Part No.: MXO11AAF3-27.000MHz		Date: Sep 09, 2005

1. Application Range

This specification is applied to crystal clock oscillator which is used for computer and it's peripheral

2. Electrical characteristics

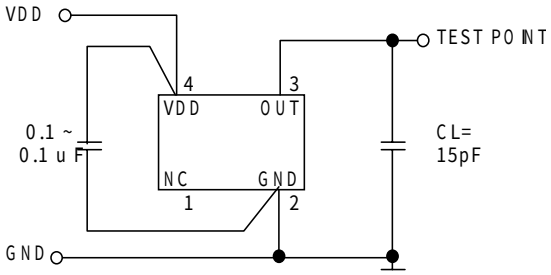
- Application: These units consist of a metal plated AT-Cut quartz crystal, mounted in a resistance welded metal holder, provided with 4 connecting leads.

- Requirements

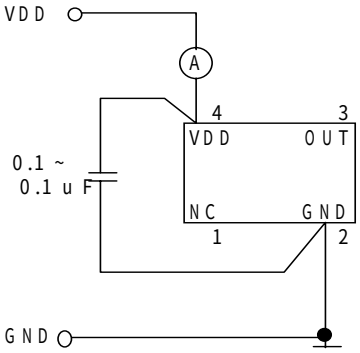
a) Nominal Frequency (标称频率) : 27.000MHz
b) Type（封装尺寸） : Full Size
c) Frequency Stability（频率稳定度）: +/-50PPM
d) Operating Temperature Range （工作温度范围） : 0 ℃ ~ +70 ℃
e) Storage Temperature（储存温度）: - 40 ℃ ~ + 85 ℃
f) Supply Voltage（输入电压） : 3.3V +/-10%
g) Input Current（输入电流） : 30mA Max
h) Output Wave Form（输出波形） : TTL/CMOS SQUARE WAVE（方波）
i) Rise & Fall Time（上升,下降时间） : 10 ns Max
j) "0" level ("0"电平) : 0.33V Max
k) "1" level ("1"电平) : 2.97V Min
l) Symmetry（占空比） : 45:55 % to 55:45%
m) Output load（负载） : 15pF or 10TTL

3. TEST CIRCUIT

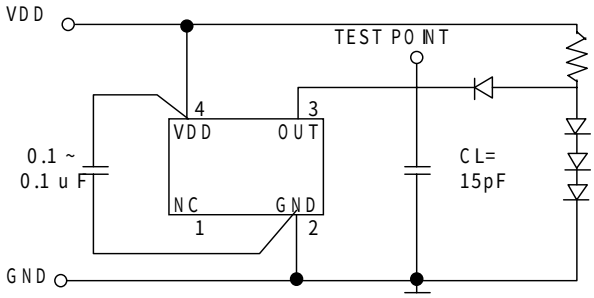
[CMOS LOAD] (15Pf)



[SUPPLY CURRENT]



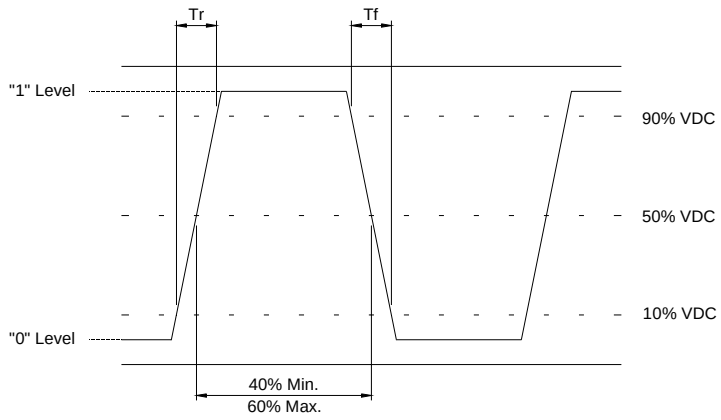
[TTL LOAD] (10TTL)



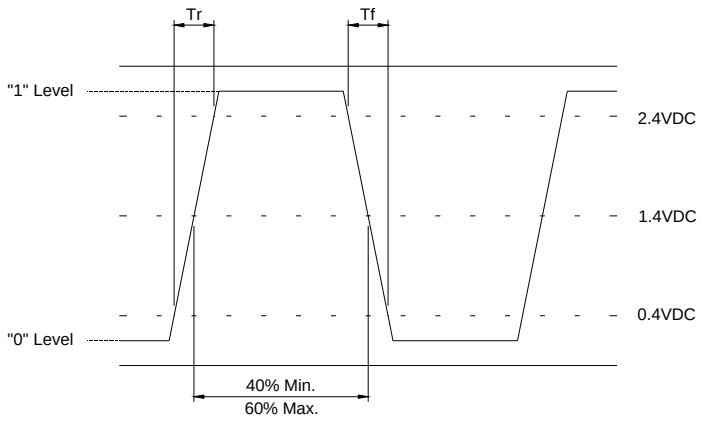
[MEASUREMENT CONDITION]

1. Oscilloscope
   Impedance: No less than IMΩ
   Capacitance: No more than 15 pF
   Band width: No less than 400MHz
   The length of GND lead of the probe should be as short as possible.
2. The CL includes the probe capacitance.
3. Grounding should be single-point grounding.
4. Supply impedance should be as low as possible.
   0.4V ⟶ 2.4V rise time is No less than 150μs
5. Use the ammeter that internal impedance is small.

4. Output waveform

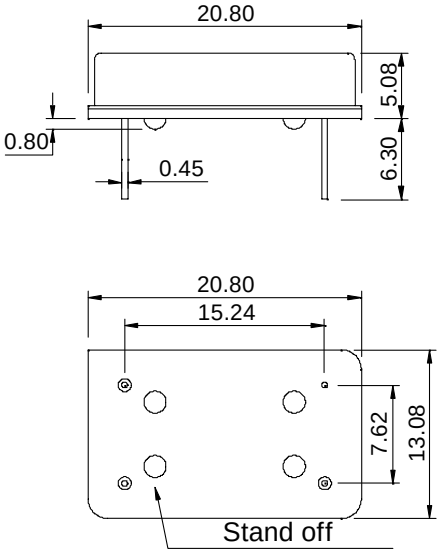


< CMOS Waveform >



< TTL Waveform >

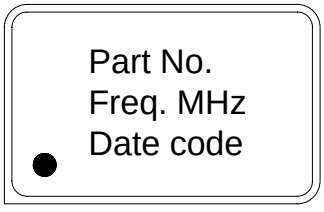
5. Dimension & Marking



< 14 PIN DIP >

PIN	CONNECTION
# 1	N/C
# 7	Ground
# 8	Output
# 14	Vdc

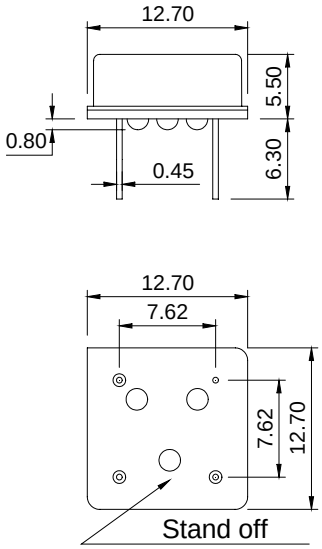
< PIN CONFIGURATION >



Line 1 : Part No.

Line 2 : Frequency

Line 3 : Vendor & Date code



< 8 PIN DIP >

PIN	CONNECTION
# 1	N/C
# 4	Ground
# 5	Output
# 8	Vdc

< PIN CONFIGURATION >

Line 1 : Part No.

Line 2 : Frequency

Line 3 : Vendor & Date code

6. Reliability test

Item	Test method & condition	Judgments
1. Temperature cycle	1. Cycle with following condition -40℃ to ＋85℃ (No Bias) 30min ~ 30min = 1 Hour / 1 Cycle 2. Measurement should be performed after putting in room temperature over 1 hour.	Electrical characteristics Satisfy the specifications.
2. Temperature humidity	1.Temperature : +40℃ ±2℃ Humidity : 90%~95% 2. Time : 96hours	Electrical characteristics Satisfy the specifications
3. Low temp. storage	1.Temperature : -20℃ ±2℃ 2. Time : 96hours	Electrical characteristics Satisfy the specifications
4. High temp. storage	1.Temperature : +85℃ ±2℃ 2. Time : 96hours	Electrical characteristics Satisfy the specifications
5. Operating Reliability HTOL with Bias	1. Temperature : +60℃ ±2℃ 2. Time : 1000hours or unless otherwise stated. Readings shall be taken at interval 96, 500 & 1000 hours.	Electrical characteristics Satisfy the specifications
6. Drop	1. Free drop from 30Cm height on a hard wooden board for 3 times	Electrical characteristics Satisfy the specifications
7. Sealing	1. Into water evaporation bath +90℃ for 30 minutes	Electrical characteristics Satisfy the specifications
8. Resistance to solder heat	1. Into solder bath +245℃ for 10sec.	Electrical characteristics Satisfy the specifications
9. Terminal strength	1. Pulling a terminal 900g weights for 5sec.	No defect for lead
10. Solder ability	1. Dip into solder bath +230 ±5℃ for 5sec.	90% of the dipped terminal is soldered.

7. Notes

A. Handling

Electrostatic discharges

This device is made with CMOS circuitry.
Please take precautions to prevent damage due to electrical discharge.

Shock reliability

This device contains a quartz crystal, so please do not give too much shock or vibration.
An automatic inversion is available, however, the internal quartz crystal might be damaged in case that too much shock or vibration is given by machine condition.
Be sure to check your machine condition in advance.

Cleaning

Since, depending the cleaning conditions, there is a possibility of damage being caused to the Crystal Oscillator, do not fail to test and confirm the results beforehand, using your company's cleaning conditions.

Temperature and humidity

We recommend storing and using device under normal temperature and humidity.
When this device if used in high humidity applications, there is a potential problem with condensation.
As with other IC's, please take precautions to prevent condensation.

B. Circuit Designs

Power lines

We recommend placing a 0.01 to 0.1μF capacitor between Vdc and GND to obtain stable operation and protect against power line ripple.
Vdc and GND pattern should be as wide as possible.

Output line

As a long output line may cause irregular output, please take care to design that output line is as short as possible, and also keep high level signal source away from this device.