

### Frequency Selectable Differential Sine Wave SY-A6A70 Series

#### Description

The **SY-A6A70 Series** of quartz crystal oscillators provides a Frequency Selectable Differential Sine Wave signal. The oscillator frequency is set by the voltage applied to the frequency select pin. The two selectable frequencies can be any discrete frequency selected within the range listed below. This device is to operate using positive voltage and uses multiple ground pins for improved signal integrity.

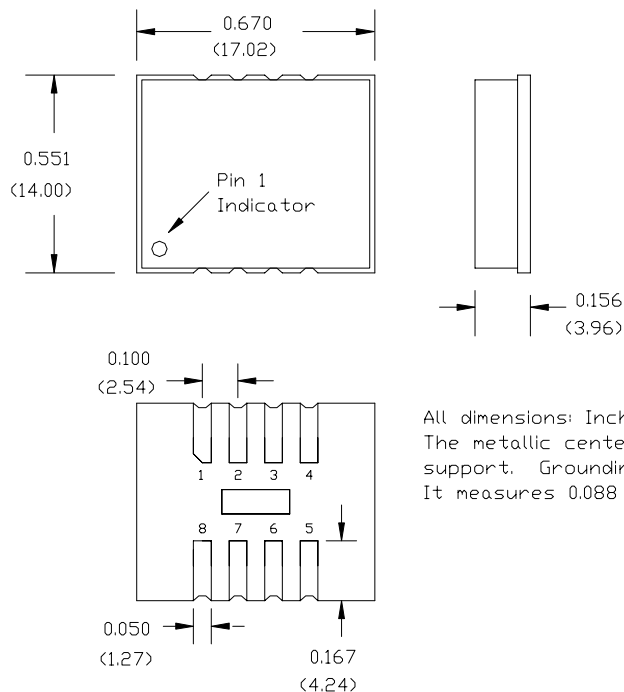
#### Features

- Wide frequency range - 250MHz to 1.7GHz
- User specified tolerance from  $\pm 20$ ppm
- Will withstand SMD reflow temperatures of 183°C for 4 minutes maximum
- High shock resistance, to 1000g
- Low Jitter
  - Wavecrest jitter characterization available
- Low Phase Noise of -135dB
  - Phase Noise characterization available
- High Reliability - NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Overtone technology
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- Cover connected to ground
- No internal PLL avoids cascading PLL problems
- High frequencies due to proprietary design

#### Electrical Connection

Pin Connection

- |   |                  |
|---|------------------|
| 1 | V <sub>CC</sub>  |
| 2 | Ground           |
| 3 | NC or Ground     |
| 4 | Q Output         |
| 5 | /Q Output        |
| 6 | Ground           |
| 7 | Frequency Select |
| 8 | Enable           |



All dimensions: Inches (mm)  
The metallic center pad is for mechanical support. Grounding of this pad is optional. It measures 0.088 x 0.190 (2.24 x 4.83).

### SY-A6A70 Series Continued Frequency Selectable Differential Sine Wave

### Operating Conditions and Output Characteristics

#### Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency1	----	----	250.0MHz	----	1.7GHz
Frequency2	----	----	250.0MHz	----	1.7GHz
Harmonic Spurious	----	----	----	-25dBc	-20dBc
Nonharmonic Spurious	----	----	----	----	-60dBc
Output Voltage	V <sub>P-P</sub>	----	0.60V	0.85V	----
Jitter, RMS <sup>(1)</sup>	----	----	----	0.3 psec	0.5 psec
Enable Voltage	----	----	0.7V <sub>CC</sub>	----	----
Disable Voltage	----	----	----	----	0.3V <sub>CC</sub>
Freq1 Select Voltage	----	----	0.7V <sub>CC</sub>	----	----
Freq2 Select Voltage	----	----	----	----	0.3V <sub>CC</sub>
Frequency Stability	dF/F	Overall conditions including: voltage, calibration, temp., 10 yr aging, shock, vibration	-100ppm	----	+100ppm
Phase Noise	----	@10kHz	----	----	-130 dBc/Hz
	----	@100kHz	----	----	-130 dBc/Hz
	----	@1MHz	----	----	-135 dBc/Hz
	----	@10MHz	----	----	-135 dBc/Hz

#### General Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	V <sub>CC</sub>	3.3V±5%	3.135V	3.3V	3.465V
Supply Current	I <sub>CC</sub>	50 ohm termination	0.0 mA	85mA	100 mA
Output current	I <sub>O</sub>	Low level Output Current	0.0 mA	----	±50.0 mA
Operating temperature	T <sub>A</sub>	----	-40°C	----	85°C
Storage temperature	T <sub>S</sub>	----	-55°C	----	125°C
Lead temperature	T <sub>L</sub>	Soldering, 10 sec.	----	----	300°C
Load <sup>(2)</sup>	50 Ohm termination	----	----	----	----
Start-up time	t <sub>S</sub>	----	----	2 ms	10 ms

#### Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-833, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Soldering Condition	300°C for 10 seconds

#### Footnotes:

- Jitter performance is frequency dependent. Please contact factory for full Aeroflex characterization. RMS jitter bandwidth of 12kHz to 20MHz.
- Internally AC coupled output

Creating a Part Number	
<b>SY - A6A7X - FREQ</b>	
<b>Package Code</b>	<b>Tolerance/Performance</b>
SY 8 pad 14x17mm SMD	0 ±100ppm 0-70°C
	1 ±50ppm 0-70°C
	7 ±25ppm 0-70°C
<b>Input Voltage</b>	9 Customer Specific
Code Specification	A ±20ppm 0-70°C
A 3.3V	B ±50ppm -40 to +85°C
B 2.5V	C ±100ppm -40 to +85°C

