



# *SAW Components*

*Data Sheet R 2523*

Data Sheet

An abstract, grayscale graphic featuring a stylized, three-dimensional representation of the EPCOS logo. The letters "EPCOS" are rendered in a bold, sans-serif font, appearing to be part of a larger, curved structure that resembles a globe or a stylized letter 'S'. The background is dark and textured, with light reflecting off the surfaces of the logo.



## SAW Components

R 2523

## Resonator

224,50 MHz

### Data Sheet

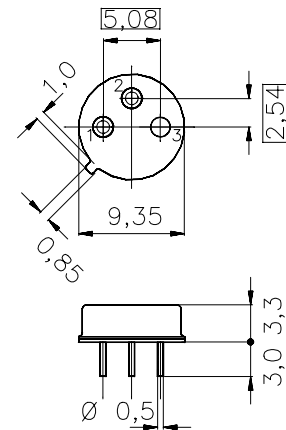
Metal package TO-39

#### Features

- 2-port resonator
- nominal 180°-phase at resonance
- Provides reliable, fundamental mode, quartz frequency stabilization i.e. in transmitters or local oscillators

#### Terminals

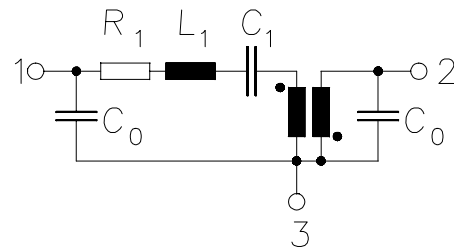
- NiFeCo, gold plated



Dimensions in mm, approx. weight 1,0 g

#### Pin configuration

- |   |                |
|---|----------------|
| 1 | Input / Output |
| 2 | Output / Input |
| 3 | Ground         |



| Type  | Ordering code     | Marking and Package according to | Packing according to |
|-------|-------------------|----------------------------------|----------------------|
| R2523 | B39221-R2523-B110 | C61157-A7-A24                    | F61074-V8072-Z000    |

Electrostatic Sensitive Device (ESD)

#### Maximum ratings

|                            |           |         |     |                       |
|----------------------------|-----------|---------|-----|-----------------------|
| Operable temperature range | $T_A$     | -45/+85 | °C  | between any terminals |
| Storage temperature range  | $T_{stg}$ | -45/+85 | °C  |                       |
| DC voltage                 | $V_{DC}$  | 12      | V   |                       |
| Source power               | $P_s$     | 0       | dBm |                       |



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#### Characteristics

Reference temperature:  $T_A = 25\text{ °C}$   
 Terminating Source impedance:  $Z_S = 50\ \Omega$   
 Terminating Load impedance:  $Z_L = 50\ \Omega$

|                                                                   |                 | min.    | typ.    | max.    |                    |
|-------------------------------------------------------------------|-----------------|---------|---------|---------|--------------------|
| <b>Center frequency</b><br>(center frequency between 3 dB points) | $f_c$           | 224,450 | 224,500 | 224,550 | MHz                |
| <b>Minimum insertion attenuation</b>                              | $\alpha_{\min}$ | —       | 8,5     | 10,0    | dB                 |
| Phase at $f_c$                                                    | $\varphi$       | 150     | 165     | 180     | ° el.              |
| Loaded quality factor                                             | $Q_L$           | 7000    | 9300    | —       |                    |
| Unloaded quality factor                                           | $Q_U$           | 11000   | 15000   | —       |                    |
| <b>Ageing of <math>f_c</math></b>                                 |                 | —       | —       | ±50     | ppm                |
| <b>Equivalent circuit elements</b>                                |                 |         |         |         |                    |
| Motional capacitance                                              | $C_1$           | —       | 0,3     | —       | fF                 |
| Motional inductance                                               | $L_1$           | —       | 1,8     | —       | μH                 |
| Motional resistance                                               | $R_1$           | —       | 180     | —       | Ω                  |
| Input / Output capacitance                                        | $C_0$           | —       | 2,1     | —       | pF                 |
| <b>Temperature coefficient of frequency</b> <sup>1)</sup>         | $TC_f$          | —       | −0,03   | —       | ppm/K <sup>2</sup> |
| Turnover temperature                                              | $T_0$           | 35      | 45      | 55      | °C                 |

<sup>1)</sup> Temperature dependence of  $f_c$ :  $f_c(T_A) = f_c(T_0)(1 + TC_f(T_A - T_0)^2)$



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