



Dual or Quad Selectable Programmable Crystal Oscillator
Output: LV-PECL

SG-8503CA / SG-8504CA

- Dual frequency Selectable: SG-8503CA, 7.0 × 5.0 × 1.5 mm (6 pins)
- Quad frequency Selectable: SG-8504CA, 7.0 × 5.0 × 1.5 mm (8 pins)
- Frequency range: 50 MHz to 800 MHz
- Supply voltage: 2.5 V to 3.3 V

Features

- User-specified two (FSEL) or four (FSEL0, FSEL1) startup frequencies
- High frequency fundamental tone crystal, Low jitter PLL technology
- Available field oscillator programmer "SG-Writer II"

Application

- OTN, BTS, Test Instrument



Product Number
SG-8503CA : X1G005011xxxx00
SG-8504CA : X1G005021xxxx00



Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	fo	50 MHz to 800 MHz	-
Supply voltage	V _{CC}	2.5 V - 0.125 V to 3.3 V + 0.33 V	-
Storage temperature range	T _{STG}	-55 °C to +125 °C	Store as bare product after packing
Operating temperature range	T _{USE}	-40 °C to +85 °C	-
Frequency tolerance *1	f _{TOL}	K : ±31.5 × 10 ⁻⁶ L : ±50 × 10 ⁻⁶	Customized Product (Option)
Current consumption	I _{CC}	90 mA Max.	OE Active, L_ECL = 50 Ω
Disable current	I _{DIS}	40 mA Max. 70 mA Max.	OE Inactive, Output Standby: Hi-Z mode OE Inactive, Output Standby: Fix mode
Symmetry	SYM	45 % to 55 %	At outputs crossing point
Output voltage	V _{OH}	V _{CC} - 1.025 V Min.	DC characteristics
	V _{OL}	V _{CC} - 1.62 V Max.	
Output load condition	L _{ECL}	50 Ω	Termination to V _{CC} - 2.0 V
Input voltage	V _{IH}	70% V _{CC} Min.	SG-8503CA : OE, FSEL
	V _{IL}	30% V _{CC} Max.	SG-8504CA : OE, FSEL0, FSEL1
Rise time / Fall time	tr / tf	400 ps Max.	Between 20% and 80% of (V _{OH} - V _{OL})
Start-up time	t _{STR}	10 ms Max.	Time at minimum supply voltage to be 0 s
Setting time for frequency change	t _{SET1}	1.5 ms Max.	SG-8503CA : From setting FSEL pin to output new frequency SG-8504CA : From setting FSEL0 / FSEL1 pin to output new frequency

*1 Frequency tolerance includes initial frequency tolerance, temperature variation, supply voltage change, reflow drift and 10 years aging at +25 °C.

Product Name SG-8503 CA 156MHz 625MHz A P R L Z
(Standard form) ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Model, ② Package type,
③ Frequency-0 (50 ~ 800 MHz), ④ Frequency-1 (50 ~ 800 MHz), ⑤ Internal crystal frequency, ⑥ Output enable pin Polarity,
⑦ Supply voltage/Output format, ⑧ Frequency tolerance/Operating temperature, ⑨ Output standby type

Product Name SG-8504 CA 156.2MHz nnnn A P R L Z
(Standard form) ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Model, ② Package type,
③ Frequency-0 (50 ~ 800 MHz), ④ Parameter identifier, ⑤ Internal crystal frequency, ⑥ Output enable pin Polarity,
⑦ Supply voltage/Output format, ⑧ Frequency tolerance/Operating temperature, ⑨ Output standby type

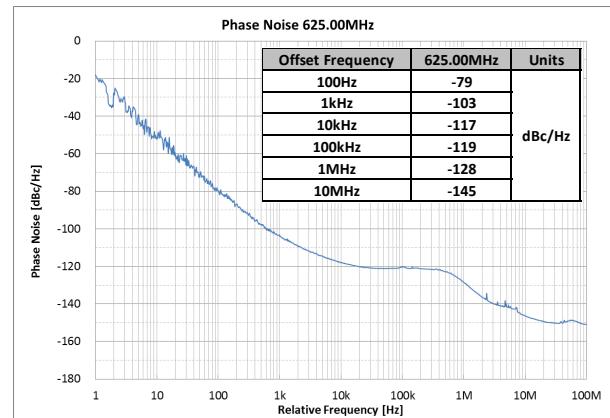
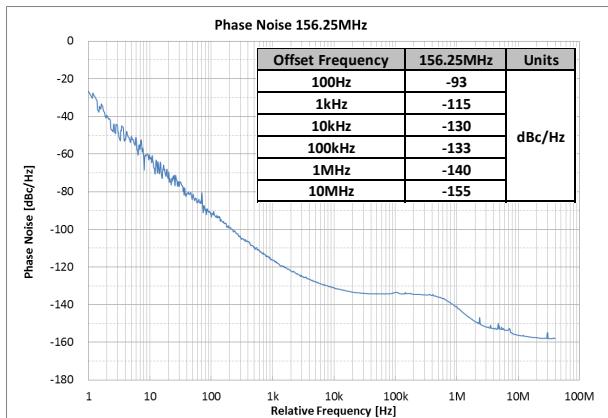
⑤ Internal crystal frequency	⑥ Output enable pin Polarity	⑦ Supply voltage/Output format	⑧ Frequency tolerance/Operating temperature	⑨ Output standby type
A 114.1444 MHz	P Active High	R 2.5 V ~ 3.3 V /LVPECL	K ±31.5 × 10 ⁻⁶ / -40 to +85 °C	F Fix (OUT="L", OUTN="H")
	Q Active Low		L ±50 × 10 ⁻⁶ / -40 to +85 °C	Z High-Z

Phase Jitter

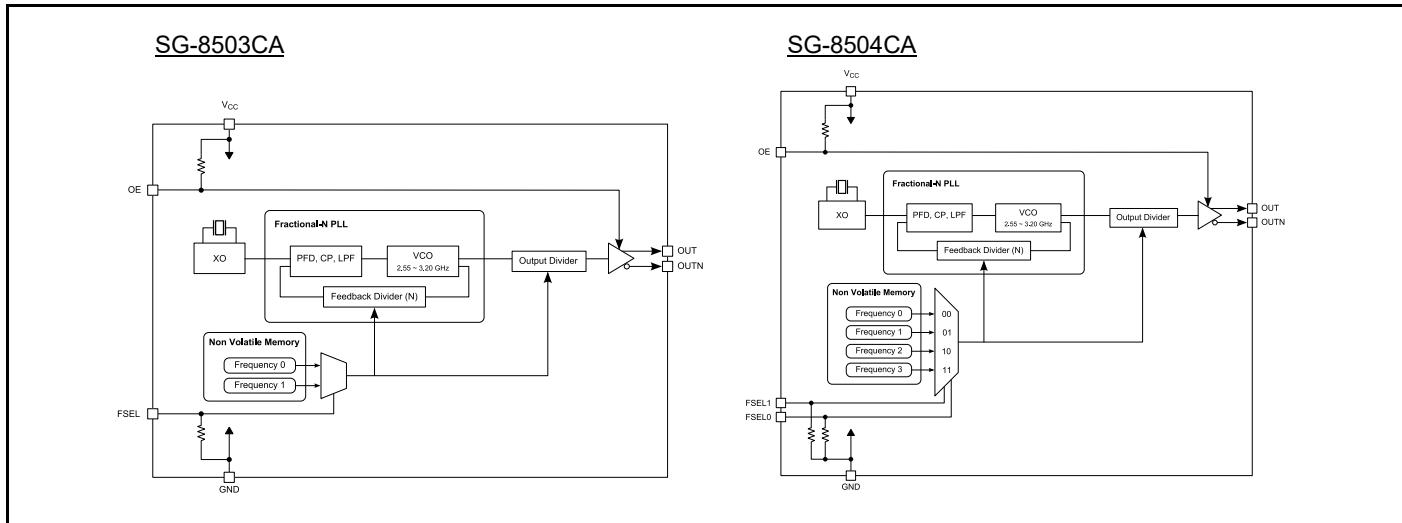
	Offset Frequency	100.00 MHz	125.00 MHz	156.25 MHz	250.00 MHz	312.50 MHz	500.00 MHz	625.00 MHz
Phase jitter *2 Typ.	12 kHz to 20 MHz	0.31 ps	0.30 ps	0.26 ps	0.26 ps	0.29 ps	0.28 ps	0.29 ps

*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.

Phase Noise



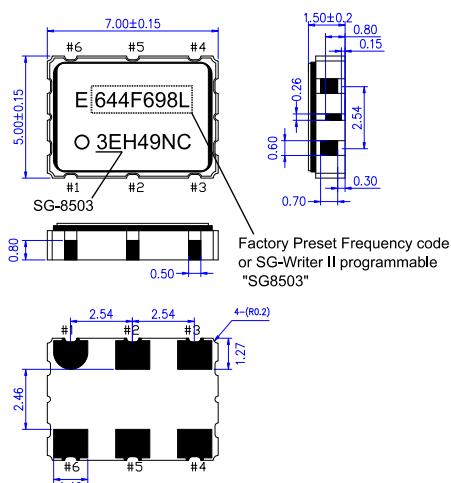
Block diagram



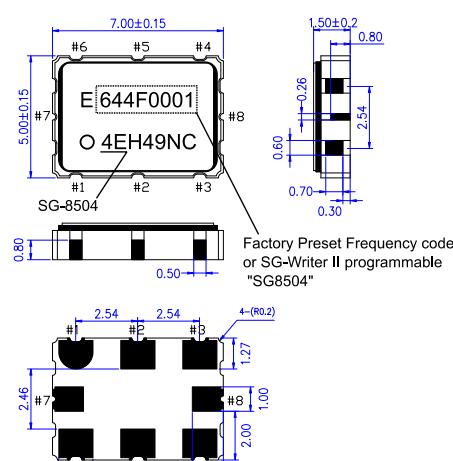
External dimensions

(Unit: mm)

SG-8503CA



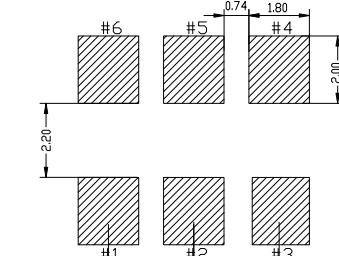
SG-8504CA



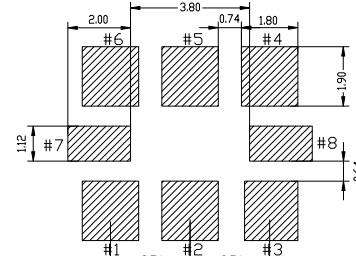
Pin	Connection
1	OE
2	FSEL (L = Frequency-0, H = Frequency-1)
3	GND
4	OUT
5	OUTN
6	Vcc

Pin	Connection	Pin	Connection
1	NC	5	OUTN
2	OE	6	Vcc
3	GND	7	FSEL0
4	OUT	8	FSEL1
FSEL1, FSEL0		Output Frequency	
LL		Frequency-0	
LH		Frequency-1	
HL		Frequency-2	
HH		Frequency-3	

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

► **Explanation of the mark that are using it for the catalog**

	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive general equipment.
	► Designed for automotive applications related to driving and safety.

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