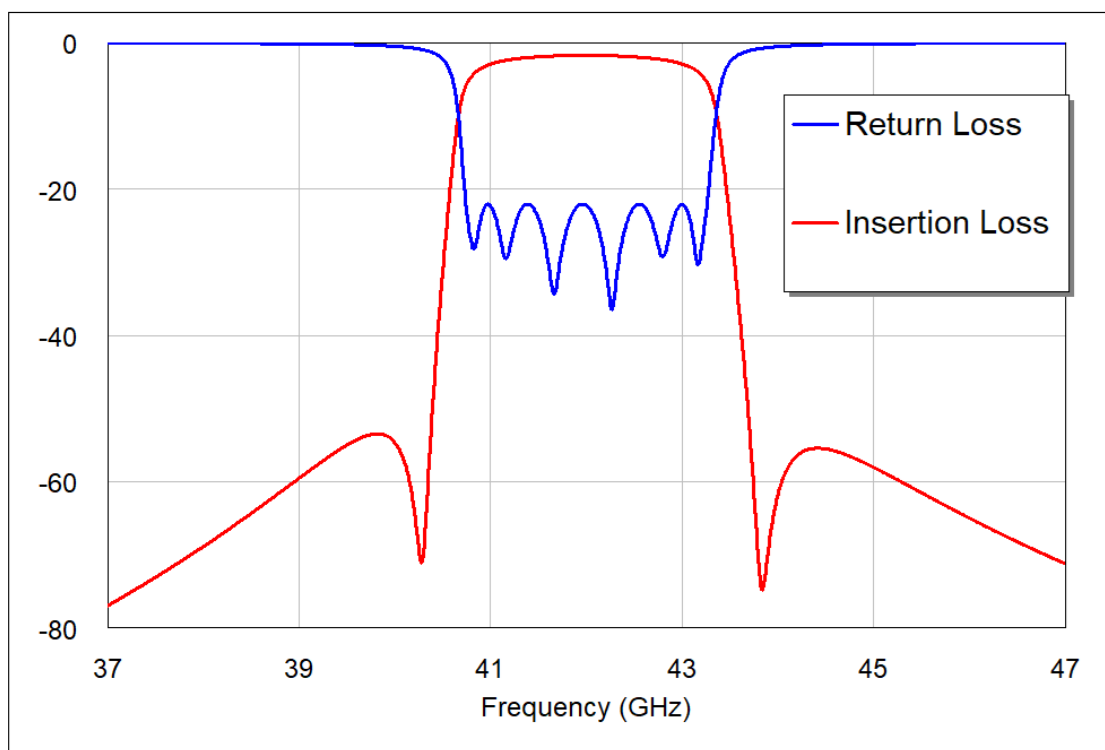
**Table 1: RF Performance**

| Parameter       | Freq. Range (GHz) | Min. | Typ. | Max. | Unit |
|-----------------|-------------------|------|------|------|------|
| Return Loss     | 41.03–42.94       | 12   | 15   | –    | dB   |
| Insertion Loss  | 41.03–42.94       | –    | 3    | 4.3  | dB   |
| Lower Rejection | 0–40.31           | 30   | 50   | –    | dB   |
| Upper Rejection | 43.76–67.0        | 30   | 50   | –    | dB   |

**Table 2: Absolute Maximum Ratings**

|                                                           |                                     |
|-----------------------------------------------------------|-------------------------------------|
| CW Power                                                  | 5 W                                 |
| Operating Temp.                                           | –40°C to 85°C                       |
| Solder Reflow                                             | 260°C max. for 10 seconds, 3 cycles |
| Epoxy Attach                                              | 150°C max. for 90 minutes           |
| Mechanical Vibration<br>MIL-STD-883 M2026.4<br>(Cond. 1F) | 20.0 Grms                           |
| Mechanical Shock<br>MIL-STD-883 M2002.4<br>(Cond. A)      | 500 G                               |

## Typical Performance

**Figure 1: RF performance**


*Plots above are preliminary simulation data.*

## PCB Guidelines

**Figure 2: Recommended PCB Stackup**

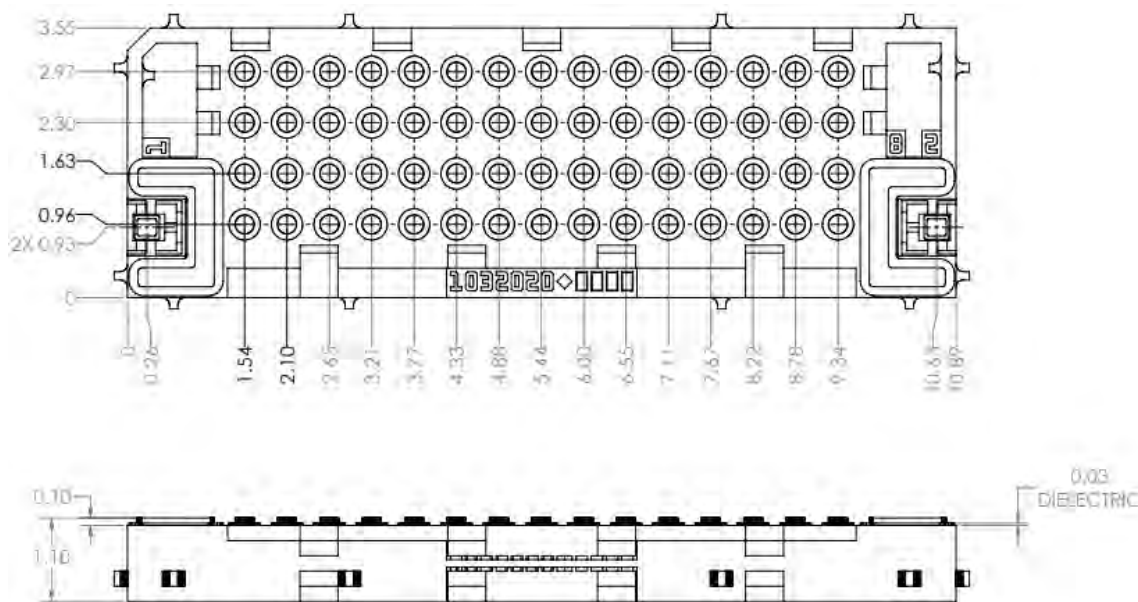
| Layer Stack Legend                           |                       |                  |                     |                |        |      |
|----------------------------------------------|-----------------------|------------------|---------------------|----------------|--------|------|
| Material                                     | Layer                 | Thickness        | Dielectric Material | Type           | Gerber | Dk   |
|                                              | Top Overlay           |                  |                     | Legend         | GTO    |      |
| Surface Material                             | Top Solder            | 0.013mm(0.5mil)  | SM-003              | Solder Mask    | GTS    | 4    |
| Nickel, Gold                                 | Top Surface Finish    | 0.004mm(0.2mil)  |                     | Surface Finish |        |      |
| HH                                           | L1- Top Layer         | 0.035mm(1.4mil)  |                     | Signal         | GTL    |      |
| Core                                         |                       | 0.254mm(10.0mil) | RO4350B             | Dielectric     |        | 3.66 |
| HH                                           | L2 RF GND             | 0.018mm(0.7mil)  |                     | Signal         | G1     |      |
| Prepreg                                      |                       | 0.381mm(15.0mil) | FR4                 | Dielectric     |        | 4.1  |
| HH                                           | L3 - Inner 2          | 0.018mm(0.7mil)  |                     | Signal         | G2     |      |
| Core                                         |                       | 0.254mm(10.0mil) | Core-028            | Dielectric     |        | 4.3  |
| CF-004                                       | L4 - Bottom Layer     | 0.035mm(1.4mil)  |                     | Signal         | GBL    |      |
| Nickel, Gold                                 | Bottom Surface Finish | 0.004mm(0.2mil)  |                     | Surface Finish |        |      |
| Total thickness: 1.015mm(40.0mil) $\pm 10\%$ |                       |                  |                     |                |        |      |

### PCB Design Notes:

1. Use blind vias (Layer 1 to Layer 2 pair) around RF traces.
2. Use solid ground pour on all ground pins of the part to prevent parasitic inductances.
3. If deviating from the above stackup, the recommended PCB footprint may need to be adjusted for tuning purposes. Please contact Nuvotronics for assistance with tuning.
4. Follow stenciling guidelines outlined in IPC-7525C to prevent over-pasting RF launches (see "PolyStrata SMT Assembly Guide" application note for details).

## Mechanical Information

**Figure 3: 2D Mechanical Drawing**



*Note: Manufacturing tethers extend past the indicated dimensions of the part. See STEP model for details.*

## Additional Information

**Table 3: Handling and Ordering Information**

|                              |                |
|------------------------------|----------------|
| Storage                      | IAW IPC-4553A  |
| ESD Sensitivity              | None           |
| Ordering Information         | PSF1033127     |
| Standard Packaging           | Gel Pack       |
| Alternative Packaging        | Tape & Reel    |
| Component Termination Finish | Immersion Gold |

*Note: Detailed handling guidelines can be found in the "General Handling Guidelines" and "PolyStrata SMT Assembly Guide" application notes (see link below).*

- Footprint DXF is available on request.
- Application notes on PCB integration are available at: <https://www.nuvotronics.com/resources/>