SPECIFICATION SHEET

MHZ SMD CRYSTAL SEAM SEAL 3225 TYPE XF SERIES

SPECIFICATION SHEET NO.	S0409 - XF24M00000S415	
ORIGINAL MFG/PART NO.	TGS Crystals/CM32 24M0A10-15-30-40-60 TLF	
NEXTGEN PART CODE	XF24M00000S415	Indicate This Code For RFQ/Order
DATE	Apr. 9, 2025	
REVISION	A2	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	MHz SMD Crystal 4 pads, XF series, Seam Seal, Dimension L3.2*W2.5*H0.7mm 24.000MHz, Tolerance ±10ppm, Load Capacitor 15pF Frequency stability ±30ppm; Operating Temp. Range -40°C ~+85°C ESR 60ohm Max, Reflow Profile Condition 260 °C Max. Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III Compliant	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE
Issued/Checked/Approved NextGen Components, Inc. Mandy Xu NextGen Components, Inc. Ruby Zhang NextGen Components, Inc. Jack Zhang
Effective Date: Apr. 9, 2025

CUSTOMER APPROVE
Date:

MAIN FEATURE

- MHz SMD Crystal L3.2*W2.5*H0.7mm 4 Pads
- Low Cost, High Precision, High Frequency Stability
- Short Lead time
- Reflow Profile Condition 260 ° C Max.
- Cross More Competitors Part
- REACH/RoHS/RoHS III Compliant

Image shown is a representation only. Exact specifications should be obtained from the product dimension.

APPLICATION

- Bluetooth, Wireless Communication Set
- Communication Electronics

ELECTRICAL CHARACTERISTICS

- See Page 6~10 For Different Part Code.
- All Products Parameters are Subject To NextGen Components' Final Confirmation.

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code XF24M00000S415 For RFQ and Order.

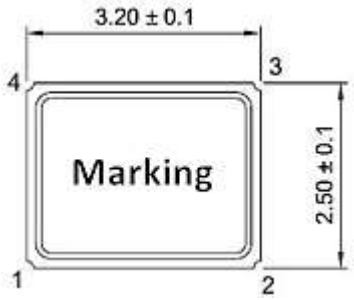
PART CODE GUIDE

RFQ
Request For Quotation

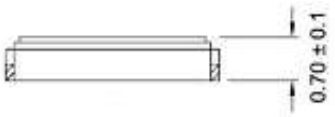
CODE	NAME	KEY SPECIFICATION OPTION
XF	Product Series Code	MHz SMD Crystal, Seam Seal, 4 Pads Case Dimension L3.2*W2.5*H0.7mm
24M0	Frequency Range Code	24M0: 24.0MHz
0000S415	Internal Control Code	Letter A~Z, a~z or digits (0~9)
XX	Special/Custom Parameters Code	Blank: N/A XX: Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters

DIMENSION - Unit: mm

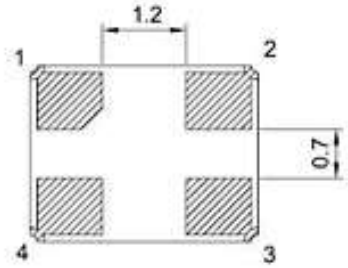
Top View



Side View



Bottom View



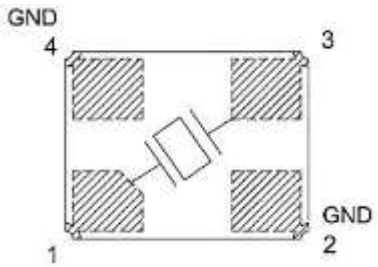
Connection

#1 Crystal

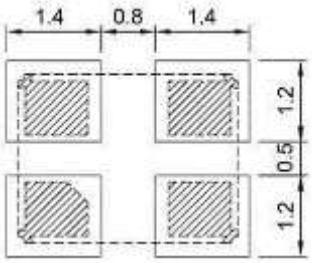
#2 Ground

#3 Crystal

#4 Ground



Recommend Pad Layout



GENERAL SPECIFICATION

PARAMETER	SYMBOL	VALUE			UNIT	CONDITION
		MIN.	TYPE	MAX.		
Mode of Vibration Code		Fundamental				
Frequency Tolerance	△F/F0	±10	-	±50	ppm	at 25℃±3℃
Load Capacitance	CL	7	-	20	pF	
Frequency Stability	Tc	±10	-	±50	ppm	
Operating Temp. Range	TOPR	-40	-	+125	˚C	
Storage Temp. Range	TSTG	-55	-	+125	˚C	
Drive Level	DL	-	-	100	μW	
Insulation Resistance	IR	500	-		mΩ	@100V ± 15VDC
Shunt Capacitance	C0	-	-	3.0	pF	
Aging per year	Fa	-3	-	+3	ppm	1st Year

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25°C

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
XF8M000000S410	8.000000	±10	10	±30	-40 ~ +85	350
XF8M000000S412	8.000000	±10	12	±30	-40 ~ +85	350
XF8M00000S4118	8.000000	±10	18	±50	-40 ~ +125	300
XF11M05920S420	11.05920	±10	20	±30	-40 ~ +85	100
XF12M00000S110	12.00000	±20	8	±30	-40 ~ +85	100
XF12M0000S4310	12.00000	±30	10	±30	-40 ~ +85	80
XF12M00000S410	12.00000	±10	10	±30	-40 ~ +85	100
XF12M00000S412	12.00000	±10	12	±30	-40 ~ +85	100
XF12M00000S101	12.00000	±30	18	±30	-20 ~ +70	100
XF12M00000S420	12.00000	±10	20	±30	-40 ~ +85	100
XF12M28800S412	12.28800	±10	12	±30	-40 ~ +85	100
XF12M28800S415	12.28800	±20	15	±30	-40 ~ +85	80
XF13M52127S420	13.52127	±10	20	±30	-40 ~ +85	100
XF13M56000S420	13.56000	±10	20	±30	-40 ~ +85	100
XF13M82400S412	13.82400	±10	12	±30	-40 ~ +85	100
XF14M31818S412	14.31818	±10	12	±30	-40 ~ +85	100
XF14M31818S420	14.31818	±10	20	±30	-40 ~ +85	100
XF14M74560S420	14.74560	±10	20	±30	-40 ~ +85	100
XF16M00000S110	16.00000	±20	8	±30	-40 ~ +85	80
XF16M00000S409	16.00000	±10	9	±30	-40 ~ +85	100

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25°C

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
XF16M00000S410	16.00000	±10	10	±30	-40 ~ +85	80
XF16M00000S412	16.00000	±10	12	±30	-40 ~ +85	100
XF16M00000S418	16.00000	±50	18	±30	-40 ~ +85	80
XF18M00000S412	18.00000	±10	12	±30	-40 ~ +85	80
XF18M43200S420	18.43200	±20	20	±30	-40 ~ +85	80
XF19M20000S407	19.20000	±10	7	±30	-40 ~ +85	60
XF20M00000S408	20.00000	±10	8	±30	-40 ~ +85	60
XF20M00000S409	20.00000	±10	9	±30	-40 ~ +85	60
XF20M00000S415	20.00000	±10	15	±30	-40 ~ +85	60
XF20M00000S416	20.00000	±10	16	±30	-40 ~ +85	60
XF20M00000S418	20.00000	±10	18	±30	-40 ~ +85	60
XF20M00000S420	20.00000	±10	20	±30	-40 ~ +85	60
XF22M11840S420	22.11840	±10	20	±30	-40 ~ +85	60
XF24M00000S409	24.00000	±10	9	±30	-40 ~ +85	60
XF24M00000S410	24.00000	±10	10	±30	-40 ~ +85	60
XF24M00000S412	24.00000	±10	12	±30	-40 ~ +85	60
XF24M0000S4112	24.00000	±20	12	±50	-40 ~ +125	50
XF24M00000S415	24.00000	±10	15	±30	-40 ~ +85	60
XF24M00000S416	24.00000	±10	16	±30	-40 ~ +85	60
XF24M000S12418	24.00000	±10	18	±20	-40 ~ +85	60

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25°C

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
XF24M000S13418	24.00000	±10	18	±30	-40 ~ +85	60
XF24M00000S418	24.00000	±30	18	±50	-40 ~ +85	60
XF24M00000S101	24.00000	±10	18	±10	-20 ~ +75	40
XF24M00000S002	24.00000	±50	20	±50	-20 ~ +70	50
XF24M00000S420	24.00000	±10	20	±30	-40 ~ +85	60
XF24M54545S001	24.54545	±30	12	±50	-40 ~ +85	80
XF24M57600S412	24.57600	±10	12	±30	-40 ~ +85	60
XF24M57600S420	24.57600	±10	20	±30	-40 ~ +85	60
XF25M00000S408	25.00000	±10	8	±30	-40 ~ +85	60
XF25M00000S410	25.00000	±10	10	±30	-40 ~ +85	60
XF25M00000S412	25.00000	±10	12	±30	-40 ~ +85	60
XF25M00000S416	25.00000	±10	16	±30	-40 ~ +85	60
XF25M00000S418	25.00000	±10	18	±30	-40 ~ +85	60
XF25M00000S420	25.00000	±10	20	±30	-40 ~ +85	60
XF25M00000S001	25.00000	±50	20	±50	-40 ~ +85	40
XF26M00000S409	26.00000	±10	9	±30	-40 ~ +85	60
XF26M00000S412	26.00000	±10	12	±30	-40 ~ +85	60
XF26M00000S415	26.00000	±10	15	±30	-40 ~ +85	60
XF26M00000S420	26.00000	±10	20	±30	-40 ~ +85	60
XF27M00000S410	27.00000	±10	10	±30	-40 ~ +85	60

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25°C

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
XF27M00000S412	27.00000	±10	12	±30	-40 ~ +85	60
XF27M00000S415	27.00000	±10	15	±30	-40 ~ +85	60
XF27M00000S418	27.00000	±10	18	±30	-40 ~ +85	60
XF27M00000S420	27.00000	±10	20	±30	-40 ~ +85	60
XF27M12000S410	27.12000	±10	10	±30	-40 ~ +85	60
XF27M12000S412	27.12000	±10	12	±30	-40 ~ +85	60
XF27M12000S420	27.12000	±10	20	±30	-40 ~ +85	60
XF28M00000S410	28.00000	±10	10	±30	-40 ~ +85	60
XF28M63636S420	28.63636	±10	20	±30	-40 ~ +85	60
XF30M00000S420	30.00000	±10	20	±30	-40 ~ +85	60
XF32M00000S409	32.00000	±10	9	±30	-40 ~ +85	40
XF32M00000S410	32.00000	±10	10	±30	-40 ~ +85	40
XF32M00000S411	32.00000	±10	11	±30	-40 ~ +85	40
XF37M40000S409	37.40000	±10	9	±30	-40 ~ +85	60
XF37M40000S412	37.40000	±10	12	±30	-40 ~ +85	40
XF37M40000S416	37.40000	±10	16	±30	-40 ~ +85	40
XF40M00000S408	40.00000	±10	8	±30	-40 ~ +85	40
XF40M00000S409	40.00000	±10	9	±30	-40 ~ +85	40
XF40M00000S410	40.00000	±10	10	±30	-40 ~ +85	40
XF40M00000S412	40.00000	±10	12	±30	-40 ~ +85	40

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25°C

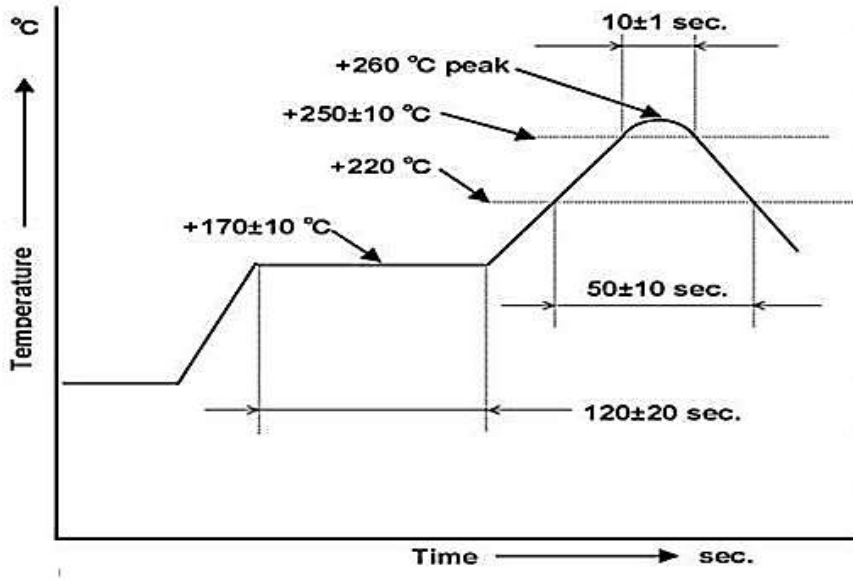
PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
XF40M00000S415	40.00000	±10	15	±30	-40 ~ +85	40
XF40M00000S420	40.00000	±10	20	±30	-40 ~ +85	40
XF48M00000S409	48.00000	±10	9	±30	-40 ~ +85	40
XF48M00000S420	48.00000	±10	20	±30	-40 ~ +85	40
XF50M00000S409	50.00000	±10	9	±30	-40 ~ +85	40
XF50M00000S420	50.00000	±10	20	±30	-40 ~ +85	40
XF50M00000S410	50.00000	±10	10	±30	-40 ~ +85	40
XF52M00000S420	52.00000	±10	20	±30	-40 ~ +85	60
XF54M00000S415	54.00000	±10	15	±30	-40 ~ +85	40

RELIABILITY - MECHANICAL AND ENVIRONMENTAL ENDURANCE

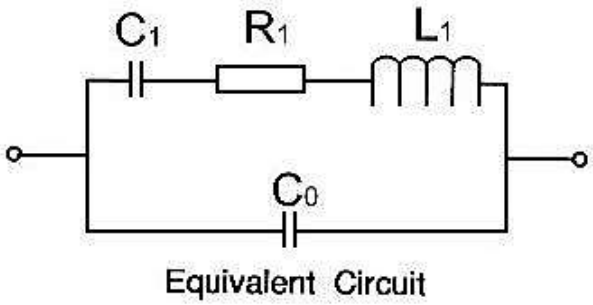
TEST ITEMS	TEST METHOD AND CONDITIONS	REQUIREMENTS
Drop	Free drop from 75cm height on a hard wooden board for 3 times. (Board is thickness more than 30mm.)	Frequency change: ≤5ppm Rr as specification
Shake	Shake frequency 10~55Hz, cyc1~2 minutes, swing 1.5mm, direction x/y/z, all 30 minutes, test after 1 hours.	Frequency change: ≤5ppm Rr as specification
Airproof	Put crystal into the pressure cabin with alcohol, keep pressure 0.4~0.5mpa 10 minutes, then take out and blow for 5 minutes	IR≥500MΩ
Weld	Temperature: 260±5℃ Time: 3 seconds	90% exhibit tin ok
Humidity	Temperature: +40±2℃ Humidity: 90%~95% R.H. Time: 250 hours	Frequency change: ≤5ppm Rr as specification
Low temperature	Temperature: -30±2℃ Time: 250 hours put in room temperature, test after 1 hours.	Frequency change: ≤5ppm Rr as specification
High Temperature	Temperature: +85±2℃ Time: 250 hours put in room temperature, test after 1 hours.	Frequency change: ≤5ppm Rr as specification
Temperature cycling	-30±3℃/30±3 min~+85±2℃/30±3min, 5 cycles	Frequency change: ≤5ppm Rr as specification

SUGGESTED REFLOW PROFILE - FOR REFERENCE ONLY

Condition:

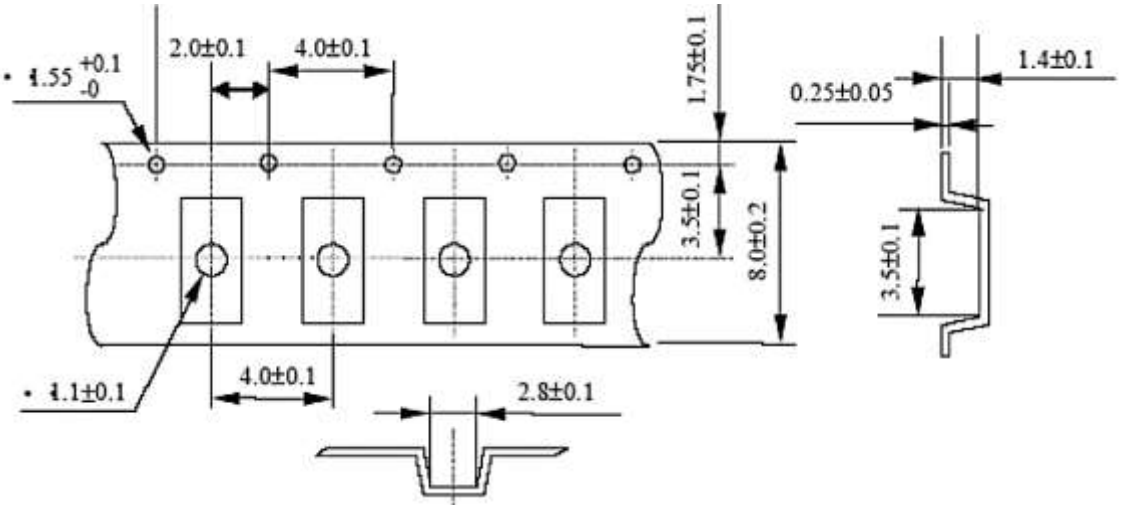


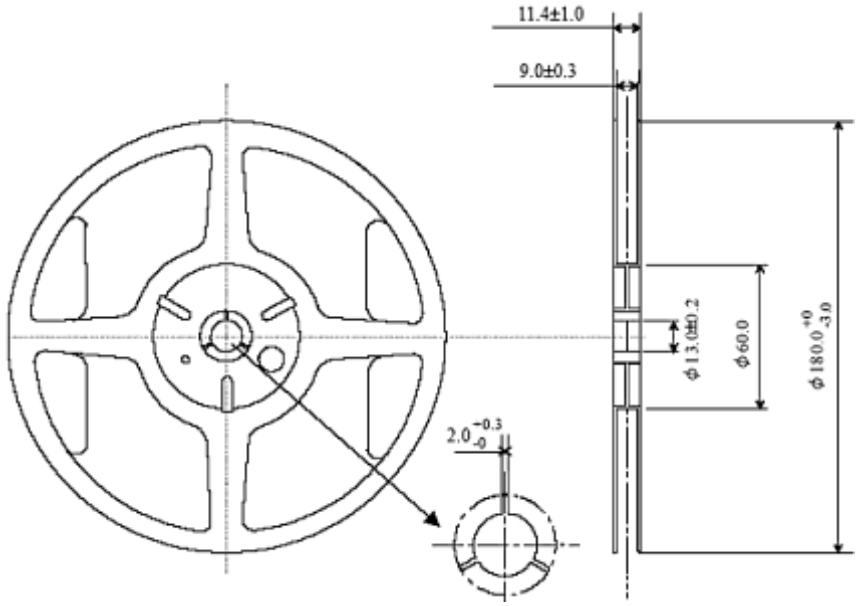
EQUIVALENT CIRCUIT



Equivalent Circuit

TAPE AND REEL - Unit: mm, 3000pcs/Reel





IMPORTANT NOTES AND DISCLAIMER

1. ROHS COMPLIANCE: The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained can be obtained at Download Center.
2. REACH COMPLIANCE: REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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