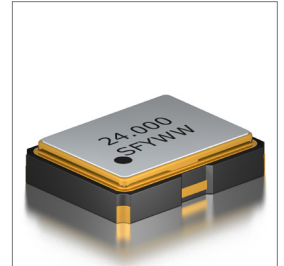
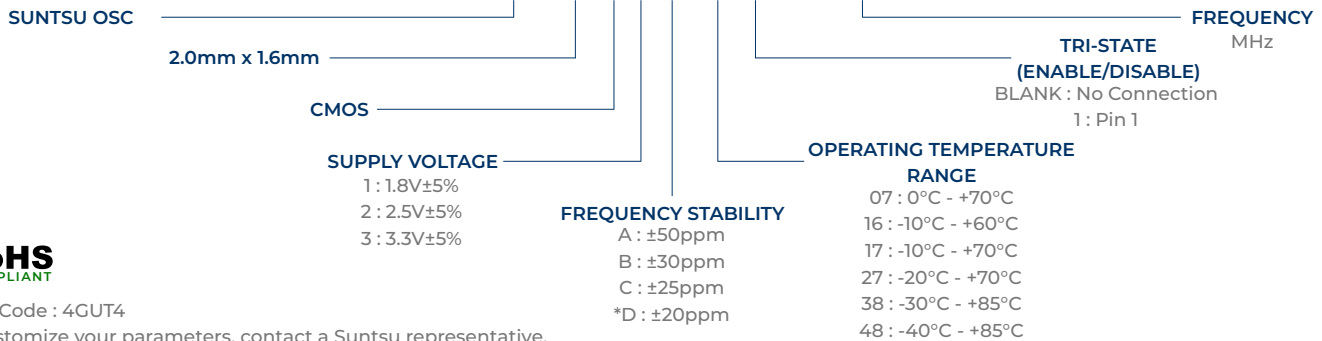


Features
<ul style="list-style-type: none"> <li>±20ppm (Frequency Stability) Available</li> <li>Ceramic Package</li> <li>CMOS</li> <li>Tape and Reel</li> </ul>

Applications
<ul style="list-style-type: none"> <li>Mobile Communication</li> <li>Portable Electronics</li> <li>PDA</li> </ul>


**Part Numbering Guide**
**SXO 21 C 3 A 48 1 - 24.000M**


Cage Code : 4GUT4

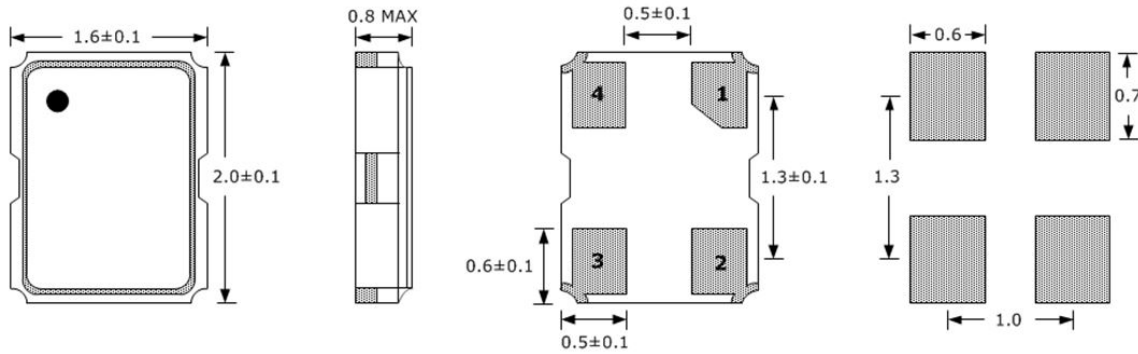
To customize your parameters, contact a Suntsu representative.

\* For Frequency stability option D, contact a Suntsu representative.

Electrical Parameters	Units	Minimum	Typical	Maximum	Remarks
Frequency Range	KHz	22.000	32.768	87.000	
Frequency Range	MHz	1		60	
Frequency Stability (Includes Initial Tolerance at 25°C, Frequency Stability over Operating Temperature, Output Load Change, Supply Voltage Change, and First Year Aging at 25°C.)	ppm	-20		+20	See part numbering guide for options
Operating Temperature	°C	-40		+85	See part numbering guide for options
Storage Temperature	°C	-55		+125	
Supply Voltage (V <sub>DD</sub> ) - 1.8V option	V	1.710	1.8	1.890	
Supply Voltage (V <sub>DD</sub> ) - 2.5V option	V	2.375	2.5	2.625	
Supply Voltage (V <sub>DD</sub> ) - 3.3V option	V	3.135	3.3	3.465	
Current (I <sub>DD</sub> ) - 1.8V option	mA			10	240µA max. from 22.000kHz to 87.000kHz
Current (I <sub>DD</sub> ) - 2.5V option	mA			10	240µA max. from 22.000kHz to 87.000kHz
Current (I <sub>DD</sub> ) - 3.3V option	mA			15	240µA max. from 22.000kHz to 87.000kHz
Standby Current	µA			10	From 22.000kHz to 87.000kHz
Output Load (CMOS)	pF			15	
Output Logic Levels High (V <sub>OH</sub> )	V	0.9*V <sub>DD</sub>			V <sub>DD</sub> -0.4 min. from 22.000kHz to 87.000kHz
Output Logic Levels Low (V <sub>OL</sub> )	V			0.1*V <sub>DD</sub>	0.4 max. from 22.000kHz to 87.000kHz
Rise (TR) and Fall (TF) Time	ns			10	200ns max. from 22.000kHz to 87.000kHz
Symmetry (Duty Cycle)	%	45	50	55	
Tri-State Input Voltage - Enable	V	0.7*V <sub>DD</sub>			No Connection
Tri-State Input Voltage - Disable	V			0.3*V <sub>DD</sub>	
Start-Up Time	ms			10	5ms max. from 22.000kHz to 87.000kHz
Phase Jitter (12kHz ~ 20MHz)	ps			1	N/A from 22.000kHz to 87.000kHz

**Outline Drawing & Land Pattern**

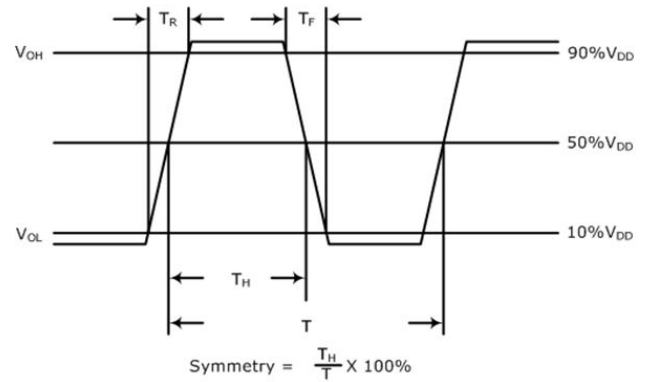
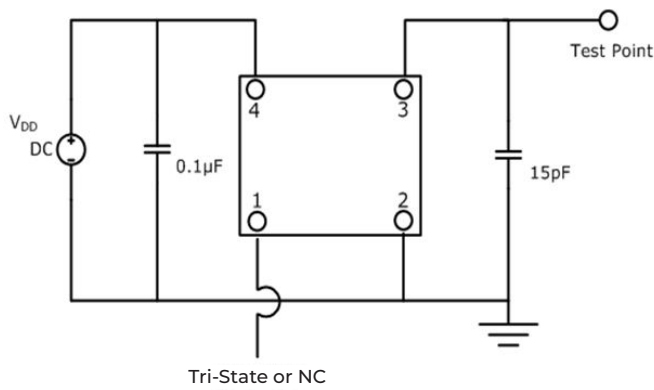
All dimensions are in millimeters (mm) unless otherwise noted. Drawings are not to scale.



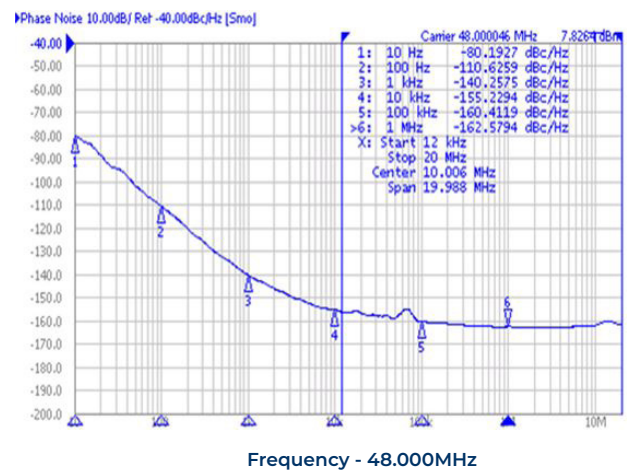
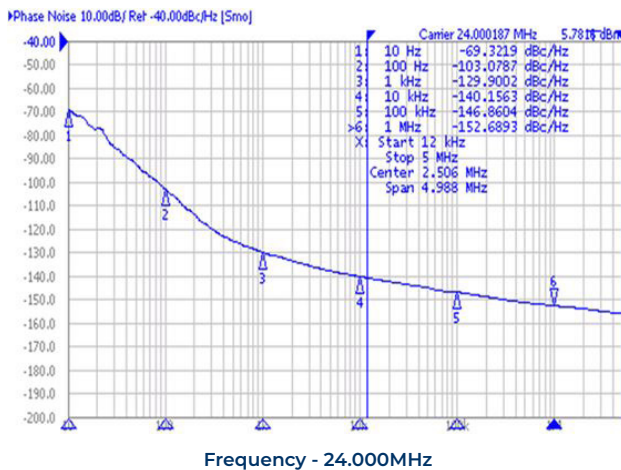
PIN	FUNCTION
1	TRI-STATE or NC
2	GND
3	OUTPUT
4	V <sub>DD</sub>

**Test Circuit (CMOS)**

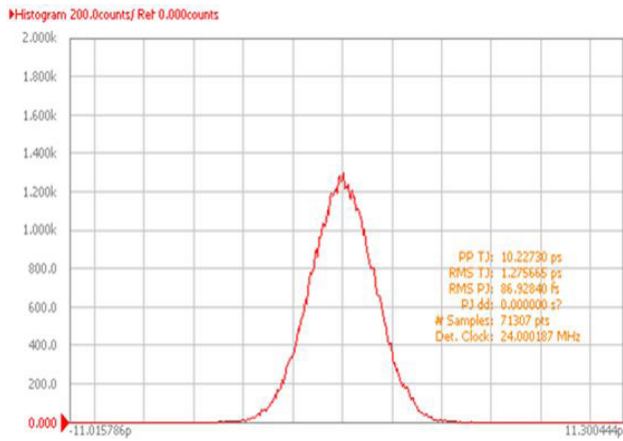
**Waveform (CMOS)**



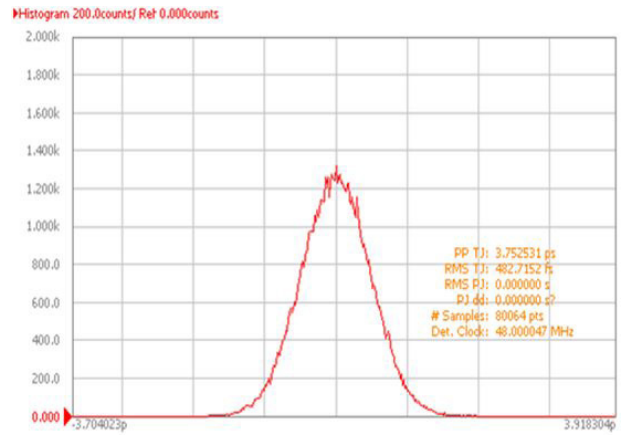
**Typical Phase Noise Performance (Measured By Agilent E5052A)**



Typical Jitter Performance (Measured By Agilent E5052A)

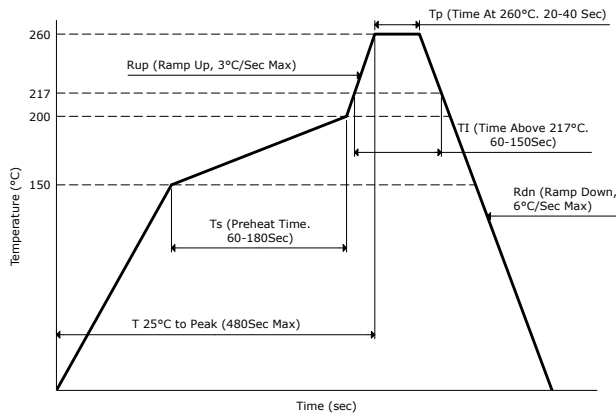


Frequency - 24.000MHz

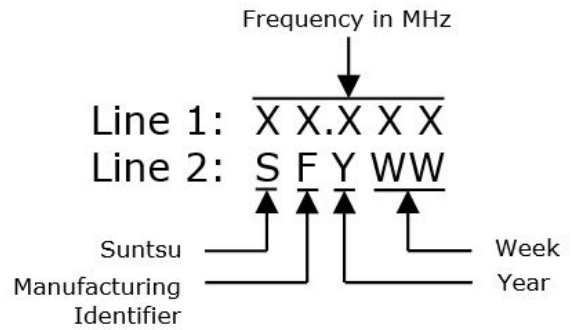


Frequency - 48.000MHz

Reflow Profile



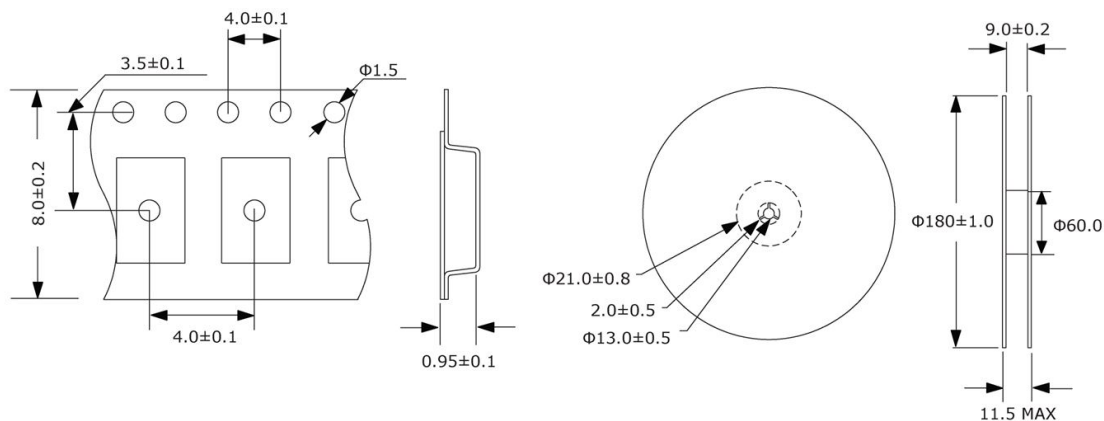
Part Marking



Tape And Reel Dimensions

All dimensions are in millimeters (mm) unless otherwise noted. Drawings are not to scale.

3,000pcs/Reel



Environmental Specifications		Mechanical Specifications	
Temperature Cycling	MIL-STD-883, Method 1010, Condition B	Mechanical Shock	MIL-STD-202, Method 213, Condition B
Fine Leak Test	MIL-STD-883, Method 1014, Condition A	Vibration	MIL-STD-883, Method 2007, Condition A
Gross Leak Test	MIL-STD-883, Method 1014, Condition C	Moisture Resistance	MIL-STD-883, Method 1004
Solderability	MIL-STD-883, Method 2003	Resistance to Solvents	MIL-STD-202, Method 215
Moisture Sensitivity	J-STD-020, MSL 1	Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition K