




SPECIFICATION SHEET

| | |
|--------------------------------|--|
| SPECIFICATION SHEET NO. | Q0129 - XP12M28800S412 |
| DATE | Jan. 29, 2023 |
| REVISION | A0 |
| DESCRIPTION | <p>MHz SMD Crystal, L6.0*W3.5*H1.2mm, Glass Seal, 2 Pads, CMG632 series 12.288000MHz, Tolerance +/-30ppm, Load Capacitor 12pF, Frequency stability +/-30ppm @Operating Temp. Range -40°C ~+85°C, ESR 70 ohm Max, Reflow Profile Condition 260 °C Max. Tape/Reel, 1000pcs/Reel RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863)</p> |
| CUSTOMER | |
| CUSTOMER PART NUMBER | |
| CROSS REF. PART NUMBER | |
| ORIGINAL PART NUMBER | TGS CMG632 12M288A30-12-30-40-70 TLH |
| PART CODE | XP12M28800S412 |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: Jan. 29, 2023 | | | |

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

1/29/2023

MHZ SMD CRYSTAL GLASS SEAL 6035 TYPE 2 PADS

MAIN FEATURE

- MHz SMD Crystal Glass seal, 2 Pads, L6.0*W3.5*H1.2mm
- Low cost, High precision, High frequency stability
- Reflow Profile Condition 260 °C Max.
- Cross more competitors part
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863)



APPLICATION

- Measurement Instrument
- Communication Electronics

PART CODE GUIDE

RFQ

[Request For Quotation](#)

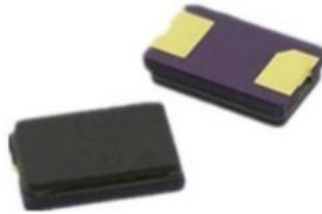
| XP | 12M28800 | S | 412 |
|----|----------|---|-----|
| 1 | 2 | 3 | 4 |

- 1) XP: Part family Code for SMD Crystal Glass seal, L6.0*W3.5*H1.2mm, 2 Pads, CMG632 series
- 2) 12M28800: Frequency range code for 12.2880MHz
- 3) S: SMD type, Package Tape/Reel, 1000pcs/Reel
- 4) 412: Specification code for original part no. **TGS CMG632 12M288A30-12-30-40-70 TLH**

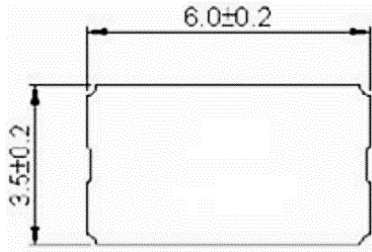
MHZ SMD CRYSTAL GLASS SEAL 6035 TYPE 2 PADS

DIMENSION (Unit: mm, +/-0.2mm)

Image for reference



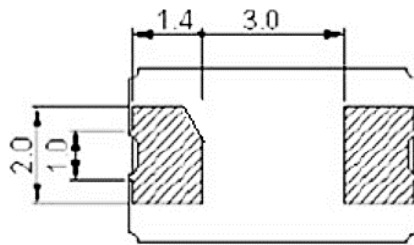
Top View



Marking

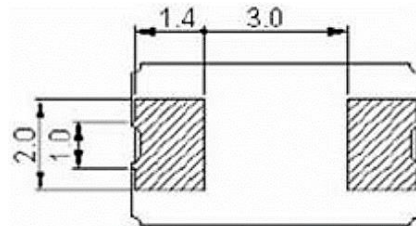
Frequency Range
or Internal control
code

Bottom type 1
View



OR

Bottom Type 2
View

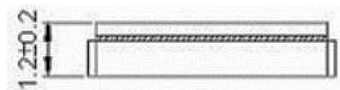


Pin Configuration

#1 Crystal

#2 Crystal

Side View



MHZ SMD CRYSTAL GLASS SEAL 6035 TYPE 2 PADS
ELECTRICAL PARAMETERS

| Parameter | Part No. Symbol | Units | Value | | | Condition |
|--------------------------------------|-------------------------|----------|---|---------|------|-----------------------|
| | | | Min. | Typical | Max. | |
| Original Manufacturer | TGS | | TGS Crystals | | | |
| Holder Type | CMG632 | | MHz SMD Crystal, Glass Seal, L6.0*W3.5*H1.2mm, 2 pads | | | |
| Frequency Range | 12M288 | MHz | 12.288000 | | | |
| Mode of Oscillation | A | | AT Fundamental | | | |
| Frequency Tolerance | 30 | ppm | -30 | | +30 | @25°C |
| Load Capacitance | -12 | pF | 12 | | | |
| Stability over Operation Temperature | -30 | ppm | -30 | | +30 | |
| Operation Temperature | -40 | °C | -40 | | +85 | |
| Storage Temperature | | °C | -40 | | +85 | |
| Equivalent Series Resistance (ESR) | 70 | Ω | | | 70 | |
| Drive Level | | μW | | | 100 | |
| Shunt Capacitance (C0) | | pF | 0 | | 5.0 | |
| 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 | @1 st year |
| Insulation Resistance | | MΩ | 500 | | | @100VDC ± 15Vdc |
| Others | Package | T | Tape/Reel, 1000pcs/Reel | | | |
| | RoHS Status | LH | RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863) | | | |
| | Add Value | | N/A | | | |
| | Internal Control Code * | | N/A | | | |

Note: 1) Original Part Number: **TGS CMG632 12M288A30-12-30-40-70 TLH**

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

1/29/2023

MHZ SMD CRYSTAL GLASS SEAL 6035 TYPE 2 PADS

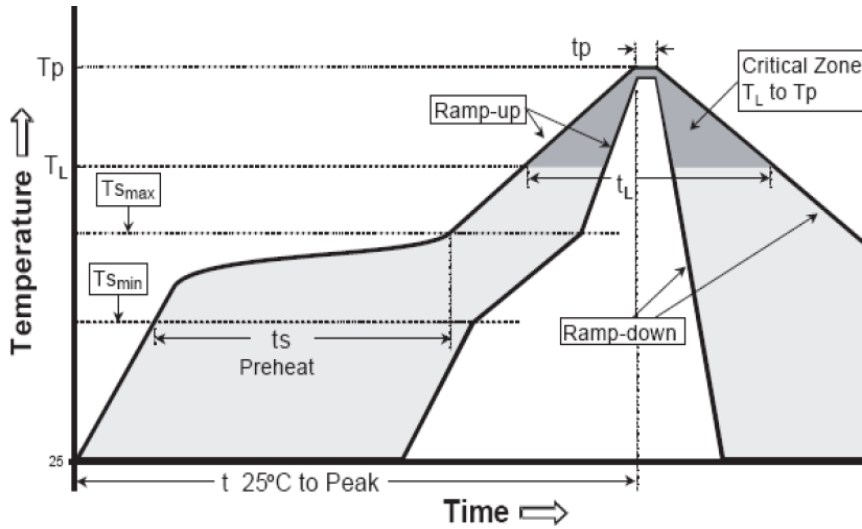
RELIABILITY

| 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 GLASS SEAL 6035 TYPE 2 PADS

SUGGESTED REFLOW PROFILE (For Reference Only)

Total time: 200 Sec. Max. Solder melting point: 220°C



| | | |
|---|------------------------------------|-------------------|
| Profile Feature | | Pb-Free Assembly |
| Average Ramp-up Rate (Ts Max to Tp) | | 3°C/second Max |
| Preheat | Temperature Min (Ts Min.) | 125°C |
| | Temperature Max (Ts Max.) | 200°C |
| | Time (ts Min. to ts Max.) | 60 ~ 180 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 | | 8 minutes Max. |
| Suggest reflow times | | 3 Times Max. |

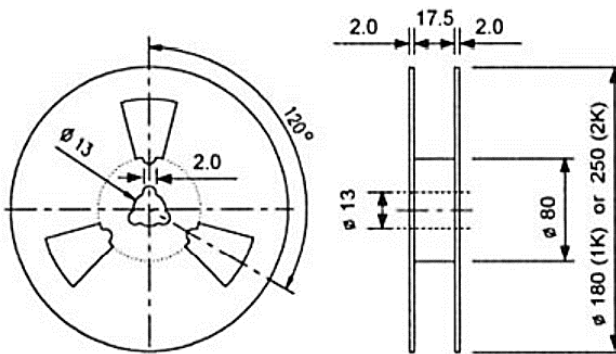
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TAPE/REEL (Unit: mm, 1000pcs/Reel)

All Devices are packed in accordance with EIA standard RS-481-2 and specifications., 1000pcs/Reel



| Code | Dimension (mm) |
|------|----------------|
| A | 1.70 |
| B | 5.45 |
| C | 3.65 |
| D | 8.00 |
| E | 12.0 |



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