




**SPECIFICATION SHEET**

|                                |   |
|--------------------------------|---|
| <b>SPECIFICATION SHEET NO.</b> | Q1213-XM25M00000S023  |
| <b>DATE</b>                    | Dec. 13, 2023   |
| <b>REVISION</b>                | A0  |
| <b>DESCRIPTION</b>             | SMD Crystal, 49SMD Type, L11.5*W4.7*H4.0mm, 2 pads,<br>25.000MHz, +/-50ppm, CL 20pF, Stability +/-50ppm @Operating Temp.<br>Range -10°C ~+60°C, ESR 40 ohm Max, Tape/Reel,<br>Reflow Profile Condition 260 ° C Max<br>RoHS/RoHS III compliant |
| <b>CUSTOMER</b>                |   |
| <b>CUSTOMER PART NUMBER</b>    |   |
| <b>CROSS REF. PART NUMBER</b>  |   |
| <b>ORIGINAL PART NUMBER</b>    | TGS CSM2 25M0A50-20-50-10-40 TLF  |
| <b>PART CODE</b>               | XM25M00000S023  |

|                         |   |  |   |
|-------------------------|---|--|---|
| <b>VENDOR APPROVE</b>   |   |  |   |
| Issued/Checked/Approved |  |  |  |
| DATE: Dec. 13, 2023     |   |  |   |

|                         |  |
|-------------------------|--|
| <b>CUSTOMER APPROVE</b> |  |
|                         |  |
| DATE:                   |  |

12/13/2023

**SMD CRYSTAL 49SMD TYPE 2 PADS**

**MAIN FEATURE**

- SMD Crystal, 49SMD Type, L11.5\*W4.7\*H4.0mm, 2 pads
- Low cost, High precision, High frequency stability
- Reflow Profile Condition 260 °C Max.
- Wide Frequency Range
- Cross more competitors part
- RoHS/RoHS III compliant



**APPLICATION**

- Bluetooth, wireless communication set
- Communication Electronics

**PART CODE GUIDE**

**RFQ**

[Request For Quotation](#)

| XM | 25M00000 | S | 023 |
|----|----------|---|-----|
| 1  | 2        | 3 | 4   |

- 1) XM: Part family Code for SMD Crystal, 49SMD Type, L11.5\*W4.7\*H4.0mm, 2 pads (CSM2)
- 2) 25M00000: Frequency range code for 25.000MHz
- 3) S: SMD type, Package Tape/Reel, 1000pcs/Reel
- 4) 023: Specification code for original part No.: **TGS CSM2 25M0A50-20-50-10-40 TLF**

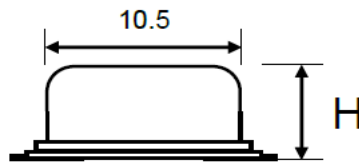
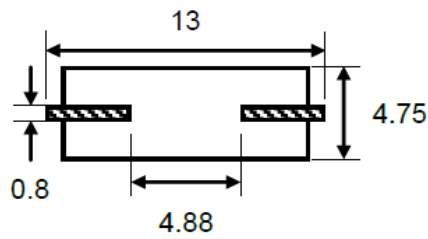
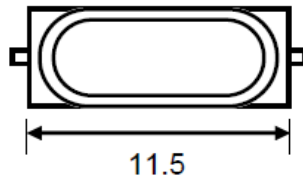
**SMD CRYSTAL 49SMD TYPE 2 PADS**

**DIMENSION (Unit: mm, Tol. +/-0.15mm)**

Image for reference



CSM2

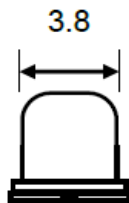


**Marking**

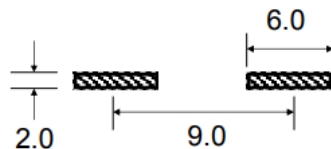
Line 1: Company Code + CL value

Line 2: Freq. Range+ QC Code (A~Z)

H: 4.0



**Recommend Pad Layout**



**SMD CRYSTAL 49SMD TYPE 2 PADS**

**ELECTRICAL PARAMETERS**

| Parameter                            | Part No. Symbol         | Units   | Value              |         |      | Condition             |
|--------------------------------------|-------------------------|---|--------------------|---------|------|-----------------------|
|                                      |                         |   | Min.               | Typical | Max. |                       |
| Original Manufacturer                | TGS                     | TGS Crystals  |                    |         |      |                       |
| Holder Type                          | CSM2                    | SMD Crystal, 49SMD Type, L11.5*W4.75*H4.0mm, 2 pads |                    |         |      |                       |
| Frequency Range                      | 25M0                    | MHz   | 25.000             |         |      |                       |
| Mode of Oscillation                  | A                       | AT Fundamental                                      |                    |         |      |                       |
| Frequency Tolerance                  | 50                      | ppm   | -50                |         | +50  | @25°C                 |
| Load Capacitance                     | -20                     | pF  | 20                 |         |      |                       |
| Stability over Operation Temperature | -50                     | ppm   | -50                |         | +50  |                       |
| Operation Temperature                | -10                     | °C  | -10                |         | +60  |                       |
| Storage Temperature                  |                         | °C  | -40                |         | +85  |                       |
| Equivalent Series Resistance (ESR)   | -40                     | Ω   |                    |         | 40   |                       |
| Drive Level                          |                         | μW  |                    |         | 100  |                       |
| Shunt Capacitance (C0)               |                         | pF  | 0                  |         | 7.0  |                       |
| 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 <sup>st</sup> year |
| Insulation Resistance                |                         | MΩ  | 500                |         |      | @100Vdc<br>± 15Vdc    |
| Others                               | Package                 | T   | Tape/Reel          |         |      |                       |
|                                      | RoHS Status             | LF  | RoHS III compliant |         |      |                       |
|                                      | Add Value               |   | N/A                |         |      |                       |
|                                      | Internal Control Code * |   | N/A                |         |      |                       |

Note: 1) Original Part Number: **TGS CSM2 25M0A50-20-50-10-40 TLF**

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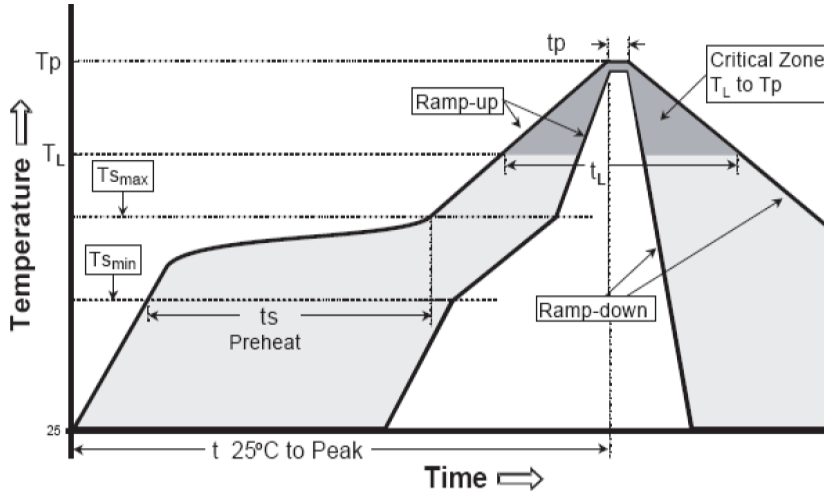
**SMD CRYSTAL 49SMD TYPE 2 PADS**

**RELIABILITY**

| Test Items                             | Test Method And Conditions  | Reference Documents                       |
|--|---|---|
| High Temperature High Humidity Storage | Temperature: 85°C±3°C<br>Relative Humidity:85%RH<br>Time: 96 Hours  | JIS C5023                                 |
| High Temperature Storage               | Temperature: 125°C±3°C<br>Time: 96 Hours.   | MIL-STD-883E<br>Method 1005.8             |
| Low Temperature Storage                | Temperature: -40°C±3°C<br>Time: 96 Hours.   | MIL-STD-883E<br>Method 1013               |
| Thermal Shock                          | Temperature 1: -55°C±5°C<br>Temperature 2: 85°C±5 °C<br>Temperature change between T1 and T2 5 min<br>10cycles maintain T1 and T2 for 30 minutes each cycle | MIL-STD-202F<br>Method 107<br>Condition A |
| Resistance to Solder Heat              | Solder Temperature: 260°C±5°C<br>Time: 10±1 Seconds   | MIL-STD-202F<br>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<br>3 Times for all 3 directions(X,Y Z)  | MIL STD 202F<br>Method 213B               |
| Vibration                              | Frequency Range: 10Hz ~ 55Hz<br>Amplitude: 0.75mm<br>2 Hours in each direction, total 6 Hours   | MIL-STD-883E<br>Method 2007.3             |
| Leakage Test                           | Take measurements with a helium Leakage detector<br>Leakage Rate≤1×10 <sup>-3</sup> Pa cm <sup>3</sup> /s   | MIL-STD-883E                              |

**SUGGESTED REFLOW PROFILE (For Reference Only)**

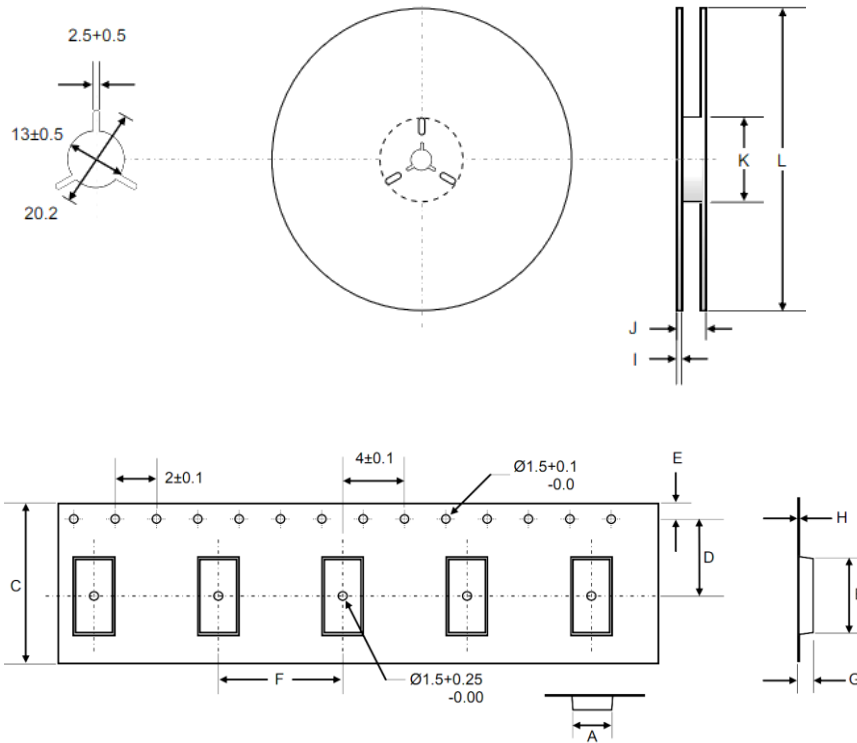
Total time: 200 Sec. Max. Solder melting point: 220°C



|  |                                  |                   |
|--|----------------------------------|-------------------|
| <b>Profile Feature</b>                                 |                                  | Pb-Free Assembly  |
| <b>Average Ramp-up Rate (Ts Max to Tp)</b>             |                                  | 3°C/second Max    |
| <b>Preheat</b>   | <b>Temperature Min (Ts Min.)</b> | 125°C             |
|  | <b>Temperature Max (Ts Max.)</b> | 200°C             |
|  | <b>Time (ts Min. to ts Max.)</b> | 60 ~ 180 seconds  |
| <b>Time maintained above</b>                           | <b>Temperature (Tl)</b>          | 217°C             |
|  | <b>Time (tL)</b>                 | 60 ~ 150 seconds  |
| <b>Peak/Classification Temperature (Tp)</b>            |                                  | 260 °C            |
| <b>Time within 5°C of actual Peak Temperature (tp)</b> |                                  | 20 ~ 40 seconds   |
| <b>Ramp-down rate</b>                                  |                                  | 6 °C /Second Max. |
| <b>Time 25 °C to Peak Temperature</b>                  |                                  | 8 minutes Max.    |
| <b>Suggest reflow times</b>                            |                                  | 3 Times Max.      |

**TAPE/REEL (Unit: mm)**

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



| Symbol | Dimension        |
|--------|------------------|
| A      | 5.0±0.1          |
| B      | 15.0±0.2         |
| C      | 24.0±0.3         |
| D      | 11.05±0.1        |
| E      | 1.75±0.1         |
| F      | 8.0±0.1/12.0±0.1 |
| G      | 5.0±0.1          |
| H      | 0.5±0.1          |
| I      | 2.4±0.2          |
| J      | 24.4±2.0/-0.0    |
| K      | 100.0±1.0        |
| L      | 330              |

**DISCLAIMER**

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