

# Programmable - High Performance SMD XO & VCXO

## ASG-P Series

**Moisture Sensitivity Level (MSL) - This product is Hermetically Sealed and not Moisture Sensitive; therefore MSL = N/A (Not Applicable)**



**RoHS**  
Compliant



7.0 x 5.0 x 1.9mm

### FEATURES:

- ASG series is a High Performance crystal based oscillator; available either as an XO or a VCXO
- Frequency range from 10MHz to 250MHz with LVCMOS output
- Available from 10MHz to 1.50GHz with LVDS or LVPECL output
- Offered with either 2.50V or 3.30V bias voltage
- Quick turn, 1~5 business days for small quantity orders

### APPLICATIONS:

- Networking, SONET/SDH
- WiMax / WLAN
- Computing
- Phase Locked Loops
- Direct Digital Synthesis (DDS)
- DSL/ADSL
- Base Terminal Stations

### STANDARD SPECIFICATIONS:

| Parameters                                                |                                     | Minimum                                                                                                                    | Typical  | Maximum                | Units | Notes                  |
|-----------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------|------------------------|-------|------------------------|
| Frequency Range:                                          | V <sub>dd</sub> = 3.3V              | 10                                                                                                                         |          | 1500                   | MHz   |                        |
|                                                           | V <sub>dd</sub> = 2.5V              | 10                                                                                                                         |          | 1500                   | MHz   |                        |
| Operating Temperature:                                    |                                     | -40                                                                                                                        |          | +85                    | °C    |                        |
| Storage Temperature:                                      |                                     | -55                                                                                                                        |          | +125                   | °C    |                        |
| Overall Frequency Stability:                              |                                     | -50                                                                                                                        |          | +50                    | ppm   | See Note # 1           |
| Initial Set Tolerance                                     |                                     | -5.00                                                                                                                      | ≤ ±1.00  | +5.00                  | ppm   |                        |
| Stability over operating temperature                      |                                     | -35.00                                                                                                                     | ≤ ±20.00 | +35.00                 | ppm   |                        |
| Aging @ 25°C over 10-years                                |                                     | -7.00                                                                                                                      |          | +7.00                  | ppm   |                        |
| Frequency variation over supply voltage change (±5%)      |                                     | -2.00                                                                                                                      |          | +2.00                  | ppm   |                        |
| Frequency variation over load variation (15pF ± 5%)       |                                     | -1.00                                                                                                                      |          | +1.00                  | ppm   |                        |
| Supply Voltage (V <sub>dd</sub> ):                        | V <sub>dd</sub> = 3.3V              | 3.135                                                                                                                      | 3.300    | 3.465                  | V     |                        |
|                                                           | V <sub>dd</sub> = 2.5V              | 2.375                                                                                                                      | 2.500    | 2.625                  | V     |                        |
| Input Current:                                            | V <sub>dd</sub> = 3.3V              |                                                                                                                            | < 54     | 60                     | mA    | Frequency dependent    |
|                                                           | V <sub>dd</sub> = 2.5V              |                                                                                                                            | < 50     | 60                     | mA    | Frequency dependent    |
| LVPECL Output (Out & $\overline{\text{Out}}$ ):           | Output High Voltage V <sub>OH</sub> | V <sub>dd</sub> - 1.03                                                                                                     |          | V <sub>dd</sub> - 0.60 | V     | V <sub>OH</sub>        |
|                                                           | Output Low Voltage V <sub>OL</sub>  | V <sub>dd</sub> - 1.85                                                                                                     |          | V <sub>dd</sub> - 1.60 | V     | V <sub>OL</sub>        |
|                                                           | Differential Duty Cycle             | 45                                                                                                                         | 48/52    | 55                     | %     | DODC <sub>LVPECL</sub> |
|                                                           | Rise Time                           | 150                                                                                                                        |          | 350                    | ps    | t <sub>R</sub>         |
|                                                           | Fall Time                           | 150                                                                                                                        |          | 350                    | ps    | t <sub>F</sub>         |
| Start-up Time:                                            |                                     |                                                                                                                            | ≤ 2.0    | 3.0                    | ms    |                        |
| Enable/Disable Function :                                 |                                     | "1" (V <sub>IH</sub> ≥ 0.7*V <sub>dd</sub> ) or Open: Oscillation<br>"0" (V <sub>IL</sub> < 0.3*V <sub>dd</sub> ) : High Z |          |                        |       |                        |
| V <sub>control</sub> Range                                |                                     | 0.00                                                                                                                       |          | V <sub>dd</sub>        | Volts | For VCXO               |
| Frequency Pull                                            |                                     | ±50                                                                                                                        |          |                        | ppm   |                        |
| Control Port Bandwidth                                    |                                     | 10                                                                                                                         |          |                        | kHz   |                        |
| Phase jitter RMS [ t <sub>jitt</sub> ( ) ]<br>See Note #2 | Integer Mode                        |                                                                                                                            | < 0.60   | 1.60                   | ps    | 12kHz to 20MHz         |
|                                                           | Fractional Mode                     |                                                                                                                            | < 0.90   | 1.60                   | ps    | 12kHz to 20MHz         |

**Note #1:** Inclusive of initial tolerance at 25°C±3°C, operating temperature range, input voltage variation, load variation & aging.

**Note #2:** The rms jitter over 12kHz to 20MHz Bandwidth is dependent on the carrier and whether or not the final frequency is achieved without engaging the Fractional Mode

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ASG-P Series

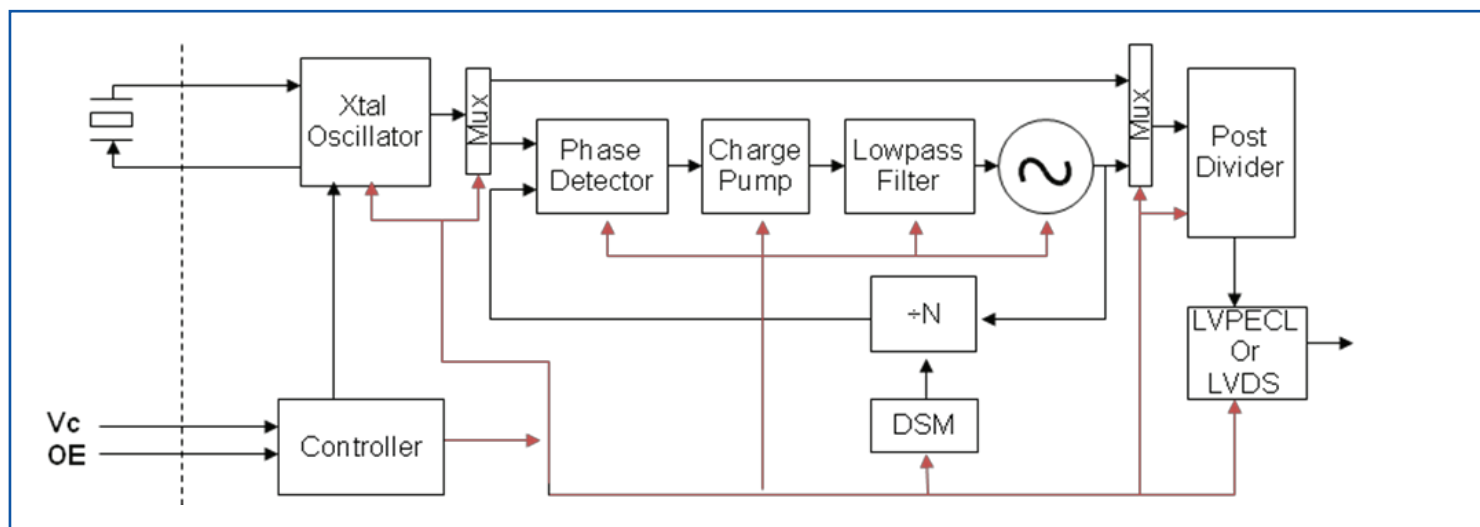


RoHS  
Compliant



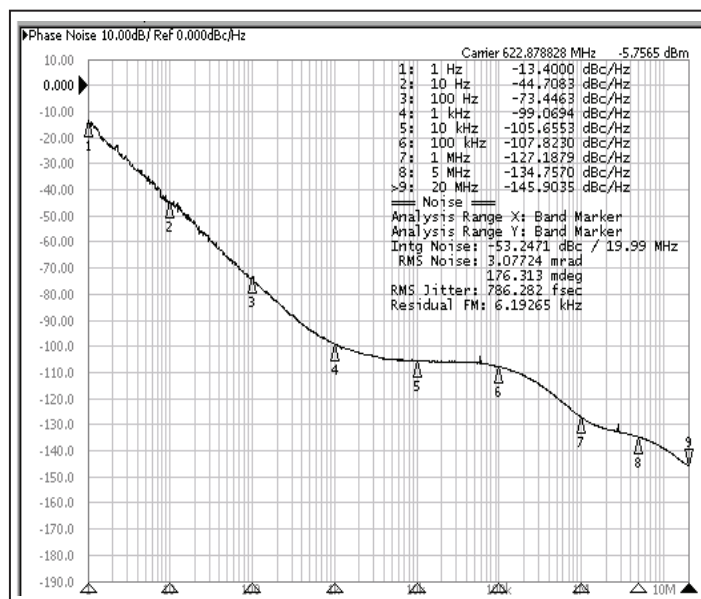
7.0 x 5.0 x 1.9mm

## OVERALL SYSTEM BLOCK DIAGRAM

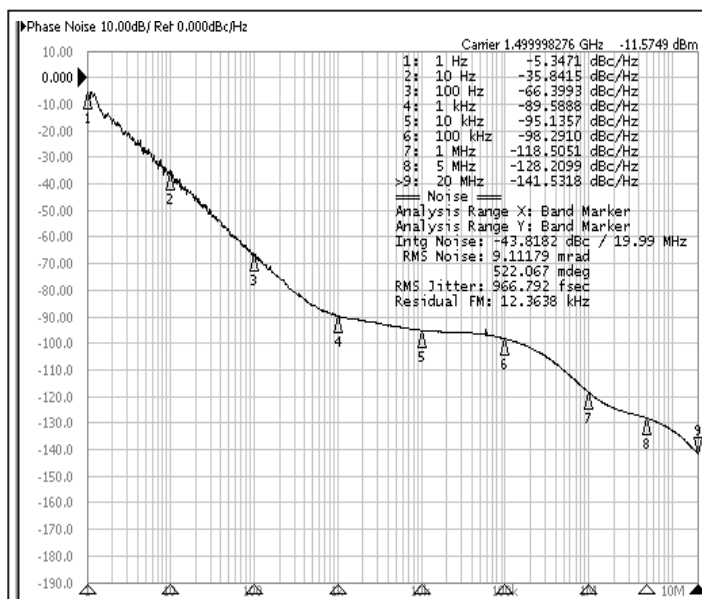


## PHASE NOISE & JITTER CHARACTERISTICS

622.88MHz Carrier



1.50GHz Carrier



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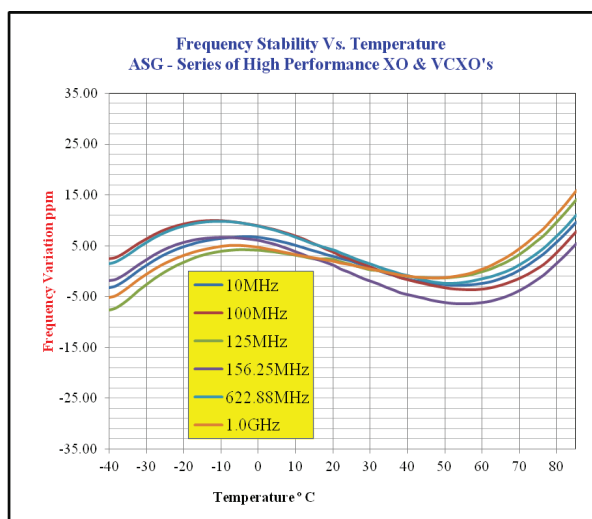


RoHS  
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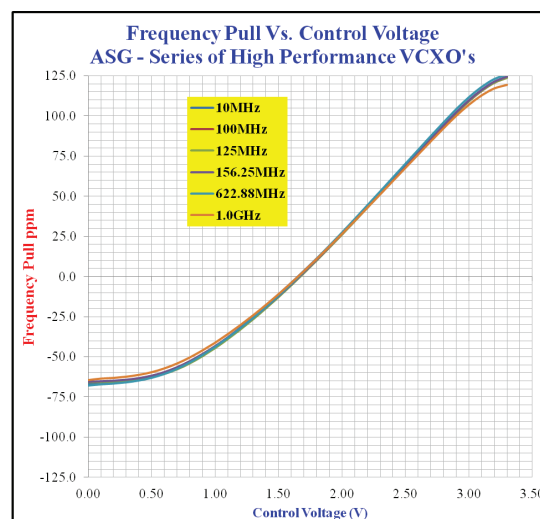


7.0 x 5.0 x 1.9mm

## FREQUENCY STABILITY VS. TEMPERATURE



## FREQUENCY PULLING VS. CONTROL VOLTAGE (VCXO MODE)



## PART IDENTIFICATION:

ASG - P -  -  -  MHz -

### Fixed or Pull-able

X = Fixed Oscillator

V = VCXO

### Operating Voltage

3.30V = A

2.50V = B

### Frequency in MHz

Please specify the  
Frequency in MHz  
e.g. 100.000 MHz

### Packaging

Blank = Bulk

T = Tape & Reel

## MARKING:

Top Line:

Bottom Line:

Pin# 1 Identifier

ASG  
GYWW

WW = Work Week

Year Code (B=2011, C=2012, etc.)

Internal Tracking Code

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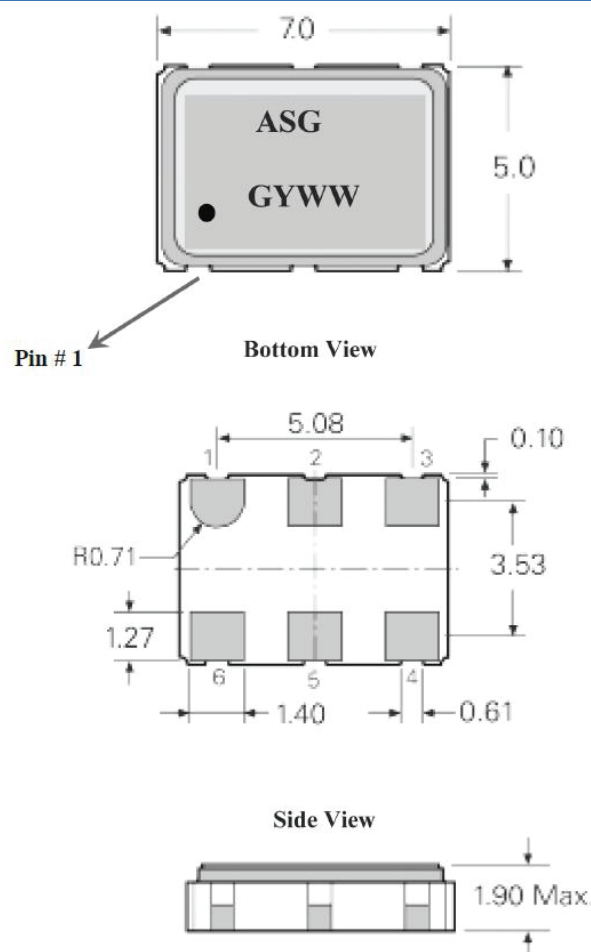


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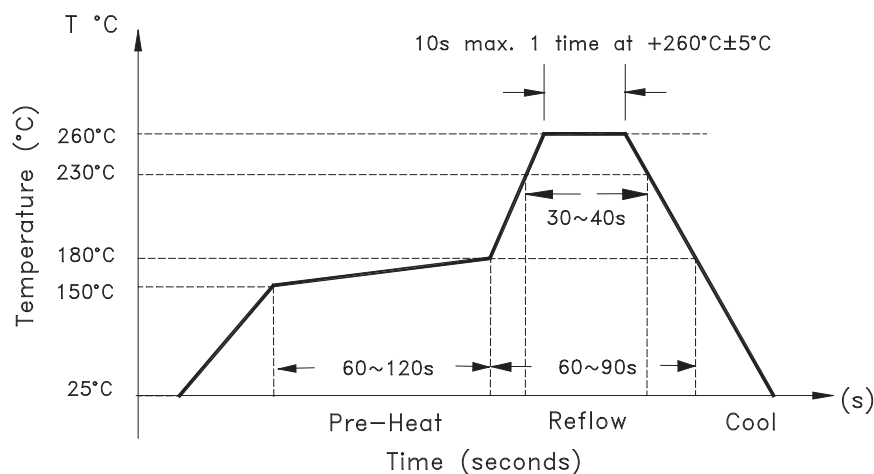
## OUTLINE DIMENSIONS:

| Pin # | Pin Description<br>For VCXO configuration |
|-------|-------------------------------------------|
| 1     | Voltage Control for VCXO                  |
| 2     | Output Enable (OE)                        |
| 3     | GND                                       |
| 4     | RF Output                                 |
| 5     | RF <i>Output</i>                          |
| 6     | Vdd                                       |

| Pin # | Pin Description<br>For XO configuration |
|-------|-----------------------------------------|
| 1     | Output Enable (OE)                      |
| 2     | N/C for XO                              |
| 3     | GND                                     |
| 4     | RF Output                               |
| 5     | RF <i>Output</i>                        |
| 6     | Vdd                                     |



## REFLOW PROFILE:



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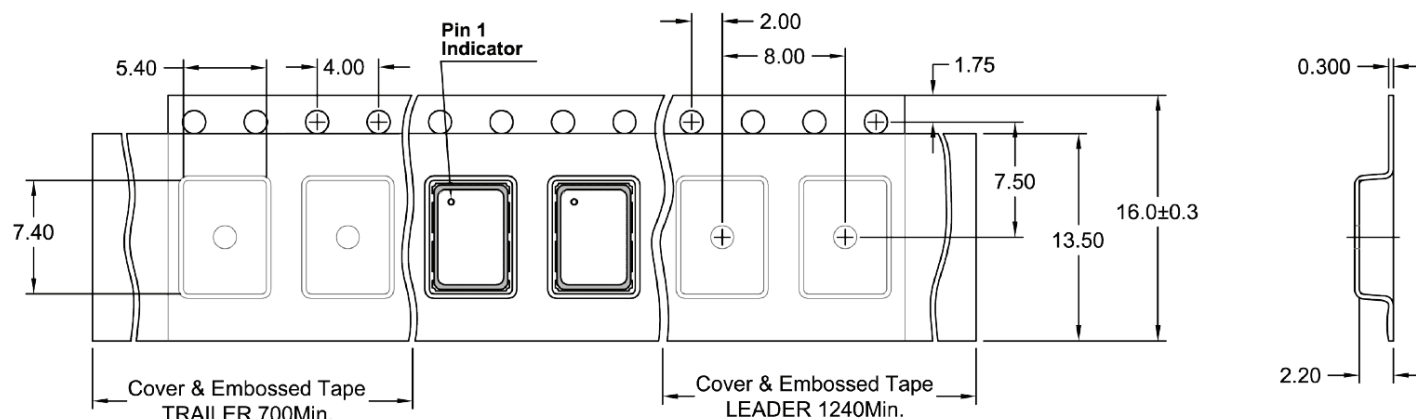


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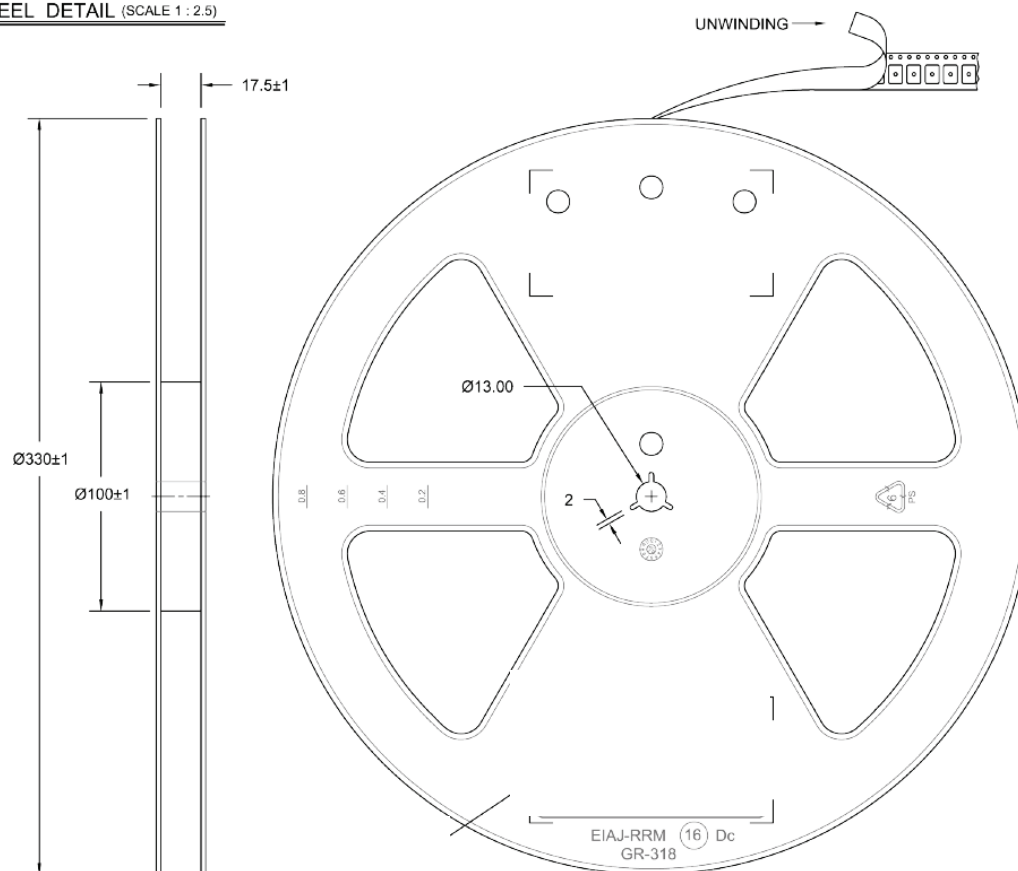
## TAPE & REEL:

**T= Tape and reel (2,000pcs/reel)**

TAPE DETAIL (SCALE 2 : 1)



**REEL DETAIL (SCALE 1 : 2.5)**



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