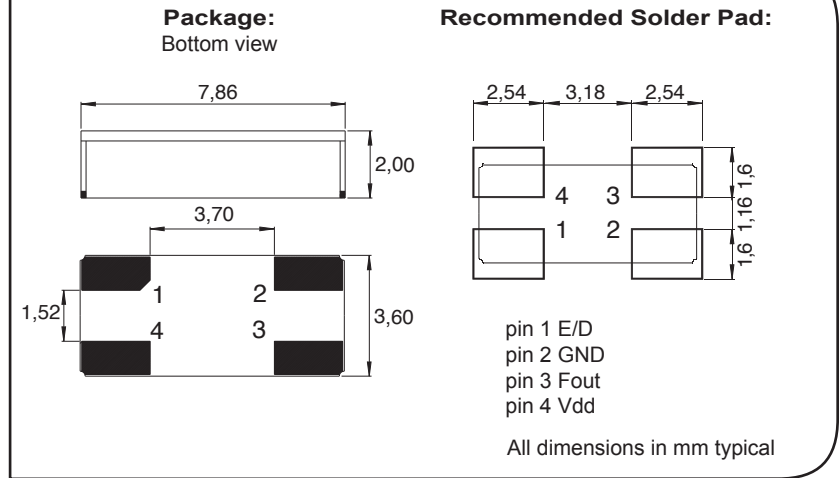




### DIMENSIONS



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

### DESCRIPTION:

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

### APPLICATIONS:

- Avionics
- Airbone equipments
- Remote control
- Security application
- Radio Transceiver
- Microprocessor clocks

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

<b>Frequency stability</b> Over temperature range (see ordering info) Including: adjustment at +25°C long term aging 10 years over supply voltage ±5% over load min to max	$\Delta F/F$	$\leq \pm 100$	ppm
<b>Frequency stability version T</b> Over temperature range (see ordering info) Including: adjustment at +25°C long term aging 1 year over supply voltage ±5% over load min to max	$\Delta F/F$	$\leq \pm 50$	ppm
Supply voltage ± 5% 1)* Version 1.2V available on request	Vdd	1.8 / 2.5 / 3.3	V
Input current	Idd	see table 1	
Output signal		HC-MOS compatible	
Symmetry at Vdd/2		40 / 60	%
Rise & fall time ≤ 20MHz For F=32.768 kHz rise & fall time ≤ 150ns (load 15pf 20% to 80%)		≤7	ns
Rise & fall time ≥ 20MHz (load 15pf 10% to 90%)		≤3	ns
Level "0" & "1"		<0.4>Vdd-0.5	V
Start-up time	t	<5	ms
Load min / max		3/47	pF
Jitter ≤ 20MHz one sigma		< 2rms	ps
Jitter > 20MHz one sigma		< 10rms	ps

\* 1) C = 47nF ceramic must be connected between GND & Vdd

**TABLE 1: I<sub>dd</sub>**  
(Without load)

Frequency	F=32 kHz	F=< 10MHz	≤ 20MHz	>20 to 225MHz
W=V <sub>dd</sub> = 2.5V	< 300μA	< 2mA	< 3mA	< 25mA
V=V <sub>dd</sub> = 3.3V	< 1mA	< 4mA	< 5mA	< 30mA

**STANDARD FREQUENCIES:**

Frequency «MHz»						
3.6864	4	8	10	12	12.8	14.7456
16	20	24	40	48	120	160
Other frequencies from 10 kHz up to 225 MHz on request						

**ENVIRONMENTAL CHARACTERISTICS:**

Storage temp. range	-65 to +125°C
Vibration resistance	10 to 2000Hz / 20g
Shocks no resistance	5000g / 0.3ms / ½ sine

**TERMINATIONS AND PROCESSING:**

Reflow soldering	+260°C / 10s max
Package	Ceramic 8 x 4 x 2mm
Lids (standard)	Kovar
Lids (on request)	Ceramic Height 2.5mm type MCSO1FC
Terminations option T3 on request	with tinned Ag/Cu/Zn
E/D option 1 on request Reaction time < 1μs	Pin 1 open → Pin 3 Clock H → Clock L → Low

- No power E/D function (pin 1) before V<sub>dd</sub> is setting on
- E/D option not available for F < 500 kHz
- E/D option on request (very low consumption in disable mode).

**PRODUCT DESCRIPTION AND ORDERING INFORMATION:**

**MCSO1F C H V T - C 48MHz E/D T3 XXX**

C	= Ceramic lids		option 1 E/D enable / disable
blank	= Kovar lids		
H	> 20MHz		option 2 blank Au plated T3 = tinned
blank	≤ 20MHz		
Z	= V <sub>dd</sub> 1.8 V		customer spec N°
W	= V <sub>dd</sub> 2.5V		
V	= V <sub>dd</sub> 3.3V		
T	= ±50ppm		
blank	= ±100ppm		
A	= 0 to +70°C		
B	= -40 to +85°C		
C	= -55 to +125°C		
X	= custom		
Frequency			

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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