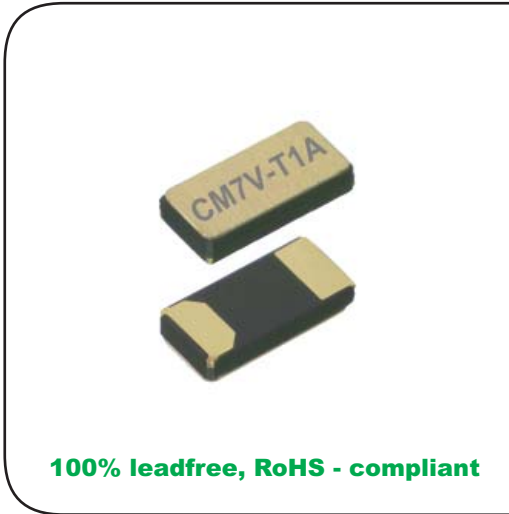
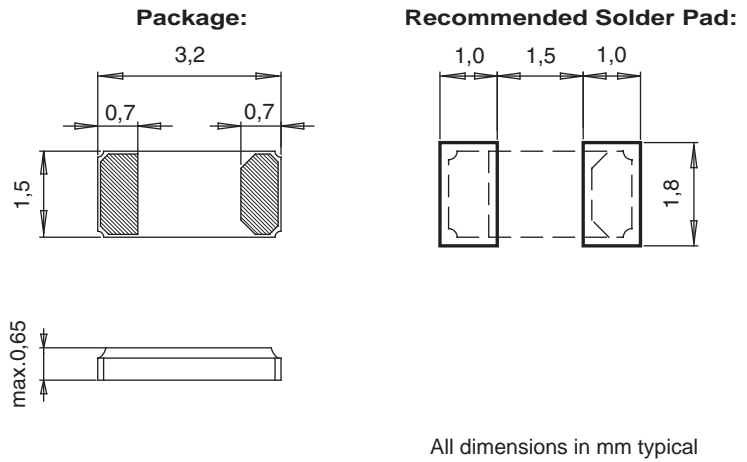


CM7V-T1A

Tuning Fork Crystal 32.768 kHz Low ESR



DIMENSIONS



Optimized Low ESR design for critical oscillator-circuitries
 Miniature SMT ceramic package with metal lid
 Low package height 0.65 mm max.
 SMD-package in Tape and Reel
 Ind. and Ext. temperature ranges
 AEC-Q200 automotive compliant
 High stability, Low aging
 Low power consumption
 High shock and vibration resistance

DESCRIPTION:

This SMD ceramic package with metal lid has been specially designed for miniature industrial, telecom and portable applications. This part is specially designed for Low ESR to support critical oscillator-circuitries and is available for extended operating temperature range and is compliant with the AEC-Q200 quality standards for automotive applications. A special crystal manufacturing process is used to achieve low ESR in combination with miniaturized blank size.

For pick-and-place equipment, the parts are available in 12 mm tape:
 7" (178 mm) reel with 1'000 crystals
 7" (178 mm) reel with 3'000 crystals
 13" (330 mm) reel with 14'000 crystals

ELECTRICAL CHARACTERISTICS AT 25°C:

| Nominal Frequency | ¹⁾ F _L | 32.768 | kHz |
|-----------------------------|------------------------------|--|-----|
| Load capacitance | ²⁾ C _L | 7.0 / 9.0 / 12.5 | pF |
| Frequency tolerance | ³⁾ ΔF/F | +/-20 | ppm |
| | | +/-100 | ppm |
| Series resistance typ./max. | R _S | 40 / 50 | kΩ |
| Motional capacitance typ. | C ₁ | 4.5 | fF |
| Static capacitance typ. | C ₀ | 1.2 | pF |
| Drive level max. | P | 1.0 | μW |
| Insulation resistance min. | R _i | 500 | MΩ |
| Aging first year max. | ΔF/F | +/-3 | ppm |
| Turnover temperature | T ₀ | 25 +/-5 | °C |
| Frequency vs. temperature | ΔF/F ₀ | -0.035 ppm/°C ² (T - T ₀) ² +/-10% | ppm |

1) Other frequencies on request.
 2) Other load capacitances on request.
 3) Tighter and wider frequency tolerances on request.

STANDARD FREQUENCIES:

| |
|------------------------------|
| Frequency kHz |
| 32.768 |
| Other frequencies on request |

**ENVIRONMENTAL
CHARACTERISTICS:**

| | | Conditions | Max. Dev. |
|--------------------------------|------|------------------------|------------------|
| Storage temp. range | | -55 to +125°C | |
| TA Operating temperature range | | -40 to +85°C | |
| TB Extended oper. temp. range | | -40 to +125°C | |
| TC Extended oper. temp. range | | -55 to +125°C | |
| Shock resistance | ΔF/F | 5000 g, 0.3 ms, ½ sine | +/-5 ppm |
| Vibration resistance | ΔF/F | 20 g / 10–2000 Hz | +/-5 ppm |

**TERMINATIONS AND
PROCESSING:**

| Type | Termination | Processing |
|-------------|------------------------------------|---------------------------------------|
| CM7V-T1A | For SMD mounting Au plated pads | Reflow soldering 260°C / 20 s max. |

**PRODUCT DESCRIPTION AND
ORDERING INFORMATION:**

CM7V-T1A Low ESR **32.768kHz** **12.5pF** **+/-20ppm** **TA** **QC**

Frequency F_0 _____

C_L Load Capacitance _____

7.0 pF
9.0 pF
12.5 pF

Frequency tolerance _____

+/- 20 ppm
+/- 100 ppm

Temperature Range _____

TA = -40 to 85°C (Standard)
TB = -40 to +125°C
TC = -55 to +125°C

Optional:
if not defined,
,Standard' will apply

Qualification _____

QC = Commercial (Standard)
QA = Automotive AEC-Q200

A unique part number will be generated for each product specification, i.e:

| | | |
|-------------|------------|----------------------------|
| 20xxxx-MG01 | 1'000 pcs | (in 12mm tape on 7" reel) |
| 20xxxx-MG03 | 3'000 pcs | (in 12mm tape on 7" reel) |
| 20xxxx-PG14 | 14'000 pcs | (in 12mm tape on 13" reel) |

Please contact us.

All specifications subject to change without notice.



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