CRYSTAL OSCILLATOR

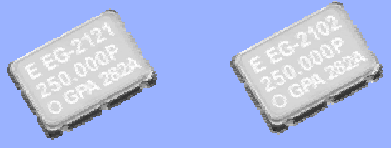
LOW-JITTER SAW OSCILLATOR

EG-2121/2102CA series

- Frequency range : 53.125 MHz to 700 MHz
- Supply voltage : 2.5 V (EG-2121CA)
  3.3 V (EG-2102CA)
- Output : Differential LV-PECL or LVDS
- Function : Output enable(OE)
- Thickness : 1.2 mm Typ.
- Very low jitter and low phase noise by SAW unit.

Pb Free RoHS Compliant

Product Number (please contact us)
EG-2121CA: Q3805CAx0xxxx00
EG-2102CA: Q3806CA00xxxx00



Actual size

EG-2121CA	EG-2102CA
	

Specifications (characteristics)

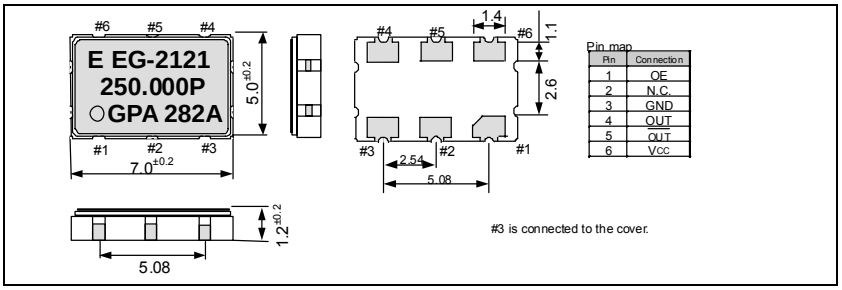
Item		Symbol	EG-2121CA	EG-2102CA	EG-2121CA	EG-2102CA	Remarks
			Differential LV-PECL		LVDS		
Output frequency range		f_0	53.125 MHz to 500 MHz	100 MHz to 700 MHz	53.125 MHz to 700 MHz		Please contact us for inquiries regarding available frequencies.
Supply voltage		V_{CC}	2.5 V ±0.125 V	3.3 V ±0.3 V	2.5 V ±0.125 V	3.3 V ±0.3 V	
Temperature range	Storage temperature	T_stg	-40 °C to +100 °C				Store as bare product after unpacking
	Operating temperature	T_use	P:0 °C to +70 °C ,R:-5 °C to +85 °C ,S:-20 °C to +70 °C				Please contact us for inquiries about S spec.
Frequency tolerance		f_tol	G: ± 50 × 10^{-6} ,H: ±100 × 10^{-6}				P:0 °C to +70 °C,R:-5 °C to +85 °C *1
Current consumption		I_{CC}	80 mA Max.	100 mA Max.	30 mA Max	45 mA Max.	OE=V_{CC},R_L=50 Ω or 100 Ω
Disable current		I_dis	20 mA Max.	32 mA Max	20 mA Max	30 mA Max.	OE=GND
Symmetry		SYM	P:45 % to 55 %	P:45 % to 55 %	L:45 % to 55 %	L:45 % to 55 %	f_0=350 MHz (at outputs crossing point) *1
Output voltage		V_{OH}	1.55 V Typ.	2.35 V Typ.	—		DC characteristics
			V_{CC}-1.025 V to V_{CC}-0.88 V				
		V_{OL}	0.8 V Typ.	1.6 V Typ.	—		
			V_{CC}-1.81 V to V_{CC}-1.62 V				
		V_{OD}	—		350 mV Typ. 247 mV to 454 mV		Differential output, DC characteristics
		ΔV_{OD}	—		50 mV		Output change, DC characteristics
		V_{OS}	—		1.25 V Typ. 1.125 V to 1.375 V		Offset, DC characteristics
		ΔV_{OS}	—		150 mV		Offset change, DC characteristics
Output load condition		R_L	50 Ω		100 Ω		LV-PECL: Terminated to V_{CC} -2.0 V LVDS: Connected between OUT to $\overline{OUT}$
Output enable input voltage		V_{IH}	70 % V_{CC} Min.				OE terminal
Output disable input voltage		V_{IL}	30 % V_{CC} Max.				OE terminal
Rise time / Fall time		t_r / t_f	400 ps Max.				LV-PECL: 80 % to 20 % (V_{OH}-V_{OL}) LVDS: 80 % to 20 % (V_{OD}×2)
Start-up time		t_str	10 ms Max.				Time at minimum supply voltage to be 0 s
Jitter *2		t_{DJ}	0.2 ps Typ.				Deterministic Jitter
		t_{RJ}	3 ps Typ.				Random Jitter
		t_{RMS}	3 ps Typ.				σ (RMS of total distribution)
		t_{p-p}	25 ps Typ.				Peak to Peak
		t_{acc}	4 ps Typ.				Accumulated Jitter(σ) n=2 to 50000 cycles
Phase Jitter		t_{PJ}	0.05 × 10^{-3} UI Typ.				Offset frequency: 12 kHz to 20 MHz
			1 ps Max.				
Frequency aging *3		f_aging	± 10 × 10^{-6}/ year Max.				+25 °C,First year,V_{CC}=2.5 V,3.3 V

*1 As per below table.
*2 Based on DTS-2075 Digital timing system made from WAVECREST with jitter analysis software VISI6.
*3 Except: ***A

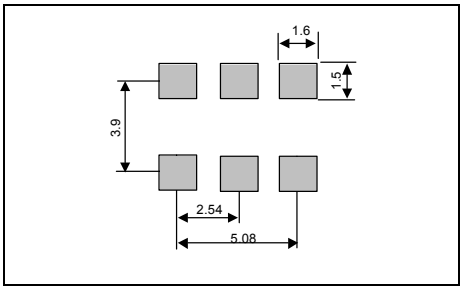
Output mode		P:Differential LV-PECL		D: Differential LV-PECL		L:LVDS		V:LVDS	
Frequency range	EG-2121CA	All range		f_0 ≤ 175 MHz		All range		f_0 ≤ 175 MHz	
	EG-2102CA			f_0 ≤ 350 MHz					
Symmetry	EG-2121CA	50 ± 10 %(f_0 > 350 MHz) 50 ± 5 %(f_0 ≤ 350 MHz)		50 ± 2 %		50 ± 10 %(f_0 > 350 MHz) 50 ± 5 %(f_0 ≤ 350 MHz)		50 ± 2 %	
	EG-2102CA	50 ± 5 %							
Details of frequency tolerance		A *4	N *5	A *4	N *5	A *4	N *5	A *4	N *5
Frequency tolerance	HP: ±100 × 10^{-6}(0°C to +70°C)	PHPA	PHPN	DHPA	DHPN	LHPA	LHPN	VHPA	VHPN
	HR: ±100 × 10^{-6}(-5°C to +85°C)	PHRA*6	PHRN*6	DHRA*6	DHRN*6	LHRA*6	LHRN*6	VHRA*6	VHRN*6
	GP: ±50 × 10^{-6}(0°C to +70°C)	PGPA*6	PGPN*6	DGPA*6	DGPN*6	LGPA*6	LGPN*6	VGPA*6	VGPN*6
	GR: ±50 × 10^{-6}(-5°C to +85°C)	—	PGRN*6	—	DGRN*6	—	LGRN*6	—	VGRN*6

*4 This includes initial frequency tolerance, temperature variation, supply voltage variation, reflow drift, and aging(+25 °C,10 years).
*5 This includes initial frequency tolerance, temperature variation, supply voltage variation, and reflow drift(except aging).
*6 53.125 MHz ≤ f_0 < 100 MHz : Unavailable.

External dimensions (Unit:mm)



Footprint (Recommended) (Unit:mm)



“QMEMS” EPSON TOYOCOM

In order to meet customer needs in a rapidly advancing digital, broadband and ubiquitous society, we are committed to offering products that are one step ahead of the market and a rank above the rest in quality. To achieve our goals, we follow a “3D (three device) strategy” designed to drive both horizontal and vertical growth. We will to grow our three device categories of “Timing Devices”, ”Sensing Devices” and “Optical Devices”, and expand vertical growth through a combination of products from these categories.
A Quartz MEMS is any high added value quartz device that exploits the characteristics of quartz crystal material but that is produced using MEMS (micro-electro-mechanical system) processing technology.
Market needs are advancing faster than previously imagined toward smaller, more stable crystal products, but we will stay ahead of the curve by rolling out products that exceed market speed and quality requirements. We want to further accelerate the 3D strategy by QMEMS.

Quartz devices have become crucial in the network environment where products are increasingly intended for broadband, ubiquitous applications and where various types of terminals can transfer information almost immediately via LAN and WAN on a global scale. Epson Toyocom Corporation addresses every single aspect within a network environment. The new corporation offers “Digital Convergence” solutions to problems arising with products for consumer use, such as, core network systems and automotive systems.

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Epson Toyocom, 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.

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.

All of our major manufacturing and non-manufacturing sites,in Japan and overseas, completed the acquisition of ISO 14001 certification.
In the future, new group companies will be expected to acquire the certification around the third year of operations.

WORKING FOR HIGH QUALITY

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

QS-9000 is an enhanced standard for quality assurance systems formulated by leading U.S. automobile manufacturers based on the international ISO 9000 series.

ISO/TS 16949 is a global standard based on QS-9000, a severe standard corresponding to the requirements from the automobile industry.

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

Pb Free	**►Pb free.** **►Complies with EU RoHS directive.**
RoHS Compliant	**►Pb free terminal designed. Contains Pb in products exempted by RoHS directive.** **(Contains Pb in sealing glass, high melting temperature type solder or other.)** **►Complies with EU RoHS directive.**
For Automotive	**►The products have been designed for high reliability applications such as Automotive.**

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  / Space equipment (artificial satellites, rockets, etc.) / Transportation vehicles and related (automobiles, aircraft, trains, vessels, etc.)
  / Medical instruments to sustain life / Submarine transmitters / Power stations and related / Fire work equipment and security equipment
  / traffic control equipment / and others requiring equivalent reliability.
- In this new crystal master for Epson Toyocom, product codes and markings will remain as previously identified prior to the merger.
  Due to the on-going strategy of gradual unification of part numbers, please review product codes and markings, as they will change during the course of the coming months.

  We apologize for the inconvenience, but we will eventually have a unified part numbering system for Epson Toyocom that will be user friendly.