iSource+™ Space-Qualified MO Spec

Revised 3 January 2005

iPrecision Timing Solutions™

Crystal-Based Master Oscillator (MO)

High Precision & Performance Source

Navigation | Space

Applications

©Temex Time
sales@temextime.com
temextime.com

Europe Headquarters
+41.32.732.16.66

North America Sales Offices
+1.512.470.3980

Asia Sales Office
+86.21. 5240.0117

Main Features:

- Very small mass and volume
- Low power consumption
- Low temperature sensitivity
- Excellent short and long term stability
- Fast warm-up
- Wide operating temperature
- Pre-adjusted frequency

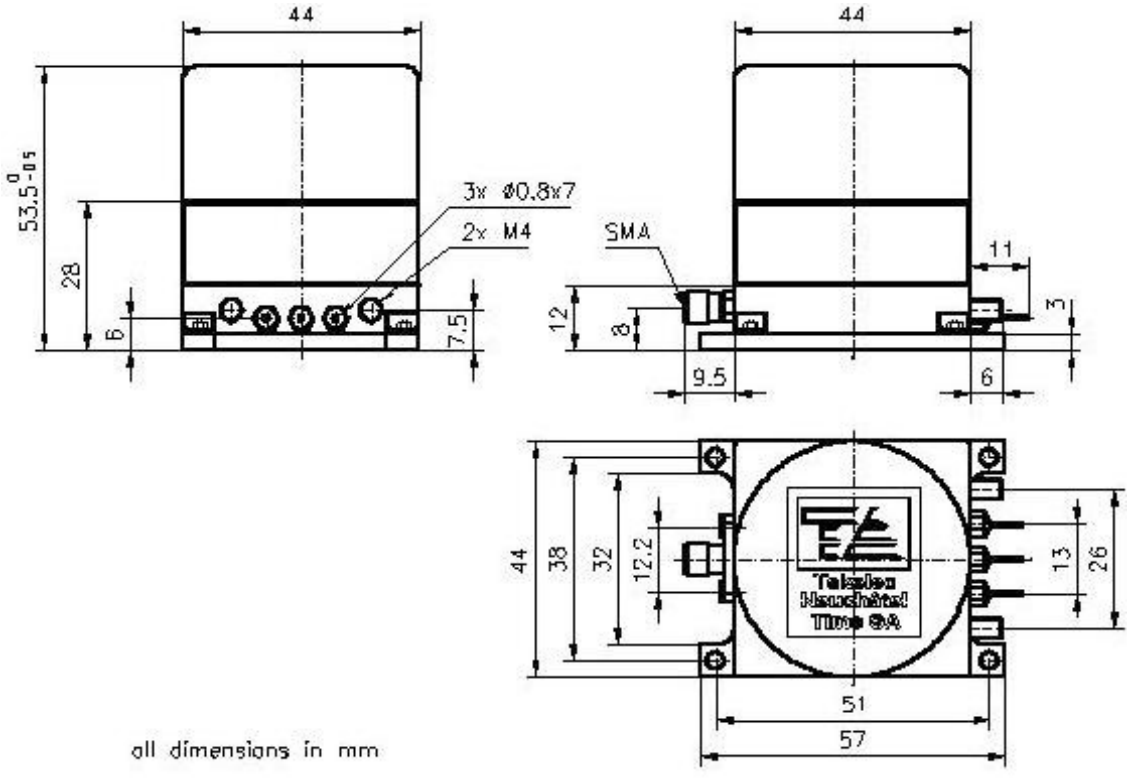
User Accessible Parameters:

The externally accessible parameters are the frequency adjustment control voltage (Vadj) and the reference voltage (Vref)

To adjust the frequency, a control voltage shall be applied on the Vadj pin. The allowed voltage range is GND ≤ Vadj ≤ Vref. This can be performed through the use of a resistor bridge or a 100kΩ variable resistor, connected between the Vref pin and the power ground.

In the standard version, all the modifiable parameters are factory adjusted by fixed value SMD resistors which are soldered on the user accessible interface PCB. The parameters can also be re-adjusted by the user, if required.

Master Oscillator external dimensions



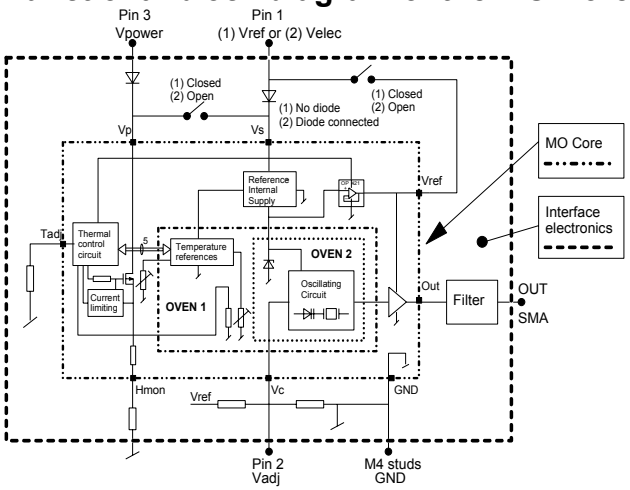
Type	MO4D-SC
Parameter	Value
Dimensions	44 x 54 x 57 (44) mm
Output signal frequency	10 MHz*
Frequency long term stability, 1st year Average ageing per day after 1 month	< $\pm 3 \times 10^{-8}$ / year < $\pm 1 \times 10^{-10}$ / day
Frequency long term stability, years after	< $\pm 1 \times 10^{-8}$ / year
Frequency short term stability	< $\pm 3 \times 10^{-12}$ (0.1-10 s)
Frequency stability over full temp. range	< $\pm$ 1x10^{-9}
Frequency adjustment	> $\pm$1.5 Hz
SSB phase noise assuming 10MHz carrier 1 Hz 10 Hz 100 Hz 1000 Hz 10000 Hz	 < -95 dBc < -125 dBc < -140 dBc < -150 dBc < -155 dBc
Output signal level	4,5 dBm $\pm$ 1dBm
Output impedance	50 $\Omega \pm$ 20%
Harmonics	-30 dBc
Spurious signals	-120 dBc
Power consumption during warm-up	8 W
Nominal power consumption	3.5 W
Maximum power consumption in operation	5 W
Volume	< 0.15 dm^3
Power supply	12 - 18 V
Warm-up time (accuracy < $\pm 2 \times 10^{-8}$ at 25°C)	20 minutes
Mass (stainless steel cover)	220 gr

Type	MO4D-SC	
Parameter		Value
Connectors 1) Power / TC 2) RF Output 3) Case ground		3 x solderable pins SMA 2 x M4 stud
Mechanical interface		flat base plate
Max. baseplate operating temperature		60 °C
Min. baseplate operating temperature		-15 °C
Storage temperature		-40 to 70 °C
First natural resonance		> 800 Hz
Random Vibration tested, with axis perpendicular to the mounting plane. Duration	20 - 80 Hz 80 - 350 Hz 350 - 443 Hz 443 - 600Hz 600 - 2000 Hz	+6 dB/oct 0.56 (0.8) g^2/Hz** -6 dB/oct 0.35 (0.5) g^2/Hz** -6 dB/oct 60 (120) sec/axis**
Random Vibration tested, with axis parallel to the mounting plane. Duration	20 - 80 Hz 80 - 350 Hz 350 - 443 Hz 443 - 950 Hz 950 - 2000 Hz	+6 dB/oct 0.22 (0.32) g^2/Hz** -6 dB/oct 0.14 (0.2) g^2/Hz** -6 dB/oct 60 (120) sec/axis**
Sinusoidal vibration Sweep rate	5 - 19 Hz 19 - 80 Hz 80 - 100 Hz	11 mm 0-peak 16 g 8 g 2(1) oct/min.**
Life time / MTBF		15 years/9 Mio hrs
Pressure sensitivity vacuum to atmosphere (thermal effect)		< $\pm 5 \times 10^{-8}$ @25°C

* Other frequencies (5 MHz to 15 MHz) and related specifications available upon request.

** Values in brackets only applicable for qualification testing

Functional block diagram of the MO Core



2 pins power as nominal