

RTX3520S

The RTX3520S is a radiation tolerant TCXO in 35 x 20 mm hermetically sealed package. This TCXO is specifically designed for missions where resistance to demanding environment, short lead-time and radiation tolerance are required. The high reliability TCXO delivers excellent frequency stability.

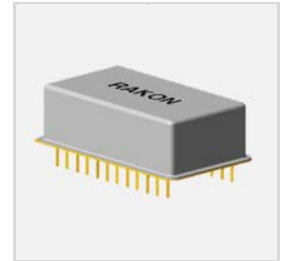
Features

- TID limit of 100 kRad and latch-up free till 32.4/62 MeV
- Hermetically sealed package
- Frequency range: 5.5 to 375 MHz
- Output option: HCMOS and Sinewave
- Low current: 25 mA
- Supply voltage 5.0 or 15.0 V
- Excellent frequency stability: ± 1 ppm over -15 to 60°C
- Manufactured in accordance with: MIL-PRL-55310 Class 2, level S

Applications

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

35 x 20 mm



Environmental Conditions

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Operating temperature		-15 -30		60 60	°C
Switch-on temperature	TS ₀	-40		65	°C
Non-operating temperature	TNOp	-55		125	°C

Frequency Characteristics

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Initial frequency accuracy	@ 25°C			±0.3	ppm
Frequency stability over temperature (FvT)	-15 to 60°C -30 to 60°C			±1 ±2	ppm
Supply voltage stability (FvT) ¹				±0.2	ppm
Ageing	Per year			±1	ppm

Electrical Interface

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Power supply (Vcc)	±5% tolerance		5.0, 15.0		V
Input current ¹	No load		25		mA

Frequency Adjustment Option

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Frequency adjustment range		±3			ppm
Provision of frequency adjustment	By external resistor	0	5	10	kΩ

Phase Noise

Parameter		5.5 to 155 MHz (Typ.)	156 to 250 MHz (Typ.)	251 to 375 MHz (Typ.)	Unit
Offset	10 Hz	-75	-67	-64	dBc/Hz
	100 Hz	-110	-102	-99	
	1 kHz	-130	-122	-119	
	10 kHz	-145	-137	-134	

¹ Over temperature range

Output Characteristics²

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit	
HCMOS ³	Nominal frequency	HCMOS output	5.5		50	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% V _{CC}			5	ns
Sinewave	Nominal frequency	Sinewave output	5.5		375	MHz
	Output level ¹	50 Ω nominal load	7			dBm
	Harmonics & subharmonics ¹			-45		dBc
	Spurious ¹			-70		dBc

Screening (100%)

Screening Operation	Requirements and Condition
Non-destructive bond pull	MIL-STD-883, method 2023
Internal visual	MIL-STD-883, method 2017 and method 2032
Stabilization 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: <i>Fine leak</i> Test condition A1, A2, or B <i>Gross leak</i> Test condition B2 or B3
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)	125°C, nominal supply voltage and burn-in load, 240 hours minimum
Radiographic	MIL-STD-883, method 2012
External Visual	MIL-STD-883, method 2009

Model Outline, Pin Connections

FRONT VIEW: Shows a package with height H (see note) and a minimum height of 5 mm. Pin pitch is 0.45 mm (x24).

SIDE VIEW: Shows the profile of the package.

BOTTOM VIEW: Shows a rectangular package with dimensions 34.8 mm by 20.19 mm. Pin 1 is at the top left, pin 13 at the top right, pin 24 at the bottom left, and pin 13 at the bottom right. Pin 5 is at the bottom center. Pin 12 is at the top center. Pin 1 is at the top left. Pin 3, 5, 8, 12 are also marked. Pin 24, 22, 20, 15, 13 are marked at the bottom. Radius R2.0 (x3) is indicated at the corners. Pin pitch is 2.54 mm (x11 = 27.94 mm).

Pin	Connections
1	Frequency adjustment option (10 kΩ POT to be connected from pin 5 to GND)
2, 3, 4	GND
5	No connection
6, 7, 8, 9, 10, 11, 12	GND
13	Fout (Frequency output)
14, 15, 16, 17, 18, 19, 20, 21, 22, 23	GND
24	V _{CC} (Supply voltage)

NOTE:

- H options: 10 or 15 mm.
- Dimensions are in millimetres.
- Tolerance is ±0.25 mm if it has not been indicated.

² LVDS option is available on request

³ The HCMOS output is available for 5.0 V supply