

# Programmable - High Performance SMD Crystal Oscillator

ASG-C 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 2.0mm

## 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                     | 250                    | MHz   |                      |                |
|   | V <sub>dd</sub> = 2.5V   | 10                     | 250                    | MHz   |                      |                |
| Operating Temperature:  | -40  |                        | +85                    | °C    |                      |                |
| Storage Temperature:  | -55  |                        | +125                   | °C    |                      |                |
| Overall Frequency Stability:                                    | -50  |                        | +50                    | ppm   | <i>See Note # 1</i>  |                |
| 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   |                        | 45                     | mA    | Frequency dependent  |                |
|   | V <sub>dd</sub> = 2.5V   |                        | 35                     | mA    | Frequency dependent  |                |
| Symmetry:   | 48   | 50                     | 52                     | %     | @ 1/2V <sub>dd</sub> |                |
| Rise and Fall Time (Tr/Tf):                                     |  | ≤ 450                  | 1000                   | ps    |                      |                |
| Output Load:  |  |                        | 15                     | pF    | CMOS                 |                |
| Output Voltage:   | VOH  | V <sub>dd</sub> * 0.90 |                        | V     |                      |                |
|   | VOL  |                        | V <sub>dd</sub> * 0.10 | V     |                      |                |
| 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 |                      |                |
| Frequency Pull  | ±50  |                        |                        | ppm   |                      |                |
| Control Port Bandwidth  | 10   |                        |                        | kHz   |                      |                |
| Phase jitter RMS [ t <sub>jitt(φ)</sub> ]<br><i>See Note #2</i> | 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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## OVERALL SYSTEM BLOCK DIAGRAM

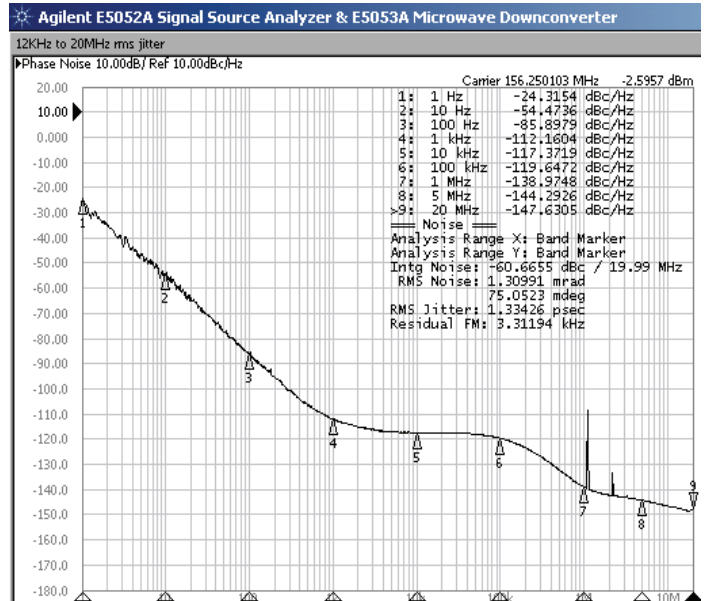


## PHASE NOISE & JITTER CHARACTERISTICS

### 100MHz Carrier



### 156.25MHz Carrier



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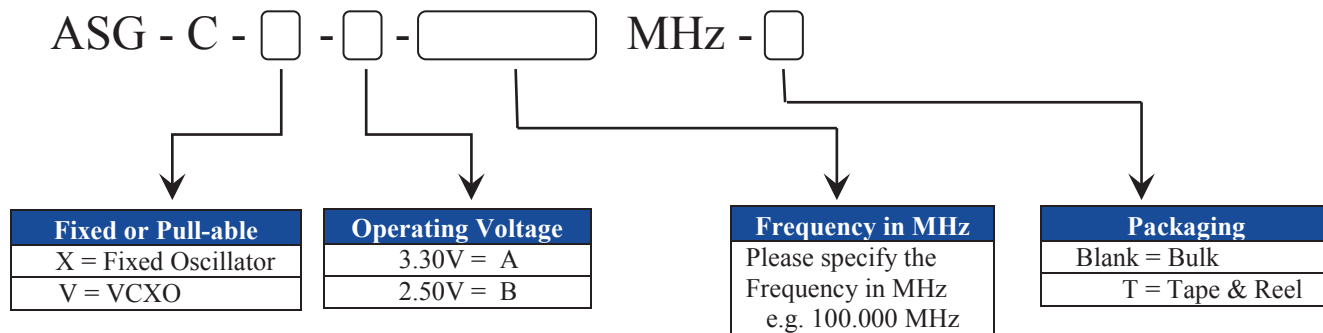
## FREQUENCY STABILITY VS. TEMPERATURE



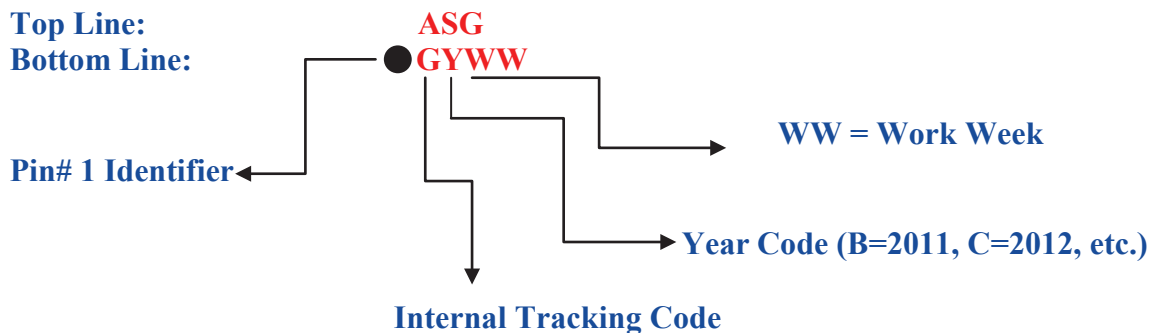
## FREQUENCY PULLING VS. CONTROL VOLTAGE (VCXO MODE)



## PART IDENTIFICATION:



## MARKING:



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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     | N/C                                       |
| 6     | Vdd                                       |

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



## REFLOW PROFILE:



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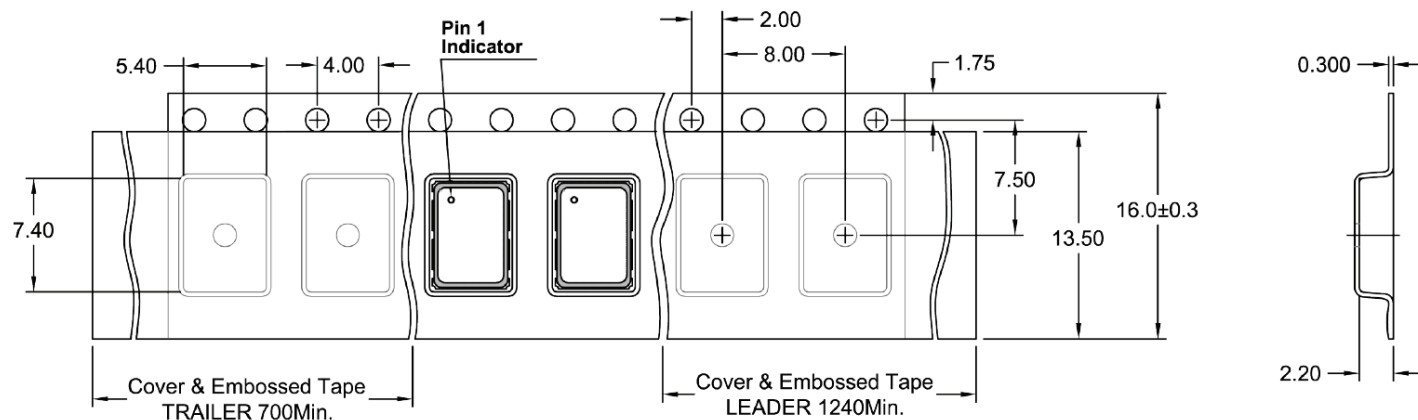


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## TAPE & REEL:

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

### TAPE DETAIL (SCALE 2 : 1)



### REEL DETAIL (SCALE 1 : 2.5)



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Электрон  
Связь**

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