瑪居禮電波工業股份有限公司

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Specification Sheet For Approval

Series No: E130924 - 02 REV

Date :   2021/6/15

| ☐ Quartz Crystal | ☐ Quartz Crystal Oscillator | ☐ TCXO | ☐ VCXO |
| ☐ M.C.F | ☑ TCXO / VCTCXO | ☐ Others _ _ _ _ _ _ _ _ _ _ _ _ _ |

Customer	Akizuki
Customer P/N	
Product Type	VCTCXO --- VM39 (Dip type --- 18.0 * 11.7 * 4.7 mm)
Nominal Frequency	12.800 MHz
Mercury P/N	VM39GS5 - 12.800 - 3.0 / -10+60

Customer	Vender
Approved By	Confirmed By
Customer Engineer :	Mercury Engineer : _Frankie_
Date :	Date : 2021/6/15
Customer QC :	Mercury QC :
Date :	Date : 2021/6/15

Specification Sheet Contents :

☑	Specifications Sheet	☑	FQC Test Report
☑	Package Dimension	☑	Temperature Stability Test Report
☑	Crystal / Oscillator Introduction	☑	Test Data Of Reliability
☐	Others _ _ _ _ _ _ _ _ _ _ _ _ _	☑	Lead Free Approved

Mercury Electronic Industrial Co., Ltd.
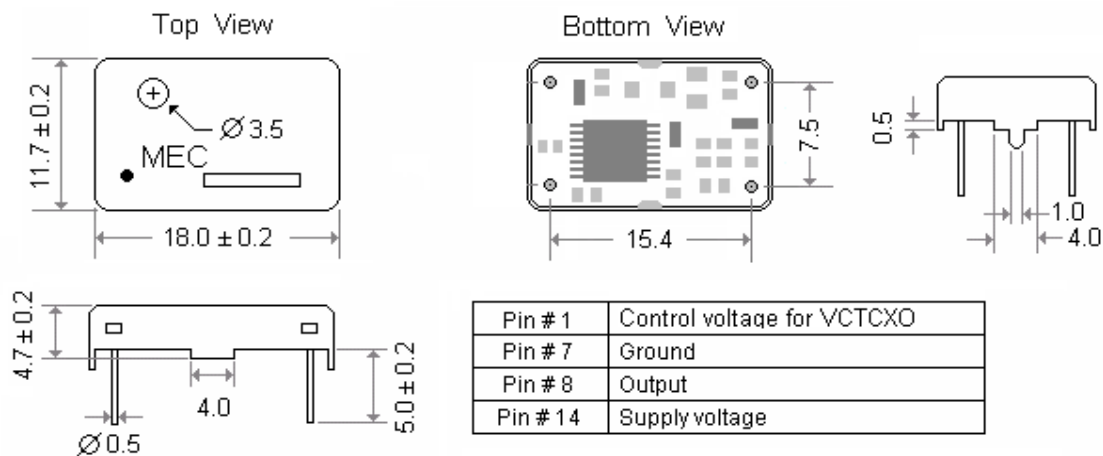
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Authorized Signature

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Quartz Crystal Specification Confirmation

Series No. : E130924 - 02 REV
Date : 2021/6/15

	Paramenters	SYM.	Electrical Spec.				Notes
			Min.	Typical	Max.	Unit	
1	Mercury Part No.			-			VM39GS5 - 12.800 - 3.0 / -10+60
2	Nominal Frequency	FL		12.800000		MHz	
3	Holder Type			-			18.4 * 11.7 * 4.7 mm , Dip Type
4	Output Wave Form			-			Clipped Sine Wave
5	Input Voltage Vcc	Vcc		5.0		V	5V ± 5%
6	Frequency Tolerance	F_tol	-1.0	~	1.0	ppm	With Trimmer Control
7	Freq. Stability vs Temperature	△Fr	-3.0	~	3.0	ppm	over specified operating temp. range
8	Freq. Stability vs Aging	△Fa	-1.0	~	1.0	ppm	first year at 25℃
	Freq. Stability vs Voltage Change	△Fv	-0.2	~	0.2	ppm	for a±5% input voltage change
	Freq. Stability vs Load Change	△FL	-0.2	~	0.2	ppm	for a±10% loading condition change
	Freq. Stability vs Reflow	△FR	-1.0	~	1.0	ppm	1 reflow and measured 24 hours
9	Current Consumption	Icc			1.5	mA	
10	Output Format						DC black , AC couple
11	Star -up Time	ST		2.0	5.0	m Sec.	
12	Output Load	CL		10k // 10		Ω // pF	
13	Operating Temperature	T_opr	-10	~	60	°C	
14	Storage Temperature	T_stg	-40	~	85	°C	

Package Dimension （Unit : mm）

Pin # 1	Control voltage for VCTCXO
Pin # 7	Ground
Pin # 8	Output
Pin # 14	Supply voltage

SDR02.02A-01

Marking

Hold Type

Frequency
ex : 20.000MHz

Mercury Logo

VMXX XXXG
XX . XXXMHz
MEC XXX

Output wave form :
T : Square wave
S : Clipped sine wave
E : True sine wave

For RoHS complciant .
Input Voltage
" 3 " for + 3.0V
" 33 " for + 3.3V
" 5 " for + 5.0V

Lot Number
(Month) : Table 2
(Year) : ex : 2001 --- 1
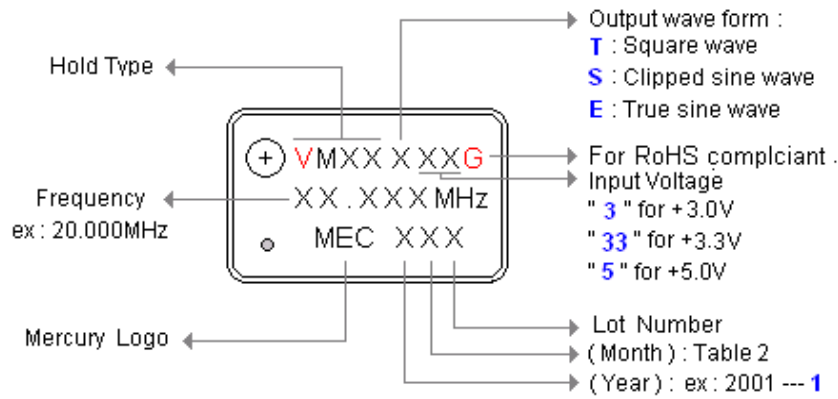
Table 2

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	A	B	C	D	E	F	G	H	I	J	K	L

Test Circuit

V_{OH}

V_{OL}

T_r

T_H

T

	TTL	CMOS
	2.4V	90%
	1.4V	50%
	0.4V	10%

Duty Cycle = (T_H / T) × 100%
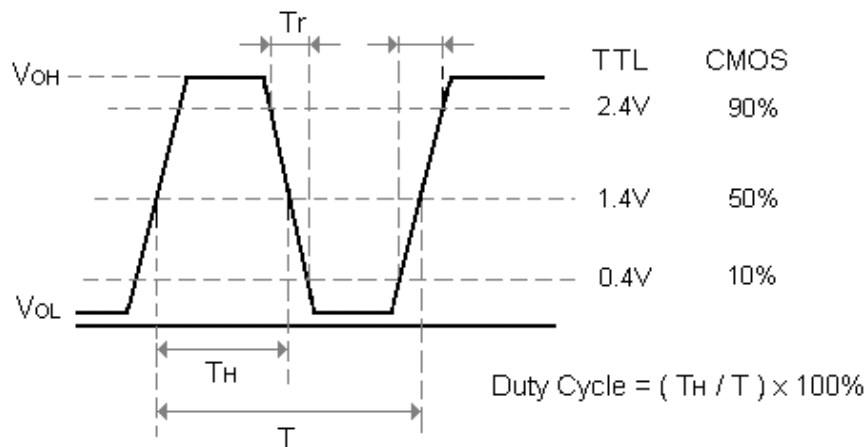
TCXO with CMOS square wave : Ex. VM14T33

Top view

M14T33

14   8
1   7

0.01uF

Vcc

A

V

Frequency counter

Oscilloscope

15 pF

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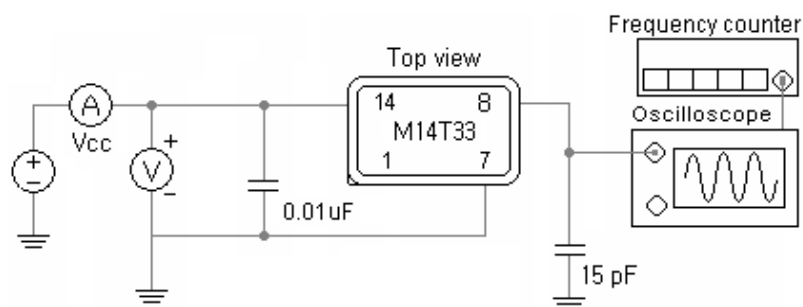
Environmental Specification

1.Temperature Test				
*Temperature Cycling Test				
Conditions:	Steps of cycle	(1)At-55°C , 30minutes		(3)At+85°C , 30minutes
		(2)At+25°C , 10~15minutes		(4)At+25℃,10~15minutes
	Number of	3 times		
Results:	Performance form of tested products must remain within specifications.			

*Thermal Shock Test		
Conditions:	Temperature T(H)+125°C ,T(L)-55°C	Duration of cycle 3 times
	Exposure time at temperature extremes 5minutes	
Results:	Performance form of tested products must remain within specifications.	

*Low Temperature Test		
Conditions:	Temperature -20°C±2°C	Duration of test 96hours
Results:	There Should be no stain on surface of products	
	Frequency and wave form of tested products must remain within specifications.	

2.Aging Test		
Conditions:	Temperature +85°C±2°C	Duration of test 96 hours
Results:	Deviation of frequency must be less than±3ppm	(+/-0.0003％)

3.Salt Spray Test		
Conditions	Temperature 35°C±2°C	Duration of test 48 hours
	NaCl 5％	

4.Humidity Test			
Conditions:	Temperature:+40°C+/-2°C	Relative humidity:90~95％	Duration of test:96 hours
Results:	Insulation resistance must be 500Mohm/100 minimum Vdc.		
	Resistance and wave form must remain within specification		

5.Fine Leak Test	
Conditions:	Helium
Results:	Less than 2×10-8 Atm cc/sec

Mechanical Specification Sheet

1.Lead Solderability Test	
Conditions:	Dipping in solder(230°C+/-5°C) for 5 seconds
Results:	More than 95％ of surface being tested should be coated uniformly with solder.

2.Vibration Test		
Conditions:	Frequency	10-55 Hz
	Amplitude	0.762 mm
	Sweep	1.0 minute
	Duration	2 hours
Results:	Performance form of tested products must remain within specifications.	

3.Drop Test		
Conditions:	Method of drop	Free drop
	Dropping floor	Hard wood board
	Height	75 cm
	Number of drops	3 times
Results:	Frequency and wave form of tested products must remain within specifications.	

4.Terminal Strength		
*lead Pulling Test		
Conditions:	Load	907.2gram
	Direction	To the downward
	Duration of	5 seconds
Results:	There should be no distortion in appearance	
*Lead Bending Test		
Conditions:	Load	453.6 gram
	Direction	90 ℃ to normal position
	Duration of	3 seconds in each cycle
Results:	There should be no distortion in appearance	

Notice :

1 Upon approved , please sign on the first page and return the whole document back to Mercury .

2．Any change to these specification have to be agreed by both parties and new revision of the specification will be issued .

SDR02.02A-01