NextGen Components,Inc.

PART CODE: XF13M82400S002

SPECIFICATION SHEET

SPECIFICATION SHEET NO.	P0125- XF13M82400S002
DATE	Jan. 25, 2022
REVISION	A0
DESCRIPITION	SMD Crystal, Seam Seal, 3225 Type, 4 pads, 13.82400MHz, +/-10ppm, CL 12pF, Stability +/-30ppm @Operating Temp. Range -40°C ~+85°C, ESR 60 ohm Max, Tape/Reel, Reflow Profile Condition 260 °C Max. RoHS/RoHS III compliant
CUSTOMER	
CUSTOMER PART NUMBER	
CROSS REF. PART NUMBER	
ORIGINAL PART NUMBER	TGS CM32 13M824A10-12-30-40-60TLF
PART CODE	XF13M82400S002

VENDOR APPROVE
Issued/Checked/Approved NextGen Components, Inc. Mandy Xu NextGen Components, Inc. Ruby Zhang NextGen Components, Inc. Jack Zhang
DATE: Jan. 25, 2022

CUSTOMER APPROVE
DATE:

NextGen Components,Inc.

PART CODE: **XF13M82400S002**

SMD CRYSTAL 3225 TYPE 4 PADS

MAIN FEATURE

- SMD Crystal, Seam Seal, L3.2*W2.5*H0.7mm, 4 pads
- Low cost, High precision, High frequency stability
- Reflow Profile Condition 260 °C Max.
- Cross more competitors part
- RoHS/RoHS III compliant

APPLICATION

- Bluetooth, wireless communication set
- Communication Electronics

PART CODE GUIDE

RFQ
Request For Quotation

XF	13M82400	S	002
1	2	3	4

1) XF: Part family Code for SMD Crystal, Seam Seal, L3.2*W2.5*H0.7mm, 4 pads (CM32)

2) 13M82400: Frequency range code for 13.82400MHz

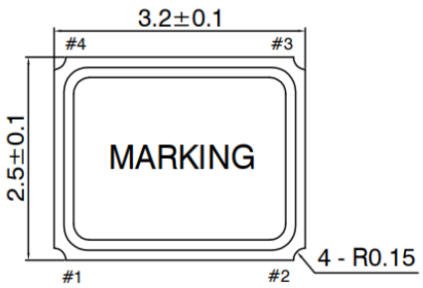
3) S: SMD type, Package Tape/Reel, 3000pcs/Reel

4) 002: Specification code for original part No.: **TGS CM32 13M824A10-12-30-40-60TLF**

DIMENSION (Unit: mm)

Image for reference

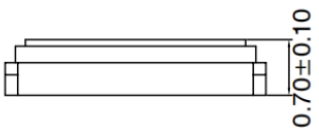
CM32



Marking

Line 1: Frequency Range

Line 2: Internal Control Code



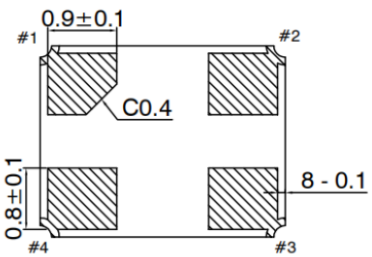
Connection

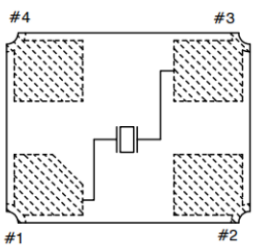
#1 Crystal

#2 Ground

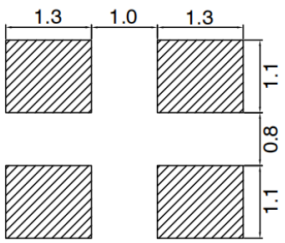
#3 Crystal

#4 Ground

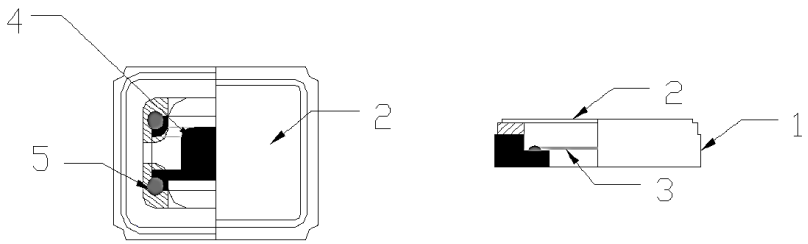




Recommend Pad Layout

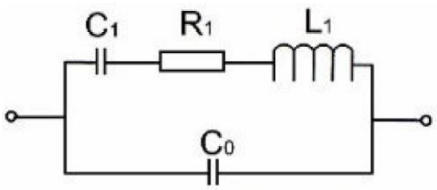


STRUCTURE



No.	Components	Material
1	Base	Ceramic (AI203)
2	Cover	KV (Fe/Co/Ni)
3	Blank	Sio2
4	Electrode	Noble Metal Ag）
5	Adhesive	Resin. Ag

EQUIVALENT CIRCUIT



NOTES BEFORE USE

Ultrasonic Cleaning:

General cleaning solutions or ultrasonic cleaning method may be used to clean our products. However, under certain circumstances, ultrasonic cleaning machine could generate resonance at the oscillation frequency of our products and thus deteriorate the electrical characteristics in device and even damage the overall structure of device. Therefore, verification test is recommended before cleaning.

Ultrasonic Welding

Avoid mounting and processing by Ultrasonic welding this method has a possibility of an excessive vibration spreading inside the crystal products and become the cause of characteristic deterioration and not oscillating.

Storage Temperature Description

Storage Temperature is only for the product itself, the temperature for the packing material is 5~40°C

Recommended Conditions for Manual Welding Max. Temperature: 350±10°C, Time: 3 sec Max., Re-solder time: twice Max.

ELECTRICAL PARAMETERS

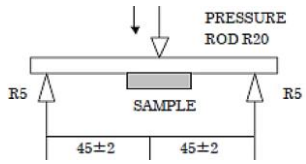
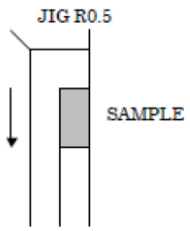
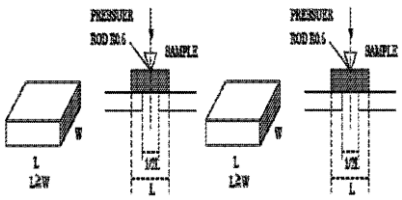
Parameter		Part No. Symbol	Units	Value			Condition
				Min.	Typical	Max.	
Original Manufacturer (Note 1)		TGS	TGS Crystals				
Holder Type		CM32	SMD Crystal, Seam Seal, L3.2*W2.5*H0.7mm, 4 pads				
Frequency Range		13M824	MHz	13.82400			
Mode of Oscillation		A		AT Fundamental			
Frequency Tolerance		10	ppm	-10		+10	@25°C
Load Capacitance		-12	pF	12			
Stability over Operation Temperance		-30	ppm	-30		+30	
Operation Temperance		-40	°C	-40		+85	
Storage Temperance			°C	-55		+125	
Equivalent Series Resistance (ESR)		-60	Ω			60	
Drive Level			µW			100	
Shunt Capacitance (C0)			pF	0		3.0	
Motional Capacitance (C1)			fF	N/A			
DLD2			Ω	N/A			
FLD2			ppm	N/A			
RDL2			Ω	N/A			
SPDB			dB	N/A			
Aging			ppm/year			±3	@1st year
Insulation Resistance			MΩ	500			@100VDC ± 15VDC
Others	**Package**	T	Tape/Reel				
	RoHS Status	LF	RoHS III compliant				
	Add Value		N/A				
	Special Code		Internal Control Code- 2 letter or digits; Blank: N/A				

Note: 1) Original Part Number: **TGS CM32 13M824A10-12-30-40-60TLF**

RELIABILITY

Test Items	Test Method And Conditions	Test Standard
High Temperature	Stored at 125± 2 ℃ for 720±12 Hours, The characteristic parameters of 250B must be tested in 24H after being static for more than 2 hours 25℃ ± 2 ℃, If customer's temperature requested is higher than the standard Temperature test must be done for customer requirements.	A, C
Low Temperature Storage	Temperature: -40℃ ± 2℃ Time: 500 ± 12 Hours. The characteristic parameters of 250B must be tested in 24H after being static for more than 2 hours 25℃ ± 2 ℃, If customer's temperature requested is higher than the standard Temperature test must be done for customer requirements.	A, C
High Temperature & Humidity	Stored at 85℃ ± 2℃ and Humidity 85% for 500± 12 Hours. The characteristic parameters of 250B must be tested in 24H after being static for more than 2 hours 25℃ ± 2 ℃	A, C,D
Temperature Shock	The crystal unit shall be subjected to 100 successive change of temperature cycles. The characteristic parameters of 250B must be tested in 24H after being static for more than 2 hours 25℃ ± 2 ℃ Temperature Range 1) -40+ 0/-6 ℃. 30± 3 minutes 2) 25+/-2 ℃. 2~3 minutes 3) -125+ 4/-0 ℃. 30± 3 minutes 4) 25+/-2 ℃. 2~3 minutes	A, C
Solderability	The solder pot temperature is 260±5℃ , dwell time 2±0.6sec	G
Drop Test	Height: 100 cm; Dropped Cycle: 3 cycles	A, C
Vibration	Frequency Range: 10Hz ~ 55Hz Amplitude: 1.5mm±15%; Sweep time: 2~3 Minutes, 2 Hours in each direction, total 6 Hours	A, C
Leakage Test	Standard part of automatic gross leakage detector, test pressure: 0.2 mpa Helium Bombing 5.0 ~5.5 Kgf/cm²; for 2 hours	E, F

RELIABILITY

Test Items	Test Method And Conditions	Test Standard
Terminal Strength	Shall be pressurized at a speed of approx. 0.5mm/sec. in the direction indicated by the arrow unit the bending width reaches 3mm and held for 5 sec. 	A, C
Sticking Tendency	A R0.5 Jig shall be used to apply a 10N dead load in the direction indicated by the arrow to the element and retain it for 10 sec. 	A, C
Element Assembly Strength	A R0.5 Jig shall be used to apply a 10N dead load in the direction indicated by the arrow to the element and retain it for 10 sec. 	A, C

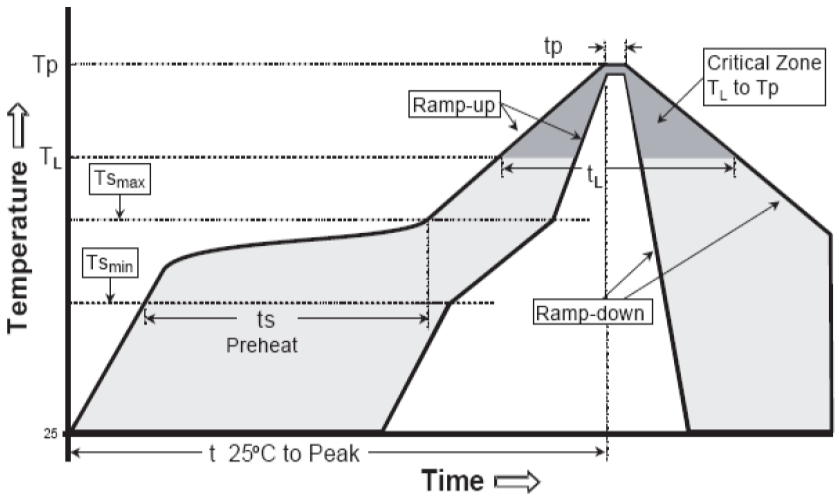
TEST STANDARD

Test Standard Symbol	Specification	Value
A	Frequency Change permitted	ΔF≤5ppm
B	Frequency Change permitted	ΔF≤10ppm
C	Equivalent Series Resistance Change Permitted	ΔCI≤5KΩ or 20%
D	Insulation Resistance	>500 MΩ
E, F	Leak Rate Less than	<1*1 E-9 Pa · m^3/sec.
G	A new uniform coating of solder shall cover a Min 95% of the crystal surface	

RELIABILITY

Test Items	Test Method And Conditions	Reference Documents
High Temperature High Humidity Storage	Temperature: 85℃±3℃ Relative Humidity:85%RH Time: 96 Hours	JIS C5023
High Temperature Storage	Temperature: 125℃±3℃ Time: 96 Hours.	MIL-STD-883E Method 1005.8
Low Temperature Storage	Temperature: -40℃±3℃ Time: 96 Hours.	MIL-STD-883E Method 1013
Thermal Shock	Temperature 1: -55℃±5℃ Temperature 2: 85℃±5 ℃ Temperature change between T1 and T2 5 min 10cycles maintain T1 and T2 for 30 minutes each cycle	MIL-STD-202F Method 107 Condition A
Resistance to Solder Heat	Solder Temperature: 260℃±5℃ Time: 10±1 Seconds	MIL-STD-202F Method 210E
Solderability	The solder pot temperature is 245±5℃ , dwell time 5±0.5sec	J-STD-002B
Drop Test	3 Times Free Fall from 50cm height table to 3cm thickness hard wood board	J-STD-002B
Mechanical Shock	Half sine wave,1000 G 3 Times for all 3 directions(X,Y Z)	MIL STD 202F Method 213B
Vibration	Frequency Range: 10Hz ~ 55Hz Amplitude: 0.75mm 2 Hours in each direction, total 6 Hours	MIL-STD-883E Method 2007.3
Leakage Test	Take measurements with a helium Leakage detector Leakage Rate≤1×10^{-3}Pa cm^3/s	MIL-STD-883E

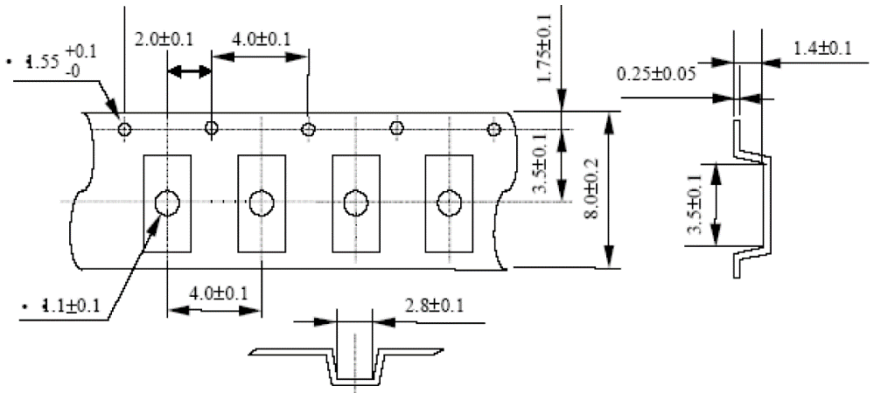
SUGGESTED REFLOW PROFILE (For Reference Only)

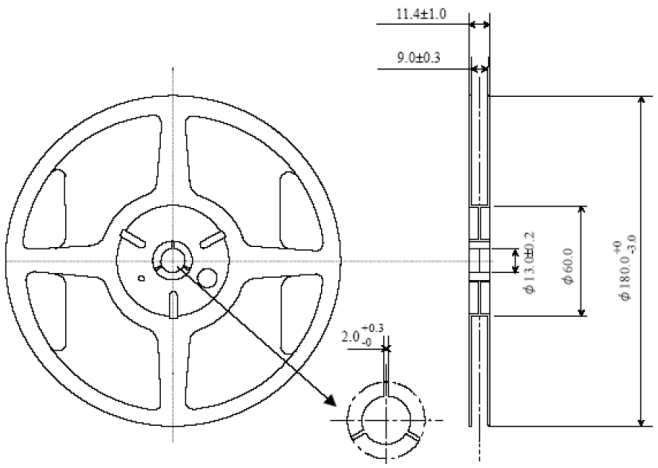


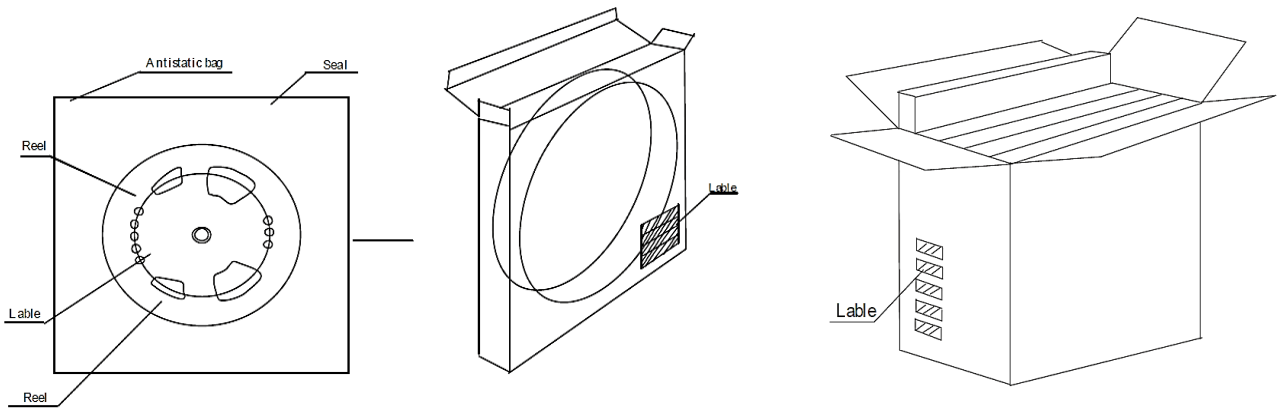
Profile Feature		Pb-Free Assembly
Average Ramp-up Rate (Ts Max to Tp)		3℃/second Max
Preheat	**Temperature Min (Ts Min.)**	125℃
	Temperature Max (Ts Max.)	200℃
	Time (ts Min. to ts Max.)	60 ~ 120 seconds
Time maintained above	**Temperature (TL)**	217℃
	Time (tL)	60 ~ 150 seconds
Peak/Classification Temperature (Tp)		260 ℃
Time within 5℃ of actual Peak Temperature (tp)		20 ~ 40 seconds
Ramp-down rate		6 ℃ /Second Max.
Time 25 ℃ to Peak Temperature		8 minutes Max.
Suggest reflow times		3 Times Max.

TAPE/REEL (Unit: mm)

All Devices are packed in accordance with EIA standard RS-481-2 and specifications., 3000pcs/Reel







DISCLAIMER

NextGen Components, Inc. reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information