

SMD Tuning Fork Crystal Unit

Low ESR / 2.0 x 1.2 mm / 32.768 kHz

TFX-03/TFX-03C/TFX-03L
 Standard type Low-ESR type Low-profile type

FEATURES

- 2012 size, 32.768 kHz tuning fork crystal with 3 types:
 - TFX-03 (Standard type)
 - TFX-03C (Low-ESR type): ESR 50 kΩ Max.
 - TFX-03L (Low profile type): Height 0.35 mm Max.
- Frequency tolerance of ±10 ppm (@25°C) available
- Wide operating temperature range of -40 ~ +105°C
- Excellent shock resistance
- Robust ceramic package with metal lid sealed by electron beam
- Specifications in conformity with AEC-Q200 available on request



TFX-03/03C: (2.0 × 1.2 × 0.6 mm)
 TFX-03L: (2.0 × 1.2 × 0.35 mm)



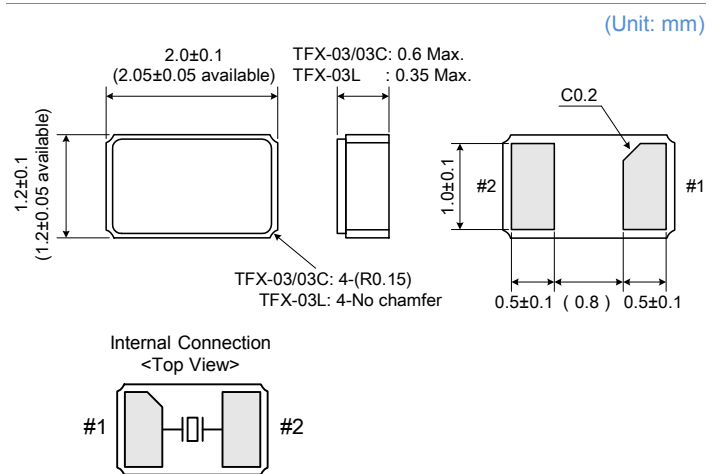
APPLICATIONS

- Car audio systems / car GPS units / remote keyless entry / dash cameras
- Smartphones / wireless-modules / wearable devices / smart cards

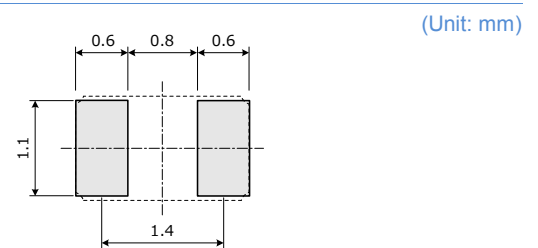
STANDARD SPECIFICATIONS

| Item | Specifications | | | Conditions / Remarks |
|---------------------------------------|---------------------------------|-------------------|-----------------------|-------------------------------------|
| | TFX-03 (Standard) | TFX-03C (Low ESR) | TFX-03L (Low profile) | |
| Nominal frequency | 32.768 kHz | | | - |
| Frequency tolerance | ±10 ppm ~ | | | @25°C See below for more options |
| Equivalent series resistance (E.S.R.) | 90 kΩ Max. | 50 kΩ Max. | 60 kΩ Max. | - |
| Motional capacitance | 6.5 fF Typ. | 9.5 fF Typ. | 7.5 fF Typ. | - |
| Shunt capacitance | 1.3 pF Typ. | 1.8 pF Typ. | 1.5 pF Typ. | - |
| Storage temperature | -55 ~ +125°C | | | - |
| Operating temperature | -40 ~ +85°C -40 ~ +105°C | | | See below for more options |
| Temperature coefficient | -0.03 ±0.01 ppm/°C ² | | | - |
| Turnover temperature | 25 ±5°C | | | - |
| Load capacitance | 5.0, 7.0, 9.0, 12.5 pF | | | Other values available |
| Drive level | 0.5 μW Max. | | | - |
| Tape and reel | 3000 pcs/reel | 5000 pcs/reel | | Reel diameter: ø180 mm |

OUTLINE DIMENSIONS



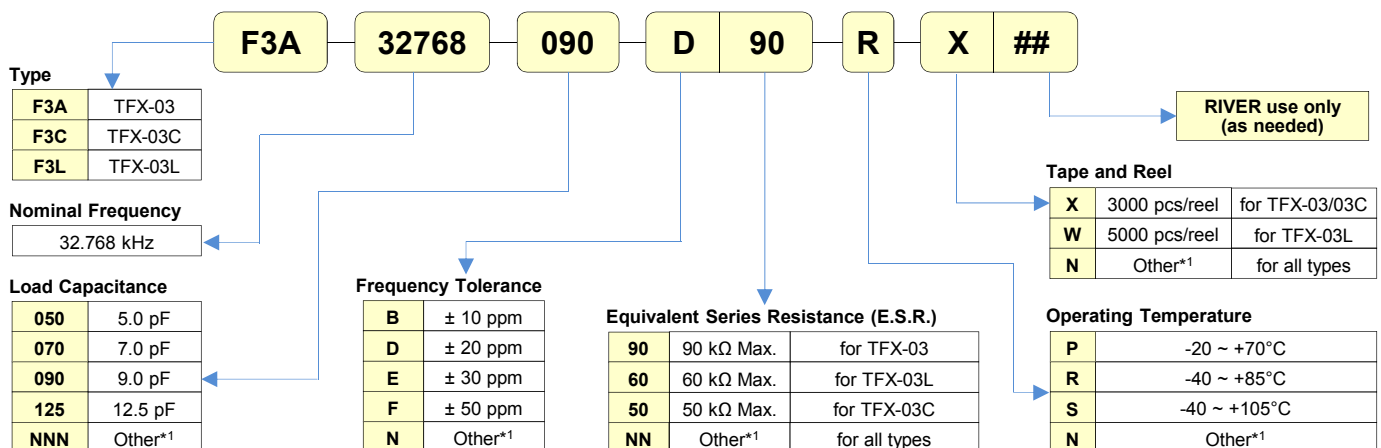
RECOMMENDED LAND PATTERN



GENERAL NOTES

- Certain combinations of standard options may be classified as high-spec models.
- Please consult us for specifications that do not match the standard specifications.
- The information in this document is subject to change without notice.

ORDERING NUMBER GUIDE



*1. Please consult us for your requirements.