3.3V Differential LV-PECL output SAW oscillator for high temp environment

EG – 2103CA – P

- **Frequency range: 100 ~ 625 MHz**
- **Frequency stability: +/-100×10^{-6}**
- **Temperature range: -5 ~ +85 °C, -20~+70 °C**
- **Low jitter. (Fundamental Oscillation)**
- **Package: 7.0×5.0×1.2 mm$_{Typ.}$**
- **Output Control (OE)**
- **Heat resistance allow reflow soldering for Pb-Free**
- **RoHS Compliant**

1. Absolute Maximum Rating

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Supply voltage	V_{CC}	-0.5	-	7.0	V	
Input voltage	V_{IN}	-0.5	-	V_{CC}+0.5	V	
Storage temperature range	T_stg	-40	-	+100	°C	Stored as bare product

2. Operating Range

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Supply voltage	V_{CC}	3.0	3.3	3.6	V	
Operating temperature range	T_use	-5	-	+85	°C	Code "R" *1
		-20	-	+70		Code "S" *1
Output load condition (LV-PECL)	L_ECL	-	50	-	Ω	

3. Electrical Characteristics

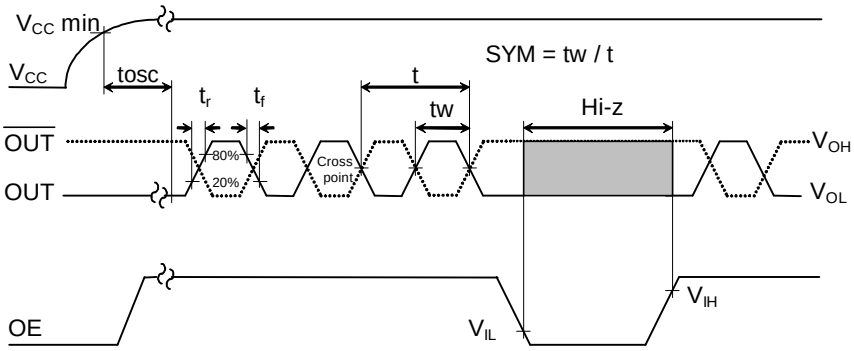
Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Start up time	t_{OSC}	-	-	10	ms	t = 0 at V_{CC} = Min.
Current consumption	I_{CC}	-	80	100	mA	L_ECL = 50 Ω , OE = V_{CC}
Output disable current	I_dis	-	-	32	mA	OE = GND
Rise time	tr	-	-	400	ps	20 % → 80 % of (V_{OH} - V_{OL})
Fall time	tf	-	-	400	ps	80 % → 20 % of (V_{OH} - V_{OL})
Symmetry	SYM	45	-	55	%	at outputs crossing point
High level output voltage	V_{OH}	V_{CC}-1.03*2	2.345	V_{CC}-0.88	V	DC characteristics
Low level output voltage	V_{OL}	V_{CC}-1.81*3	1.595	V_{CC}-1.62*4		
High level input voltage	V_{IH}	70 %V_{CC}	-	V_{CC}+0.3	V	OE terminal
Low level input voltage	V_{IL}	0.3	-	30 %V_{CC}		
Input current	I_{IH}	-200	-	-20	μA	V_{IN} = 70 %V_{CC}
	I_{IL}	-20	-	-2		V_{IN} = GND
Output disable time	t_{PXZ}	-	-	100	ns	
Output enable time	t_{PZX}	-	-	100	ns	
Jitter*5	t_{RMS}	-	3	-	ps	σ(RMS of total distribution)
	t_{p-p}	-	25	-		Peak to Peak

4. Frequency Characteristics

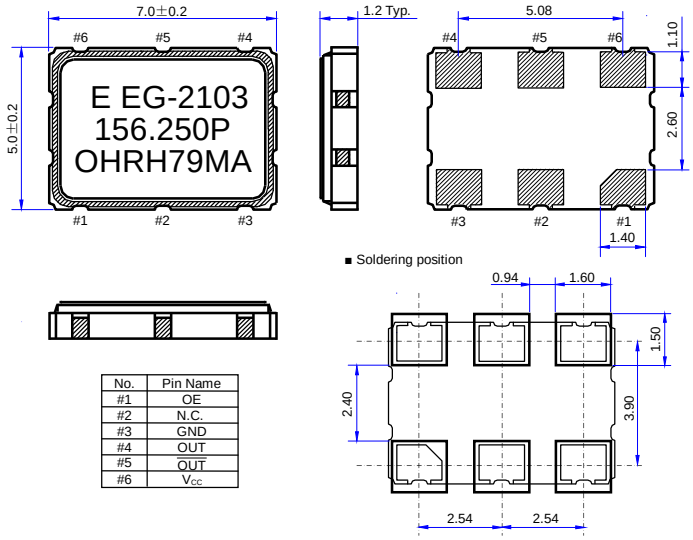
Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Output frequency	fo	100.00	-	156.25	MHz	
		200.00	-	312.50		
		400.00	-	625.00		
Frequency tolerance*6	f_tol	-100	-	+100	×10^{-6}	

*Note 1: Please see "7.Product Codes".
*Note 2: V_{OH}=V_{CC}-1.09 V Min. at T_use< 0 °C
*Note 3: V_{OL}=V_{CC}-1.83 V Min. at T_use< 0 °C
*Note 4: V_{OL}=V_{CC}-1.56 V Max. at T_use< 0 °C
*Note 5: Based on DTS-2075 Digital timing system made from WAVECREST CORPORATION with jitter analysis software VISI6.
*Note 6: This includes initial frequency tolerance, temperature, supply voltage variation, reflow drift and estimation of 5 years aging at T_use Max.
*Note : Please place a 0.01 μF to 0.1 μF capacitor closely between V_{CC} and GND to obtain stable operation and protest against power line ripple.

5. Timing Chart

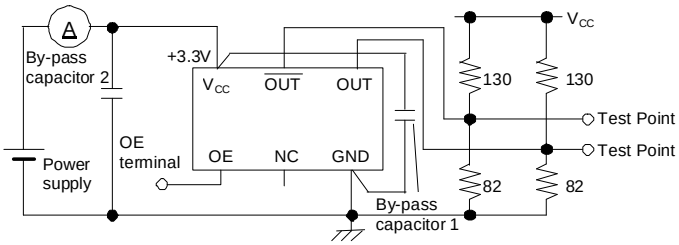


6. External Dimensions (Unit : mm)



No.	Pin Name
#1	OE
#2	N.C.
#3	GND
#4	OUT
#5	$\overline{OUT}$
#6	V_{CC}

▪ Test Circuit



(1)By-pass capacitor 1(approx. 0.01 uF to 0.1uF) is placed closely between V_{CC} to GND.
(2)By-pass capacitor 2 (approx.10uF) is placed closely between V_{CC} to GND.

7. Product Codes

EG-2103CA 156.2500M P H R H

Aging option:	**H**: include 5 years aging @T_use Max.
Temperature Range:	**R**: -5~+85°C, **S**: -20~+70°C
Frequency tolerance:	**H**: +/-100×10^{-6}
Output:	**P**: LV-PECL, **L**: LVDS

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