



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 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

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 +210°C (see ordering info) Including 2)*	ΔF/F	≤ ± 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

* 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

TABLE 1: I_{dd}
(Without load)

Frequency	Fz 32 kHz	F=< 10MHz	≤ 20MHz	>20 to 100MHz
W =V _{dd} = 2.5V	< 300μA	< 2mA	< 3mA	< 15mA
V =V _{dd} = 3.3V	< 1mA	< 4mA	< 5mA	< 20mA
blank =V _{dd} = 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	-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 5 x 3.2 x 1.6mm
Lids	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 < 1μs	Pin 1 open → Pin 3 Clock H → Clock L → Low

- No power E/D function (pin 1) before V_{dd} 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

<p>H > 20MHz blank ≤ 20MHz</p> <p>W = V_{dd} 2.5V V = V_{dd} 3.3V blank = V_{dd} 5V</p> <p>C = -55 to 125°C E = -55 to 150°C D = -55 to 175°C G = -55 to 210°C X = custom</p> <p>Frequency _____</p>	<p>option 1 E/D enable / disable</p> <p>option 2 blank Au plated T3 = tinned</p> <p>customer spec N°</p>
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A unique part number will be generated for each product specification

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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