CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS

For Automotive | Pb Free | RoHS Compliant

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

SG2016CAA
(2.0 x 1.6 x 0.7 mm)

SG2520CAA
(2.5 x 2.0 x 0.8 mm)

Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
Output frequency	fo	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: ±50 × 10^{-6}			
		L: ±100 × 10^{-6}			
Current consumption	I_{CC}	V_{CC} = 1.8 V ± 10 %	V_{CC} = 2.5 V ± 10 %	V_{CC} = 3.3 V ± 10 %	
		2.0 mA Max.	2.1 mA Max.	2.3 mA Max.	No load condition, 8 MHz ≤ fo ≤ 20 MHz
		2.3 mA Max.	2.5 mA Max.	2.7 mA Max.	No load condition, 20 MHz < fo ≤ 40 MHz
		2.6 mA Max.	2.9 mA Max.	3.1 mA Max.	No load condition, 40 MHz < fo ≤ 54 MHz
Stand-by current	I_std	2.7 µA Max.	3.1 µA Max.	3.3 µA Max.	$\overline{ST}$ =GND
Symmetry	SYM	45 % to 55 %			50 % V_{CC} level, L_CMOS ≤ 15 pF
Output voltage	V_{OH}	90 % V_{CC} Min.			I_{OH}: 1.8 V±10 % -1.5 mA; 2.5 V±10 % -3 mA; 3.3 V±10 % -4 mA
	V_{OL}	10 % V_{CC} Max.			I_{OL}: 1.8 V±10 % 1.5 mA; 2.5 V±10 % 3 mA; 3.3 V±10 % 4 mA
	V_{OH}	V_{CC} - 0.4 V Min.			I_{OH}: 1.8 V±10 % -3 mA; 2.5 V±10 % -4 mA; 3.3 V±10 % -6 mA
	V_{OL}	0.4 V Max.			I_{OL}: 1.8 V±10 % 3 mA; 2.5 V±10 % 4 mA; 3.3 V±10 % 6 mA
Output load condition	L_CMOS	15 pF Max.			
Input voltage	V_{IH}	80 % V_{CC} Min.			$\overline{ST}$ terminal
	V_{IL}	20 % V_{CC} Max.			
Rise time and Fall time	tr/ tf	3 ns Max. 3.5 ns Max. (@1.8 V±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	±3 × 10^{-6} / year Max.			+25 °C, First year

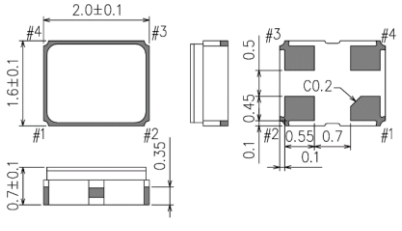
Product Name (Standard form) SG2016CAA (Model Name) 25.000000MHz (Frequency) T J H A (②③:Available code JG,JH,LG,LH,LJ,TJ) ①②③ └ Standard Specification A

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

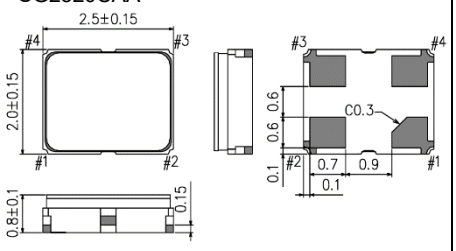
②Frequency tolerance / ③Operating temperature	
JH	±50 × 10^{-6} / -40 °C to +105 °C
LJ	±100 × 10^{-6} / -40 °C to +125 °C

External dimensions (Unit:mm)

SG2016CAA



SG2520CAA

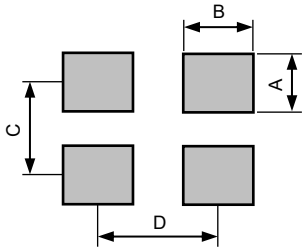


Pin map

Pin	Connection
1	$\overline{ST}$
2	GND
3	OUT
4	V_{CC}

Note.
ST pin = "H" or "open" : Specified frequency output.
ST pin = "L" : Output is high impedance, oscillation stops.

Footprint (Recommended) (Unit:mm)



	SG2016CAA	SG2520CAA
A	0.8	0.9
B	0.9	1.1
C	1.1	1.3
D	1.4	1.7

To maintain stable operation, provide a 0.01uF to 0.1uF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between V_{CC} - GND).

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.

WORKING FOR HIGH QUALITY

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.

►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 applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).