

**SPECIFICATION SHEET**

<b>SPECIFICATION SHEET NO.</b>	Q1130- YQ3M8400S33420	
<b>DATE</b>	Nov. 30, 2023	
<b>REVISION</b>	A0	Updated With Most Recent Data - Official First Release
<b>DESCRIPTION AND MAIN PARAMETRICS</b>	<p>MHz SMD Crystal, Plastic case, L12.5*W4.6*H3.7mm,  3.8400MHz, +/-30ppm, 20pF,  Stability +/-30ppm @Operating Temp. Range -40°C ~+85°C, ESR 120Ω Max,  Tape/Reel, 1000pcs/Reel , Reflow Profile Condition 260 °C Max.  RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863)</p>	
<b>CUSTOMER</b>		
<b>CUSTOMER PART NO.</b>		
<b>CROSS REF. PART NO.</b>		
<b>ORIGINAL MFG/PART NO.</b>	TGS/CCME 3M84A30-20-30-40-120 TLH	
<b>PART CODE</b>	YQ3M8400S33420	

**VENDOR APPROVE**

Issued/Checked/Approved



Date: Nov. 30, 2023

**CUSTOMER APPROVE**

Date:

11/30/2023

## MHZ SMD CRYSTAL PLASTIC CASE CCME SERIES

### MAIN FEATURE

- MHz SMD Crystal, Plastic case, L12.5\*W4.6\*H3.7mm
- Operating Temperature Range -40°C ~+85°C
- 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](#)

YQ	3M8400	S	33420
1	2	3	4

1. YQ: Parts family Code for MHz SMD Crystal, Plastic case, L12.5\*W4.6\*H3.7mm, 4 pads
2. 3M8400: Frequency range code for 3.84MHz
3. S: SMD type Package code, Tape/Reel
4. 33420: Internal Control Code or special Parameters code letter A~Z or digits (1-9)

### HOW TO ORDER

Please follow up **Part Code Guide** and indicate pat code when you order or RFQ.

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### DIMENSION (Unit: Inch/mm)

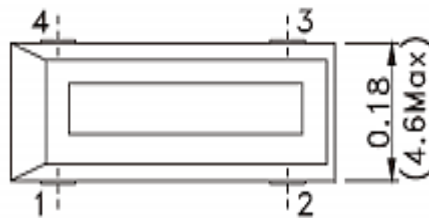
#### Image for reference



#### Package code

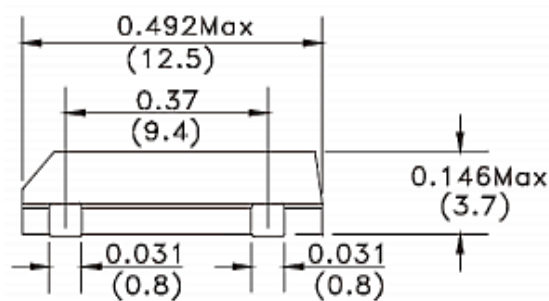
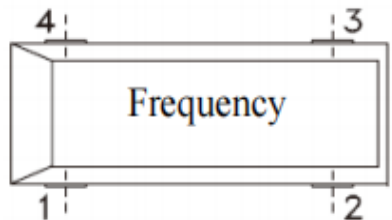
CCME, 4 Pads

L12.5\*W4.6\*H3.7mm



#### Marking

Frequency Rang



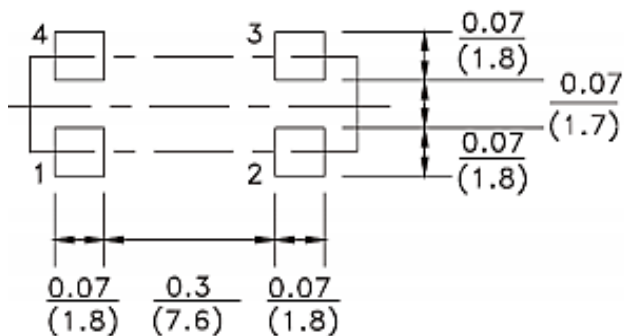
#### Note

Metal (Crystal inside) may be exposed on the top or bottom of CCME's plastic case. That will not be affect performance and reliability of the part in question



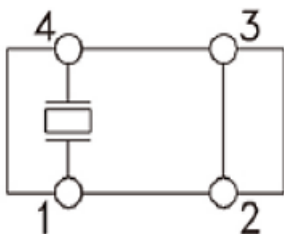
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### Recommend Pad Layout



### Pin Function

- #1 Crystal
- #2 Ground
- #3 Ground
- #4 Crystal



## MHZ SMD CRYSTAL PLASTIC CASE CCME SERIES

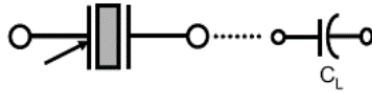
### ELECTRICAL PARAMETERS

PARAMETER		PART NO. SYMBOL	UNITS	VALUE			CONDITION
				MIN.	TYPICAL	MAX.	
Original Manufacturer		TGS	TGS Crystals				
Holder Type		CCME	MHz SMD Crystal, Plastic case, L12.5*W4.6*H3.7mm				
Frequency Range		3M84	MHz	3.84000			
Mode of Oscillation		A		AT Fundamental			
Frequency Tolerance		30	ppm	-30		+30	@25°C
Load Capacitance		-20	pF	20			
Stability over Operation Temperance		-30	ppm	-30		+30	
Operation Temperance		-40	°C	-40		+85	
Storage Temperance			°C	-55		+125	
Equivalent Series Resistance (ESR)		-120	Ω			120	
Drive Level			μW		100	500	
Shunt Capacitance (C0)			pF	0	5.0	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			±5	@1 <sup>st</sup> year
Insulation Resistance			MΩ	500			@100Vdc ± 15Vdc
Others	Package	T	Tape/Reel				
	RoHS Status	LH	RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863)				
	Add Value		N/A				
	Code *		N/A				

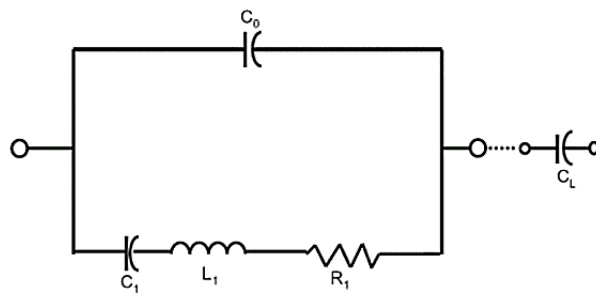
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### TEST STANDARD

#### Equivalent Circuits

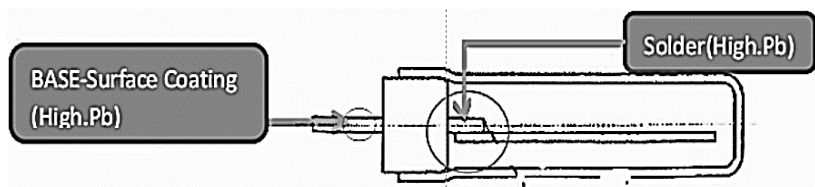


Symbol for crystal unit



### Exemption Rule

1. SMD Tuning Fork Crystal series contain Pb chemical substance where solder material is over limitation. The location see at below drawing, The solder purpose is base connected with chip crystal blank.



2. Below statement is that exemption rule: Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).(RoHS 6/5 2002/95/EC)

**MHZ SMD CRYSTAL PLASTIC CASE CCME SERIES****CHARACTERISTICS****Standard Atmospheric Conditions**

Unless otherwise specified the standard range of atmospheric conditions for making measurements and tests is as follows:

- Ambient temperature: 15°C to 35°C
- Relative humidity : 25% to 85%
- Air pressure : 86 to 106 k Pa

If there is any doubt about the results measurements shall be made within the following limits:

- Ambient temperature : 25±1°C
- Relative humidity : 63% to 67%
- Air pressure : 86 to 106 k Pa

**Operating Temperature Range**

The operating temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

- Operating temperature range: -40°C to +85°C

**Storage Temperature Range**

The storage temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

- Storage temperature range: -55°C to +125°C

## MHZ SMD CRYSTAL PLASTIC CASE CCME SERIES

### RELIABILITY (Mechanical And Environmental Endurance)

TEST ITEMS	TEST METHOD AND CONDITIONS	REQUIREMENTS
Vibration	<ol style="list-style-type: none"> <li>Vibration Frequency: 10 To 55hz</li> <li>Vibration Amplitude: 1.5mm</li> <li>Cycle Time: 1~2min(10-55-10hz)</li> <li>Direction: X.Y.Z</li> <li>Duration: 2h/Each Direction, total 6Hours</li> </ol>	Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{ Rr Max}$
Drop	3 Times Free Fall From 75cm Height table to 3cm thickness hard wood board, After 30 minutes, the relative change value of frequency was measured.	Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{ Rr Max.}$
Leakage	Placed in a helium pressurized tank and filled with helium at a pressure of 0.5-0.6mpa for 1 hour then tested with a helium mass spectrometry leak detector.	Leakage: $1 \times 10^{-8} \text{ mbar.L/S}$ Max.
Solder ability	Dip in flux 3-5 seconds Temperature: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$	Solder adhesion is good, solder adhesion more than 95%
High Temp Storage	Temperature: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 72 H, and the relative change in frequency was measured after 1-2 hours at room temperature	Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{ Rr Max.}$
Low Temp Storage	Temperature: $-45^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 72 H, and the relative change in frequency was measured after 1-2 hours at room temperature	Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{ Rr Max.}$



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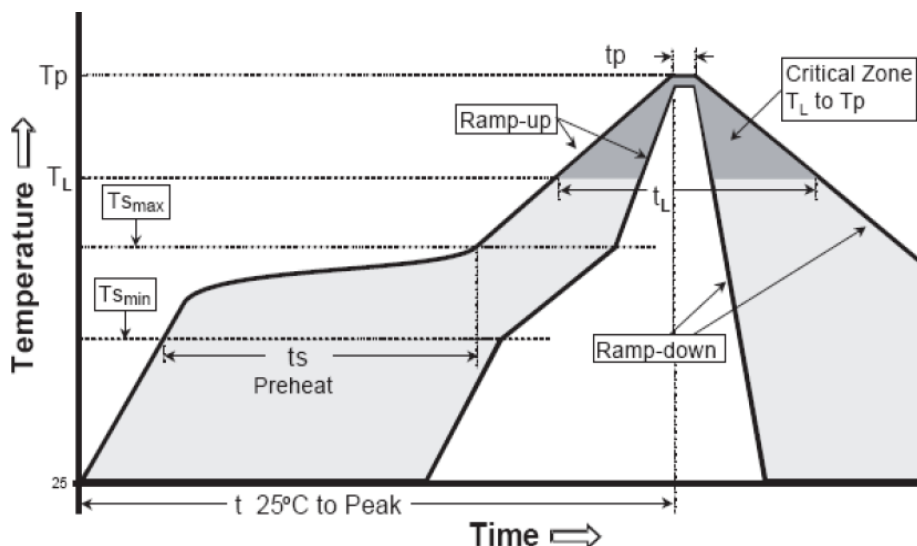
### RELIABILITY (Mechanical And Environmental Endurance)

TEST ITEMS	TEST METHOD AND CONDITIONS	REQUIREMENTS
Humidity Storage	Temperature: $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 72 H, relative Humidity: 90-95% for 72 hours, and then the relative change in frequency was measured	Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{rr max.}$
Temp cycle	Temperature 1: $-55^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , Temperature 2: $-55^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , Temperature change between from T1 to T2 to T1, Run 5 cycles, maintain T1 and T2 30minutes each in one cycle. And the relative change in frequency was measured after 1-2 hours at room temperature	Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{rr max.}$
Salt Fog	Put the crystal units in the salt spray room(salt density: 5%) at the temperature of $35^{\circ}\text{C}$ for 96 hours. Then clean it with water and dry its surface.	The appearance shall has no abnormity and soldering is good.
Aging	Temperature: $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 1000H hours, the stood at room temperature for 1-2hours, and the relative change in frequency was measured	Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{rr max.}$

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### SUGGESTED REFLOW PROFILE (For Reference Only)

Recommended Solder Composition: It is following industry trend of using alloy range Sn-Ag (3.4-4.1)-Cu (0.45-0.9) or Sn-Pb-Ag for reflow and wave soldering.

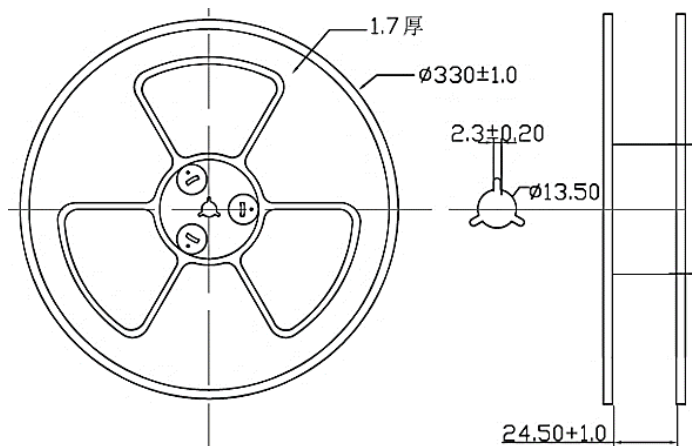
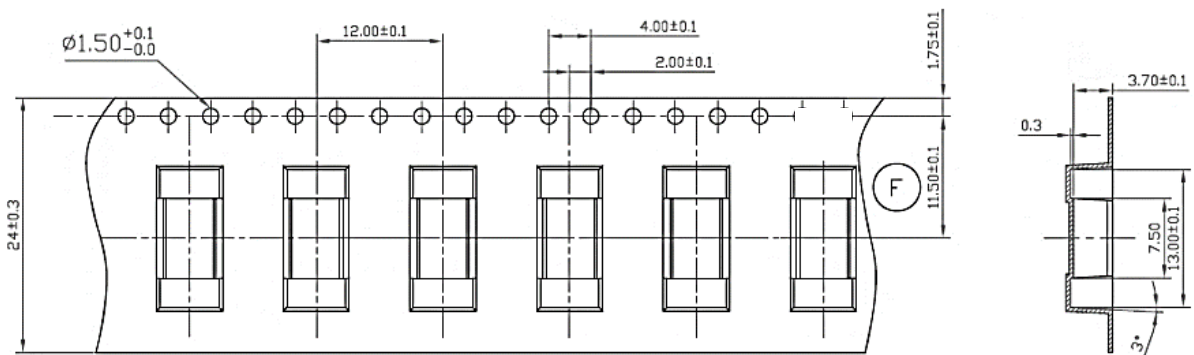


PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (Ts Max to Tp)		3°C/second Max
Preheat	Temperature Min (Ts Min.)	125°C
	Temperature Max (Ts Max.)	200°C
	Time (ts Min. to ts Max.)	60 ~ 180 seconds
Time maintained above	Temperature (TL)	217°C
	Time (tL)	60 ~ 150 seconds
Peak/Classification Temperature (Tp)		260 °C
Time within 5°C of actual Peak Temperature (tp)		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)

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



## MHZ SMD CRYSTAL PLASTIC CASE CCME SERIES

### CAUTION

In Order To Maintain Quality. Without Change In Characteristics Of The crystal Units. Please Follow Below

Recommendation

#### Shock

All Crystal Units Have A Thin Crystal Blanks Within If It Is Dropped Above The Recommended Dropping Height (500mm) The Specific Characteristics And Appearance Can Be Changed Please Pay Special Attention To External Shock

#### Environmental

1. Crystal Units' Frequency Can Be Changed Due To Surrounding Temperature If It Is Stored Next To A High Temperature Heater (Above+85°C) Or Below 40°C. And A Strong Light Source For Long Period Of Time. The Electrical Characteristics Can Be Changed It Is Suggested That These Environment Be Avoided
2. If The Unit Is Placed In A Humid Environment. Lead Terminal Can Be Damaged: Therefore. Do Not Store The Crystal Units In A Humid Environment
3. Crystal unit Has Vibrating Characteristics If It Is Placed Where Vibration Exists The Operating Characteristics Can Be Altered; Therefore This Environment Should Be Avoided

#### Leads

1. After Soldering Crystal Units Into A PCB Impacting The Unit From The top, bottom Left Or Right Side Of The Unit Can Shatter The Glass Portion Of The Base Rendering The Unit Useless

#### Assembly Method

1. Correct Ultrasonic Frequency For Cleaning Should Be Less Than 20khz
2. Soldering Should Be Bone Using IEC 61760-1 OR Pb-free Products

#### Storage

If The Crystal Units Are Stored In Humid Or Salty Environment Appearance Can Be Changed And Solderability Can Deteriorate; Therefore avoid Storing In Such Environment Do Not Store The Crystal Unit More Than 3 Months

**MHZ SMD CRYSTAL PLASTIC CASE CCME SERIES****IMPORTANT NOTES AND DISCLAIMER**

1. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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