




SPECIFICATION SHEET

| | |
|--------------------------------|--|
| SPECIFICATION SHEET NO. | P0606- XY48M00000S408 |
| DATE | June 06, 2022 |
| REVISION | A0 |
| DESCRIPTION | SMD Crystal, Seam seal, 1612 Type, 4 pads, 48.0000MHz, +/-10ppm, CL 8pF, Stability +/-15ppm @Operating Temp. Range -40°C ~+85°C, ESR 80 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 CM11 48M0A10-8-15-40-80TLF |
| PART CODE | XY48M00000S408 |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: June 06, 2022 | | | |

| | |
|-------------------------|--|
| CUSTOMER APPROVE | |
| | |
| DATE: | |

6/6/2022

MHZ SMD CRYSTAL 1612 TYPE 4 PADS

MAIN FEATURE

- Extra SMD Package, Seam Sealed Ceramic-Metal, 4pads
- 1612Type, L1.6*W1.2*H0.4mm, 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

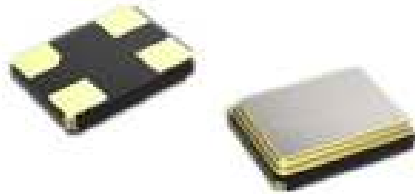
| | | | |
|-----------|-----------------|----------|------------|
| XY | 48M00000 | S | 408 |
| 1 | 2 | 3 | 4 |

- 1) XY: Part family Code for SMD Crystal, 1612 Type, L1.6*W1.2*H0.4mm, 4 Pads (CM11)
- 2) 48M00000: Frequency range code for 48.000MHz
- 3) S: SMD type, Package Tape/Reel, 3000pcs/Reel
- 4) 408: Specification code for original part No.: **TGS CM11 48M0A10-8-15-40-80TLF**

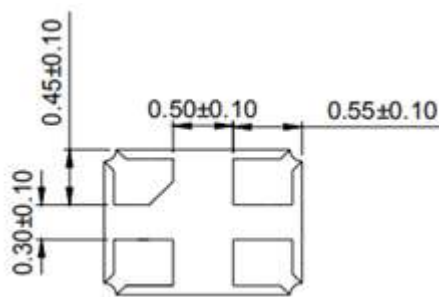
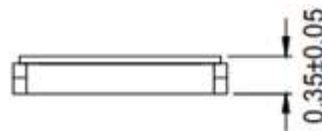
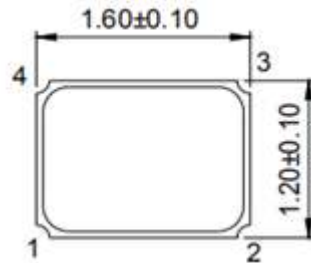
MHZ SMD CRYSTAL 1612 TYPE 4 PADS

DIMENSION (Unit: mm)

Image for reference



CM11

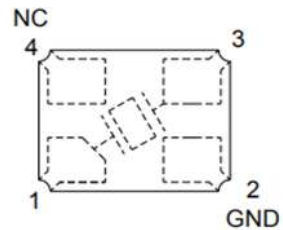


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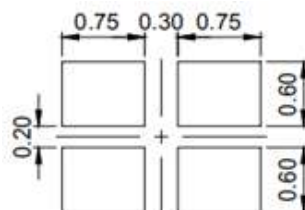
Frequency Range + QC code

Connection

- #1 In/Out
- #2 Ground
- #3 Out/In
- #4 N/C



Recommend Solder pattern



MHZ SMD CRYSTAL 1612 TYPE 4 PADS
ELECTRICAL PARAMETERS

| Parameter | Part No. Symbol | Units | Value | | | Condition |
|--------------------------------------|-------------------------|--|--------------------------------|---------|------|-----------------------|
| | | | Min. | Typical | Max. | |
| Original Manufacturer | TGS | TGS Crystals | | | | |
| Holder Type | CM11 | SMD Crystal, 1612 Type, L1.6*W1.2*H0.4mm, 4 Pads | | | | |
| Frequency Range | 48M0 | MHz | 48.0 | | | |
| Mode of Oscillation | A | Fundamental | | | | |
| Frequency Tolerance | 10 | ppm | -10 | | +10 | @25°C |
| Load Capacitance | -8 | pF | 8 | | | |
| Stability over Operation Temperature | -15 | ppm | -15 | | +15 | |
| Operation Temperature | -40 | °C | -40 | | +85 | |
| Storage Temperature | | °C | -55 | | +125 | |
| Equivalent Series Resistance (ESR) | -80 | Ω | | | 80 | |
| 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 | | | ±2 | @1 st year |
| Insulation Resistance | | MΩ | 500 | | | @100VDC ± 15VDC |
| Others | Package | T | Tape/Reel, 3000pcs/Reel | | | |
| | RoHS Status | LF | RoHS III compliant | | | |
| | Add Value | | - | | | |
| | Internal Control Code * | | Internal Control code or Blank | | | |

Note: 1) Original Part Number: **TGS CM11 48M0A10-8-15-40-80TLF**

2) * Internal Control Code- 2 letter or digits; Blank: N/A

MHZ SMD CRYSTAL 1612 TYPE 4 PADS

RELIABILITY

| Test Items | Test Method And Conditions | Reference Documents |
|--|---|---|
| High Temperature High Humidity Storage | Temperature: 85°C±3°C Relative Humidity:85%RH Time: 96 Hours | JIS C5023 |
| High Temperature Storage | Temperature: 125°C±3°C Time: 96 Hours. | MIL-STD-883E Method 1005.8 |
| Low Temperature Storage | Temperature: -40°C±3°C Time: 96 Hours. | MIL-STD-883E Method 1013 |
| Thermal Shock | Temperature 1: -55°C±5°C Temperature 2: 85°C±5 °C 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°C±5°C Time: 10±1 Seconds | MIL-STD-202F Method 210E |
| Solderability | The solder pot temperature is 245±5°C , 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 |

MHZ SMD CRYSTAL 1612 TYPE 4 PADS

SUGGESTED REFLOW PROFILE (For Reference Only)

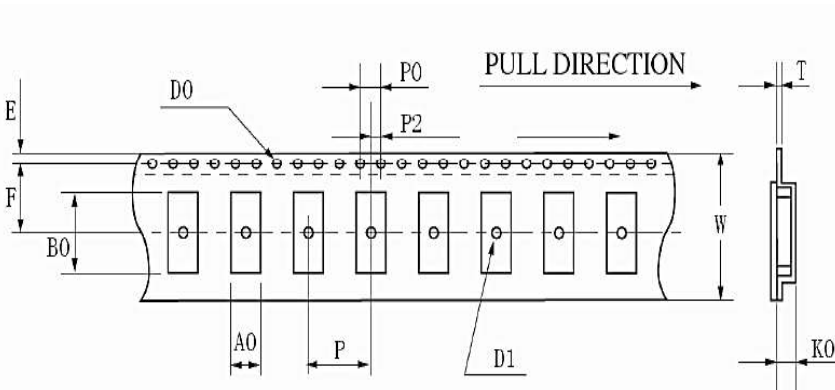


| | | |
|---|------------------------------------|-------------------|
| Profile Feature | | Pb-Free Assembly |
| Average Ramp-up Rate (Ts Max to Tp) | | 3°C/second Max |
| Preheat | Temperature Min (Ts Min.) | 140°C |
| | Temperature Max (Ts Max.) | 190°C |
| | Time (ts Min. to ts Max.) | 40 ~ 120 seconds |
| Time maintained above | Temperature (T_L) | 217°C |
| | Time (t_L) | 60 ~ 150 seconds |
| Peak/Classification Temperature (T_p) | | 260 °C |
| Time within 5°C of actual Peak Temperature (t_p) | | 20 ~ 40 seconds |
| Ramp-down rate | | 6 °C /Second Max. |
| Time 25 °C to Peak Temperature | | 4 minutes Max. |
| Suggest reflow times | | 3 Times Max. |

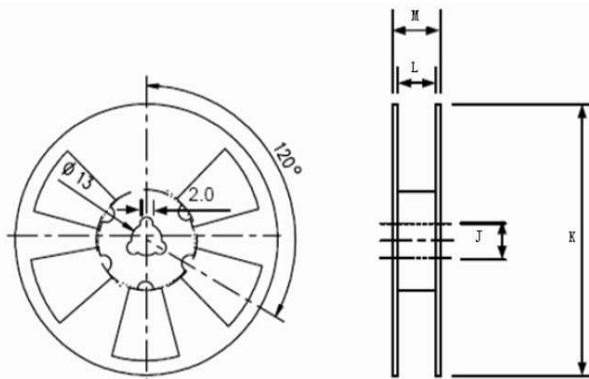
MHZ SMD CRYSTAL 1612 TYPE 4 PADS

TAPE/REEL (Unit: mm)

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



| | |
|----|-------------|
| W | 8.00+/-0.2 |
| E | 1.75+/-0.1 |
| F | 3.5+/-0.05 |
| T | 0.25+/-0.05 |
| P | 4.0+/-0.1 |
| P0 | 4.0+/-0.1 |
| P2 | 2.0+/-0.1 |
| D0 | Ø1.55+0.05 |
| D1 | Ø1.0+0.05 |
| A0 | 1.2+/-0.1 |
| K0 | 0.70+/-0.1 |
| B0 | 1.85+/-0.1 |



| DIMENSIONS | J | K | L | M | pcs/Reel (unit:mm) |
|------------|----|-----|---|------|--|
| | 13 | 178 | 8 | 11.5 | Standard Reel Quality is 3,000pcs per reel |

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