

PTOC3 series - OCXO, frequencies up to 77,76 MHz



Highlights PTOC3 series:

- Hermetically sealed oscillator
- Optional voltage reference
- Low phase noise and low jitter optimised design
- AT-Cut and SC-CUT crystal designs
- Optional oven alarm
- Different designs depending on customers requirements

General electrical parameter PTOC3 series	symbol	from	to
Supply voltage	Vs	3,3 V	12,0 V
Frequency range *1)	f0	5 MHz	77,76 MHz
Example frequency	f0	32,768 MHz	
Frequency deviation vs temperature range	$\Delta f/f$	$\pm 0,002$ ppm	$\pm 0,5$ ppm
Frequency overall tolerances (including all effects) *2)	$\sum \Delta f/f_0$	4,6 ppm	
Ageing first year (15 years) (after 30 days power on)	$\Delta f/f (t)$	depends on specification	
Operating temperature ranges	TC 1	- 20° C to + 80° C	- 40° C to + 80° C
Storage temperature range		- 55° C to + 105° C	
Frequency tuning range	$\Delta f/f (Vc)$	± 1 ppm	± 18 ppm
Nonlinearity		10 %	5 %
Output voltage	RF	HCMOS	
Typical phase noise @ 77,76 MHz	@ 1 Hz	- 65 dBc/Hz	
	@ 10 Hz	- 100 dBc/Hz	
	@ 100 Hz	- 125 dBc/Hz	
	@ 1 kHz	- 130 dBc/Hz	
	@ 10 kHz	- 140 dBc/Hz	
@ 100 kHz		- 145 dBc/Hz	

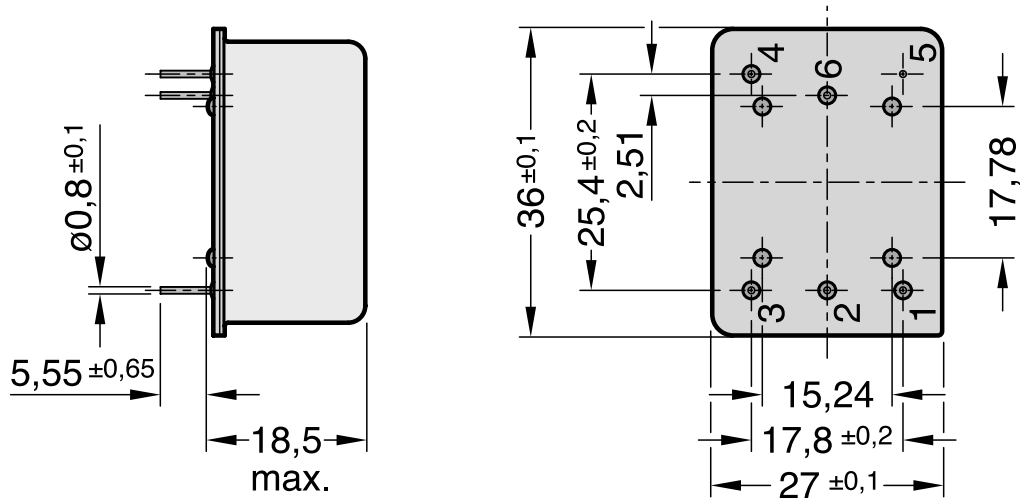
Notes:
 *1) **Further frequencies, tolerances and specifications upon request possible**
 *2) Including adjustment tolerance, tolerance vs temperature range, vs supply change, vs load change and 15 years ageing

Standard frequency examples (all in MHz) — other frequencies are feasible —

10,000	16,384	32,768	38,880
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Case drawing CO-08_07



Pin connection

	5 pin	6 pin
Pin 1	Vc	Vc
Pin 2	Vref	Vref
Pin 3	Vs	Vs
Pin 4	RF	RF
Pin 5	GND	GND
Pin 6		Oven alarm

Marking specification

Line 1:	Company
Line 2:	Article / customer designation
Line 3:	Frequency
Line 4:	Series number and date code
Example:	FOQ Piezo Technik PTOC 32203 32,768 MHz 3232 51/03

Package and shipment in ESD-trays

Package 5 (290x235x120 mm)	Package 3 (290x235x240 mm)	Package 2 (460x305x245 mm)	Package 1 (575x465x245 mm)	All multiples and combinations are possible
120 pcs.	240 pcs.	480 pcs.	960 pcs.	

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Environmental Conditions (Please find below our standard environmental conditions)

Test	CECC 69000 Chapter	IEC 60068 Part ...	Test Conditions
Visual inspection, Dimensions	IPC-A-610 Chapter 10	IPC-A-610 Chapter 10	class II
Resistance to bending of the connections	4.6.1	2-21	Tests Ua1, Ua2, Ub, 5N
Density	4.6.2	2-17	Gross leak: Test Qc, Fine leak: Test Qk
Solderability	4.6.3	2-20	Test Ta (235+- 5)°C Method 1
Solder heat Resistance		2-58	Test Td, for SMD
Shock	4.6.8	2-27	Test Ea, 3 x per axes 100g, 6ms
Free Fall	4.6.9	2-32	Test Ed procedure 1, 2 * fall from 1m height on hardwood
Vibration, sinusoidal	4.6.7	2-6	Test Fc, 30 min per axis, 10 Hz - 55 Hz 0,75mm, 55 Hz – 2 kHz, 10g, 30min, X,Y,Z
Rapid temperature change	4.6.5	2-14	Test Na, 100 cycles in Operating temperature range
Dry heat	4.6.14	2-2	Test Ba, 16h 85°C
Moisture heat, cyclically	4.6.15	2-30	Test Db version 1, level b), 55°C/95% r.H., 6 cycles
Cold	4.6.16	2-1	Test Aa, 2 h, -40°C
Order of climatic tests	4.6.17	1-7	2-2, 2-30(1 cycle), 2-1, 2-30(5 cycles)
Moisture heat constantly	4.6.18	2-3	Test Ca, 56 days, 85%/85°C
Dipping into cleanser	4.6.21	2-45	Test Xa
Endurance tests -Ageing -Extended ageing	4.7.1	IEC 679-1	30 days at 85°C 1000h, 2000h at 85°C

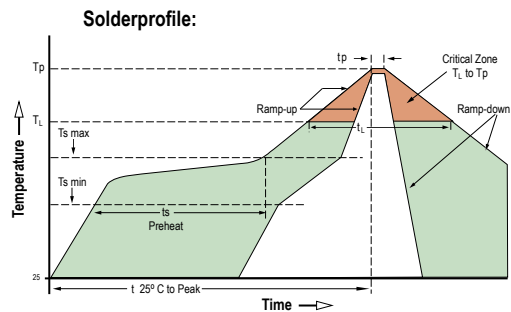
Soldering

Wired oscillators can be processed manually or in solderwave. Oscillators with SMD-connections can be processed in convection, infrared or vapour phase soldering procedure, however, not over the head.

In soldermachine mounted crystal or crystal oscillator can get a frequency offset which relaxes only after a view days, type depending.

A storage under normal climate conditions (+5°C to +35°C and 40% to 75% a relative humidity) ensures a sufficient solderability of minimum 1 year. The solderability is typically still guaranteed beyond it.

Should the occasion of a long storage arise it has to be rechecked. For corresponding soldering profiles please refer to IEC 61760-1.



Profile Feature	standard		on request	
	Sn-Pb Assembly		Pb-Free Assembly	
	Large Body	Small Body	Large Body	Small Body
Average ramp-up rate (T _l to T _p)	3°C/second max.		3°C/second max.	
Preheat -Temperature Min T _{s min} -Temperature Min T _{s max} -Time (min to max) (t _s)	100°C 150°C 60-120 seconds		150°C 200°C 60-180 seconds	
T _{s max} to T _l - Ramp-up Rate			3°C / second max.	
Time maintained above: -Temperature (T _l) -Time (t _l)	183°C 60-150 seconds		217°C 60-150 seconds	
Peak Temperature (T _p)	225 +0/-5°C	240 +0/-5°C	245 +0/-5°C	250 +0/-5°C
Time within 5°C of actual Peak Temperature (t _p)	10-30 seconds	10-30 seconds	10-30 seconds	20-40 seconds
Ramp-down Rate	6°C/second max.		6°C/second max.	
Time 25°C to Peak Temperature	6 minutes max.		8 minutes max.	

All temperature refer to topside of the package, measured on the package body surface.