

SMD Tuning Fork Crystal Unit

Low ESR / 2.0 mm x 1.2 mm / 32.768 kHz

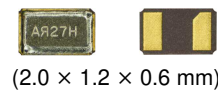
TFX-03 / TFX-03C

Standard type

Low-ESR type

FEATURES

- 2012 size, tuning fork crystal (32.768 kHz) with 2 types:
 - TFX-03 (Standard type)
 - TFX-03C (Low-ESR type): ESR 50 kΩ Max.
- Frequency tolerance of ± 10 ppm (@25 °C) available
- Wide operating temperature range of -40 °C to +105 °C
- Excellent shock resistance
- Robust ceramic package with metal lid sealed by electron beam
- Specifications in conformity with AEC-Q200 available on request



APPLICATIONS

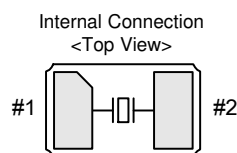
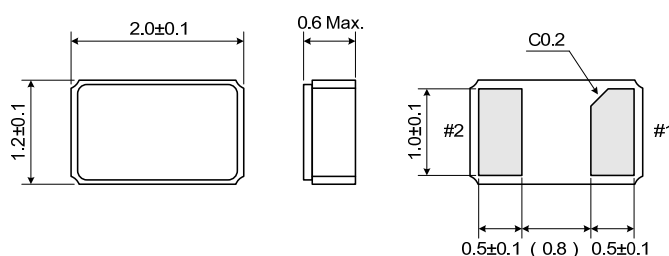
- Car audio systems / car GPS units / remote keyless entry / dash cameras
- Smartphones / wireless-modules / wearable devices / smart cards

STANDARD SPECIFICATIONS

Item	Specifications		Unit	Conditions (Remarks)
	TFX-03 (Standard)	TFX-03C (Low-ESR)		
Nominal frequency	32.768		kHz	-
Frequency tolerance	± 10		ppm	@25 °C (See below for more options)
Equivalent series resistance (Max.)	90	50	kΩ	-
Motional capacitance (Typ.)	6.5	9.5	fF	-
Shunt capacitance (Typ.)	1.3	1.8	pF	-
Storage temperature	-55 to +125		°C	-
Operating temperature	-40 to +85 -40 to +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 (Max.)	0.5		μW	-
Tape and reel	3000		pcs/reel	Reel diameter : $\phi 180$ mm

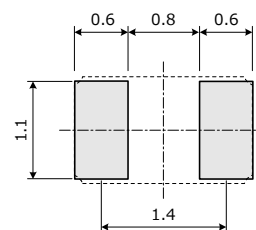
OUTLINE DIMENSIONS

(Unit: mm)



RECOMMENDED LAND PATTERN

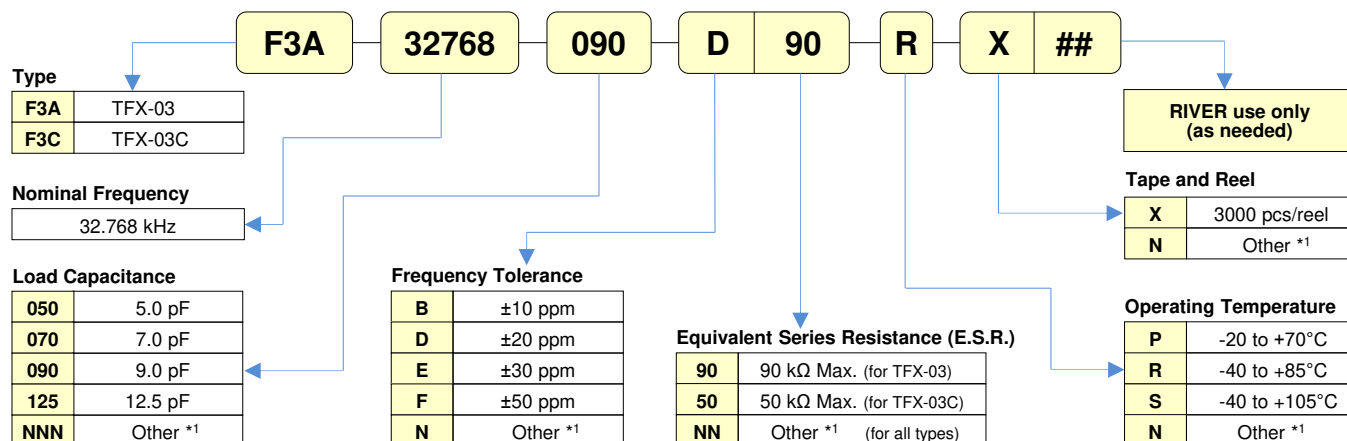
(Unit: mm)



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.

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