

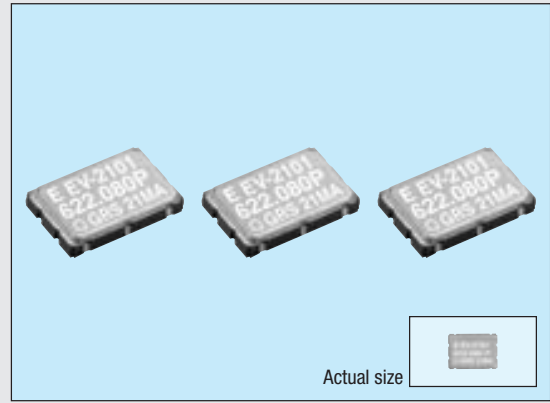
VOLTAGE CONTROLLED SAW OSCILLATOR

EV-2101CA

Product number (please refer to page 4)

Q3831CA0XXXX00

- 3.3 V operating voltage, Differential LV-PECL / LVDS output.
- Generates high frequency clock with fundamental mode.
- Very low jitter and low phase noise.
- Ceramic package with 2.0 mm Max. thickness.
- Excellent environmental capability.
- Low current consumption due to use of CMOS technology.
- Available for lead (Pb)-free soldering.
- Complete lead (Pb)-free product.



Specifications (characteristics)

Item	Symbol	Specifications		Remarks
		LV-PECL	LVDS	
Output frequency range	f _o	77.760 MHz to 700.0000 MHz		Please contact us for inquiries about the available frequency
Power source voltage	Max. supply voltage	Vcc-GND	-0.5 V to +4.0 V	
	Operating voltage	Vcc	3.3 V ±0.3 V	
Temperature range	Storage temperature	T _{STG}	-40 °C to +100 °C	Stored as bare product after unpacking
	Operating temperature	T _{OPR}	R : -5 °C to +85 °C, M : -40 °C to +85 °C	
Absolute Pull Range	APR	as per below table		V _c = 0.15 V to 3.0 V *1
Modulation Bandwidth	BW	100 kHz Typ.		Flat to ±3 dB Typ.
Current consumption	I _{OP}	70 mA Typ.	35 mA Typ.	OE = Vcc
Output disable current	I _{OE}	6 mA Typ.		OE = GND
Duty	t _w / t	45 % to 55 %		at outputs crossing point
Output voltage	V _{OH}	2.35 V Typ. (Vcc -1.03 to Vcc -0.88)	—	DC characteristics
	V _{OL}	1.60 V Typ. (Vcc -1.81 to Vcc -1.62)	—	
	V _{OD}	—	247 mV to 454 mV	Differential output, DC characteristics
	ΔV _{OD}	—	50 mV	Output change, DC characteristics
	V _{OS}	—	1.125 V to 1.375 V	Offset
	ΔV _{OS}	—	150 mV	Offset change
Output load condition (fan out)	R _L	50 Ω	100 Ω	LV-PECL: Terminated to Vcc -2.0 V / LVDS: Connected between OUT - OUT
Output enable disable input voltage	V _{IH}	0.7 Vcc Min.		
	V _{IL}	0.3 Vcc Max.		
Output rise time	t _r	400 ps Max.		LV-PECL: 20 % → 80 % of (V _{OH} - V _{OL}) / LVDS: 20 % → 80 % of (V _{OO} x 2)
Output fall time	t _f	400 ps Max.		LV-PECL: 80 % → 20 % of (V _{OH} - V _{OL}) / LVDS: 80 % → 20 % of (V _{OO} x 2)
Oscillation start up time	t _{OSC}	10 ms Max.		Time at 3.0 V to be 0 s
Gain transfer	K _v	200 x 10 ⁻⁶ / V Typ.		APR ±50 x 10 ⁻⁶ , -5 °C to +85 °C *2
		250 x 10 ⁻⁶ / V Typ.		APR ±100 x 10 ⁻⁶ , -5 °C to +85 °C *2
Phase jitter	t _{PJ}	1 ps Max.		Offset frequency : 12 kHz to 20 MHz
		1 ps Max.		Offset frequency : 50 kHz to 80 MHz

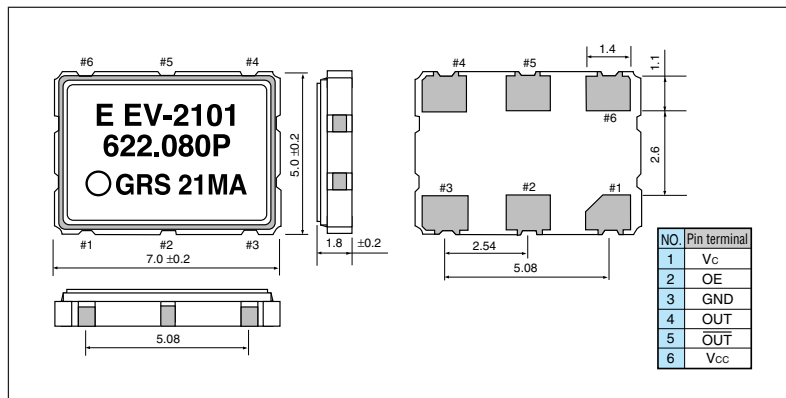
*1 This includes initial frequency tolerance, temperature variation, supply voltage variation, reflow drift, and 10 years aging (As per below table).

*2 For -40 °C to +85 °C, please contact us for inquiries.

Operating voltage		3.3 V	
Frequency range (MHz)		77.76 to 700	
Output mode		P : LV-PECL	L : LVDS
APR	±50 x 10 ⁻⁶ (-5 °C to +85 °C)	PGRS	LGRS
	±100 x 10 ⁻⁶ (-5 °C to +85 °C)	PHRS	LHRS
	±50 x 10 ⁻⁶ (-40 °C to +85 °C)	PGMS	LGMS
	±100 x 10 ⁻⁶ (-40 °C to +85 °C)	PHMS	LHMS

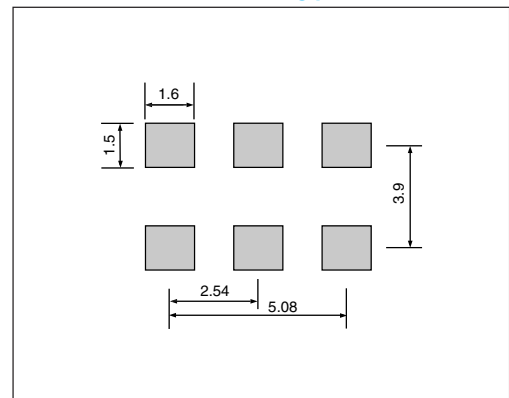
External dimensions

(Unit: mm)



Recommended soldering pattern

(Unit: mm)



THE CRYSTALMASTER



ENERGY SAVING EPSON

EPSON offers effective savings to its customers through a wide range of electronic devices, such as semiconductors, liquid crystal display (LCD) modules, and crystal devices. These savings are achieved through a sophisticated melding of three different efficiency technologies.

Power saving technology provides low power consumption at low voltages.

Space saving technology provides further reductions in product size and weight through super-precise processing and high-density assembly technology.

Time saving technology shortens the time required for design and development on the customer side and shortens delivery times.

Our concept of Energy Saving technology conserves resources

by blending the essence of these three efficiency technologies. The essence of these technologies is represented in each of the products that we provide to our customers.

In the industrial sector, leading priorities include measures to counter the greenhouse effect by reducing CO₂, measures to preserve the global environment, and the development of energy-efficient products. Environmental problems are of global concern, and although the contribution of energy-saving technology developed by EPSON may appear insignificant, we seek to contribute to the development of energy-saving products by our customers through the utilization of our electronic devices. EPSON is committed to the conservation of energy, both for the sake of people and of the planet on which we live.

WORKING WITH ENVIRONMENTAL ISSUES

In 1988, Seiko Epson led in working to abolish CFCs, and perfect abolition of those ozone layer-destroying substances was achieved in 1992. In 1998, the 10th year of start of the CFC-free activity, Seiko Epson set this year as the "Second Environmental Benchmark Year" and established a new corporate General Environmental Policy. Seiko Epson is tackling with environmental issues comprehensively.

At the end of Fiscal 1988, Seiko Epson succeeded in abolishing chloric solvents doubted to be harmful to human body. In fiscal 1999, Seiko Epson started the activity with a goal of abolishing lead solder pointed out possibility of environmental pollutant.

Promotion of Environment Management System conforming to International Standard

To strengthen management for environmental activities, Seiko Epson Group aims at acquisition of the ISO14001 certification for Japanese and abroad main business bases (including affiliates) for manufacturing, sales, software development and others.

As of May 25, 2001, planned 68 bases of all manufacturing bases and some non-manufacturing bases have acquired the certification.



Co-existence Mark

The environmental mark symbolizing Epson's basic stance of "Co-existence with Nature". The design incorporates a fish, flower, and water, representing mutually supportive co-existence.



ISO14000 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

Seiko-Epson quickly began working to acquire company-wide ISO9000 series certification, and has acquired ISO9001 or ISO9002 certification with all targeted products manufactured in Japanese and overseas plants.

The Quartz Device Operations Division (Ina Japan, EPM and SZE) have acquired QS-9000 certification, which are of higher level.



QS-9000:

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

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