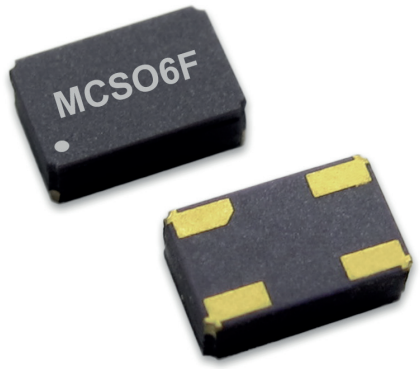
MICRO CRYSTAL SWITZERLAND

# MCSO6F family package 3.5×2.2 mm

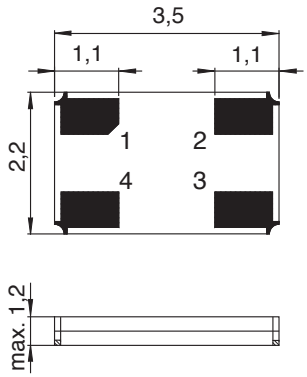
**Low Jitter** **From 10 kHz up to 155 MHz**



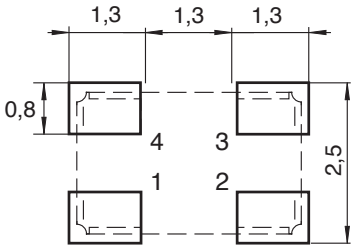

100% Leadfree, RoHScompliant:

## DIMENSIONS

**Package:**
Bottom view




**Recommended Solder Pad:**




pin 1 E/D
pin 2 GND
pin 3 Fout
pin 4 Vdd

All dimensions in mm typical

**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**

## 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 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

| | | | |
|---|---|---|---|
| **Frequency stability**<br>Over temperature range (see ordering info)<br>Including: adjustment at +25°C<br>long term aging 10 years<br>over supply voltage ±5%<br>over load min to max | **ΔF/F** | **≤ ± 100** | **ppm** |
| **Frequency stability version T**<br>Over temperature range (see ordering info)<br>Including: adjustment at +25°C<br>long term aging 1 year<br>over supply voltage ±5%<br>over load min to max | **ΔF/F** | **≤ ± 50** | **ppm** |
| Supply voltage ± 5% 1)* | Vdd | 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<br>For F=32.768 kHz rise & fall time ≤ 150ns<br>(load 15pf 20% to 80%) | | ≤7 | 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 |

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

| Frequency | F=32 kHz | F=< 10MHz | ≤ 20MHz | >20 to 155MHz |
|---|---|---|---|---|
| W=Vdd = 2.5V | < 300µA | < 2mA | < 3mA | < 25mA |
| V=Vdd = 3.3V | < 1mA | < 4mA | < 5mA | < 30mA |

**STANDARD FREQUENCIES:**

| Frequency «MHz» | | | | | | |
|---|---|---|---|---|---|---|
| 4 | 8 | 10 | 12 | 16 | 20 | 24 |
| 40 | 50 | 60 | | | | |
| Other frequencies from 10 kHz up to 155 MHz on request | | | | | | |

**ENVIRONMENTAL CHARACTERISTICS:**

| | |
|---|---|
| Storage temp. range | -65 to +125°C |
| Vibration resistance | 10 to 2000Hz / 20g |
| Shocks resistance | 5000g / 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 |
| Terminations option T3 on request | with tinned Ag/Cu/Zn |
| Reaction time < 1µs<br>E/D option 1 on request | Pin 1 open → Pin 3 Clock<br>H → Clock<br>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:**

**MCSO6F V T - C 48MHz E/D T3 XXX**

W = Vdd 2.5V
V = Vdd 3.3V

T = ±50ppm
blank = ±100ppm

A = 0 to +70°C
B = -40 to +85°C
C = -55 to +125°C
X = custom

Frequency

option 1 E/D
enable / disable

option 2
blank Au plated
T3 = tinned

customer
spec N°

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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