MICRO CRYSTAL SWITZERLAND

MCSO1EL very low consumption 32.768 kHz

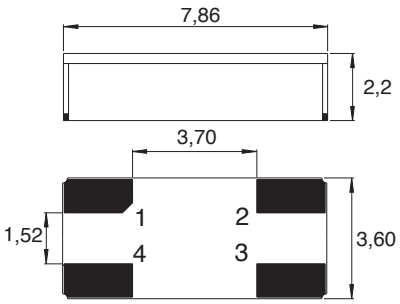
T range up to 200°C



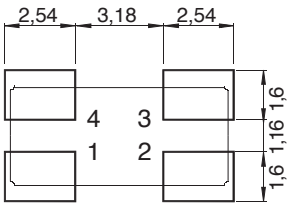
100% Leadfree, RoHScompliant:

DIMENSIONS

Package:
Bottom view



Recommended Solder Pad:



pin 1 E/D
pin 2 GND
pin 3 Fout
pin 4 Vdd

All dimensions in mm typical

SMT Clock oscillator in ceramic package
Fundamental quartz mode frequency
High shock and vibration resistance
Wide temperature range
Low aging
Ultra low internal MSL
Very fast start-up
Excellent solderability
Swiss made quality
Customer specification on request

Frequency stability included 1000h at Tmax

DESCRIPTION:

This SMD oscillator in ceramic package has been specially designed for surface mount using infrared, vapor phase or epoxy techniques.

APPLICATIONS:

- Downhole and Well drilling equipments
- Avionics
- Airbone equipments
- Geothermal equipments
- Fire fighter equipments

The MCSO1's are supplied on trays (91 pcs / tray)
For pick-and-place equipment, the parts are available in 16mm tapes with 250 parts min
1000 parts max

ELECTRICAL CHARACTERISTICS AT +25°C

Frequency stability Over temperature range C = -55 to +125°C (see ordering info) Including 2)*	**ΔF/F**	**≤ ± 100**	**ppm**
Frequency stability Over temperature range E = -55 to +150°C (see ordering info) Including 2)*	**ΔF/F**	**≤ ± 150**	**ppm**
Frequency stability Over temperature range D = -55 to +175°C (see ordering info) Including 2)*	**ΔF/F**	**≤ ± 300**	**ppm**
Frequency stability Over temperature range G = -55 to +200°C (see ordering info) Including 2)* 3)*	**ΔF/F**	**≤ ± 400**	**ppm**
Supply voltage ± 5% 1)*	Vdd	2.5 / 3.3 / 5	V
Input current	Idd	see table 1	
Output signal		HC-MOS compatible	
Symmetry at Vdd/2		40 / 60	%
Rise & fall time (load 15pf 20% to 80%)		25	ns
Level "0" & "1"		<0.4>Vdd-0.5	V
Start-up time	t	<5	ms
Load min / max		3/27	pF

* 1) C = 47nF ceramic must be connected between GND & Vdd
Operable over 2.3 to 5.5V
* 2) adjustment at +25°C, long term aging 1000h at Tmax ordered over supply voltage ±5% and over load min to max
* 3) Only available with Supply voltage 5V

TABLE 1: Idd
(With load 10pF)

Frequency	F=32 kHz
W=Vdd = 2.5V	< 100µA
V=Vdd = 3.3V	< 110µA
blank=Vdd = 5V	< 120µA

STANDARD FREQUENCIES:

Frequency «kHz»
32.768
Other frequencies from up to 50 kHz on request

ENVIRONMENTAL CHARACTERISTICS:

Storage temp. range	-65 to +125°C
Vibration resistance (survival)	10 to 2000Hz / 80g
Shocks resistance (survival)	10000g / 0.3ms / ½ sine

TERMINATIONS AND PROCESSING:

Reflow soldering	+260°C / 10s max
Package	Ceramic 8 x 4 x 2.2mm
Lids (standard)	Kovar
Lids (on request)	Ceramic (Kovar on version G)
Terminations option T3 on request (not available on G temperature range)	with tinned Ag/Cu/Sn
E/D option 1 on request Reaction time < 5mS	Pin 1 open → Pin 3 Clock H → Clock L → Low

- No power E/D function (pin 1) before Vdd is setting on
- Disable option (consumption ≤5µA).

PRODUCT DESCRIPTION AND ORDERING INFORMATION:

MCSO1EL C V - D 32kHz E/D T3 XXX

blank = Kovar lids
C = Ceramic lids

W = Vdd 2.5V
V = Vdd 3.3V
blank = Vdd 5V

C = -55 to 125°C
E = -55 to 150°C
D = -55 to 175°C
G = -55 to 200°C
X = custom

Frequency

option 1 E/D
enable / disable

option 2
blank Au plated
T3 = tinned

customer
spec N°

A unique part number will be generated for each product specification: i.e:

20xxxx-EA00 xxx pcs (in ESD plastic tray)
200xxx-ML00 xxx pcs (in tape & reel, any quantity)

All specifications subject to change without notice.

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