



TX-402

Temperature Compensated Crystal Oscillator
High Precision

Helping Customers Innovate, Improve & Grow



TX-402

Features

- High Precision TCXO
- OCXO Replacement
- OCXO Temperature Performance
- Low power consumption
- Low cost
- Tight Tolerances

Applications

- Base Station
- Test Equipment
- Femto Base Station
- Communication Equipment
- Digital Switching

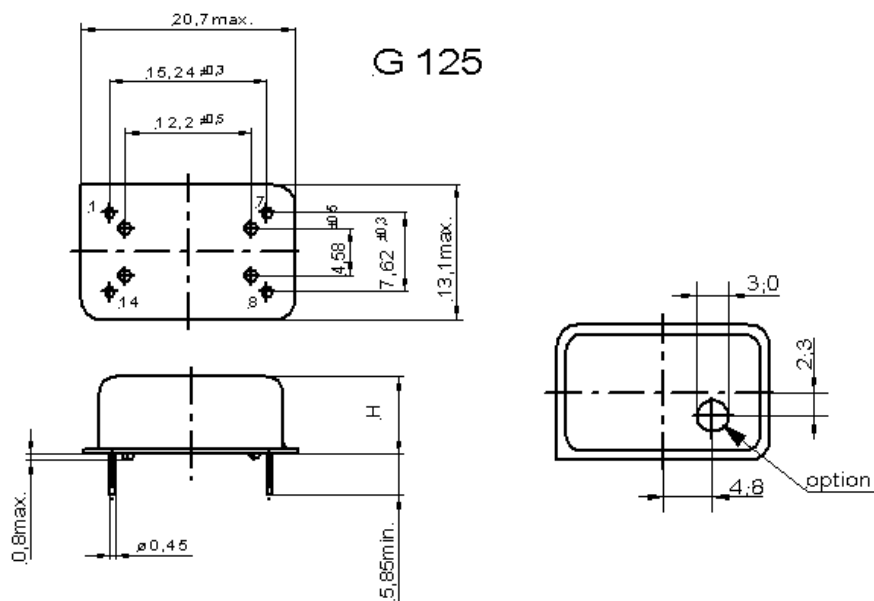
Performance Specifications

Frequency Stabilities ¹ (Standard - 6.4 to 50 MHz)						
Parameter	Min	Typical	Max	Units	Condition	
vs. operating temperature range (referenced to +25°C)	-280		+280	ppb	-40 to +85°C	Options ³
	-140		+140	ppb	-40 to +85°C	
	-100		+100	ppb	-40 to +85°C for some frequencies ¹	
	-100		-100	ppb	-20 to +70°C	
	-70		+70	ppb	-20 to +70°C	
	-50		+50	ppb	-20 to +70°C for some frequencies ¹	
Initial tolerance	-0.5		+0.5	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-10		+10	ppb	V _s ±5% static	
vs. load change	-10		+10	ppb	Load ±5% static	
vs. aging / day	-10		+10	ppb	after 30 days of operation	
vs. aging / year	-1.0		+1.0	ppm	after 30 days of operation	
vs. aging / 10 years	-3.0		+3.0	ppm	after 30 days of operation	

Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition	
Supply voltage (standard) Current consumption	3.135	3.3	3.465 12	VDC mA	@HCMOS	
Supply voltage Current consumption	4.75	5.0	5.25 12	VDC mA	@HCMOS	
RF Output						
Signal [standard]	HCMOS					
Load	13.5	15	16.5	pF		
Signal Level (Vol)			0.3	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	2.6				with Vs=3.3V and 15pF Load	
Signal Level (Vol)			0.5	VDC	with Vs=5.0V and 15pF Load	
Signal Level (Voh)	4.5				with Vs=5.0V and 15pF Load	
Duty Cycle	40		60	%	@ (Voh-Vol)/2	
Rise and Fall time			5	ns	@15 pF 10 to 90 %	
Frequency Tuning (EFC) 6.4 to 26 MHz						
Tuning Range	Fixed TCXO; No adjust				Opti- on ³	
Tuning Range	±5.0			ppm		
Linearity	<10%					
Tuning Slope	Positive					
Control Input Impedance	80	100	120	kOhm		
Control Voltage Range	0.3	1.65	3.0	VDC	with Vs=3.3V	
Control Voltage Range	0.5	2.5	4.5	VDC	with Vs=5 V	
Additional Parameters						
Phase Noise ²		-92	-80	dBc/Hz	10 Hz	@ 10 MHz HCMOS 5 V
		-117	-110	dBc/Hz	100 Hz	
		-139	-130	dBc/Hz	1 kHz	
		-150	-145	dBc/Hz	10 kHz	
		-152	-150	dBc/Hz	100 kHz	
Jitter		0.2		ps RMS	@ 12 kHz to 20 MHz	
Weight			8.0	g		
Processing & Packing	Handling & Processing Note					
Absolute Maximum Ratings						
supply voltage (Vs)			6.0	V	with Vs=3.3 & 5.0 VDC	
Output Load			50	pF		
Operable Temperature Range	-40		+85	°C		
Storage Temperature Range	-40		+90	°C		

Outline Drawing / Enclosure



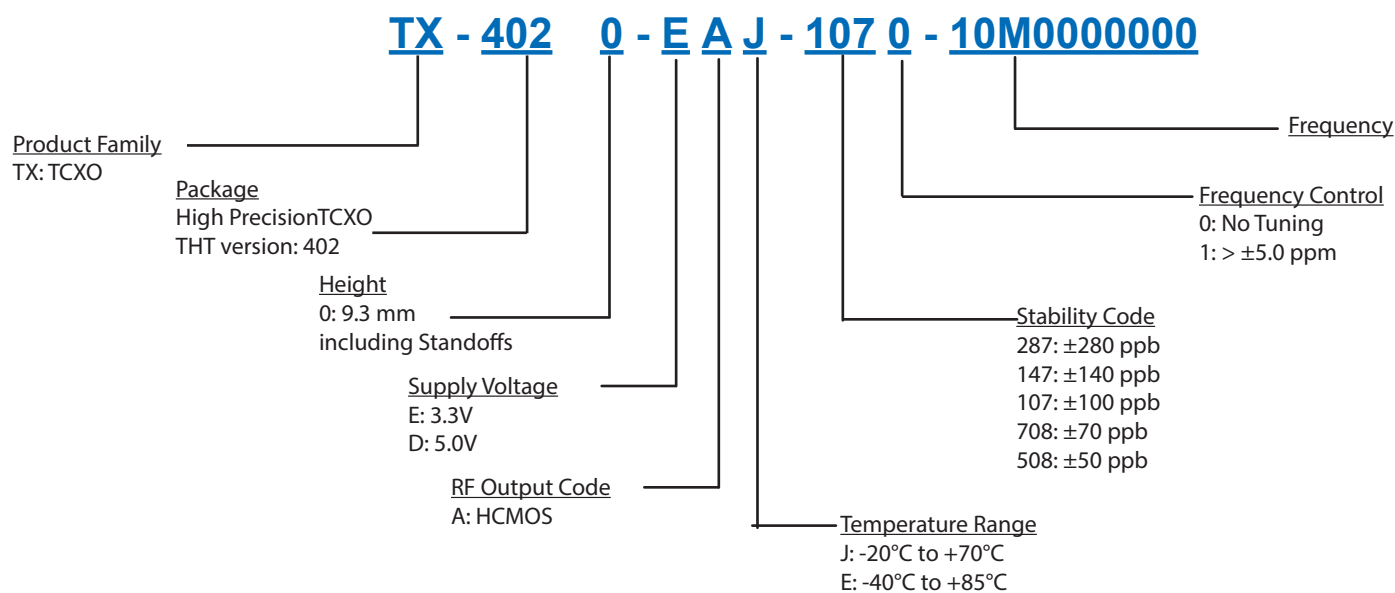
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TX-402	
Height "H"	Pin Length "L"
8.5 max	NA

Pin Connections	
1	Control Voltage Input (Vc)
7	Ground (Case)
8	RF-Output
14	Supply Voltage Input (Vs)

Dimensions in mm

Ordering Information



Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Phase noise degrades with increasing output frequency.
3. Contact factory for availability.

Unless other stated all values are valid at typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).

Subject to technical modification.

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