



Low Jitter Programmable & Selectable SPXO with LVPECL Output

In today's fast-paced development environment, programmable oscillators provide flexibility for board-level designs. With 24-hour delivery, programmable oscillators are ideal for supporting standard and non-standard frequencies and quick frequency experiments for rapid prototyping.

Epson was the very first company to introduce programmable oscillator technology. Because of this history, Epson has the capability to support 24-hour lead time for both prototypes and pre-production runs. Prototypes can easily be converted to pin-compatible Epson fixed-frequency oscillators for production volumes.

Using Epson's latest high performance Fractional-N PLL technology, Epson has created a family of user-programmable/selectable SPXO's that provide any frequency synthesis with LVPECL output. The output frequency can be programmed from 50 MHz to 800 MHz. The new Fractional-N PLL technology is designed for low power and low jitter, where the integrated phase jitter is below 0.31 ps rms (12 kHz to 20 MHz) (See Figure 1 & 2).

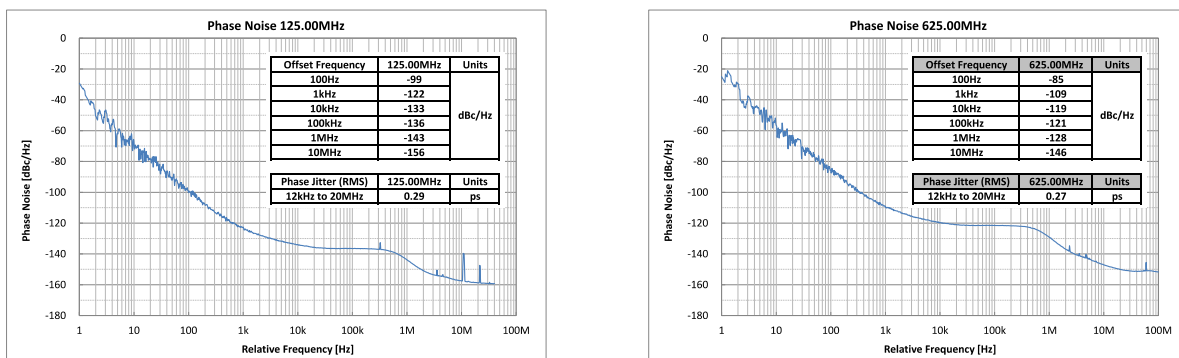


Figure 1: Typical Phase Noise Plot for SG-8506

	Offset Frequency	100.00 MHz	125.00 MHz	156.25 MHz	250.00 MHz	312.50 MHz	500.00 MHz	625.00 MHz
Phase jitter *2 Typ.	12 kHz to 20 MHz	0.31 ps	0.30 ps	0.26 ps	0.26 ps	0.29 ps	0.28 ps	0.29 ps

*2 In order to achieve optimum jitter performance, it is recommended that the capacitor (0.1 μF + 10 μF) between V_{CC} and GND pin should be placed as close to the V_{CC} pin as possible.

Table 1: Typical Phase Jitter Data for SG-8506

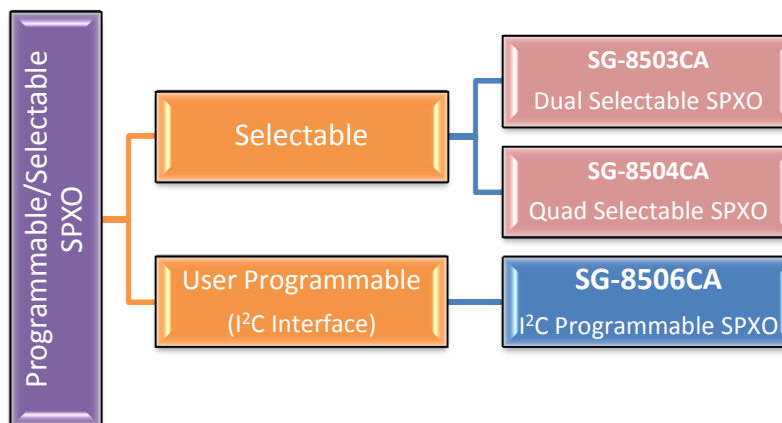


Figure 2: LVPECL Output Programmable/Selectable Oscillators



This family of oscillators consists of SPXO, Fractional-N PLL, LVPECL output buffer, and output enable. The selectable option has up to 4 additional registers that are either pre-programmed or user programmable, which the user can select from. User Programmable option has the I²C control block to reprogram the frequencies as needed.

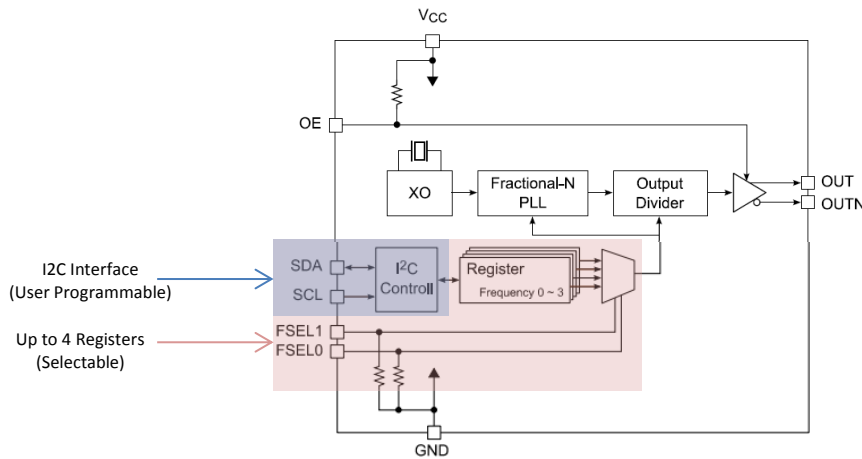


Figure 3: Programmable Oscillator Block Diagram

This family of oscillators is targeting high-performance timing applications, where it provides frequency flexibility and low jitter performance.

- SONET/SDH
- OTN
- GbE
- Fiber channel
- Multiple Rated Multi-protocol Line Card

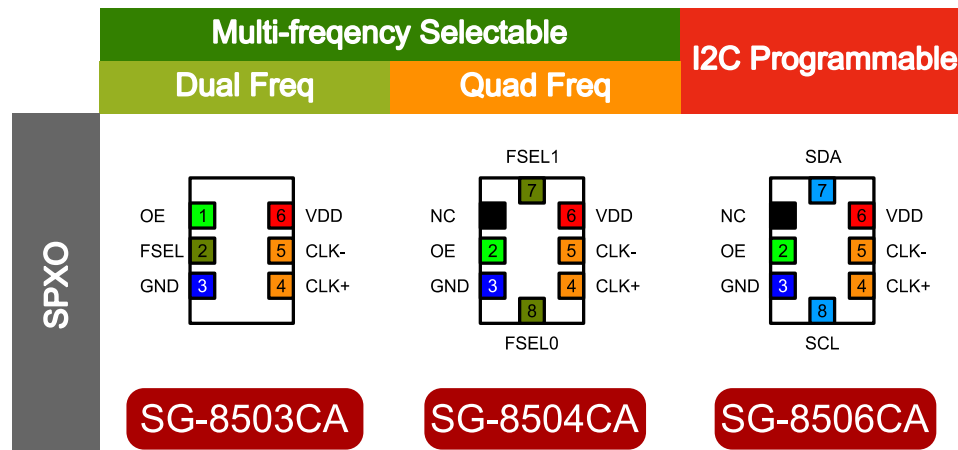




Table 2: Initial Reference Part Number (Contact Sales for other default values/settings)

Product	P/N	Default Startup Frequency [MHz]*				OE Function	Frequency Tolerance [ppm]	Output Standby Type	Supply Voltage [V]
		Freq 1	Freq 2	Freq 3	Freq 4				
SG-8503CA	SG-8503CA 156.2MHz 625.0MHzA PRLZ	156.250000	625.000000			HIGH	50	Z	2.5 - 3.3
	SG-8503CA 100.0MHz 125.0MHzA PRLZ	100.000000	125.000000			HIGH	50	Z	2.5 - 3.3
	SG-8503CA 125.0MHz 156.2MHzA PRLZ	125.000000	156.250000			HIGH	50	Z	2.5 - 3.3
SG-8504CA	SG-8504CA 75.0MHz0007A PRLZ	75.000000	100.000000	150.000000	250.000000	HIGH	50	Z	2.5 - 3.3
	SG-8504CA 62.5MHz0008A PRLZ	62.500000	125.000000	156.250000	250.000000	HIGH	50	Z	2.5 - 3.3
	SG-8504CA 106.2MHz0009A PRLZ	106.250000	159.375000	212.500000	425.000000	HIGH	50	Z	2.5 - 3.3
	SG-8504CA 100.0MHz0010A PRLZ	100.000000	133.333333	166.666666	200.000000	HIGH	50	Z	2.5 - 3.3
	SG-8504CA 100.0MHz0011A PRLZ	100.000000	125.000000	156.250000	312.500000	HIGH	50	Z	2.5 - 3.3
SG-8506CA	SG-8506CA 156.2MHz0x37A PRLZ	156.250000				HIGH	50	Z	2.5 - 3.3
	SG-8506CA 622.0MHz0x37A PRLZ	622.080000				HIGH	50	Z	2.5 - 3.3

*Note: Default Startup Frequency Set by Factory or SG-Writer II

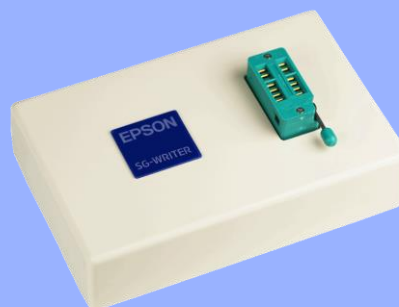


Programming tool for Programmable Crystal Oscillator

SG - Writer II

- Programming tool for programmable oscillator: SG-8101, SG-8002, SG-8003, SG-9101, SG-8503, SG-8504, and SG-8506 series (Blank device).
- Able to program required frequency at customer side
- External power supply by USB cable.
- Available PC OS: Windows 7 (32 bit, 64 bit) etc,
- Small body and easy carry.

Product Number
Q91PR20W1102000



For frequency programming of non-volatile memory or default start-up frequencies

Option SMD socket adaptors

SG-8503CA	Q91PR10W00026
SG-8504CA	Q91PR10W00027
SG-8506CA	Q91PR10W00028

Option Blank device

SG-8503CA BLANK SAMPLE	X1G0050111001
SG-8504CA BLANK SAMPLE	X1G0050211001
SG-8506CA BLANK SAMPLE	X1G0050311001

Frequency(s) and other options are stored in non-volatile memory. These are programmed one time with SG-Writer II.

System Requirements

Operating system	Windows 7 (32 bit, 64 bit) Windows Vista (32 bit), Windows XP (32 bit)
Processor	Over Pentium 4 1.4 GHz or equivalent Processor
Memory capacity	Windows XP : Over 512 MB Windows Vista, Windows7 32 bit : Over 1 GB Windows 7 64 bit : Over 2 GB
Other	USB cable (Type A ⇔ mini-B) Option SMD socket adaptors

Software

http://www5.epsondevice.com/en/information/support/sg8000/sg_writer2_software.html



Evaluation Boards

SG-8506CA-EVB
VG7050EAN-EVB
VG7050ECN-EVB

Customer can set target frequencies via I²C interface and evaluate the device with these evaluation boards. Accompanying software writes target frequency register value on device.



Evaluation Board for User Programmable Devices (I²C Interface)

Features

- PC USB connection to evaluation board
- Device evaluation by register setting through I²C Bus
- Target register calculation by inputting frequency value into accompanying software
- Power supply (+2.5 V or +3.3 V) available through USB connection

Software

SG-8506CA-EVB

http://www5.epsondevice.com/en/information/support/sg8506ca_evaboard/agreement.html

VG7050EAN-EVB:

VG7050ECN-EVB:

http://www5.epsondevice.com/en/information/support/vg_evaboard/agreement.html