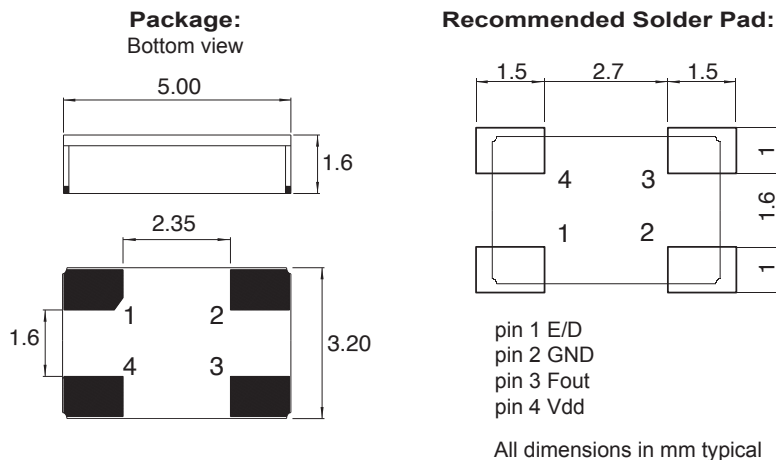




100% Leadfree, RoHScompliant:

## 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 equipment
- Geothermal equipment

The MCSO2's are supplied on trays (128 pcs / tray)  
 For pick-and-place equipment, the parts are available in 12mm tapes  
 with 250 parts min  
 1000 parts min

## 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% 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 ≤ 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

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

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

Frequency	Fz 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»						
3.6864	4	8	10	12	12.8	14.7456
16	20	24	40	48		
Other frequencies from 10 kHz up to 100MHz 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 5 x 3.2 x 1.6mm
Lids	Ceramic
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:**

MCSO2E H V - D 20MHz				E/D	T3	XXX
H	> 20MHz					
blank	≤ 20MHz			option 1 E/D enable / disable		
W	= Vdd 2.5V					
V	= Vdd 3.3V			option 2 blank Au plated		
blank	= Vdd 5V			T3 = tinned		
D	= -55 to +175°C					
G	= -55 to +210°C					
X	= custom			customer spec N°		
Frequency						
A unique part number will be generated for each product specification						
20xxx-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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