

SMD Crystal Clock Oscillator (SPXO)

Low phase noise / 2.5 mm x 2.0 mm / 16.9344 MHz to 50 MHz / CMOS / 1.8 V to 3.3 V

FCXO-05E

FEATURES

- 2520 size CMOS oscillator (16.9344 MHz to 50 MHz) with ultra-low phase noise for audio systems :
 - -157 dBc/Hz typical @offset 1 kHz
 - -165 dBc/Hz typical @offset 100 kHz
- Frequency tolerance of ± 7 ppm (@25 °C) available
- Wide operating temperature range of -40 °C to +105 °C available
- Robust ceramic package with metal lid sealed by electron beam
- Specifications in conformity with AEC-Q200 available on request



(2.5 × 2.0 × 0.9 mm)



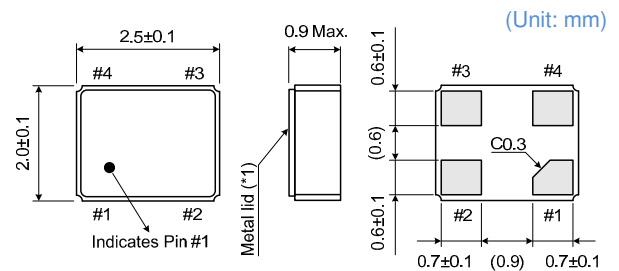
APPLICATIONS

- Hi-Fi audio/video systems / mobile communication / wireless-modules
- Car audio systems / car GPS units / remote keyless entry / dash cameras

STANDARD SPECIFICATIONS

Item	Specifications		Unit	Conditions / Remarks
	Standard	High performance		
Nominal frequency	16.9344 to 50		MHz	-
Frequency tolerance	± 7		ppm	@25 °C (See below for more options)
Storage temperature	-55 to +125		°C	-
Operating temperature	-40 to +85 , -40 to +105		°C	(See below for more options)
Frequency / temperature characteristics	± 10 (-20 °C to +70 °C)		ppm	Refer to 25 °C (See below for more options)
	± 30 (-40 °C to +105 °C)		ppm	
Supply voltage	1.8 , 3.3		V	(See below for more options)
Current consumption (Max.)	5	10	mA	$V_{DD} = 3.0$ V , No load
Stand-by current (Max.)	10	35	μ A	Stand-by = " L "
Output voltage	V_{OH} (Min.)	$0.9V_{DD}$	V	-
	V_{OL} (Max.)	$0.1V_{DD}$	V	-
Drivability	± 4	± 2	mA	-
Output load (Max.)	15		pF	-
Output level	CMOS		-	-
Symmetry (Duty Cycle)	50 ± 5		%	$V_{TH} = 0.5V_{DD}$
Rise time / Fall time (Max.)	6.0	4.7	ns	$0.1V_{DD}$ to $0.9V_{DD}$
Start-up time (Max.)	2.0		ms	$V_{DD} = 3.3$ V
	5.0		ms	$V_{DD} = 1.8$ V
Random Jitter (Typ.)	3.0	3.5	ps	$V_{DD} = 3.3$ V Measured on WaveCrest 3100C
Total Jitter (Typ.)	43	47	ps	$V_{DD} = 3.3$ V , $T_J = n^{\circ}$ RJ ($n \approx 14.1$, BER = 10-12) Measured on WaveCrest 3100C
Phase Noise (Max.)	-140	-157	dBc/Hz	Offset 1 kHz ($V_{DD} = 1.8$ V)
	-156	-165	dBc/Hz	Offset 100 kHz ($V_{DD} = 1.8$ V)
Stand-by function (Pin #1)	V_{IH} (Min.)	$0.7V_{DD}$	V	Output (Pin #3) enabled
	V_{IL} (Max.)	$0.3V_{DD}$	V	Output (Pin #3) disabled = High-Z
Tape and reel	3000		pcs/reel	Reel diameter: $\phi 180$ mm

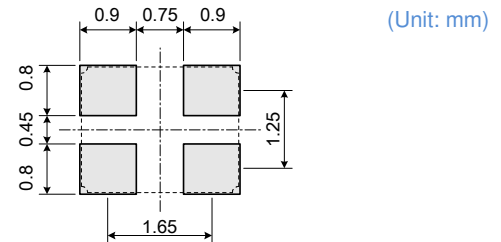
OUTLINE DIMENSIONS



Pin	Function
#1	Stand-by
#2	Ground
#3	Output
#4	V_{DD}

• Pin #2 is connected to the metal lid (*1)

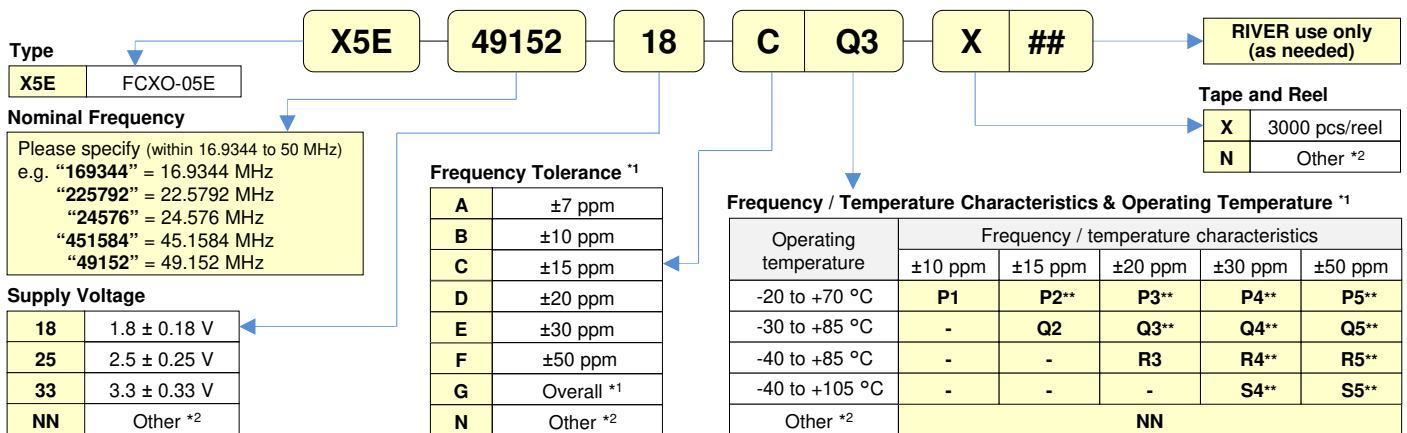
RECOMMENDED LAND PATTERN



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.
- For operational stability, a 0.01 μ F bypass capacitor should be placed between V_{DD} (Pin #4) and Ground (Pin #2) as close as possible to the product.

ORDERING NUMBER GUIDE



*1. For overall frequency stability inclusive of stability at 25 °C and an operating temp. range, please select "G (Overall)" from the table "Frequency Tolerance" followed by a code that is with " ** " from the table "Freq./Temp. Characteristics & Operating Temp.". (e.g. GP2 = Overall ± 15 ppm (-20 to +70 °C))

*2. Please consult us for your requirements.

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