SPECIFICATION SHEET

MHZ SMD CRYSTAL PLASTIC CASE 8038 TYPE YG SERIES

SPECIFICATION SHEET NO.	S0117 - YG14M31818S410	
ORIGINAL MFG/PART NO.	TGS Crystals/CCMD 14M31818A20-10-30-40-100TLH/PMX206(AT)/AM2	
NEXTGEN PART CODE	YG14M31818S410	Indicate This Code For RFQ/Order
DATE	Jan. 17, 2025	
REVISION	A1	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	MHz SMD Crystal 4 pads, Plastic Case, YG series Dimension L8.0*W3.8*H2.5mm 14.31818MHz, Tolerance ±20ppm, Load Capacitor 10pF Frequency stability ±30ppm; Operating Temp. Range -40°C ~+85°C, ESR 100 ohm Max, Reflow Profile Condition 260 °C Max. Package in Tape/Reel, 3000pcs/Reel REACH/RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863)	
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: Jan. 17, 2025

CUSTOMER APPROVE
Date:

MAIN FEATURE

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

- MHz SMD Crystal L8.0*W3.8*H2.5mm 4 Pads
- Plastic case, Glass seal
- Low Profile and Short Lead time
- REACH/RoHS/RoHS III Compliant, RoHS Annex III Lead Exemption (exempt per RoHS EU 2015/863)
- Moist are Sensitivity Level (MSL) Level 1
- Excellent Aging and Wide Frequency Range
- Cross More Competitors' Parts.

APPLICATION

- Microcontroller Systems, Microprocessors, Communication Interfaces
- Clock source for Portable

ELECTRICAL CHARACTERISTICS

- See Page 6 ~Page 16 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 YG14M31818S410 For RFQ and Order.

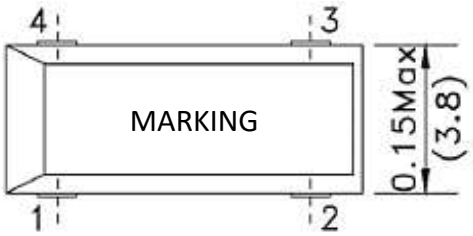
PART CODE GUIDE

RFQ
Request For Quotation

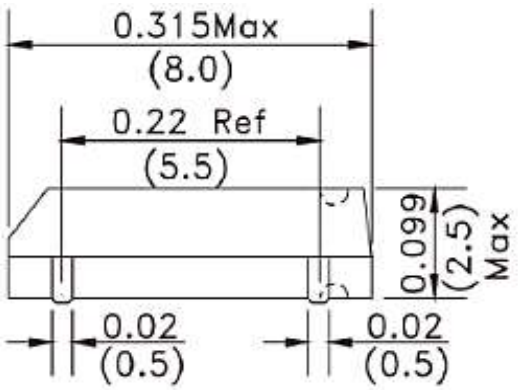
CODE	NAME	KEY SPECIFICATION OPTION
YG	Series Code	MHz SMD Crystal L8.0*W3.8*H2.5mm 4 Pads
14M31818	Frequency Range Code	14M31818: 14.31818MHz or Custom Frequency Range by Page 7~ Page 16
S	Internal Control Code	Letter A~Z, a~z or digits (0~9)
410	Parameters code	Special Parameters Code Letter A~Z, a~z or digits (1-9)
XX	Special/Custom Parameters Code	Blank: N/A XX: Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters

DIMENSION (Unit: Inch/mm)

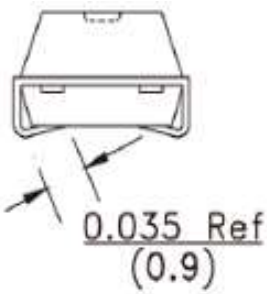
Top View



Side View

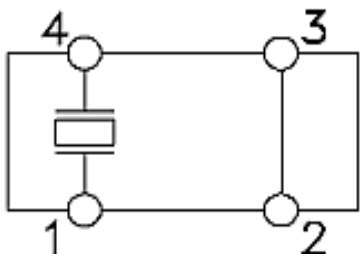


Side View



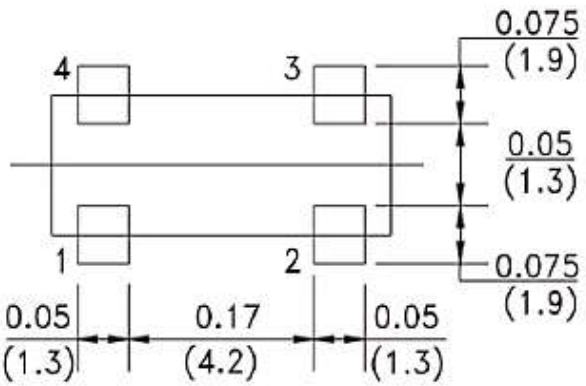
Note: Metal (Crystal inside) may be exposed on the top or bottom of plastic case. That will not be affect performance and reliability of the part in question

Electrode Arrangement



Pin 2 and Pin 3 are not be connected to the GND (Floating)

Recommended Land Pattern (Unit: inch/mm)



GENERAL SPECIFICATION

PARAMETER	SYMBOL	VALUE			UNIT	CONDITION
		MIN.	TYPE	MAX.		
Frequency Range	F0	8.000	-	54.000	MHz	Customer specified
Mode of Vibration Code		Fundamental				Optional: 3rd OT Or 5th OT
Frequency Tolerance	△F/F0	±10	±30	±50	ppm	at 25℃±3℃
Load Capacitance	CL	8	18	Series	pF	Customer specified
Frequency Stability	Tc	±30	±30	±50	ppm	Customer specified
Operating Temp. Range	TOPR	-40	-	+85	˚C	Standard
Storage Temp. Range	TSTG	-55	-	+125	˚C	
Equivalent Series Resistance	ESR	See Table 1			Ω	Customer specified
Drive Level	DL	-	100	200	μW	
Insulation Resistance	IR	500	-		mΩ	At 100VDC
Shunt Capacitance	C0	-	-	5.0	pF	
Aging per year	Fa	-5	-	+5	ppm	1st Year

Table 1

FREQUENCY RANGE	MODE OF VIBRATION	ESR (Ω) MAX
8.000MHz≤ F0 <10.000MHz	Fundamental	200
10.000MHz≤ F0 <12.000MHz	Fundamental	150
12.000MHz≤ F0 <16.000MHz	Fundamental	120
16.000MHz≤ F0 <20.000MHz	Fundamental	100
20.000MHz≤ F0 <30.000MHz	Fundamental	80
30.000MHz≤ F0 <54.000MHz	Fundamental	60

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	℃	Ω Max.
YG8M000000S408	8.00000	±20	8	±30	-40 ~ +85	200
YG8M000000S410	8.00000	±20	10	±30	-40 ~ +85	200
YG8M000000S412	8.00000	±20	12	±30	-40 ~ +85	200
YG8M000000S416	8.00000	±20	16	±30	-40 ~ +85	200
YG8M000000S418	8.00000	±20	18	±30	-40 ~ +85	200
YG8M000000S420	8.00000	±20	20	±30	-40 ~ +85	200
YG8M000000S430	8.00000	±20	30	±30	-40 ~ +85	200
YG10M00000S408	10.00000	±20	8	±30	-40 ~ +85	150
YG10M00000S410	10.00000	±20	10	±30	-40 ~ +85	150
YG10M00000S412	10.00000	±20	12	±30	-40 ~ +85	150
YG10M00000S416	10.00000	±20	16	±30	-40 ~ +85	150
YG10M00000S418	10.00000	±20	18	±30	-40 ~ +85	150
YG10M00000S420	10.00000	±20	20	±30	-40 ~ +85	150
YG10M00000S430	10.00000	±20	30	±30	-40 ~ +85	150
YG11M05920S408	11.05920	±20	8	±30	-40 ~ +85	150
YG11M05920S410	11.05920	±20	10	±30	-40 ~ +85	150
YG11M05920S412	11.05920	±20	12	±30	-40 ~ +85	150
YG11M05920S416	11.05920	±20	16	±30	-40 ~ +85	150
YG11M05920S418	11.05920	±20	18	±30	-40 ~ +85	150
YG11M05920S420	11.05920	±20	20	±30	-40 ~ +85	150

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
YG11M05920S420	11.05920	±20	30	±30	-40 ~ +85	150
YG12M00000S408	12.00000	±20	8	±30	-40 ~ +85	100
YG12M00000S410	12.00000	±20	10	±30	-40 ~ +85	100
YG12M00000S412	12.00000	±20	12	±30	-40 ~ +85	100
YG12M00000S416	12.00000	±20	16	±30	-40 ~ +85	100
YG12M00000S418	12.00000	±20	18	±30	-40 ~ +85	100
YG12M00000S420	12.00000	±20	20	±30	-40 ~ +85	100
YG12M00000S430	12.00000	±20	30	±30	-40 ~ +85	100
YG12M28800S408	12.28800	±20	8	±30	-40 ~ +85	100
YG12M28800S410	12.28800	±20	10	±30	-40 ~ +85	100
YG12M28800S412	12.28800	±20	12	±30	-40 ~ +85	100
YG12M28800S416	12.28800	±20	16	±30	-40 ~ +85	100
YG12M28800S418	12.28800	±20	18	±30	-40 ~ +85	100
YG12M28800S420	12.28800	±20	20	±30	-40 ~ +85	100
YG12M28800S430	12.28800	±20	30	±30	-40 ~ +85	100
YG14M31818S408	14.31818	±20	8	±30	-40 ~ +85	100
YG14M31818S410	14.31818	±20	10	±30	-40 ~ +85	100
YG14M31818S412	14.31818	±20	12	±30	-40 ~ +85	100
YG14M31818S416	14.31818	±20	16	±30	-40 ~ +85	100
YG14M31818S418	14.31818	±20	18	±30	-40 ~ +85	100

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	℃	Ω Max.
YG14M31818S420	14.31818	±20	20	±30	-40 ~ +85	100
YG14M31818S430	14.31818	±20	30	±30	-40 ~ +85	100
YG14M74560S408	14.74560	±20	8	±30	-40 ~ +85	100
YG14M74560S410	14.74560	±20	10	±30	-40 ~ +85	100
YG14M74560S412	14.74560	±20	12	±30	-40 ~ +85	100
YG14M74560S416	14.74560	±20	16	±30	-40 ~ +85	100
YG14M74560S418	14.74560	±20	18	±30	-40 ~ +85	100
YG14M74560S420	14.74560	±20	20	±30	-40 ~ +85	100
YG14M74560S430	14.74560	±20	30	±30	-40 ~ +85	100
YG16M00000S408	16.00000	±20	8	±30	-40 ~ +85	80
YG16M00000S410	16.00000	±20	10	±30	-40 ~ +85	80
YG16M00000S412	16.00000	±20	12	±30	-40 ~ +85	80
YG16M00000S416	16.00000	±20	16	±30	-40 ~ +85	80
YG16M00000S418	16.00000	±20	18	±30	-40 ~ +85	80
YG16M00000S420	16.00000	±20	20	±30	-40 ~ +85	80
YG16M00000S430	16.00000	±20	30	±30	-40 ~ +85	80
YG16M38400S408	16.38400	±20	8	±30	-40 ~ +85	80
YG16M38400S410	16.38400	±20	10	±30	-40 ~ +85	80
YG16M38400S412	16.38400	±20	12	±30	-40 ~ +85	80
YG16M38400S416	16.38400	±20	16	±30	-40 ~ +85	80

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	℃	Ω Max.
YG16M38400S418	16.38400	±20	18	±30	-40 ~ +85	80
YG16M38400S420	16.38400	±20	20	±30	-40 ~ +85	80
YG16M38400S430	16.38400	±20	30	±30	-40 ~ +85	80
YG18M43200S408	18.43200	±20	8	±30	-40 ~ +85	80
YG18M43200S410	18.43200	±20	10	±30	-40 ~ +85	80
YG18M43200S412	18.43200	±20	12	±30	-40 ~ +85	80
YG18M43200S416	18.43200	±20	16	±30	-40 ~ +85	80
YG18M43200S418	18.43200	±20	18	±30	-40 ~ +85	80
YG18M43200S420	18.43200	±20	20	±30	-40 ~ +85	80
YG18M43200S430	18.43200	±20	30	±30	-40 ~ +85	80
YG19M20000S408	19.20000	±20	8	±30	-40 ~ +85	80
YG19M20000S410	19.20000	±20	10	±30	-40 ~ +85	80
YG19M20000S412	19.20000	±20	12	±30	-40 ~ +85	80
YG19M20000S416	19.20000	±20	16	±30	-40 ~ +85	80
YG19M20000S418	19.20000	±20	18	±30	-40 ~ +85	80
YG19M20000S420	19.20000	±20	20	±30	-40 ~ +85	80
YG19M20000S430	19.20000	±20	30	±30	-40 ~ +85	80
YG20M00000S408	20.00000	±20	8	±30	-40 ~ +85	60
YG20M00000S410	20.00000	±20	10	±30	-40 ~ +85	60
YG20M00000S412	20.00000	±20	12	±30	-40 ~ +85	60

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	℃	Ω Max.
YG20M00000S416	20.00000	±20	16	±30	-40 ~ +85	60
YG20M00000S418	20.00000	±20	18	±30	-40 ~ +85	60
YG20M00000S420	20.00000	±20	20	±30	-40 ~ +85	60
YG20M00000S430	20.00000	±20	30	±30	-40 ~ +85	60
YG22M11840S408	22.11840	±20	8	±30	-40 ~ +85	60
YG22M11840S410	22.11840	±20	10	±30	-40 ~ +85	60
YG22M11840S412	22.11840	±20	12	±30	-40 ~ +85	60
YG22M11840S416	22.11840	±20	16	±30	-40 ~ +85	60
YG22M11840S418	22.11840	±20	18	±30	-40 ~ +85	60
YG22M11840S420	22.11840	±20	20	±30	-40 ~ +85	60
YG22M11840S430	22.11840	±20	30	±30	-40 ~ +85	60
YG24M00000S408	24.00000	±20	8	±30	-40 ~ +85	60
YG24M00000S410	24.00000	±20	10	±30	-40 ~ +85	60
YG24M00000S412	24.00000	±20	12	±30	-40 ~ +85	60
YG24M00000S416	24.00000	±20	16	±30	-40 ~ +85	60
YG24M00000S418	24.00000	±20	18	±30	-40 ~ +85	60
YG24M00000S420	24.00000	±20	20	±30	-40 ~ +85	60
YG24M00000S430	24.00000	±20	30	±30	-40 ~ +85	60
YG24M57600S408	24.57600	±20	8	±30	-40 ~ +85	60
YG24M57600S410	24.57600	±20	10	±30	-40 ~ +85	60

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
YG24M57600S412	24.57600	±20	12	±30	-40 ~ +85	60
YG24M57600S416	24.57600	±20	16	±30	-40 ~ +85	60
YG24M57600S418	24.57600	±20	18	±30	-40 ~ +85	60
YG24M57600S420	24.57600	±20	20	±30	-40 ~ +85	60
YG24M57600S430	24.57600	±20	30	±30	-40 ~ +85	60
YG25M00000S408	25.00000	±20	8	±30	-40 ~ +85	60
YG25M00000S410	25.00000	±20	10	±30	-40 ~ +85	60
YG25M00000S412	25.00000	±20	12	±30	-40 ~ +85	60
YG25M00000S416	25.00000	±20	16	±30	-40 ~ +85	60
YG25M00000S418	25.00000	±20	18	±30	-40 ~ +85	60
YG25M00000S420	25.00000	±20	20	±30	-40 ~ +85	60
YG25M00000S430	25.00000	±20	30	±30	-40 ~ +85	60
YG26M00000S408	26.00000	±20	8	±30	-40 ~ +85	60
YG26M00000S410	26.00000	±20	10	±30	-40 ~ +85	60
YG26M00000S412	26.00000	±20	12	±30	-40 ~ +85	60
YG26M00000S416	26.00000	±20	16	±30	-40 ~ +85	60
YG26M00000S418	26.00000	±20	18	±30	-40 ~ +85	60
YG26M00000S420	26.00000	±20	20	±30	-40 ~ +85	60
YG26M00000S430	26.00000	±20	30	±30	-40 ~ +85	60
YG27M00000S408	27.00000	±20	8	±30	-40 ~ +85	60

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	℃	Ω Max.
YG27M00000S410	27.00000	±20	10	±30	-40 ~ +85	60
YG27M00000S412	27.00000	±20	12	±30	-40 ~ +85	60
YG27M00000S416	27.00000	±20	16	±30	-40 ~ +85	60
YG27M00000S418	27.00000	±20	18	±30	-40 ~ +85	60
YG27M00000S420	27.00000	±20	20	±30	-40 ~ +85	60
YG27M00000S430	27.00000	±20	30	±30	-40 ~ +85	60
YG27M12000S408	27.12000	±20	8	±30	-40 ~ +85	60
YG27M12000S410	27.12000	±20	10	±30	-40 ~ +85	60
YG27M12000S412	27.12000	±20	12	±30	-40 ~ +85	60
YG27M12000S416	27.12000	±20	16	±30	-40 ~ +85	60
YG27M12000S418	27.12000	±20	18	±30	-40 ~ +85	60
YG27M12000S420	27.12000	±20	20	±30	-40 ~ +85	60
YG27M12000S430	27.12000	±20	30	±30	-40 ~ +85	60
YG28M63636S408	28.63636	±20	8	±30	-40 ~ +85	60
YG28M63636S410	28.63636	±20	10	±30	-40 ~ +85	60
YG28M63636S412	28.63636	±20	12	±30	-40 ~ +85	60
YG28M63636S416	28.63636	±20	16	±30	-40 ~ +85	60
YG28M63636S418	28.63636	±20	18	±30	-40 ~ +85	60
YG28M63636S420	28.63636	±20	20	±30	-40 ~ +85	60
YG28M63636S430	28.63636	±20	30	±30	-40 ~ +85	60

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	℃	Ω Max.
YG30M00000S408	30.00000	±20	8	±30	-40 ~ +85	40
YG30M00000S410	30.00000	±20	10	±30	-40 ~ +85	40
YG30M00000S412	30.00000	±20	12	±30	-40 ~ +85	40
YG30M00000S416	30.00000	±20	16	±30	-40 ~ +85	40
YG30M00000S418	30.00000	±20	18	±30	-40 ~ +85	40
YG30M00000S420	30.00000	±20	20	±30	-40 ~ +85	40
YG30M00000S430	30.00000	±20	30	±30	-40 ~ +85	40
YG32M00000S408	32.00000	±20	8	±30	-40 ~ +85	40
YG32M00000S410	32.00000	±20	10	±30	-40 ~ +85	40
YG32M00000S412	32.00000	±20	12	±30	-40 ~ +85	40
YG32M00000S416	32.00000	±20	16	±30	-40 ~ +85	40
YG32M00000S418	32.00000	±20	18	±30	-40 ~ +85	40
YG32M00000S420	32.00000	±20	20	±30	-40 ~ +85	40
YG32M00000S430	32.00000	±20	30	±30	-40 ~ +85	40
YG36M00000S408	36.00000	±20	8	±30	-40 ~ +85	40
YG36M00000S410	36.00000	±20	10	±30	-40 ~ +85	40
YG36M00000S412	36.00000	±20	12	±30	-40 ~ +85	40
YG36M00000S416	36.00000	±20	16	±30	-40 ~ +85	40
YG36M00000S418	36.00000	±20	18	±30	-40 ~ +85	40
YG36M00000S420	36.00000	±20	20	±30	-40 ~ +85	40

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	℃	Ω Max.
YG36M00000S430	36.00000	±20	30	±30	-40 ~ +85	40
YG38M40000S408	38.40000	±20	8	±30	-40 ~ +85	40
YG38M40000S410	38.40000	±20	10	±30	-40 ~ +85	40
YG38M40000S412	38.40000	±20	12	±30	-40 ~ +85	40
YG38M40000S416	38.40000	±20	16	±30	-40 ~ +85	40
YG38M40000S418	38.40000	±20	18	±30	-40 ~ +85	40
YG38M40000S420	38.40000	±20	20	±30	-40 ~ +85	40
YG38M40000S430	38.40000	±20	30	±30	-40 ~ +85	40
YG40M00000S408	40.00000	±20	8	±30	-40 ~ +85	40
YG40M00000S410	40.00000	±20	10	±30	-40 ~ +85	40
YG40M00000S412	40.00000	±20	12	±30	-40 ~ +85	40
YG40M00000S416	40.00000	±20	16	±30	-40 ~ +85	40
YG40M00000S418	40.00000	±20	18	±30	-40 ~ +85	40
YG40M00000S420	40.00000	±20	20	±30	-40 ~ +85	40
YG40M00000S430	40.00000	±20	30	±30	-40 ~ +85	40
YG48M00000S408	48.00000	±20	8	±30	-40 ~ +85	40
YG48M00000S410	48.00000	±20	10	±30	-40 ~ +85	40
YG48M00000S412	48.00000	±20	12	±30	-40 ~ +85	40
YG48M00000S416	48.00000	±20	16	±30	-40 ~ +85	40
YG48M00000S418	48.00000	±20	18	±30	-40 ~ +85	40

ELECTRICAL PARAMETERS – FOR DIFFERENT PART CODE- Ta = 25℃

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
YG48M00000S420	48.00000	±20	20	±30	-40 ~ +85	40
YG48M00000S430	48.00000	±20	30	±30	-40 ~ +85	40
YG50M00000S408	50.00000	±20	8	±30	-40 ~ +85	40
YG50M00000S410	50.00000	±20	10	±30	-40 ~ +85	40
YG50M00000S412	50.00000	±20	12	±30	-40 ~ +85	40
YG50M00000S416	50.00000	±20	16	±30	-40 ~ +85	40
YG50M00000S418	50.00000	±20	18	±30	-40 ~ +85	40
YG50M00000S420	50.00000	±20	20	±30	-40 ~ +85	40
YG50M00000S430	50.00000	±20	30	±30	-40 ~ +85	40

TEST STANDARD

1. General Electrical Characteristics And Visual Testing

1.1 Lot classification : if the quantity is 1000pcs or more, 1000pcs is one lot

1.2 Sampling test method : MIl-STD-105E G-II

1.3 Test level

A) High level defect : AQL 0.065% [200 pcs]

B) Medium level defect : AQL 0.25% [50 pcs]

C) Low level defect : AQL 0.4% [32 pcs]

1.4 Defect classification

A) High level

@No frequency

@Mixing

@Leak defect

B) Medium level - Electrical characteristic defect

@Frequency

@Oscillation

@Electrical current

@Other electrical characteristics defect

C) Visual

@Marking

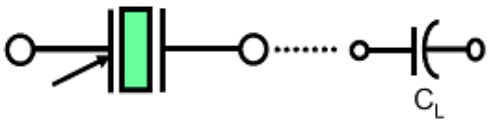
@Welding

@Leads

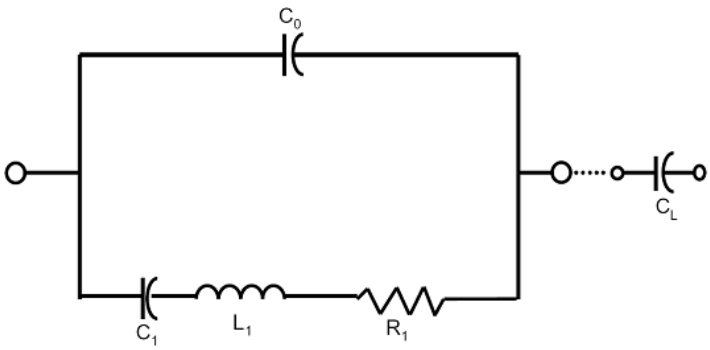
@Other visual defect

Testing method and its standard can be modified depending on the customer's request.

2. Equivalent Circuits



Symbol For Crystal Unit



CHARACTERISTICS

Units and values indicated with { } in this specification are the former units and the specified values.

Standard Atmospheric Conditions:

Unless otherwise specified the standard range of atmospheric conditions for making measurements and tests is as follows:

Ambient temperature: 15℃ to 35℃

Relative humidity : 25% to 85%

Air pressure : 86 to 106 k Pa

If there is any doubt about the results measurements shall be made within the following limits:

Ambient temperature : 25±1℃

Relative humidity : 63% to 67%

Air pressure : 86 to 106 k Pa

Operating Temperature Range:

The operating temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

Operating temperature range: -40℃ to +85℃

Storage Temperature Range:

The storage temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

Storage temperature range: -55℃ to +125℃

CAUTION

* In Order To Maintain Quality. Without Change In Characteristics Of The crystal Units. Please Follow Below Recommendation

Shock

All Crystal Units Have A Thin Crystal Blanks Within If It Is Dropped Above The Recommended Dropping Height (500mm) The Specific Characteristics And Appearance Can Be Changed Please Pay Special Attention To External Shock

Environmental

1) Crystal Units' Frequency Can Be Changed Due To Surrounding Temperature If It Is Stored Next To A High Temperature Heter (Above+85'c) Or Below 40'c.And A Strong Light Source For Long Period Of Time. The Electrical Characteristics Can Be Changed It Is Suggested That These Environment Be Avoided

2) If The Unit Is Placed In A Humid Environment. Lead Terminal Can Be Damaged: Therefore. Do Not Store The Crystal Units In A Humid Environment

3) Crystal unit Has Vibrating Characteristics If It Is Placed Where Vibration Exists The Operating Characteristics Can Be Altered; Therefore This Environment Should Be Avoided

Leads

1) After Soldering Crystal Units Into A PCB Impacting The Unit From The top, bottom Left Or Right Side Of The Unit Can Shatter The Glass Portion Of The Base Aendering The Unit Useless

Assembly Method

1) Correct Ultrasonic Frequency For Cleaning Should Be Less Than 20khz

2) SOLDERING SHOULD BE BONE USING IEC 61760-1 OR Pb-free Products

Storage

If The Crystal Units Are Stored In Humid Or Salty Environment Appearance Can Be Changed And Solderability Can Deteriorate; Therefore avoid Storing In Such Environment Do Not Store The Crystal Unit More Than 3 Months

RELIABILITY (MECHANICAL AND ENVIRONMENTAL ENDURANCE)

TEST ITEMS	TEST METHOD AND CONDITIONS	REQUIREMENTS
Vibration	a) Vibration Frequency： 10 To 55hz b) Vibration Amplitude： 1.5mm c) Cycle Time： 1~2min(10-55-10hz) d) Direction： X.Y.Z e) Duration： 2h/Each Direction, total 6Hours f) G-force：≥5G	Frequency change: ±10ppm max. Resistance change: ± 15%rrmax
Shock	3 times free drop from 75cm height to hard wooden board of thickness more than 30mm.	Frequency change: ±10ppm max. Resistance change: ± 15%rrmax
Leakage	Put crystal units into a hermetic container and helium for 0.5-0.6.Mpa, and keep it for 1h; Check the leakage by a helium leak detector.	Leakage:1x10^{-8} mbar.L/S Max
Solderability	a) Dip the leads into flux(Rojin methanol) for 3~5s. b) Dip the leads into 245±5℃ 99% SN dipping solution for 5s	The dipped part of the Leads should have 95% SN coating.
Soldering Heat Resistance Test	a) Perform electrical characteristics test before starting this procedure. b) Dip the leads into flux(Rojin methanol) 5±0.5s. c) Dip the leads into 260±5℃ 99% SN dipping solution for 5s. d) Take the unit out ,store at room temperature for 30s then measure the Electrical characteristics.	Should pass sealing and visual test. Frequency change: ±10ppm max.
Leak Test	Use helium leak detector. Bombing pressure:5kg/cm² Bombing time: 2 hours Leak should be less than 1e-^{8} atm.cc/sec.	Gas or air should not be detected.
High Temperature Endurance	The crystal units shall be put in somewhere for 500 hours at temperature of 125℃±5℃,then keep it for 1 to 2 hours under room temperature.	Frequency change: ±10ppm max. Resistance change: ± 15%rrmax

RELIABILITY (MECHANICAL AND ENVIRONMENTAL ENDURANCE)

TEST ITEMS	TEST METHOD AND CONDITIONS	REQUIREMENTS
Low Temperature Endurance	The crystal units shall be put in somewhere for 500 hours at temperature of -40℃, then keep it for 1 to 2 hours under room	Frequency change: ±10ppm max. Resistance change: ± 15%rrmax
Humidity Endurance	Somewhere at 40℃±5℃ in relative humidity of 90%~95% for 72 hours, then keep it for one or two hours under room temperature	Frequency change: ±10ppm max. Resistance change: ± 15%rrmax
Temperature Cycle	Temperature shift from low (-40℃) to high(100℃,keep 30 minutes),satisfy high(100℃) to low(-40℃, keep 30 minutes), then go up to room temperature for 10 cycles	Frequency change: ±10ppm max. Resistance change: ± 15%rrmax
Lead Tensity	a) Fix the unit. b) Apply 2LB of weight axis to the leads. c) Time: 5s	Should pass sealing and visual test.
Lead Bending	a) Attach 1lb of weight to each of the leads. b) Bending angle: 90° (from the normal position to 45° opposite direction) c) Bending time: 3s(each direction) Number of bending: 2times a) Number of bending: 2times	Should pass sealing and visual test.
Marking Erase	Submerge the unit into ipa [isopropyl alcohol] Solution for 10minutes and brush the marking 10 times with a tooth brush.	Marking should not be erased.

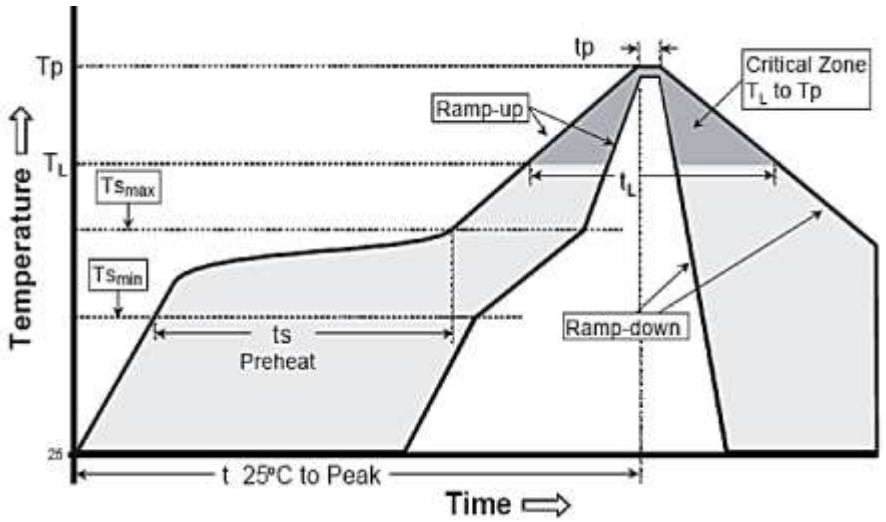
MATERIAL DATA DECLARATION SHEET – For Reference Only

COMPONENT	MATERIAL NAME	MATERIAL MASS (MG)	SUBSTANCES				MATERIAL ANALYSIS (%)
			NAME	SYMBO-L	CAS#	WEIGHT (MG)	
Base	Metal Ring (42Ni)	6.112	Nickel	Ni	7440-02-0	2.506	41.0
			Iron	Fe	439-89-6	3.534	57.82
			Cobalt	Co	7440-48-4	0.031	0.51
			Manganese	Mn	7439-96-5	0.024	0.40
			Silicon	Si	7440-21-3	0.01	0.16
			Carbon	C	7440-44-0	0.006	0.10
	Glass	2.750	Silicon dioxide	SiO2	7631-86-9	1.696	61.68
			Aluminum oxide	Al2O3	1344-28-1	0.242	8.81
			Boron oxide	B2O3	1303-86-2	0.448	16.30
			Lithium oxide	Li2O	12057-24-8	0.061	2.20
			Sodium oxide	Na2O	1313-59-3	0.242	8.81
			kalium oxide	K2O	12030-88-5	0.061	2.20
	Leads (Kovar)	3.521	Iron	Fe	7439-89-6	1.889	53.64
			Nickel	Ni	7440-02-0	1.021	29.00
			Cobalt	Co	7440-48-4	0.598	16.98
			Carbon	C	7440-44-0	0.001	0.02
			Silicon	Si	7440-21-3	0.009	0.26
			Manganese	Mn	7439-96-5	0.003	0.09
	Surface Coating	2.586	plumbum	Pb	7439-92-1	2.338	90.41
			Tin	Sn	7440-31-5	0.248	9.59
		0.045	Copper	Cu	7440-50-8	0.045	1.74
Cover	Metal Case	30.700	Copper	Cu	7440-50-8	23.018	74.98
			Nickel	Ni	7440-02-0	3.713	12.10
			Zinc	Zn	7440-66-6	3.938	12.83
			Manganese	Mn	7439-96-5	0.028	0.09
			Iron	Fe	7439-89-6	0.002	0.01
	Surface Coating	4.999	Nickel	Ni	7440-02-0	4.999	100

MATERIAL DATA DECLARATION SHEET – For Reference Only

COMPONENT	MATERIAL NAME	MATERIAL MASS (MG)	SUBSTANCES				MATERIAL ANALYSIS (%)
			NAME	SYMBO-L	CAS#	WEIGHT (MG)	
Quartz (Blank)	Quartz Blank	2.361	Silica	SiO2	14808-60-7	2.361	100
Blank Metalization	Blank Metalization	0.038	Chromium	Cr	7440-47-3	0.002	5.26
			Tin	Sn	7440-31-5	0.006	15.79
			Silver	Ag	7440-22-4	0.03	78.95
Solder	Solder (For Blank Attachment)	2.860	plumbum	Pb	7439-92-1	2.57	89.86
			Silver	Ag	7440-22-4	0.06	2.10
			Tin	Sn	7440-31-5	0.23	8.04
Plastic Mold	Epoxy compound	70.158	Quartz	Sio2	14808-60-7	42.095	60.00
			Filler	silicon dioxide	7631-86-9	22.801	32.50
			Phenol-formaldehy depolymer		9003-35-4	3.508	5.00
			Boron zinc hydroxide oxide	b12Zn4 (OH)14O15	138265-88-0	1.403	2.00
			Pigment	Carbon black	1333-86-4	0.351	0.50
Lead Frame	Metal Frame	12.730	Copper	Cu	7440-50-8	8.402	66.00
			Zinc	Zn	7440-66-6	4.328	34.00
	Surface coating	1.001	Tin	Sn	7440-31-5	0.858	85.71
			Copper	Cu	7440-50-8	0.143	14.29

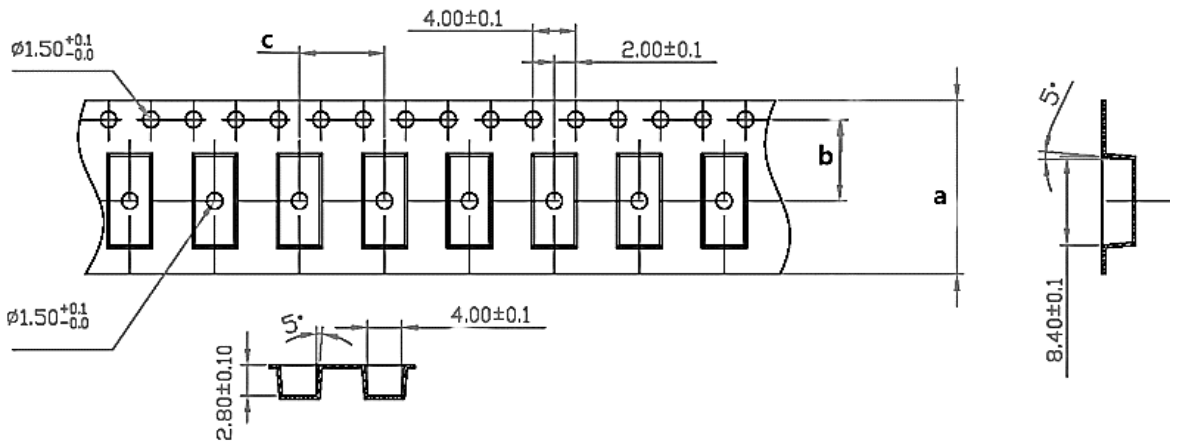
SUGGESTED REFLOW PROFILE (For Reference Only)



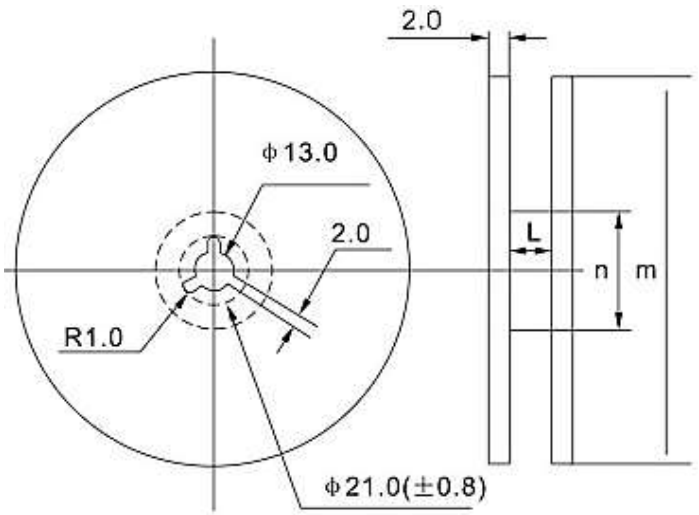
PROFILE FEATURE		HIGH-PB ASSEMBLY
Average Ramp-up Rate (Ts Max to Tp)		3℃/second Max
Preheat	Temperature Min (Ts Min.)	120℃
	Temperature Max (Ts Max.)	190℃
	Time (ts Min. to ts Max.)	70 ~ 120 seconds
Time maintained above	Temperature (T_L)	230℃
	Time (t_L)	20 ~ 50 seconds
Peak/Classification Temperature (Tp)		260 ℃
Time within 5℃ of actual Peak Temperature (tp)		10 seconds Max.
Ramp-down rate		6 ℃ /Second Max.
Time 25 ℃ to Peak Temperature		8 minutes Max.
Suggest reflow times		3 Times Max.

TAPE AND REEL (Unit: mm)

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



SYMBOL	DIMENSION
a	16.0
b	7.5
c	8.0



SYMBOL	DIMENSION
ϕm	330±3
ϕn	80 Min.
L	17.5
Carrier Tape Size	16

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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