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.

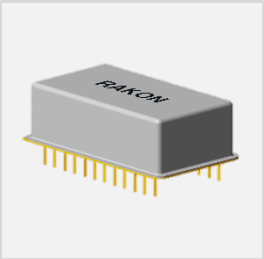
Features

- 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-PRF-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

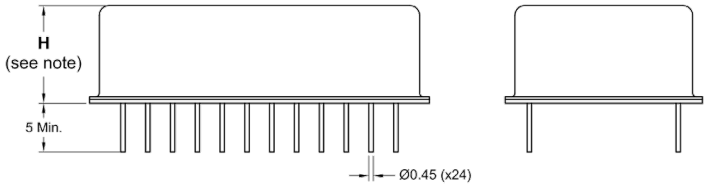
Output Characteristics[2]

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% Vcc			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: ***Fine leak*** *Test condition A1, A2, or B* ***Gross leak*** *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

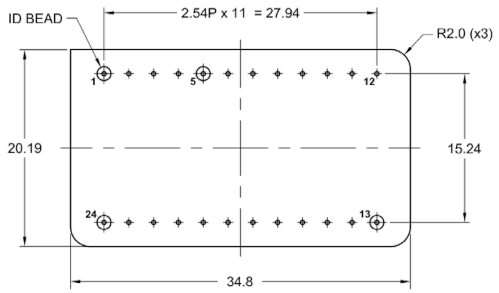
Model Outline, Pin Connections



FRONT VIEW SIDE VIEW

NOTE:

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



BOTTOM VIEW

Pin	Connections
1	Frequency adjustment option (10 kΩ POT to be connected from pin 1 to GND
3, 5, 15, 20, 22	No Connection
13	Fout (Frequency output)
24	Vcc (Supply voltage)
All other pins	GND

[2] LVDS option is available on request
[3] The HCMOS output is available for 5.0 V supply