

HB217.25

217.25MHz TWO-Port SAW Resonator



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| Approved by: |
| Checked by: |
| Issued by: |

SPECIFICATION

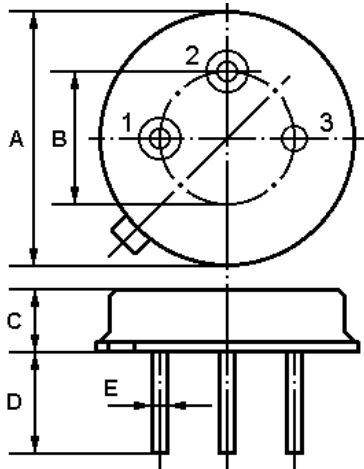
PRODUCT: SAW RESONATOR

MODEL: HB217.25 TO-39

HOPE MICROELECTRONICS CO., LIMITED

The HB217.25 is a two-port, 180° surface-acoustic-wave (SAW) resonator in a low-profile metal TO-39 case. It provides reliable, fundamental-mode, quartz frequency stabilization i.e. in transmitters or local oscillators operating at 217.250 MHz.

1.Package Dimension (TO-39)



| Pin | Configuration |
|-----|----------------|
| 1 | Input / Output |
| 2 | Output / Input |
| 3 | Case Ground |

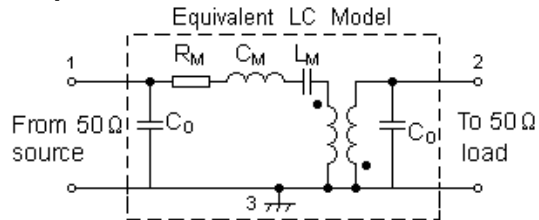
| Dimension | Data (unit: mm) |
|-----------|-----------------|
| A | 9.30±0.20 |
| B | 5.08±0.10 |
| C | 3.40±0.20 |
| D | 3±0.20 / 5±0.20 |
| E | 0.45±0.20 |

2.Marking

HB217.25

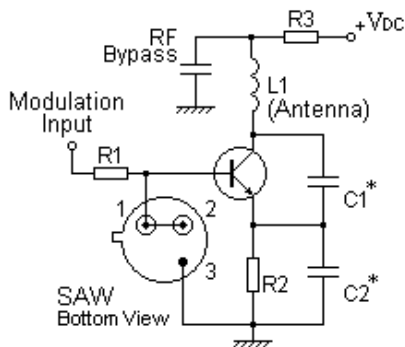
Color: Black or Blue

3.Equivalent LC Model and Test Circuit

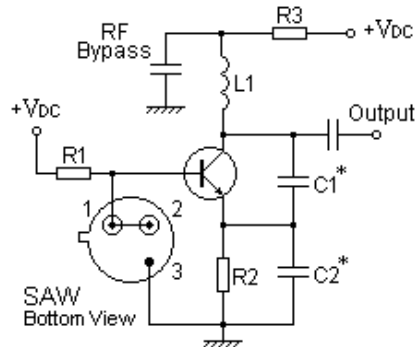


4.Typical Application Circuits

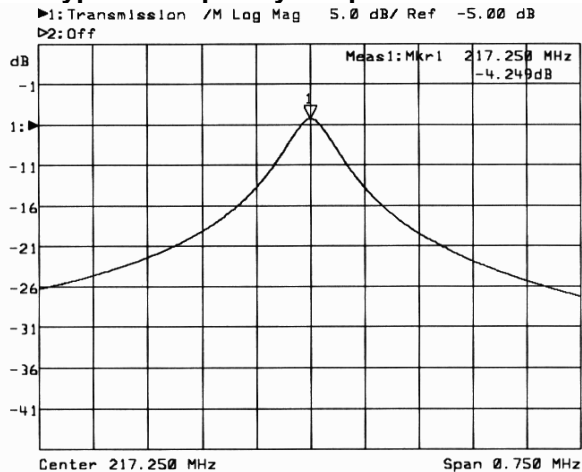
1) Low-Power Transmitter Application



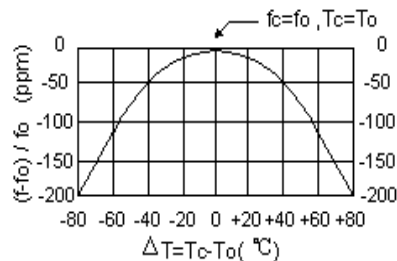
2) Local Oscillator Application



5.Typical Frequency Response



6.Temperature Characteristics



The curve shown above accounts for resonator contribution only and does not include LC component temperature characteristics.

7.Performance

7-1.Maximum Ratings

| Rating | Value | Unit |
|--|------------|--------------------|
| CW RF Power Dissipation P | 10 | dBm |
| DC Voltage Between Any Two Pins V_{DC} | ± 30 | V |
| Storage Temperature Range T_{stg} | -40 to +85 | $^{\circ}\text{C}$ |
| Operating Temperature Range T_A | -10 to +60 | $^{\circ}\text{C}$ |

7-2.Electronic Characteristics

| Characteristic | | Sym | Minimum | Typical | Maximum | Unit |
|---|--------------------------------------|--------------|---------|-----------|---------|---------------------------|
| Center Frequency (+25 $^{\circ}\text{C}$) | Absolute Frequency | f_C | 217.100 | | 217.400 | MHz |
| | Tolerance from 217.250 MHz | Δf_C | | ± 150 | | kHz |
| Insertion Loss | | IL | | 4.5 | 6.0 | dB |
| Quality Factor | Unloaded Q | Q_U | | 14,820 | | |
| | 50 Ω Loaded Q | Q_L | | 6,000 | | |
| Temperature Stability | Turnover Temperature | T_O | 25 | | 55 | $^{\circ}\text{C}$ |
| | Turnover Frequency | f_O | | f_C | | kHz |
| | Frequency Temperature Coefficient | FTC | | 0.032 | | ppm/ $^{\circ}\text{C}^2$ |
| Frequency Aging | Absolute Value during the First Year | $ f_A $ | | ≤ 10 | | ppm/yr |
| DC Insulation Resistance Between Any Two Pins | | | 1.0 | | | M Ω |
| RF Equivalent RLC Model | Motional Resistance | R_M | | 68 | 99.5 | Ω |
| | Motional Inductance | L_M | | 738.8242 | | μH |
| | Motional Capacitance | C_M | | 0.7271 | | fF |
| | Shunt Static Capacitance | C_O | 1.7 | 2.0 | 2.3 | pF |

ⓘ CAUTION: Electrostatic Sensitive Device. Observe precautions for handling!

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- The frequency f_C is the frequency of minimum IL with the resonator in the specified test fixture in a 50 Ω test system with VSWR $\leq 1.2:1$. Typically, $f_{OSCILLATOR}$ or $f_{TRANSMITTER}$ is less than the resonator f_C .
- Unless noted otherwise, case temperature $T_C = +25^{\circ}\text{C} \pm 2^{\circ}\text{C}$.
- Frequency aging is the change in f_C with time and is specified at +65 $^{\circ}\text{C}$ or less. Aging may exceed the specification for prolonged temperatures above +65 $^{\circ}\text{C}$. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
- Turnover temperature, T_O , is the temperature of maximum (or turnover) frequency, f_O . The nominal frequency at any case temperature, T_C , may be calculated from: $f = f_O [1 - \text{FTC} (T_O - T_C)^2]$. Typically, *oscillator* T_O is 20 $^{\circ}$ less than the specified *resonator* T_O .
- This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O is the measured static (nonmotional) capacitance between either Pin 1 and ground or Pin 2 and ground. The measurement includes case parasitic capacitance.
- Derived mathematically from one or more of the following directly measured parameters: f_C , IL, 3 dB bandwidth, f_C versus T_C , and C_O .
- The specifications of this device are based on the test circuit shown above and subject to change or obsolescence without notice.
- Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
- Our liability is only assumed for the Surface Acoustic Wave (SAW) component(s) per se, not for applications, processes and circuits implemented within components or assemblies.
- For questions on technology, prices and delivery, please contact our sales offices or e-mail sales@hoperf.com.