

# 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 "0" (V <sub>IL</sub> < 0.3*V <sub>dd</sub> ) : High Z					
Vcontrol 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> ] <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

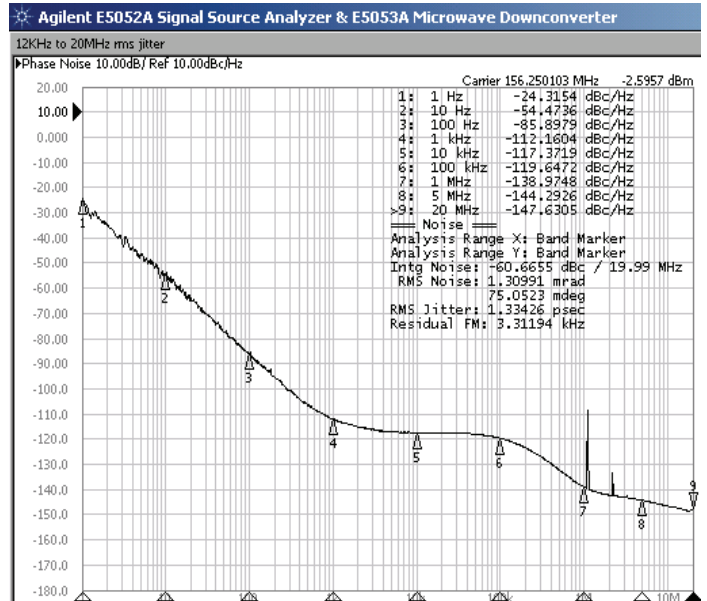


## PHASE NOISE & JITTER CHARACTERISTICS

### 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 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 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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## TAPE & REEL:

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

### TAPE DETAIL (SCALE 2 : 1)



### REEL DETAIL (SCALE 1 : 2.5)



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