




SPECIFICATION SHEET

SPECIFICATION SHEET NO.	Q1213-XM13M10500S100
DATE	Dec. 13, 2023
REVISION	A0
DESCRIPTION	SMD Crystal, 49SMD Type, L11.5*W4.7*H4.0mm, 2 pads, 13.105MHz, +/-50ppm, CL 20pF, Stability +/-50ppm @Operating Temp. Range -10°C ~+60°C, ESR 50 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 CSM2 13M105A50-20-50-10-50 TLF
PART CODE	XM13M10500S100

VENDOR APPROVE			
Issued/Checked/Approved			
DATE: Dec. 13, 2023			

CUSTOMER APPROVE	
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	13M10500	S	100
1	2	3	4

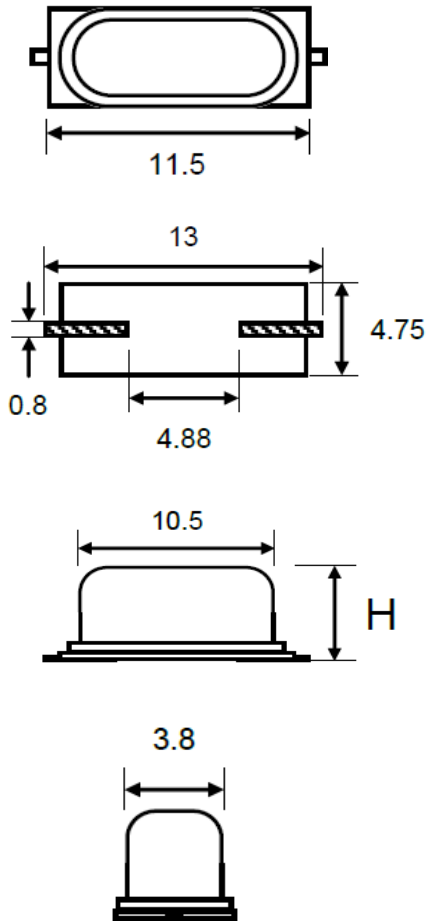
- 1) XM: Part family Code for SMD Crystal, 49SMD Type, L11.5*W4.7*H4.0mm, 2 pads (CSM2)
- 2) 13M10500: Frequency range code for 13.105MHz
- 3) S: SMD type, Package Tape/Reel, 1000pcs/Reel
- 4) 100: Specification code for original part No.: **TGS CSM2 13M105A50-20-50-10-50 TLF**

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

Image for reference



CSM2



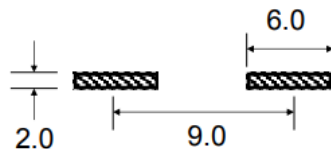
Marking

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	13M105	MHz	13.105			
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)	-50	Ω			50	
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 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 CSM2 13M105A50-20-50-10-50 TLF**
12/13/2023

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)

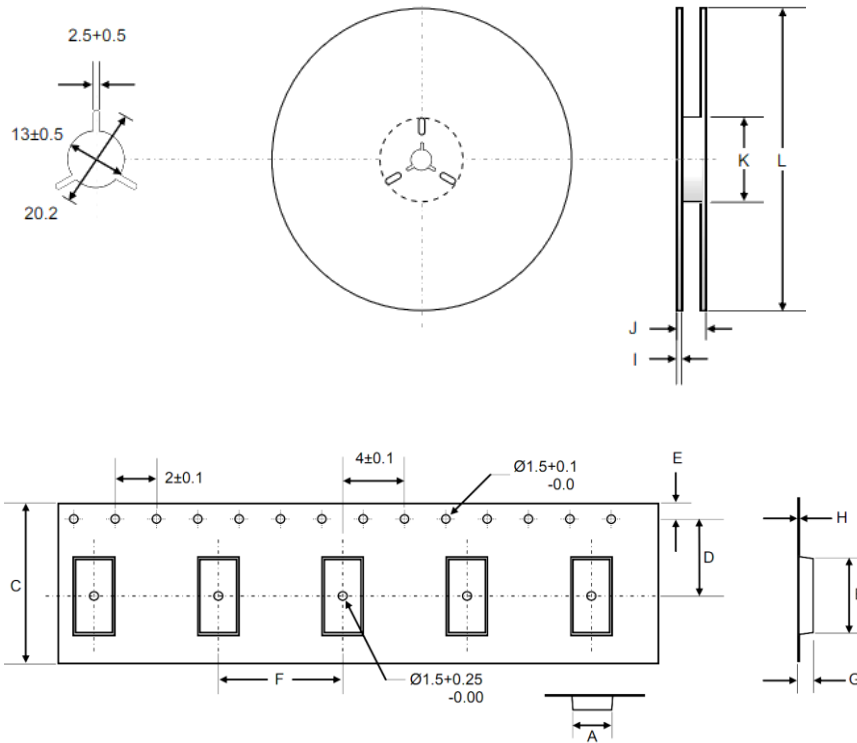
Total time: 200 Sec. Max. Solder melting point: 220°C



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., 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

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