

EG-2021CA 2.5V LVC MOS Output Oscillator

Preliminary

◆ Features

- Generates high frequency clock from a high stability SAW (Surface Acoustic Wave) resonator.
- 2.5V-CMOS output.
- Very low jitter/low phase noise.
- Small SMD in 7x5mm, Max1.4mm height, ceramic package.

◆ Applications

- Ethernet, Fibre channel, InfiniBand, PCI-Express, RapidIO, Hypertransport, SONET etc.

◆ Absolute Maximum Ratings

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

◆ Operating range

Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Supply voltage	V _{DD}	V	2.375	2.5	2.625	
Operating temperature	T _{opr}	°C	0		+70	P version
			-5		+85	R version
Output load	CL	pF			15	

◆ Frequency characteristics

(V_{DD}=2.375 to 2.625, GND=0.0V, Load=Max,)

Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Output frequency Range	f _{osc}	MHz	62.5		170	
Frequency Stability	df/f ₀	ppm	+/-100			H stability, *1
			+/-50			G stability, *1

*1 This includes initial frequency tolerance, temperature, supply voltage variation and loading variation.

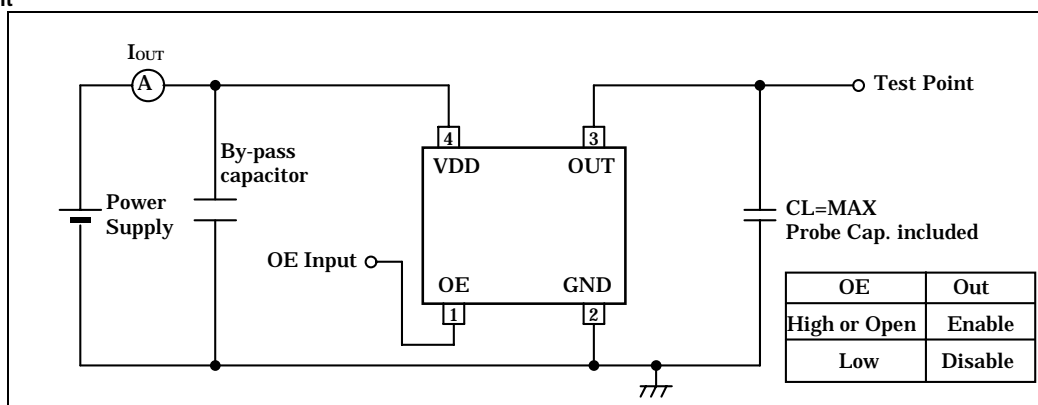
◆ Electrical characteristics

(V_{DD}=2.375 to 2.625, GND=0.0V, Load=Max)

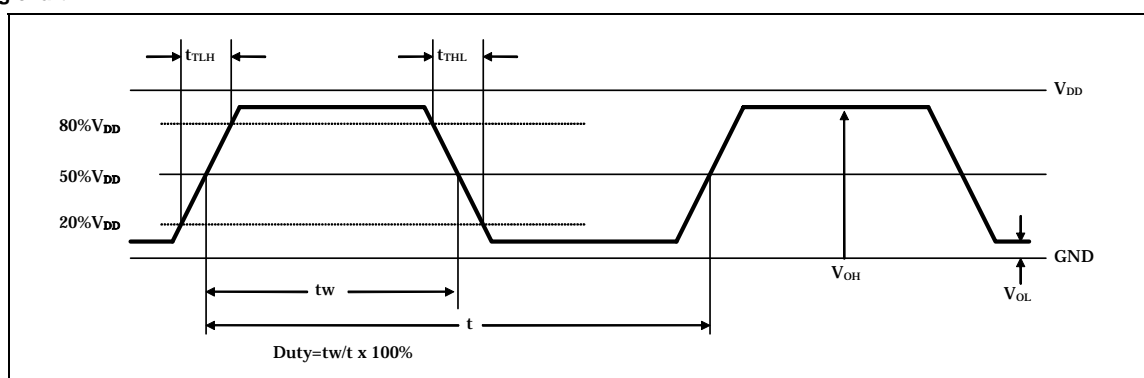
Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Start up time	T _{osc}	ms			10	t=0 at V _{DD} =2.375V
Current consumption	I _{OP}	mA		20	TBD	CL=15pF
		mA		15	TBD	No Load
Output disable current	I _{OE}	mA			0.6	OE=GND
Rise time	t _{TLH}	ns		1.0	TBD	20-80% of (VOH-VOL)
Fall time	t _{THL}	ns		1.0	TBD	80-20% of (VOH-VOL)
Duty	tw/t		45		55	at 50% V _{DD}
High level output voltage	V _{OH}	V	V _{DD} -0.4			IOH=-8mA
Low level output voltage	V _{OL}	V			0.4	IOL=8mA
High level input voltage	V _{IH}	V	0.7V _{DD}			OE Terminal
Low level input voltage	V _{IL}	V			0.3V _{DD}	OE Terminal
Phase Jitter *2 12KHz to 20MHz offset	t _{PJ}	UI		0.027x10 ⁻³		RMS, @62.5 to 170MHz
		ps		0.21		RMS, @125MHz
Period Jitter *3 n=50000 samples	t _{RJ}	ps		3	4	σ of Random Jitter
		tp-p	ps	25	40	Peak to Peak of jitter distribution
Accumulated Jitter *3 n=2 to 50000 cycles	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.

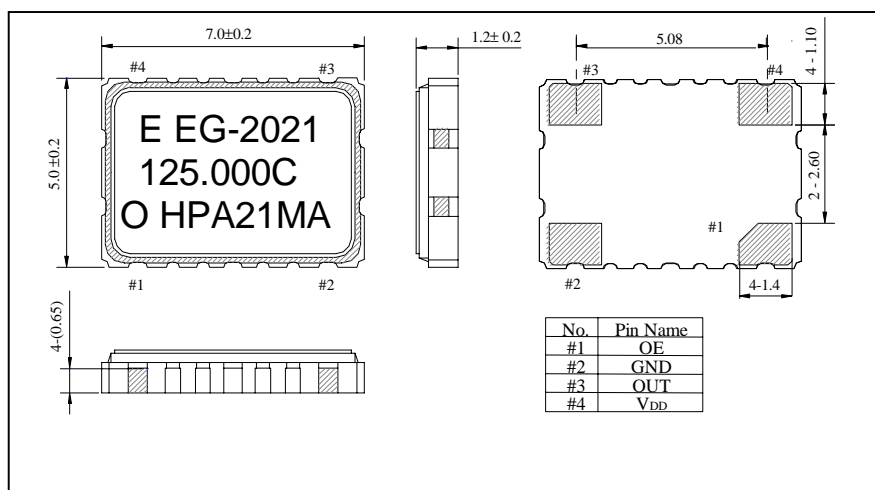
◆ Test circuit



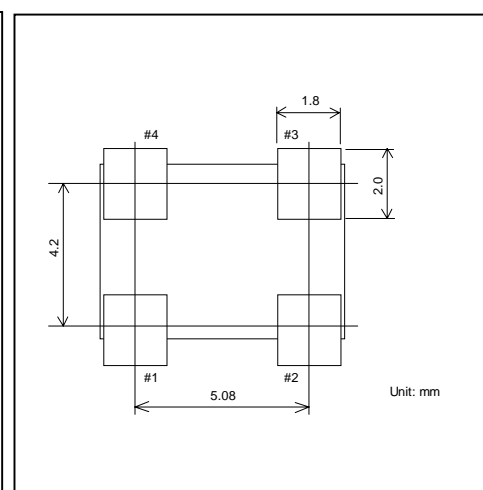
◆ Timing chart



◆ External Dimensions (Unit : mm)

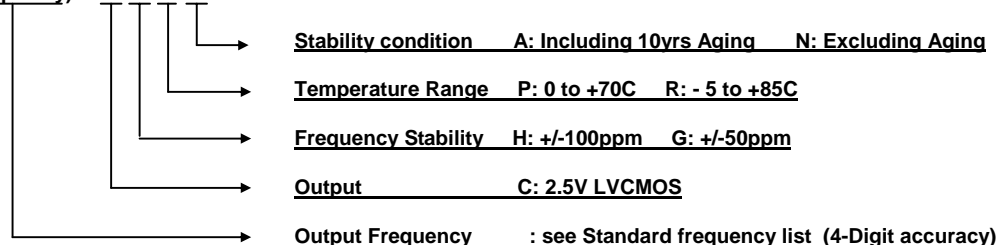


◆ Recommended solder pattern



◆ Part Numbering Guide *4

EG-2021CA - (Frequency)M - C H P A



*4: CGRA is not available.

*5: CGxx and CxRx are not available below 100MHz.

◆ Developed Frequency List and Available Part No. Combinations:

Frequency	Part No. Suffix Available
62.5000	CHPA, CHPN
64.0000	CHPA, CHPN
66.4063	CHPA, CHPN
66.5000	CHPA, CHPN
66.6667	CHPA, CHPN
71.5000	CHPA, CHPN
75.0000	CHPA, CHPN
77.7600	CHPA, CHPN
78.1250	CHPA, CHPN
80.0000	CHPA, CHPN
80.5664	CHPA, CHPN
83.0000	CHPA, CHPN
83.3143	CHPA, CHPN
87.5000	CHPA, CHPN
90.0000	CHPA, CHPN
98.3040	CHPA, CHPN
100.0000	CHPA, CHPN, CHRA, CHRN, CGPN
106.2500	CHPA, CHPN, CHRA, CHRN, CGPN
108.0000	CHPA, CHPN
125.0000	CHPA, CHPN, CHRA, CHRN, CGPN
128.0000	CHPA, CHPN
132.8125	CHPA, CHPN
133.0000	CHPA, CHPN, CHRA, CHRN, CGPN
133.3333	CHPA, CHPN
143.0000	CHPA, CHPN
150.0000	CHPA, CHPN
155.5200	CHPA, CHPN, CHRA, CHRN, CGPN
156.2500	CHPA, CHPN, CHRA, CHRN, CGPN
159.3750	CHPA, CHPN, CHRA, CHRN, CGPN
160.0000	CHPA, CHPN
161.1328	CHPA, CHPN, CHRA, CHRN, CGPN
164.3555	CHPA, CHPN
166.0000	CHPA, CHPN
166.6286	CHPA, CHPN, CHRA, CHRN, CGPN
167.3316	CHPA, CHPN, CHRA, CHRN, CGPN