EG-2021CA

2.5V LVCMOS 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	Tstg	°C	-40		+100	Stored as bare product.
Solder heat resistance	Tsol	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	Topr	°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	fosc	MHz	62.5		170	
Frequency Stability	df/f0	ppm	+/-100			H stability, *1
			+/-50			G stability, *1

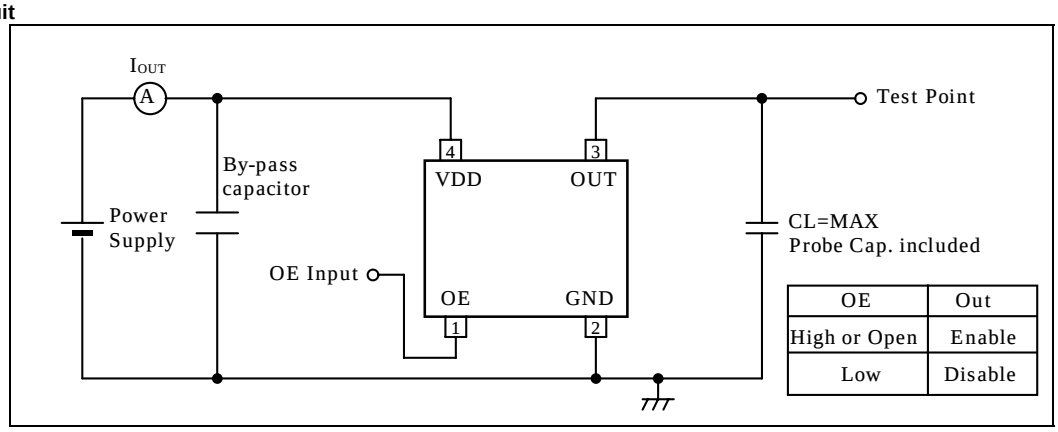
*1 This includes initial frequency tolerance, temperature, supply voltage variation and loading variation.

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

Item	Symbol	Unit	MIN.	TYP.	MAX.	Condition
Start up time	Tosc	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	tacc	ps		4	5	σ of Total jitter distribution

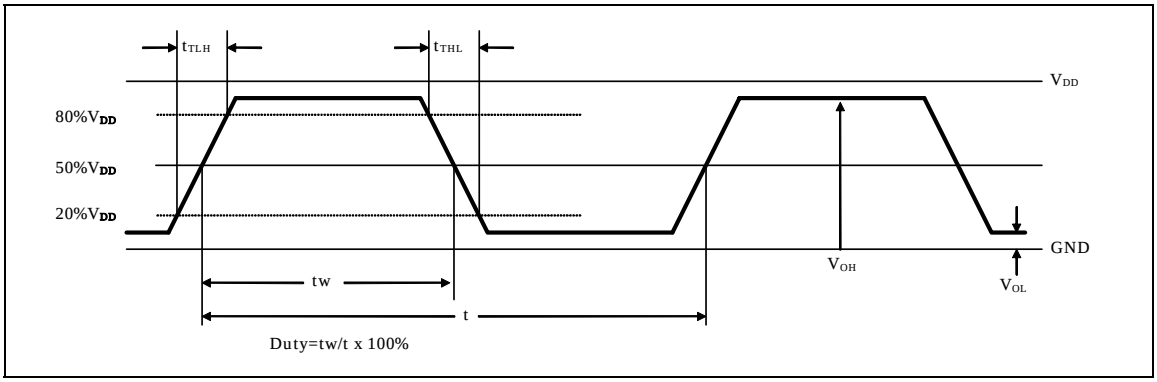
*2 Measured by SSB phase noise test equipment. *3 Measured by Time interval analyzer or oscilloscope.

♦ **Test circuit**

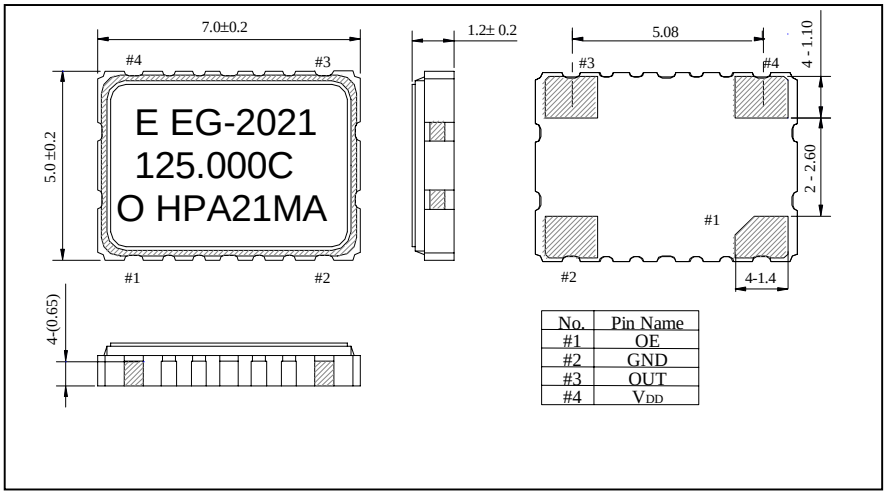


OE	Out
High or Open	Enable
Low	Disable

♦ **Timing chart**

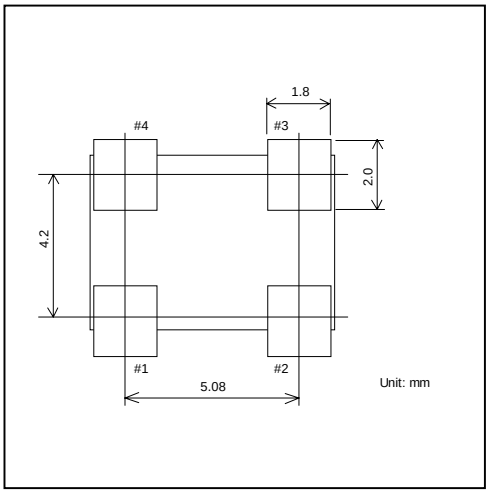


♦ **External Dimensions (Unit : mm)**



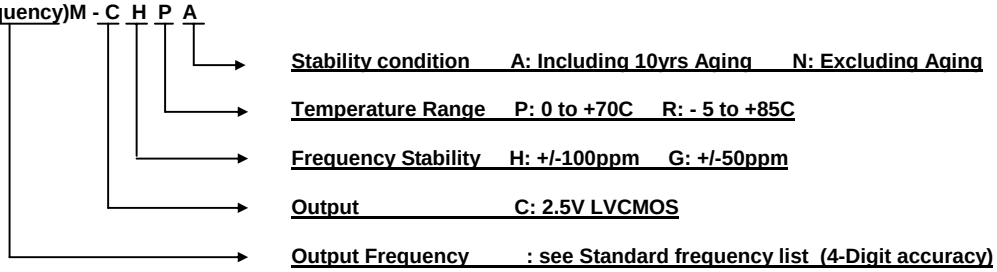
No.	Pin Name
#1	OE
#2	GND
#3	OUT
#4	VDD

♦ **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