

EG-2102CA -High frequency PECL Oscillator-

◆ Features

- Generates high frequency clock from a high stability SAW (surface acoustic wave) resonator.
- Differential LV-PECL output.
- Very low jitter/low phase noise.
- Small SMD in 7x5mm, Max1.4mm height, ceramic package.

◆ Applications

- 10Gigabit Ethernet, Fibre channel, High-end Server

◆ Absolute Maximum Ratings

Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Supply Voltage	V _{CC}	V	-0.5		+4.0	V _{CC} - GND
Storage temperature	T _{stg}	°C	-40		+100	Stored as bare product after unpacking
Solder heat resistance of the outer lead	T _{sol}	Max. 240°C x Max. 10s x 2 times				

◆ Operating range

Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Supply voltage	V _{CC}	V	3.0	3.3	3.6	
Operating temperature	T _{OPR}	°C	0		+70	P version
			-5		+85	R version
Output load	RL	Ω	50			Terminated to V _{CC} -2V

◆ Frequency characteristics

(V_{CC}=3.0 to 3.6, GND=0.0V, Load=Max, Output bias=V_{CC}-2.0V)

Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Oscillation Range	f _{osc}	MHz	100		700	
Frequency Stability	df/f ₀	ppm	+/-100			H stability *1
			+/-50			G stability *1
Aging	dfa	ppm	+/-5 1 st year			N (Excluding Aging) condition

*1 This includes initial frequency tolerance, temperature variation, supply voltage variation, load variation and reflow drift.

Condition "A" includes 10yrs aging. Condition "N" doesn't include aging.

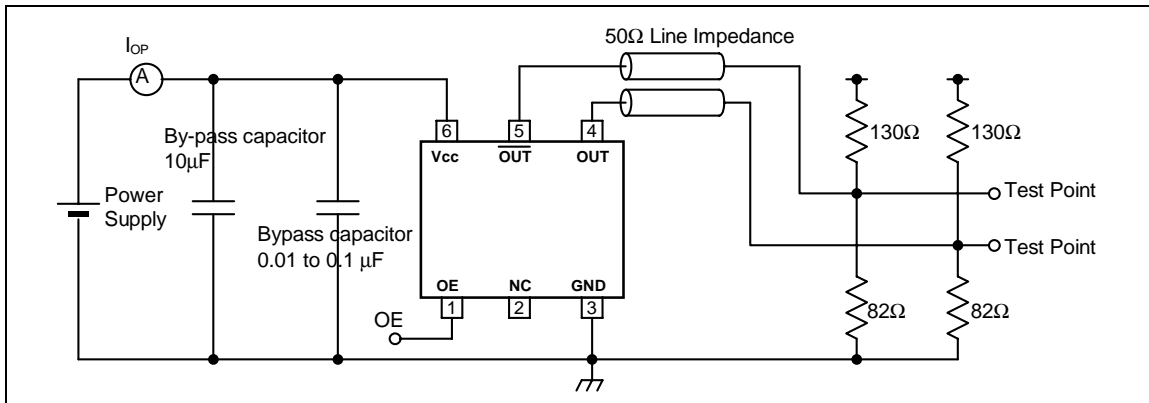
◆ Electrical characteristics

(V_{CC}=3.0 to 3.6, GND=0.0V, Load=Max, Output bias=V_{CC}-2.0V)

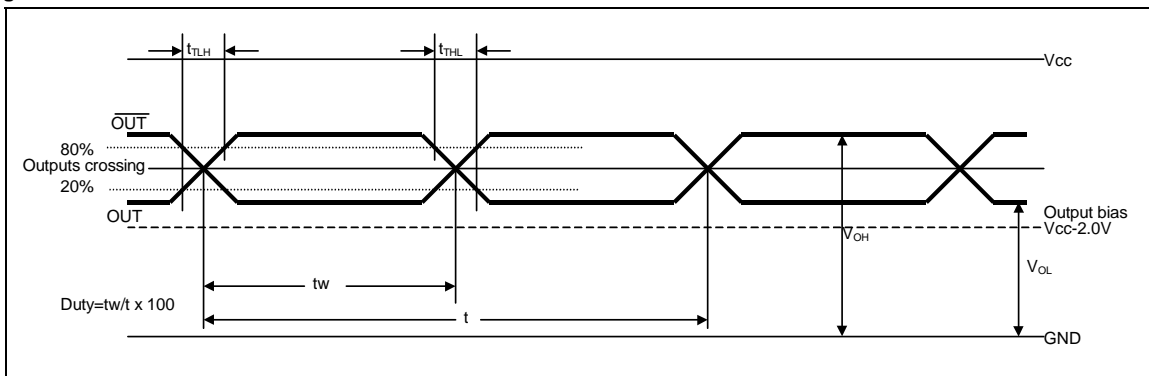
Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Start up time	t _{osc}	ms			10	t=0 at V _{CC} =3.135V
Current consumption	I _{OP}	mA		80	100	With 50Ω load
Disable current	I _{OE}	mA			32	OE=GND
Rise time	t _{TLH}	ps			400	20-80% of (VOH-VOL)
Fall time	t _{THL}	ps			400	80-20% of (VOH-VOL)
Duty at outputs crossing point	tw/t	%	45		55	P version. 100 to 700MHz
			48		52	D version. <350MHz
High level output voltage	V _{OH}	V	V _{CC} -1.03	2.35	V _{CC} -0.88	V _{CC} =3.3V, *4
Low level output voltage	V _{OL}	V	V _{CC} -1.81	1.60	V _{CC} -1.62	V _{CC} =3.3V
High level input voltage	V _{IH}	V	0.7V _{CC}			OE Terminal.
Low level input voltage	V _{IL}	V			0.3V _{CC}	OE Terminal.
Output disable time	T _{PXZ}	ns			100	When OE turns High to Low.
Output enable time	T _{PZX}	ns			100	When OE turns Low to High.
Phase Jitter *2	t _{PJ}	UI		0.072x10 ⁻³		12KHz to 20MHz, rms
		UI		0.103x10 ⁻³		50KHz to 80MHz, rms
Period Jitter *3 n=50000 samples	t _{DJ}	ps		5	10	Deterministic Jitter
	t _{RJ}	ps		3	4	σ of Random Jitter
	t _{RMS}	ps		3	4	σ of Total jitter distribution
Accumulated Jitter *3 n=2 to 50000 cycles	t _{P-P}	ps		25	40	Peak to Peak of jitter distribution
	t _{acc}	ps		4	5	σ of Total jitter distribution

*2 Measured by SSB phase noise test equipment. *3 Measured by Time interval analyzer or oscilloscope. *4 V_{OH} = V_{CC}-1.09 MIN at Ta<0°C

◆ Test circuit

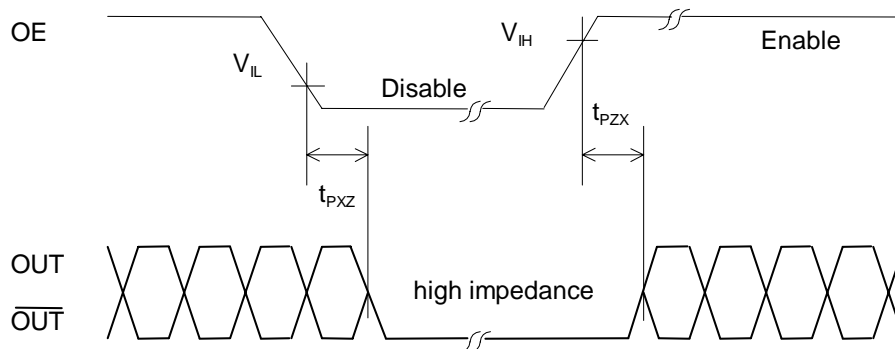


◆ Timing chart

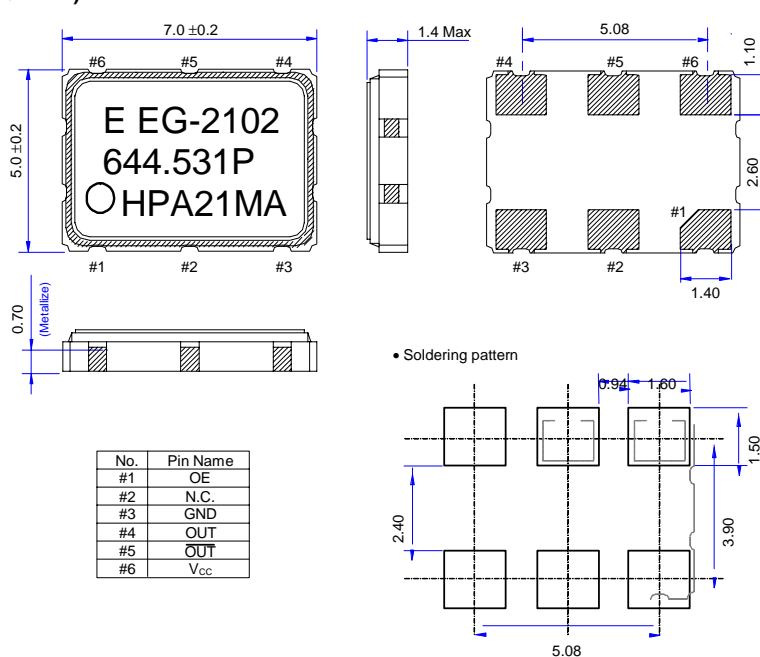


◆ OE function and timing

OE terminal	Osc. circuit	Output
High or Open	Enable	Enable
Low	Enable	Disable (high impedance)

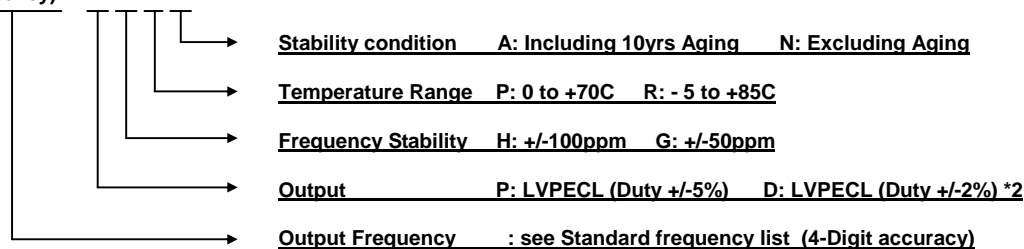


◆ External Dimensions (Unit : mm)



◆ Part Numbering Guide *1

EG-2102CA - (Frequency)M - P H P A



*1: Available combination : xHPA, xHPN, xHRA, xHRN, xGPN

For xGPA and xGRN, please contact Epson.

xGRA is not available.

*2: D (Duty+/-2%) is available under 350MHz.

◆ Standard Frequency List

100.0000	106.2500	125.0000	155.5200	156.2500	161.1328 *3
200.0000	212.5000	250.0000	311.0400	312.5000	322.2656 *4
400.0000	425.0000	500.0000	622.0800	625.0000	644.5313 *5
159.3750					

Please round off 5th digit specify 4-digit accuracy under decimal point.

Nominal frequency: *3=161.1328125MHz, *4=322.265625MHz, *5=644.53125MHz