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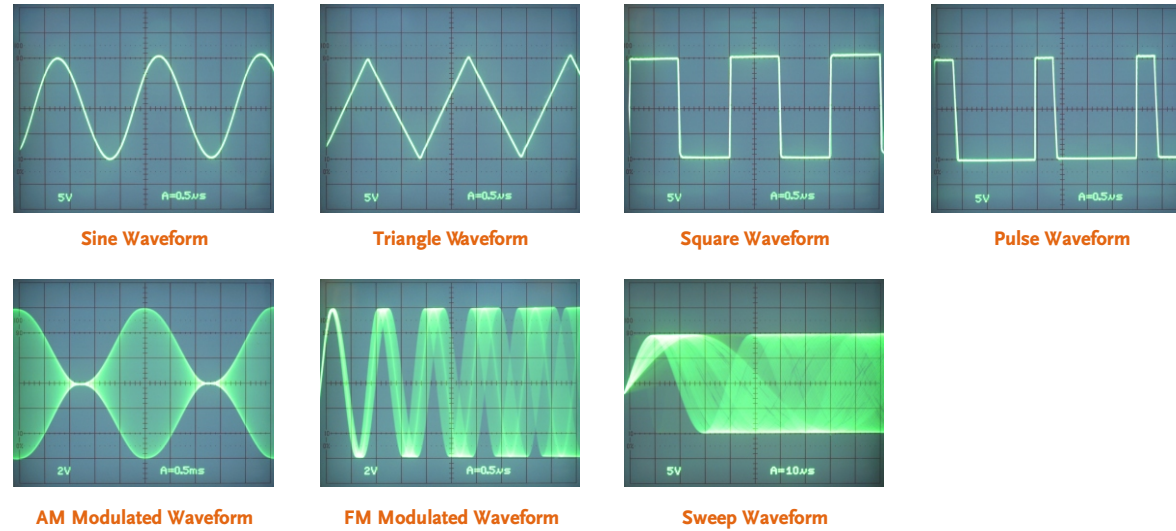
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20MHz/10MHz/7MHz/4MHz DDS FUNCTION GENERATOR

3 MHz DDS FUNCTION GENERATOR

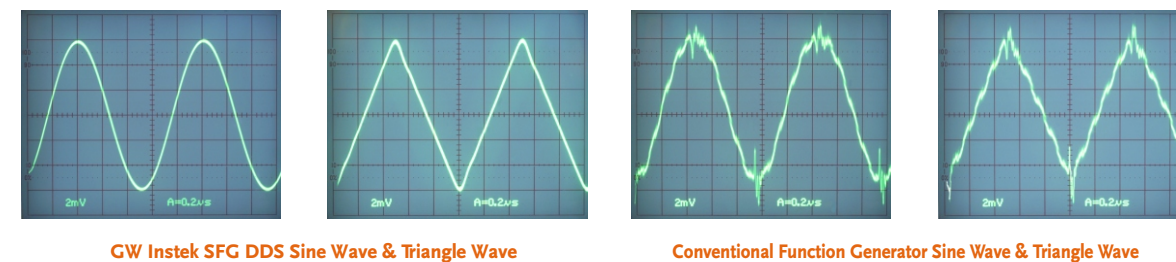
A. OUTPUT WAVEFORM



SFG-2000/2100 Series provides Sine, Triangle and Square waveforms with DC offset and variable duty cycle at ± 20 ppm frequency stability and accuracy. The low drift rate and -55dBc low distortion of the sine wave output significantly extend the application range of the product to various market sectors.

The TTL/CMOS output is also available to fulfill various application requirements in the market. Besides the basic functions, SFG-2100 Series further provides additional functions of AM/FM modulation, sweep mode, and Built-In Frequency Counter.

B. DDS FG VS. CONVENTIONAL FG



The signal of SFG-2000/2100 is generated by continuously delivering a series of sampling values from a sine waveform table (stored in RAM) to DAC (Digital to Analog Converter) for waveform construction. With low pass filter circuit to filter out the harmonics of DAC output and smooth the signal, the SFG-2000/2100 is able to provide a stable output with very low waveform distortion. This is very different from the way a conventional FG generates a signal. As a conventional FG

needs to obtain its signal by switching current sources to go positive and negative directions alternately all the time, the "Ringing" distortion occurs at the peak of the signal waveform when the switching is activated. This distortion is comparatively serious when the output amplitude is low. For SFG-2000/2100 DDS FG, however, the waveform distortion remains low even when the output amplitude is at only 2mV_{pk}.



SFG-1003/1013 (3MHz)

NEW



FEATURES

- * DDS Technology and FPGA Design
- * Frequency Range : 0.1Hz ~ 3MHz
- * High Frequency Accuracy : ± 20 ppm
- * High Frequency Stability : ± 20 ppm
- * Max. Frequency Resolution : 100 mHz
- * Low Distortion Sine Wave : -55dBc, 0.1Hz~200 kHz
- * Voltage Display (Only SFG-1013)

SELECTION GUIDE

MAIN FUNCTION	MODEL	SFG-1003	SFG-1013
Frequency		3 MHz	3 MHz
Offset		✓	✓
TTL Output		✓	✓
-40dB Attenuation		✓	✓
Voltage display		—	✓

SFG-1000 Series, an economic function generator with high accuracy and high stability output, is designed based on the DDS (Direct Digital Synthesized) technology embedded in a large scale FPGA. The frequency range of 3MHz and the output waveform selection of Sine, Square, Triangle and TTL of SFG-1000 Series adequately provide the fundamental features to ensure high confidence for the test results. The DDS technology at an affordable price gives a high value solution to the users who need a signal source for accurate but unsophisticated measurement applications.

SPECIFICATIONS

MAIN	
Output Function	Sine, Square, Triangle, TTL
Frequency Range(For Sine, Square)	0.1Hz ~ 3MHz
Frequency Range(For Triangle)	0.1Hz ~ 1MHz
Resolution	0.1Hz maximum
Stability	± 20 ppm
Accuracy	± 20 ppm
Aging	± 5 ppm/year
Amplitude Range	10Vp-p (into 50 Ω load)
Amplitude Accuracy	$\pm 20\%$ at maximum position (only SFG-1013)
Impedance	50 $\Omega \pm 10\%$
Attenuator	-40dB ± 1 dBx1
DC Offset	<-5V ~ >5V (into 50 Ω load)
Duty Control Range	25% ~ 75% below 1MHz (for square wave only)
Display	6-digit LED display
Output Control	ON/OFF selector
SINE WAVE	
Harmonics Distortion	From Amplitude control at maximum position without any attenuation to its 1/10 of any combination setting, TTL OFF ≥ -55 dBc, 0.1Hz ~ 200kHz ≥ -40 dBc, 0.2MHz ~ 2MHz ≥ -35 dBc, 2MHz ~ 3MHz $< \pm 0.3$ dB, 0.1Hz ~ 1MHz $< \pm 0.5$ dB, 1MHz ~ 2MHz $< \pm 1$ dB, 2MHz ~ 3MHz
Flatness (at maximum amplitude relative to 1kHz)	$< \pm 0.5$ dB, 1MHz ~ 2MHz $< \pm 1$ dB, 2MHz ~ 3MHz
TRIANGLE WAVE	
Linear	$\geq 98\%$, 0.1Hz ~ 100kHz ; $\geq 95\%$, 100kHz ~ 1MHz
SQUARE WAVE	
Symmetry	5% of period+4ns, 0.1Hz ~ 100kHz
Rise or Fall Time	≤ 100 ns at maximum output. (into 50 Ω load)
TTL OUTPUT	
Level	≥ 3 Vp-p
Fan Out	20 TTL load
Rise or Fall Time	≤ 25 ns
GENERAL	
Operation Environment	Indoor use, altitude up ~ 2000m Ambient Temperature 0 $^{\circ}$ C ~ 40 $^{\circ}$ C Relative Humidity: Up to 80% at 0 $^{\circ}$ C ~ 40 $^{\circ}$ C Up to 70% at 35 $^{\circ}$ C ~ 40 $^{\circ}$ C Installation category II Pollution Degree 2
POWER SOURCE	
	AC 240V/220V/110V $\pm 10\%$, 50/60Hz
STORAGE CONDITION	
Temperature	-10 $^{\circ}$ C ~ 70 $^{\circ}$ C
Humidity	70% (Maximum).
DIMENSION & WEIGHT	
	251(W) x 91(H) x 291(D) mm, Approx. 2.1kg
ORDERING INFORMATION	
SFG-1003	3 MHz DDS Function Generator
SFG-1013	3 MHz DDS Function Generator with Voltage Display
ACCESSORIES :	
User manualx1, Power cord, GTL-101x1	



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