

CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS



Product Number  
 SG2016CAA: X1G005341xxxx00  
 SG2520CAA: X1G005951xxxx16

SG2016CAA  
 SG2520CAA

- Frequency : 19 standard frequencies
- Supply voltage : 1.8 V to 3.3 V Typ.
- Function : Standby ( $\overline{ST}$ )
- Operation temperature : -40 °C to +125 °C
- Conforms to AEC-Q200



Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks	
Output frequency	$f_o$	8 MHz 10 MHz 11.2896 MHz 12 MHz 12.288 MHz 14.7456 MHz 16.6666 MHz 20 MHz 22.5792 MHz 24 MHz 24.576 MHz 25 MHz 27 MHz 33 MHz 33.3333 MHz 40 MHz 48 MHz 50 MHz 54 MHz		
Supply voltage	$V_{CC}$	T: 1.60 V to 3.63 V		
Storage temperature	$T_{stg}$	-55 °C to +125 °C	Storage as single product.	
Operating temperature	$T_{use}$	H: -40 °C to +105 °C J: -40 °C to +125 °C		
Frequency tolerance	$f_{tol}$	J: $\pm 50 \times 10^{-6}$ L: $\pm 100 \times 10^{-6}$		
Current consumption	$I_{cc}$	$V_{CC} = 1.8 V \pm 10 \%$	No load condition, 8 MHz $\leq f_o \leq 20$ MHz	
		$V_{CC} = 2.5 V \pm 10 \%$		No load condition, 20 MHz $< f_o \leq 40$ MHz
		$V_{CC} = 3.3 V \pm 10 \%$		No load condition, 40 MHz $< f_o \leq 54$ MHz
Stand-by current	$I_{std}$	2.7 $\mu$ A Max. 3.1 $\mu$ A Max. 3.3 $\mu$ A Max.	$\overline{ST} = GND$	
Symmetry	SYM	45 % to 55 %	50 % $V_{CC}$ level, $L_{CMOS} \leq 15$ pF	
Output voltage	$V_{OH}$	90 % $V_{CC}$ Min.	$V_{OH}$ 1.8 V $\pm$ 10 % 2.5 V $\pm$ 10 % 3.3 V $\pm$ 10 %	
	$V_{OL}$	10 % $V_{CC}$ Max.	$I_{OH}$ -1.5 mA -3 mA -4 mA	
	$V_{OH}$	$V_{CC} - 0.4$ V Min.	$I_{OL}$ 1.5 mA 3 mA 4 mA	
	$V_{OL}$	0.4 V Max.	$V_{OH}$ 1.8 V $\pm$ 10 % 2.5 V $\pm$ 10 % 3.3 V $\pm$ 10 %	
Output load condition	$L_{CMOS}$	15 pF Max.	$I_{OH}$ -3 mA -4 mA -6 mA	
			$I_{OL}$ 3 mA 4 mA 6 mA	
Input voltage	$V_{IH}$	80 % $V_{CC}$ Min.		
	$V_{IL}$	20 % $V_{CC}$ Max.	$\overline{ST}$ terminal	
Rise time and Fall time	$t_r / t_f$	3 ns Max. 3.5 ns Max. (@1.8 V $\pm$ 10 %)	20 % $V_{CC}$ to 80 % $V_{CC}$ level, $L_{CMOS} = 15$ pF	
Start-up time	$t_{str}$	5 ms Max.	$t = 0$ at 90 % $V_{CC}$	
Frequency aging	$f_{age}$	$\pm 3 \times 10^{-6}$ / year Max.	+25 °C, First year	

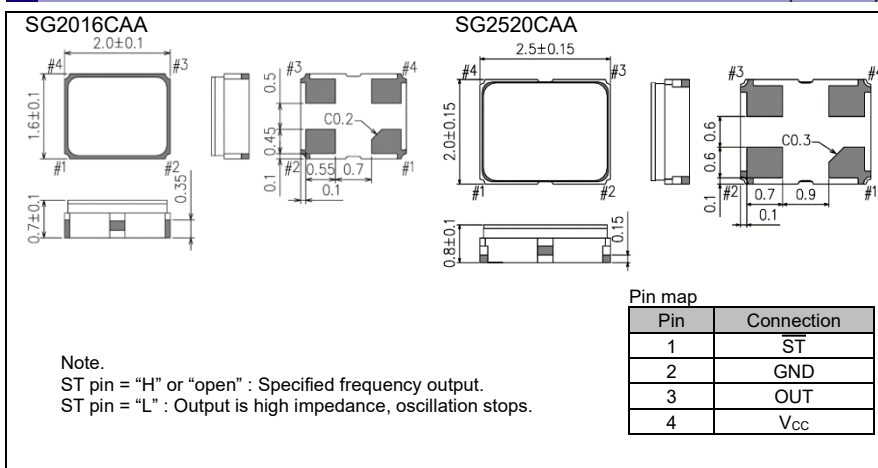
Product Name **SG2016CAA** 25.000000MHz I J H A (②③: Available code JG,JH,LG,LH,LJ,TJ)  
 (Standard form) Model Name Frequency ①②③ Standard Specification A

①Supply voltage *See Figure 1	
T	1.8 V to 3.3 V Typ.
K	2.5 V to 3.3 V Typ.

②Frequency tolerance / ③Operating temperature	
JH	$\pm 50 \times 10^{-6}$ / -40 °C to +105 °C
LJ	$\pm 100 \times 10^{-6}$ / -40 °C to +125 °C

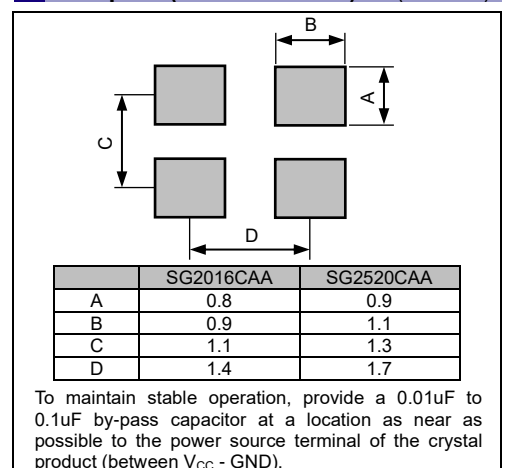
External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)



## PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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In order provide high quality and reliable products and services than meet customer needs, Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

IATF 16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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	► 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 applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
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