




SPECIFICATION SHEET

| | |
|--------------------------------|---|
| SPECIFICATION SHEET NO. | Q0816- XF16M00000S418 |
| DATE | Aug. 16, 2023 |
| REVISION | A0 |
| DESCRIPTION | MHz SMD Crystal, L3.2*W2.5*H0.7mm, Seam Seal, 4 Pads, CM32 series 16.00000MHz, Tolerance +/-50ppm, Load Capacitor 18pF, Frequency stability +/-30ppm @Operating Temp. Range -40°C ~+85°C, ESR 80 ohm Max, Reflow Profile Condition 260 °C Max. Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant |
| CUSTOMER | |
| CUSTOMER PART NUMBER | |
| CROSS REF. PART NUMBER | |
| ORIGINAL PART NUMBER | TGS CM32 16M0A50-18-30-40-80 TLF |
| PART CODE | XF16M00000S418 |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: Aug. 16, 2023 | | | |

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

08/16/2023

SMD CRYSTAL 3225 TYPE 4 PADS

MAIN FEATURE

- SMD Crystal, Seam Seal, L3.2*W2.5*H0.7mm, 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

| | | | |
|-----------|-----------------|----------|------------|
| XF | 16M00000 | S | 418 |
| 1 | 2 | 3 | 4 |

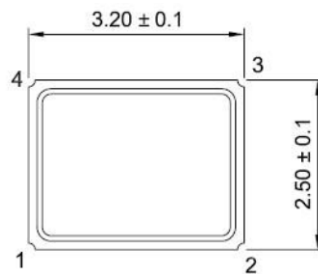
- 1) XF: Part family Code for SMD Crystal, Seam Seal, L3.2*W2.5*H0.7mm, 4 pads (CM32)
- 2) 16M00000: Frequency range code for 16.000 MHz
- 3) S: SMD type, Package Tape/Reel, 3000pcs/Reel
- 4) 418: Specification code for original part No.: **TGS CM32 16M0A50-18-30-40-80 TLF**

DIMENSION (Unit: mm)

Image for reference



CM32



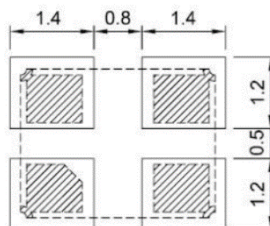
Marking
Frequency Range



Connection
#1 Crystal
#2 Ground
#3 Crystal
#4 Ground



Recommend Pad Layout



SMD CRYSTAL 3225 TYPE 4 PADS
ELECTRICAL PARAMETERS

| Parameter | Part No. Symbol | Units | Value | | | Condition |
|--------------------------------------|-------------------------|--|--------------------|---------|------|-----------------------|
| | | | Min. | Typical | Max. | |
| Original Manufacturer | TGS | TGS Crystals | | | | |
| Holder Type | CM32 | SMD Crystal, Seam Seal, L3.2*W2.5*H0.7mm, 4 pads | | | | |
| Frequency Range | 16M0 | MHz | 16.000 | | | |
| Mode of Oscillation | A | AT Fundamental | | | | |
| Frequency Tolerance | 50 | ppm | -50 | | +50 | @25°C |
| Load Capacitance | -18 | pF | 18 | | | |
| Stability over Operation Temperature | -30 | ppm | -30 | | +30 | |
| Operation Temperature | -40 | °C | -40 | | +85 | |
| Storage Temperature | | °C | -55 | | +105 | |
| Equivalent Series Resistance (ESR) | -80 | Ω | | | 80 | |
| Drive Level | | μW | | | 300 | |
| Shunt Capacitance (C0) | | pF | | | 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 | | | |
| | RoHS Status | LF | RoHS III compliant | | | |
| | Add Value | | N/A | | | |
| | Internal Control Code * | | N/A | | | |

Note: 1) Original Part Number: **TGS CM32 16M0A50-18-30-40-80 TLF**

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

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SMD CRYSTAL 3225 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 |

SUGGESTED REFLOW PROFILE (For Reference Only)

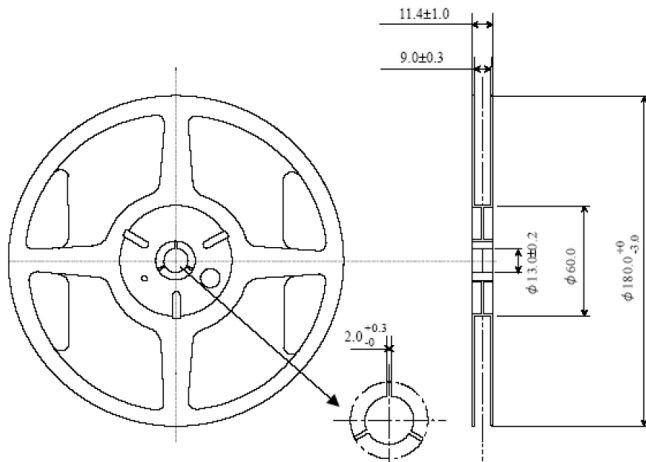
Total time: 200 Sec. Max. Solder melting point: 220°C



| | | |
|---|------------------------------------|-------------------|
| 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. |

TAPE/REEL (Unit: mm)

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



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