VOLTAGE-CONTROLLED SAW OSCILLATOR (VCSO)

Output: LV-PECL

LOW PHASE JITTER

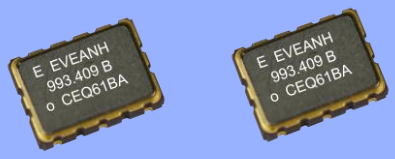
EV7050EAN

- Low phase jitter : 18 fs typ. *3
- Frequency range : 600 MHz to 1100 MHz
  : 1200 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

RoHS Compliant Pb Free

Product Number (please contact us)
X1M00052xxxxxxx



Actual size

Specifications (characteristics)

Type OE

Item	Symbol	EV7050EAN		Conditions / Remarks	
Output frequency range	f_0	600 MHz to 1100 MHz / 1200 MHz to 2200 MHz		Please contact us about available frequencies	
Supply voltage	V_{CC}	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	I_{CC}	f_0=600 to 1100 MHz : 115 mA Max f_0=1200 to 2200 MHz : 175 mA Max			
Output disable current	I_dis	f_0=600 to 1100 MHz : 80 mA Max f_0=1200 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	V_{OH}	V_{CC} -1.25 V Min		Output termination is L_ECL	
	V_{OL}	V_{CC} -1.55 V Max		Output termination is L_ECL	
Input voltage	V_{IH}	80% V_{CC}		OE terminal(#2)	
	V_{IL}	20% V_{CC}			
Output load condition	L_ECL	50 Ω		Terminated to Vcc-2.0V	
Rise time / Fall time	t_r / t_f	0.125 ns Max		Between 20% and 80% of output single ended swing	
Start-up time	t_str	10 ms Max		Time at 90 %V_{CC} 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 ≤ f_0 ≤ 1100 MHz 1980 MHz ≤ f_0 ≤ 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	f_0	600 MHz to 1100 MHz / 1200 MHz to 2200 MHz		Please contact us about available frequencies	
Supply voltage	V_{CC}	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	I_{CC}	f_0=600 to 1100 MHz : 115 mA Max f_0=1200 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	V_{OH}	V_{CC} -1.25 V Min		Output termination is L_ECL	
	V_{OL}	V_{CC} -1.55 V Max		Output termination is L_ECL	
Input voltage	V_{IH}	80% V_{CC}		ST terminal(#2)	
	V_{IL}	20% V_{CC}			
Output load condition	L_ECL	50 Ω		Terminated to Vcc-2.0V	
Rise time / Fall time	t_r / t_f	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 V_{IH}(Active Low is V_{IL}) to be 0 s	
Resume time	t_res	10 ms Max			
Phase Jitter	tPJ	18fs typ. *3 40fs Max		990 MHz ≤ f_0 ≤ 1100 MHz 1980 MHz ≤ f_0 ≤ 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 variation, 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

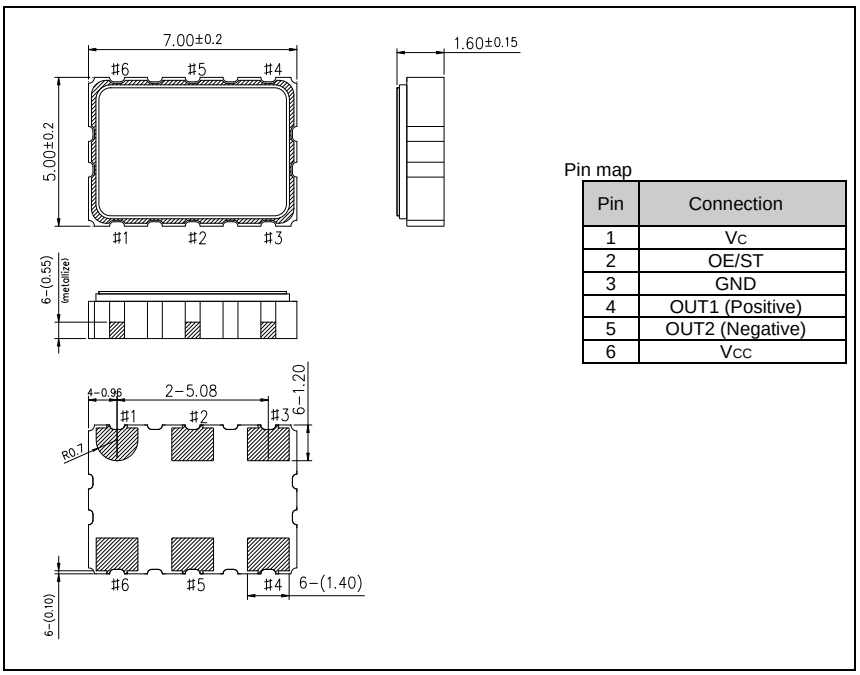
①Model ②Output(E: LV-PECL) ③Frequency
④Supply voltage (C: 3.3 V Typ.) ⑤Frequency tolerance
⑥Operating temperature ⑦OE function
⑧Absolute pull range(APR)
⑨Internal identification code (“A” is default)

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)

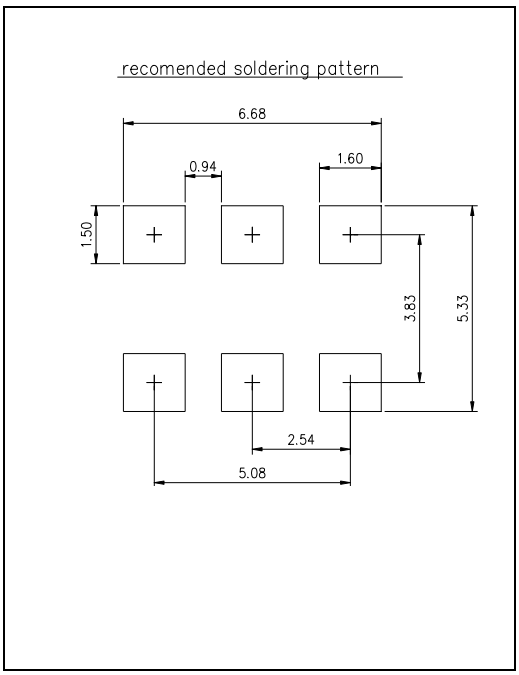
External dimensions (Unit :mm)



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,

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ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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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).

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