




| | | |
|---|---|---|
| SPECIFICATION SHEET NO. | R1223-YP38K40000S101 | |
| ORIGINAL MFG/PART NO. | TGS Crystals/CCMC 38K4A10-12.5-40-50TLH/PMX206/AM23840012502T6 | |
| NEXTGEN PART CODE | YP38K40000S101 | Indicate This Code For RFQ /Order |
| DATE | Dec. 23, 2024 | |
| REVISION | A6 | Updated With Most Recent Data |
| DESCRIPTION AND MAIN PARAMETRICS | <p>KHz SMD Crystals, Plastic Case, 8038, 4 pads, YP series</p> <p>Dimension: L8.0*W3.8*H2.4mm,</p> <p>38.4000000KHz, Tolerance: ± 10ppm, Load Capacitance (CL): 12.5pF</p> <p>ESR 50 Kohm Max, Operating Temp. Range -40°C ~+85°C</p> <p>Reflow Profile Condition 260 °C Max.</p> <p>Packed in Tape/Reel, 3000pcs/Reel</p> <p>RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863)</p> | |
| CUSTOMER | | |
| CUSTOMER PART NUMBER | | |
| CROSS PART NUMBER | MA306 | |
| MEMO | | |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| Date: Dec. 23, 2024 | | | |

| | |
|-------------------------|--|
| CUSTOMER APPROVE | |
| | |
| Date: | |

MAIN FEATURE

- KHz SMD Crystal, Plastic Case L8.0*W3.8*H2.4mm, 4 pads
- Industry Standard
- Reflow Profile Condition 260 °C Max.
- Operating Temperature Range: -40~+85°C
- Available Load Capacitance(CL) Range 6pF~30pF and standard CL
6pF/7pF/9pF/12.5pF
- Low ESR 50 Kohm Max.
- Material Safety Data Sheet (MSDS)
- Offer Quality Alternatives Parts For Major Brand MA306 and more
- Moisture Sensitivity Level (MSL) 1 (Unlimited)
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS
EU 2015/863)



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



MAIN APPLICATION

- Clock Source For Portable
- Mobile Communications And Consumer Devices, Etc.
- Smart Card And Wearable Devices

ELECTRICAL CHARACTERISTICS

- See Page 6 ~Page 9 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 Part Code YP38K40000S101 For RFQ/Order.

PART CODE GUIDE

RFQ

[Request For Quotation](#)

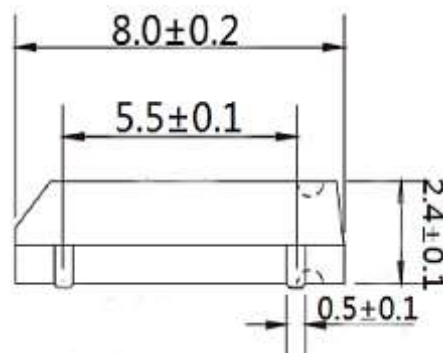
| CODE | NAME | KEY SPECIFICATION OPTION |
|-------|-----------------------|---|
| YP | Product Index | KHz SMD Crystal, Plastic Case L8.0*W3.8*H2.4mm, 4 pads |
| 38K4 | Frequency Range | 38K4: 38.4KHz or Custom Frequency Range by Page 7~ Page 9 |
| 0000S | Internal Control Code | Special letter A~Z , a~z or digits (1-9) |
| 101 | Parameters Code | Special Parameters Code letter A~Z, a~z or Digits (1-9) |
| XX | Suffix | Blank: N/A XX: Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters |

DIMENSION (Unit: mm, Plastic Case L8.0*W3.8*H2.4mm, 4 Pads)

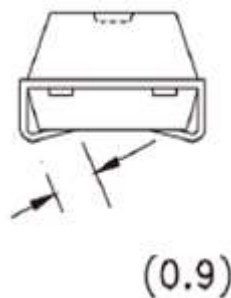
Top View



Side View

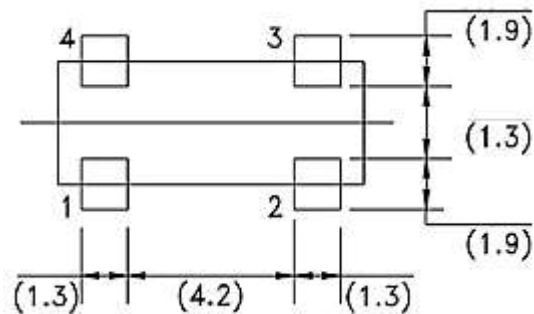


Side View

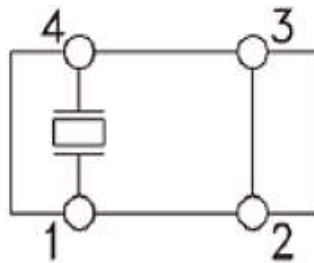


Note: Metal (Crystal inside) may be exposed on the top or bottom of plastic case. That will not be affect performance and reliability of the part in use.

Recommend Pad Layout (unit: mm)



Electrode Arrangement



Pin 2 and Pin 3 are not connected to the GND

GENERAL ELECTRICAL PARAMETERS

| PARAMETERS | SYMBOL | UNITS | VALUE | | | CONDITION |
|-----------------------------|----------------|--------------------|----------------|------|--------|--------------------|
| | | | MIN. | TYP. | MAX. | |
| Frequency Range | F0 | KHz | 32.000 | - | 153.60 | Customer specified |
| Frequency Temp. Coefficient | $\Delta f/f_0$ | ppm/C ² | -0.034 ± 0.006 | | | |
| Turnover Temperature | T m | °C | 20 | 25 | 30 | |
| Operating Temperature Range | T OP | °C | -40 | | +85 | |
| Storage Temperature Range | T ST | °C | -55 | | +125 | |
| Quality Factor | Q | | | | 75000 | |
| Shunt Capacitance | C0 | pF | 0.9 | 1.35 | 2.0 | |
| Motional Capacitance | C1 | Ff | 2.3 | | 3.0 | |
| Insulation Resistance | IR | mΩ | 500 | | | DC100V ± 15V |
| Drive Level | DL | μW | | | 1 | |
| Capacitance Ratio | R | | | 450 | | |
| Aging per Year | Δ/f | ppm | ±3 | | ±5 | @25°C±3°C |
| Moist are Sensitivity Level | MSL | | 1 | | | J-STD-033 |

MAIN ELECTRICAL PARAMETERS - Ta = 25°C

| NEXTGEN PART CODE | FREQUENCY RANGE | FREQUENCY TOLERANCE | LOAD CAPACITANCE | OPERATING TEMPERATURE | ESR MAX. |
|----------------------|--------------------|------------------------|---------------------|--------------------------|----------|
| | KHz | ppm | pF | °C | KΩ |
| YP32K00000S101 | 32.000 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP32K00000S102 | 32.000 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP32K00000S103 | 32.000 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP32K76800S006 | 32.768 | ±10 | 6 | -40 ~ +85 | 60 |
| YP32K76800S601 | 32.768 | ±10 | 6 | -40 ~ +85 | 50 |
| YP32K76800S002 | 32.768 | ±20 | 6 | -40 ~ +85 | 60 |
| YP32K76800S602 | 32.768 | ±20 | 6 | -40 ~ +85 | 50 |
| YP32K76800S603 | 32.768 | ±30 | 6 | -40 ~ +85 | 50 |
| YP32K76800S701 | 32.768 | ±10 | 7 | -40 ~ +85 | 50 |
| YP32K76800S702 | 32.768 | ±20 | 7 | -40 ~ +85 | 50 |
| YP32K76800S703 | 32.768 | ±30 | 7 | -40 ~ +85 | 50 |
| YP32K76800S901 | 32.768 | ±10 | 9 | -40 ~ +85 | 50 |
| YP32K76800S902 | 32.768 | ±20 | 9 | -40 ~ +85 | 50 |
| YP32K76800S903 | 32.768 | ±30 | 9 | -40 ~ +85 | 50 |
| YP32K76800S101 | 32.768 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP32K76800S102 | 32.768 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP32K76800S103 | 32.768 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP32K76800S003 | 32.768 | ±30 | 12.5 | -40 ~ +85 | 60 |
| YP36K00000S101 | 36.000 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP36K00000S102 | 36.000 | ±20 | 12.5 | -40 ~ +85 | 50 |

MAIN ELECTRICAL PARAMETERS - Ta = 25°C

| NEXTGEN PART CODE | FREQUENCY RANGE | FREQUENCY TOLERANCE | LOAD CAPACITANCE | OPERATING TEMPERATURE | ESR MAX. |
|----------------------|--------------------|------------------------|---------------------|--------------------------|----------|
| | KHz | ppm | pF | °C | KΩ |
| YP36K00000S103 | 36.000 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP38K00000S101 | 38.000 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP38K00000S102 | 38.000 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP38K00000S103 | 38.000 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP38K40000S101 | 38.400 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP38K40000S102 | 38.400 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP38K40000S103 | 38.400 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP40K00000S101 | 40.000 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP40K00000S102 | 40.000 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP40K00000S103 | 40.000 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP60K00000S101 | 60.000 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP60K00000S102 | 60.000 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP60K00000S103 | 60.000 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP65K53600S101 | 65.536 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP65K53600S102 | 65.536 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP65K53600S103 | 65.536 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP75K00000S101 | 75.000 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP75K00000S102 | 75.000 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP75K00000S103 | 75.000 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP76K80000S101 | 76.800 | ±10 | 12.5 | -40 ~ +85 | 50 |

MAIN ELECTRICAL PARAMETERS - Ta = 25°C

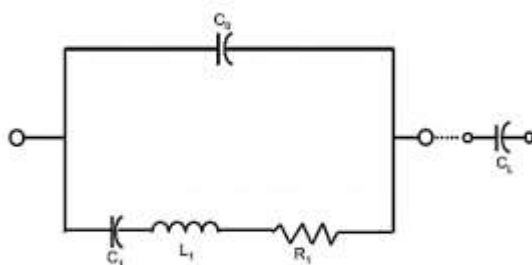
| NEXTGEN PART CODE | FREQUENCY RANGE | FREQUENCY TOLERANCE | LOAD CAPACITANCE | OPERATING TEMPERATURE | ESR MAX. |
|----------------------|--------------------|------------------------|---------------------|--------------------------|----------|
| | KHz | ppm | pF | °C | KΩ |
| YP76K80000S102 | 76.800 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP76K80000S103 | 76.800 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP77K50000S101 | 77.500 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP77K50000S102 | 77.500 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP77K50000S103 | 77.500 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP77K50300S101 | 77.503 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP77K50300S102 | 77.503 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP77K50300S103 | 77.503 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP96K00000S101 | 96.000 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP96K00000S102 | 96.000 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP96K00000S103 | 96.000 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP100K0000S101 | 100.00 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP100K0000S102 | 100.00 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP100K0000S103 | 100.00 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP153K6000S101 | 153.60 | ±10 | 12.5 | -40 ~ +85 | 50 |
| YP153K6000S102 | 153.60 | ±20 | 12.5 | -40 ~ +85 | 50 |
| YP153K6000S103 | 153.60 | ±30 | 12.5 | -40 ~ +85 | 50 |
| YP153K6000S105 | 153.60 | ±50 | 12.5 | -40 ~ +85 | 50 |
| | | | | | |
| | | | | | |

TEST STANDARD

Equivalent Circuits



Symbol for crystal unit



Exemption Rule

1. SMD Tuning Fork Crystal series contain Pb chemical substance where solder material is over limitation. The location see at below drawing, The solder purpose is base connected with chip crystal blank.

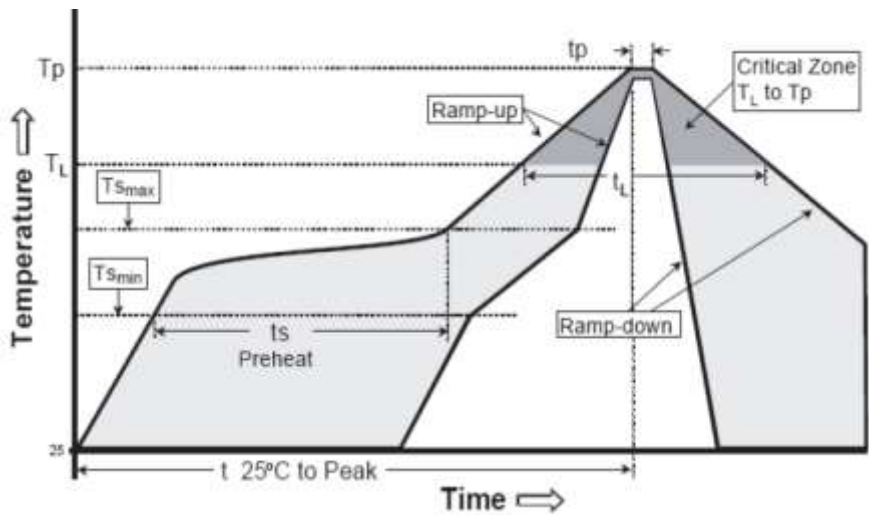


2. Below statement is that exemption rule: Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).(RoHS 6/5 2002/95/EC)

RELIABILITY (Mechanical And Environmental Endurance)

| TEST ITEMS | TEST METHOD AND CONDITIONS | REQUIREMENTS |
|-------------------|---|---|
| Vibration | 1. Vibration Frequency: 10 To 55hz 2. Vibration Amplitude: 1.5mm 3. Cycle Time: 1~2min(10-55-10hz) 4. Direction: X.Y.Z 5. Duration: 2h/Each Direction, total 6Hours | Frequency Change: ±10ppm Max. Resistance Change: ± 15% Rr Max |
| Drop | 3 Times Free Fall From 75cm Height table to 3cm thickness hard wood board, After 30 minutes, the relative change value of frequency was measured. | Frequency Change: ±10ppm Max. Resistance Change: ± 15% Rr Max. |
| Leakage | Placed in a helium pressurized tank and filled with helium at a pressure of 0.5-0.6mpa for 1 hour then tested with a helium mass spectrometry leak detector. | Leakage:1x10 ⁻⁸ mbar.L/S Max. |
| Solder ability | Dip in flux 3-5 seconds Temperature: 260°C±5°C | Solder adhesion is good, solder adhesion more than 95% |
| High Temp Storage | Temperature: 125°C±5°C for 72 H, and the relative change in frequency was measured after 1-2 hours at room temperature | Frequency Change: ±10ppm Max. Resistance Change: ± 15% Rr Max. |
| Low Temp Storage | Temperature: -45°C±5°C for 72 H, and the relative change in frequency was measured after 1-2 hours at room temperature | Frequency Change: ±10ppm Max. Resistance Change: ± 15% Rr Max. |

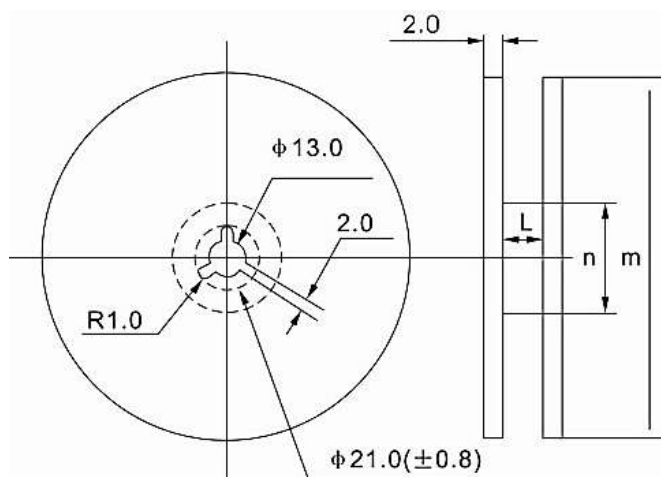
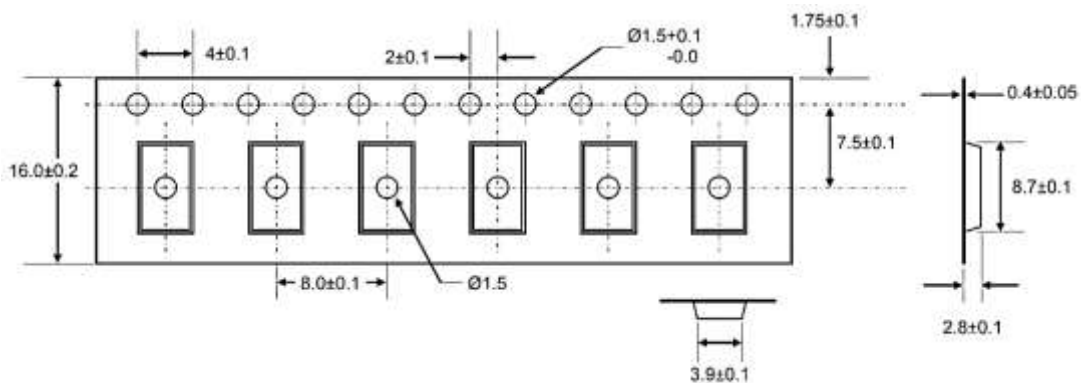
SUGGESTED REFLOW PROFILE (For Reference No. JEDEC J-STD-020D)



| PROFILE FEATURE | | PB-FREE ASSEMBLY |
|---|---------------------------|-------------------|
| Average Ramp-up Rate (Ts Max to Tp) | | 3°C/second Max |
| Preheat | Temperature Min (Ts Min.) | 150°C |
| | Temperature Max (Ts Max.) | 200°C |
| | Time (ts Min. to ts Max.) | 60 ~ 120 seconds |
| Time maintained above | Temperature (TL) | 217°C |
| | Time (tL) | 60 ~ 150 seconds |
| Peak/Classification Temperature (Tp) | | 260 +/-5°C |
| Time within 5°C of actual Peak Temperature (tp) | | 20 ~ 40 seconds |
| Ramp-down rate | | 6 °C /Second Max. |
| Time 25 °C to Peak Temperature | | 8 minutes Max. |
| Suggest reflow times | | 3 Times Max. |

REEL AND TAPE DIMENSION (Unit: mm)

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



| SYMBOL | Φm | Φn | L | CARRIER TAPE SIZE |
|-----------|-------------|----------|------|-------------------|
| Dimension | 330 ± 3 | 80 Min. | 17.5 | 16 |

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 Heater (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 Rendering 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

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 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 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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