Pb Free
RoHS Compliant

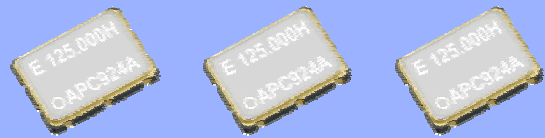**Product Number (please contact us)**
Q3803CA00xxxx00

CRYSTAL OSCILLATOR
LOW-JITTER SAW OSCILLATOR

EG - 2101CA

- Frequency range : 62.5 MHz to 99.999 MHz
- Supply voltage : 3.3 V
- Output : Differential LV-PECL
- Function : Output enable(OE)
- External dimensions : 7.0 × 5.0 × 1.2 t (mm) Typ.
- Very low jitter and low phase noise by SAW unit.

Actual size

■■ Specifications (characteristics)

Item		Symbol	Specifications	Remarks
Output frequency range		f_0	62.500 MHz to 99.999 MHz	Please contact us for inquiries regarding available frequencies
Supply voltage		V_{CC}	3.3 V ±0.15 V	
Temperature range	Storage temperature	T_stg	-40 °C to +100 °C	Store as bare product after unpacking
	Operating temperature	T_use	0 °C to +70 °C	
Frequency tolerance		f_tol	$\pm 50 \times 10^{-6}$, $\pm 100 \times 10^{-6}$	0 °C to +70 °C　*1
Current consumption		I_{CC}	60 mA Max.	OE=V_{CC}, R_L=50 Ω
Disable current		I_{OE}	25 mA Max.	OE=GND
Symmetry *3		SYM	D:47.5 % to 52.5 %	DCH,DCY,DCZ　　at outputs crossing point
High output voltage		V_{OH}	2.35 V Typ. V_{CC}-1.025 V to V_{CC}-0.88 V	DC characteristics
Low output voltage		V_{OL}	1.60 V Typ. V_{CC}-1.81 V to V_{CC}-1.62 V	
Output load condition		R_L	50 Ω	Terminated to V_{CC} -2.0 V
High input voltage		V_{IH}	70 % V_{CC} Min.	OE terminal
Low input voltage		V_{IL}	30 % V_{CC} Max.	OE terminal
Rise time / Fall time		t_r / t_f	600 ps Max.	20 % to 80 % (V_{OH}-V_{OL})
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	$\pm 5 \times 10^{-6}$ / year Max.	+25 °C, First year, V_{CC}=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 : PCH,DCH

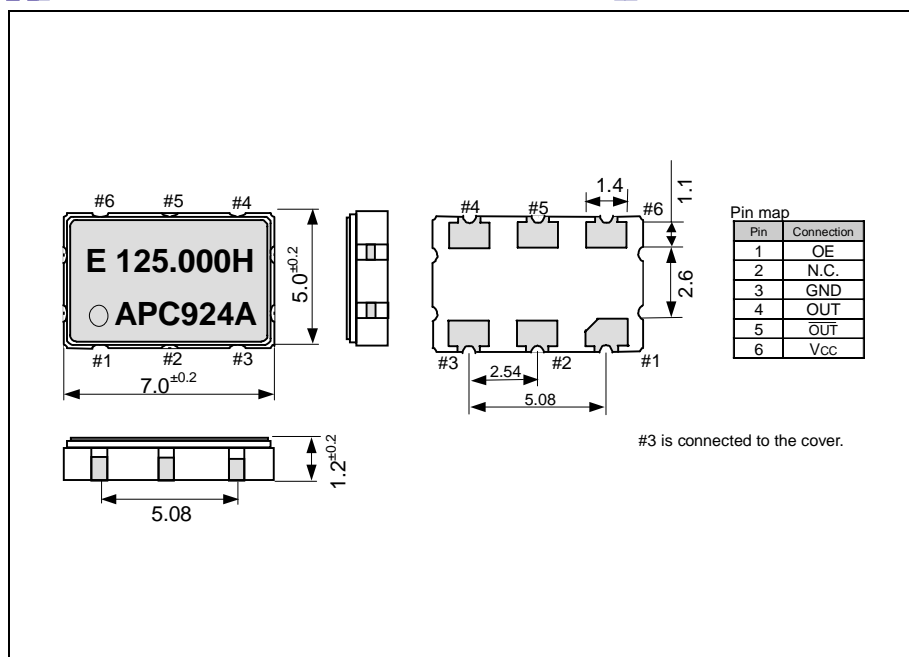|	Output mode (Symmetry)	D:Symmetry 50 ±2.5 %
Details of frequency tolerance	H: $\pm 100 \times 10^{-6}$ (0 °C to +70 °C)*4	DCH
	Y: $\pm 100 \times 10^{-6}$ (0 °C to +70 °C) *5	DCY
	Z: $\pm 50 \times 10^{-6}$ (0 °C to +70 °C)*6	DCZ

*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　This includes initial frequency tolerance and temperature variation(except supply voltage variation, reflow drift, aging).
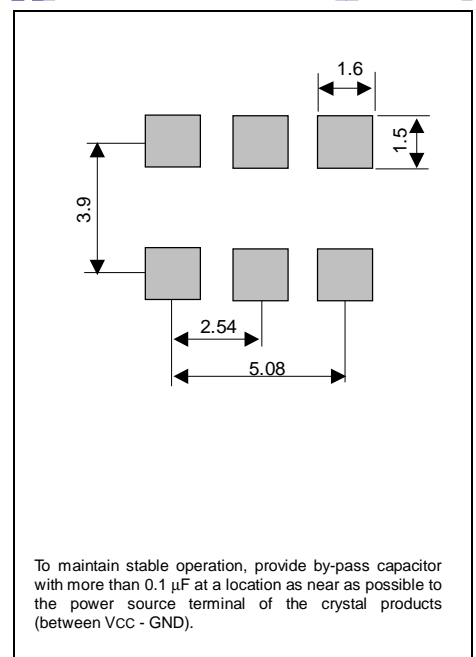
■■ External dimensions　　　(Unit:mm)

E 125.000H
○ APC924A

7.0 ±0.2
5.0 ±0.2
1.2 ±0.2
5.08
1.4
1.1
2.6
2.54
5.08

Pin	Connection
1	OE
2	N.C.
3	GND
4	OUT
5	$\overline{OUT}$
6	V_{CC}

#3 is connected to the cover.

■■ Footprint (Recommended)　　　(Unit:mm)

1.6
1.5
3.9
2.54
5.08

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

"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.

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, 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.

> ISO/TS 16949 is a global standard based on QS-9001, 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.**

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	►**The products have been designed for high reliability applications such as Automotive.**

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/ 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.