Features

- SMD filter consisting of coupled resonators with stepped impedances
- MgTiO₃ - CaTiO₃ ($\epsilon_r = 21$, $TC_f = 0\pm 10$ ppm/K) with a coating of copper (10µm) and tin (>5µm)
- Excellent reflow solderability, no migration effect due to copper/tin metallization
- ESD insensitivity and ESD protecting due to filter characteristics

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Component drawing

View from below onto the solder terminals and view from beside

Recommended footprint

solder pads

I/O connected to lines with an impedance of 50 Ohm

FR4 material
permittivity : 4.4
ground layers below footprint
preferred thickness : 0.3
Vias : Ø0.3 / mm²
For other thickness
correlation might be necessary
Microwave Ceramics and Modules

4-Pole Filter XM Radio

Design Goal

Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>min.</th>
<th>typ.</th>
<th>max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center frequency</td>
<td>$f_c$</td>
<td>2338.755</td>
<td>-</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>$\alpha_{IL}$</td>
<td>2.2</td>
<td>2.5</td>
</tr>
<tr>
<td>Passband</td>
<td>$B$</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>Amplitude ripple (peak - peak)</td>
<td>$\Delta\alpha$</td>
<td>0.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Standing wave ratio</td>
<td>$SWR$</td>
<td>1.4</td>
<td>2.0</td>
</tr>
<tr>
<td>Group delay in Passband</td>
<td></td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>Impedance</td>
<td>$Z$</td>
<td>50</td>
<td>$\Omega$</td>
</tr>
<tr>
<td>Attenuation</td>
<td>$\alpha$</td>
<td>45</td>
<td>49</td>
</tr>
</tbody>
</table>

Maximum ratings

EC climatic category (IEC 68-1)                        | - 40/+ 90/56 |
Operating temperature $T_{op}$                        | -20 / +80    | °C |

Typical passband characteristic

![Typical passband characteristic graph](image-url)
Microwave Ceramics and Modules
Filter
4-Pole Filter XM Radio

Design Goal

Processing information
- Wettability acc. to IEC 68-2-58: ≥ 75% (after aging)

Soldering Requirements

<table>
<thead>
<tr>
<th>Soldering type</th>
<th>Profile for eutectic SnPb solder paste</th>
<th>Profile for leadfree solder paste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum soldering temperature (measuring point on top surface of the component)</td>
<td>reflow 235 (max. 2 sec.) 225 (max. 10 sec.)</td>
<td>reflow 260 (max. 2 sec.) 250 (max. 10 sec.)</td>
</tr>
</tbody>
</table>

Recommended soldering conditions (infrared): 

<table>
<thead>
<tr>
<th>Time [sec.]</th>
<th>Temp. [°C]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-80 sec.</td>
<td>215°C±10°C</td>
</tr>
<tr>
<td>20-40 sec.</td>
<td>215°C±10°C</td>
</tr>
<tr>
<td>2-3 min.</td>
<td>245°C±5°C</td>
</tr>
<tr>
<td>&gt; 5 °C/s</td>
<td>&gt; 5 °C/s</td>
</tr>
</tbody>
</table>

Delivery mode
- Blister tape acc. to IEC 286-3, polyester, grey
- Pieces/tape: t.b.d.

Note: This document is PRELIMINARY. All specifications are subject to change and are not guaranteed.