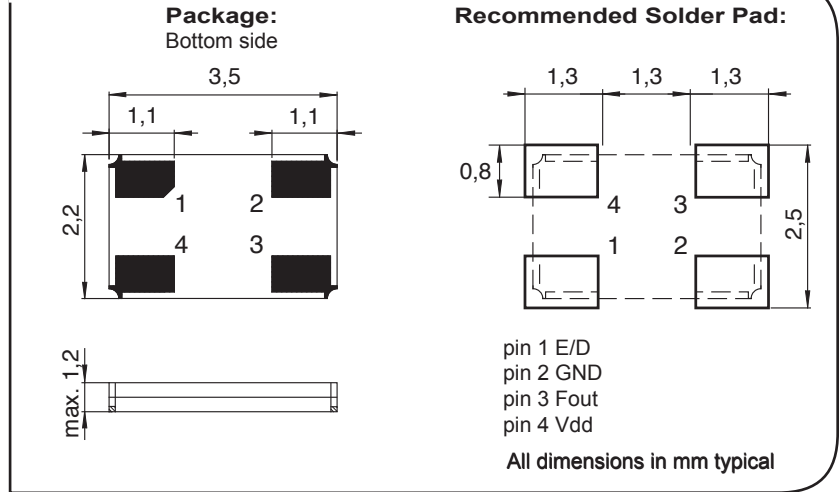




**DIMENSIONS**



**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

The MCSO6's are supplied on trays (208 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><br>Over temperature range C = -55 to +125°C (see ordering info) Including 2)* | $\Delta F/F$ | $\leq \pm 100$      | ppm |
| <b>Frequency stability</b><br>Over temperature range E = -55 to +150°C (see ordering info) Including 2)* | $\Delta F/F$ | $\leq \pm 150$      | ppm |
| <b>Frequency stability</b><br>Over temperature range D = -55 to +175°C (see ordering info) Including 2)* | $\Delta F/F$ | $\leq \pm 300$      | ppm |
| <b>Frequency stability</b><br>Over temperature range G = -55 to +210°C (see ordering info) Including 2)* | $\Delta F/F$ | $\leq \pm 400$      | ppm |
| Supply voltage $\pm 5\%$ 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<br>For F=32.768 kHz rise & fall time $\leq 150$ ns (load 15pf 20% to 80%)               |              | $\leq 7$            | ns  |
| Level "0" & "1"  |              | $<0.4 > V_{dd}-0.5$ | 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  $\pm 5\%$  and over load min to max

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

| Frequency                   | F= 32 kHz | F=< 10MHz | ≤ 20MHz | > 20MHz |
|-----------------------------|-----------|-----------|---------|---------|
| W =V <sub>dd</sub> = 2.5V   | < 300µA   | < 2mA     | < 3mA   | < 15mA  |
| V =V <sub>dd</sub> = 3.3V   | < 1mA     | < 4mA     | < 5mA   | < 20mA  |
| blank =V <sub>dd</sub> = 5V | < 2mA     | < 6mA     | < 7mA   | < 30mA  |

**STANDARD FREQUENCIES:**

| Frequency «MHz»  |    |    |    |    |    |    |
|--|----|----|----|----|----|----|
| 4  | 8  | 10 | 12 | 16 | 20 | 24 |
| 40   | 50 | 60 |    |    |    |    |
| Other frequencies from 10 kHz MHz to 60 MHz on request |    |    |    |    |    |    |

**ENVIRONMENTAL  
CHARACTERISTICS:**

|                      |                         |
|----------------------|-------------------------|
| Storage temp. range  | -65 to +125°C           |
| Vibration resistance | 10 to 2000Hz / 40g      |
| Shocks resistance    | 10000g / 0.3ms / ½ sine |

**TERMINATIONS AND  
PROCESSING:**

|   |  |
|---|--|
| Reflow soldering  | +260°C / 10s max                                 |
| Package   | Ceramic 3.5 x 2.2 x 1.2mm                        |
| Lids  | Ceramic (Kovar on version G)                     |
| Terminations option T3 on request<br>(not available on G temperature range) | with tinned Ag/Cu/Zn                             |
| E/D option 1 on request<br>Reaction time < 1µs                              | Pin 1 open → Pin 3 Clock<br>H → Clock<br>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:**

| <b>MCSO6E</b>   | <b>V - D 20MHz</b> | <b>E/D T3</b>                          | <b>XXX</b> |
|---|--------------------|--|------------|
| W = V <sub>dd</sub> 2.5V  |                    |  |            |
| V = V <sub>dd</sub> 3.3V  |                    |  |            |
| blank = V <sub>dd</sub> 5V  |                    |  |            |
| C = -55 to 125°C  |                    | option 1 E/D enable / disable          |            |
| E = -55 to 150°C  |                    | option 2 blank Au plated               |            |
| D = -55 to 175°C  |                    | T3 = tinned                            |            |
| G = -55 to 210°C  |                    | customer spec N°                       |            |
| X = custom  |                    |  |            |
| Frequency   |                    |  |            |
| 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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