# RVX3520S

The RVX3520S is a radiation tolerant VCXO housed in a 35 x 20 mm hermetically sealed package. This high reliability VCXO offers wide frequency pulling of ±375 ppm and precise frequency stability of ±25 ppm. Engineered for range for space missions requiring exceptional resistance to demanding environments, the RVX3522S ensure robust performance under challenging conditions. The oscillator is available with a short lead time, providing a reliable solution for time-sensitive applications.

## Features

- TID limit of 100 krad and SEL free up to LET 62 MeV.cm²/mg
- Hermetically sealed package
- Frequency range: 0.032 Hz to 100 MHz
- Output: CMOS and Sinewave
- Low current 25 mA
- Supply voltage: 5, 9, 15 V
- Excellent frequency stability: 15 ppm over -30 to 60°C
- Manufactured in accordance with: MIL-PRF-55310 Class 2, level S

## Applications

- Space Synthesizers and Transponders
- GPS receivers
- Down and up converters and on-board calculators

## 35 x 20 mm


## Environmental Conditions

| Parameter | Test Conditions/Description | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Operating temperature (To) | Option A<br>Option B | -30<br>-40 | | 60<br>85 | °C |
| Switch-on temperature (Tso) | | -40 | | 125 | °C |
| Storage temperature (Ts) | | -55 | | 125 | °C |

## Frequency Characteristics

| Parameter | Test Conditions/Description | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Initial frequency accuracy | @ 25°C | | | ±10 | ppm |
| Frequency stability over temperature (FvT) | Option A: -30 to 60°C<br>Option B: -40 to 85°C | | | ±15<br>±35 | ppm |
| Supply voltage stability (FvT)[11] | | | | ±0.2 | ppm |
| Ageing | per year | | | ±1 | ppm |
| Start-up time | | | | 10 | ms |

## Electrical Interface

| Parameter | Test Conditions/Description | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Power supply (Vcc) | ±5% tolerance | | 5, 9, 15 | | V |
| Input current[2] | No load | | 25 | | mA |

[1] Over operating temperature.

[2] Over temperature range.

## Control Voltage (Vc)

| Parameter | Test Conditions/Description | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Pulling range[3] | | ±50 100<br>±100 150 | | | ppm |
| Control voltage (Vc) | Custom Vc available on request | -3.0<br>0.0 | 0<br>2.5 | 3.0<br>5.0 | V |
| Linearity[1] | | | | 10 | % |
| Slope | Positive or negative | | | | |
| Modulation impedance | | 50 | | | kΩ |
| Frequency adjustment with external 10 kΩ potentiometer | | ±5 | | | ppm |

## Output Characteristics[4]

| Parameter | | Test Conditions/Description | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| HCMOS[5] | Nominal frequency (Fn) | HCMOS output | 0.032 | | 72 | MHz |
| | Output voltage ($V_{OL}$)[1] | 15 pF load | | | 10% $V_{CC}$ | V |
| | Output voltage ($V_{OH}$)[1] | 15 pF load | 90% $V_{CC}$ | | | V |
| | Duty cycle[1] | @50% $V_{CC}$ | 45 | | 55 | % |
| | Rise time / Fall time[1] | 10 % to 90% Vcc | | | 5 | ns |
| Sinewave | Nominal frequency (Fn) | Sinewave output | 15 18 | | 40 100 | MHz |
| | Output level[1] | 50 Ω nominal load | | 7 | | dBm |
| | Harmonics & subharmonics[1] | | | -30 | | dBc |
| | Spurious[1] | | | -70 | | dBc |
| | Phase noise for Sinewave | 1 kHz offset @ 38 MHz | | -130 | | dBc/Hz |

## Environmental Specifications

| Screening Operation | Requirements and Condition | | | |
|---|---|---|---|---|
| Non-destructive bond pull | MIL-STD-883, method 2023 | | | |
| Internal visual | MIL-STD-883, method 2017 and method 2032 | | | |
| Stabilisation bake (prior to seal) | MIL-STD-883, method 1008, condition C (+150°C), 48 hours minimum | | | |
| Thermal shock | MIL-STD-883, method 1011, condition A | | | |
| Temperature cycling | MIL-STD-883, method 1010, condition C | | | |
| Constant acceleration | MIL-STD-883, method 2001, condition A, Y1 only (5000 g's) | | | |
| Seal (fine and gross leak) | MIL-STD-883, method 1014: | *Fine leak*<br>Test condition A1, A2, or B | *Fine leak*<br>Test condition B2 or B3 | *Fine leak*<br>*Test condi* |
| Particle impact noise detection (PIND) | MIL-STD-883, method 2020, condition A | | | |
| Electrical test | Nominal and extreme supply voltages, specified load, 23°C and temperature extremes, record all test parameters by serial number | | | |
| Burn-in (load) | 115°C, nominal supply voltage and burn-in load, 440 hours minimum | | | |
| Radiographic | MIL-STD-883, method 2012 | | | |
| External Visual | MIL-STD-883, method 2009 | | | |

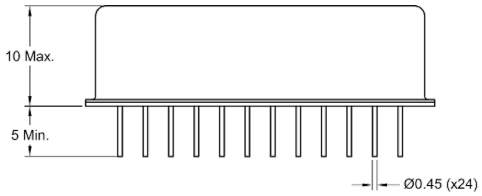
[3] Pulling range of min ±375 ppm available on request.

[4] LVDS output option is available on request.

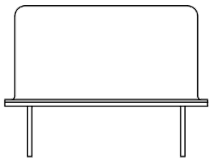
[5] The HCMOS option is available for 5.0 V.

## Model Outline and Pin Connections

| Parameter | Requirements / Condition |
|---|---|
| Package size | L x W: 35 x 20 mm nom. H = 10 mm max. |
| Net weight | 30 g typ. |



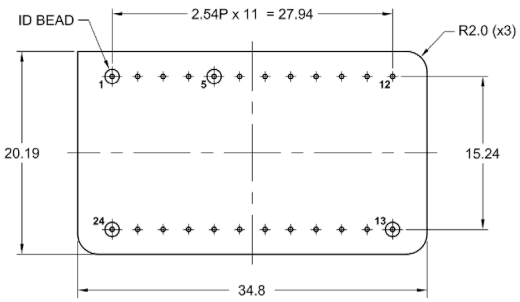

FRONT VIEW



SIDE VIEW

**NOTE:**

- Dimensions are in millimetres.
- Tolerance is ±0.25 mm if it has not been indicated.




BOTTOM VIEW

| Pin | Connections |
|---|---|
| **1** | Vc (Control voltage) |
| **2, 3, 4** | GND |
| **5*** | Frequency adjustment option (10 kΩ POT to be connected from pin 5 to GND |
| **6, 7, 8, 9, 10, 11, 12** | GND |
| **13** | Fout (Frequency output) |
| **14, 15, 16, 17, 18, 19, 20, 21, 22, 23** | GND |
| **24** | Vcc (Supply voltage) |