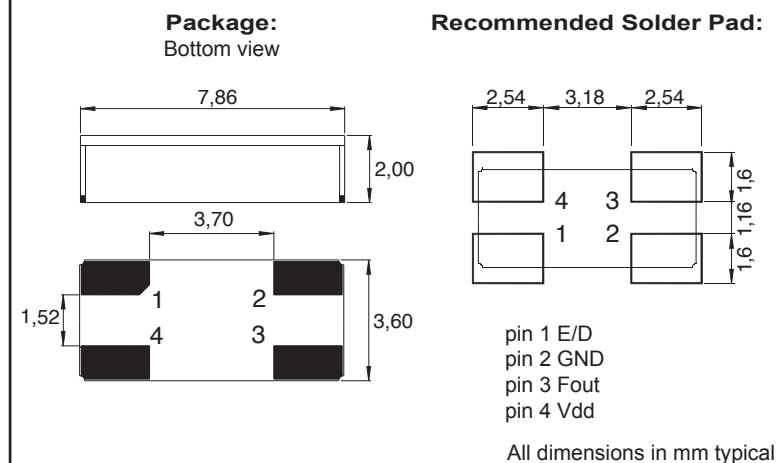




100% Leadfree, RoHScpliant:

## 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:

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

<b>Frequency stability</b> Over temperature range D = +55 to +175°C (see ordering info) Including: adjustment at +25°C long term aging 1 year over supply voltage ±5% over load min to max	$\Delta F/F$	$\leq \pm 300$	ppm
<b>Frequency stability</b> Over temperature range G = -55 to +210°C (see ordering info) Including: adjustment at +25°C long term aging 1 year over supply voltage ±5% over load min to max	$\Delta F/F$	$\leq \pm 400$	ppm
Supply voltage ± 5%	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 ≤ 20MHz For F=32.768 kHz rise & fall time ≤ 150ns (load 15pf 20% to 80%)		≤7	ns
Rise & fall time ≥ 20MHz for (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

**TABLE 1: Idd**  
**(Without load)**

Frequency	F=32 kHz	F=< 10MHz	≤ 20MHz	>20 to 100MHz
W=Vdd = 2.5V	< 300μA	< 2mA	< 3mA	< 15mA
V=Vdd = 3.3V	< 1mA	< 4mA	< 5mA	< 20mA
blank=Vdd = 5V	< 2mA	< 6mA	< 7mA	< 30mA

## STANDARD FREQUENCIES:

Frequency «MHz»						
0.032768	3.6864	4	8	10	12	12.8
14.7456	16	20	24	40	48	
Other frequencies from 32 kHz up to 100 MHz on request						

## ENVIRONMENTAL CHARACTERISTICS:

Storage temp. range	-55 to +125°C
Vibration resistance	10 to 2000Hz / 40g
Shocks no resistance	10000g / 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 MCS01EC
Terminations option T3 on request (not available on G temperature range)	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 Vdd 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:

**MCS01E C H V - D 20MHz E/D T3 XXX**

**C** = Ceramic lids  
 blank = Kovar lids

**H** > 20MHz  
 blank ≤ 20MHz

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

**D** = -55 to 175°C  
**G** = -55 to 210°C  
**X** = custom

**E/D**  
 option 1 E/D enable / disable  
 option 2 blank Au plated  
**T3** = tinned  
 customer spec N°

**Frequency** 20MHz

All specifications subject to change without notice.



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