VOLTAGE-CONTROLLED SAW OSCILLATOR (VCSO)

Output: LV-PECL

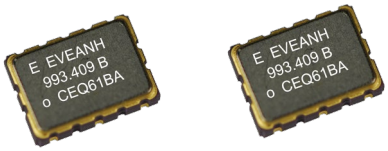
LOW PHASE JITTER

EV7050EAN

Product Number
X1M00052xxxxxxx

- Low phase jitter : 18 fs typ. *3
- Frequency range : 750 MHz to 1100 MHz
  : 1500 MHz to 2200 MHz
- Function : OUTPUT disable(OE)/Standby(ST)
- Supply voltage : 3.3 V
- Absolute pull range : ±50 × 10^{-6} Min./ ±30 × 10^{-6} Min.
- External dimensions: 7.0 × 5.0 × 1.6(t) mm
- Output : LV-PECL

Application : OTN(40GbE,100GbE,400GbE),
High Speed ADCs and DACs, Test Instrument



Specifications (characteristics)

Type OE

Item	Symbol	EV7050EAN		Conditions / Remarks	
Output frequency range	fo	750 MHz to 1100 MHz / 1500 MHz to 2200 MHz		Please contact us about available frequencies	
Supply voltage	Vcc	3.3 V ±0.165 V			
Storage temperature	T_stg	-55 °C to +125 °C		Storage as single product	
Operating temperature	T_use	-10 °C to +85 °C	-40 °C to +85 °C		
Frequency tolerance *1	f_tol	-100 × 10^{-6} to +100 × 10^{-6}	-120 × 10^{-6} to +120 × 10^{-6}		
Absolute pull range *2	APR	±50 × 10^{-6} Min	±30 × 10^{-6} Min		
Current consumption	Icc	f0=750 to 1100 MHz : 115 mA Max f0=1500 to 2200 MHz : 175 mA Max			
Output disable current	I_dis	f0=750 to 1100 MHz : 80 mA Max f0=1500 to 2200 MHz : 135 mA Max			
Input resistance	Rin	50 kΩ Min		DC level	
Frequency change polarity	—	Positive slope			
Symmetry	SYM	45 % to 55 %		Reference is crossing point of OUT1 and OUT2	
Output voltage	VOH	Vcc -1.25 V Min		Output termination is L_ECL	
	VOL	Vcc -1.55 V Max		Output termination is L_ECL	
Input voltage	VIH	80% Vcc		OE terminal(#2)	
	VIL	20% Vcc			
Output load condition	L_ECL	50 Ω		Terminated to Vcc-2.0V	
Rise time / Fall time	tr / tf	0.125 ns Max		Between 20% and 80% of output single ended swing	
Start-up time	t_str	10 ms Max		Time at 90 %Vcc to be 0 s	
Enable delay time	tpzx	1.0 us Max		The time from release OE to Output signal	
Phase Jitter	tPJ	18fs typ. *3 40fs Max		990 MHz ≤ f0 ≤ 1100 MHz 1980 MHz ≤ f0 ≤ 2200 MHz	Offset frequency: 12 kHz to 20 MHz
		60fs Max		Except for the above	

Type ST

Item	Symbol	EV7050EAN		Conditions / Remarks	
Output frequency range	fo	750 MHz to 1100 MHz / 1500 MHz to 2200 MHz		Please contact us about available frequencies	
Supply voltage	Vcc	3.3 V ±0.165 V			
Storage temperature	T_stg	-55 °C to +125 °C		Storage as single product	
Operating temperature	T_use	-10 °C to +85 °C	-40 °C to +85 °C		
Frequency tolerance *1	f_tol	-100 × 10^{-6} to +100 × 10^{-6}	-120 × 10^{-6} to +120 × 10^{-6}		
Absolute pull range *2	APR	±50 × 10^{-6} Min	±30 × 10^{-6} Min		
Current consumption	Icc	f0=750 to 1100 MHz : 115 mA Max f0=1500 to 2200 MHz : 175 mA Max			
Standby current	I_std	7 mA Max			
Input resistance	Rin	50 kΩ Min		DC level	
Frequency change polarity	—	Positive slope			
Symmetry	SYM	45 % to 55 %		Reference is crossing point of OUT1 and OUT2	
Output voltage	VOH	Vcc -1.25 V Min		Output termination is L_ECL	
	VOL	Vcc -1.55 V Max		Output termination is L_ECL	
Input voltage	VIH	80% Vcc		ST terminal(#2)	
	VIL	20% Vcc			
Output load condition	L_ECL	50 Ω		Terminated to Vcc-2.0V	
Rise time / Fall time	tr / tf	0.125 ns Max		Between 20% and 80% of output single ended swing	
Start-up time	t_str	10 ms Max		Time at ST terminal is VIH(Active Low is VIL) to be 0 s	
Resume time	t_res	10 ms Max			
Phase Jitter	tPJ	18fs typ. *3 40fs Max		990 MHz ≤ f0 ≤ 1100 MHz 1980 MHz ≤ f0 ≤ 2200 MHz	Offset frequency: 12 kHz to 20 MHz
		60fs Max		Except for the above	

*1 Frequency tolerance includes initial frequency tolerance, temperature variation, supply voltage change, reflow drift, and aging (+25°C, 10 years).
*2 Absolute pull range (APR) = Frequency control range - Frequency tolerance
*3 Put bypass capacitor (0.1uF and 10uF) near by Vcc terminal for jitter performance.

Product Name (Standard form)

EV7050 EAN 1986.819000MHz C L E H B A
① ② ③ ④⑤⑥⑦⑧⑨

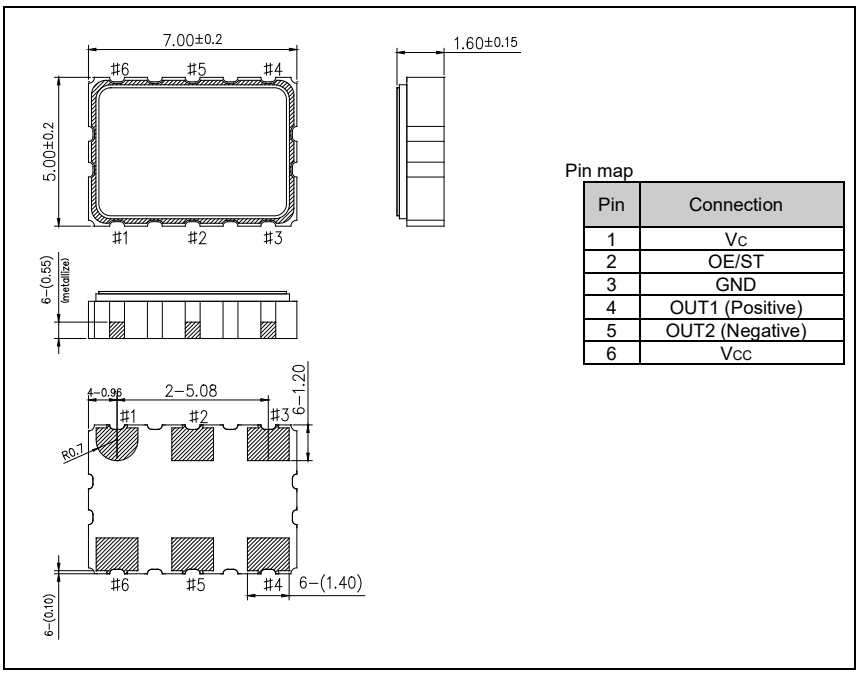
①Model ②Output(E: LV-PECL) ③Frequency
④Supply voltage (C: 3.3 V Typ.) ⑤Frequency tolerance
⑥Operating temperature ⑦OE function
⑧Absolute pull range(APR)
⑨Internal identification code (“A” is default)

④Supply voltage	⑤Frequency tolerance	⑥Operating temperature	⑦OE function	⑧APR	⑨identification code
C:3.3V Typ	L: -100~+100× 10^{-6}	E: -10 ~ +85°C	H:OE Active High L:OE Active Low S:ST Active High T:ST Active Low	B: ±50 × 10^{-6} Min.	A
	U: -120~+120× 10^{-6}	G: -40 ~ +85°C		A: ±30 × 10^{-6} Min.	

OE Standby Type

Product	Oscillation	Outputs
OE Active High	High: enable /Low: enable	High: enable(specified frequency) Low: disable(Hi-Z)
OE Active Low	High: enable /Low: enable	High: disable(Hi-Z) Low: enable(specified frequency)
ST Active High	High: enable /Low: disable	High: enable(specified frequency) Low: disable(Hi-Z)
ST Active Low	High: disable /Low: enable	High: disable(Hi-Z) Low: enable(specified frequency)

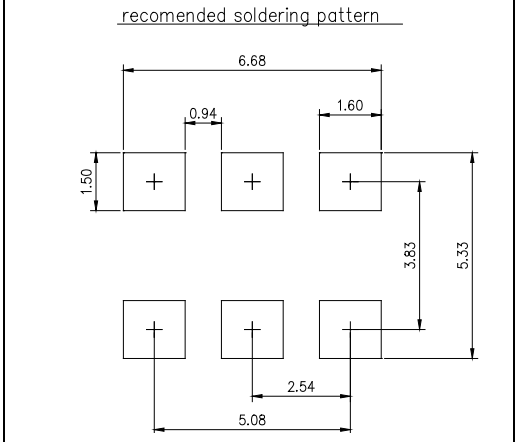
External dimensions (Unit :mm)



Pin map

Pin	Connection
1	Vc
2	OE/ST
3	GND
4	OUT1 (Positive)
5	OUT2 (Negative)
6	Vcc

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.

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