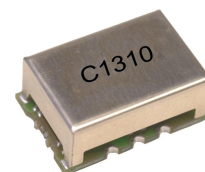


Typical Applications

Base Stations
 Test Equipment
 Synthesizers

Features

Surface Mount Package
 Reflow Process Compatible
 AT-Cut Crystal
 SONENT Minimum Clock Specification
 Low Phase Noise
 Tight Tolerances



Frequency range

1 MHz – 700 MHz

Standard frequencies

10; 20; 24.705; 30.720; 32.768; 50; 68.768; 76.8 MHz
 77.76; 100; 125; 150; 155.52; 156.25; 175; 200 MHz
 250; 280; 312.5; 340; 400; 622,08 MHz

Frequency stabilities¹ [Standard]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code ⁵
vs. operating temperature range (Referenced to +25°C)	-10.0		+10.0	ppm	-20 ... +70°C	D105
Parameter	Min	Typ	Max.	Units	Condition	
Initial tolerance	-5.0		+5.0	ppm	V _s ± 5% Load ± 5%	
vs. supply voltage change	-1.0		+1.0	ppm		
vs. load change	-1.0		+1.0	ppm		
vs. aging /1. Year	-3.0		+3.0	ppm		
vs. aging / year (following Years)	-1.0		+1.0	ppm		

Frequency stabilities¹ [meets SONENT Minimum Clock Specification - Option]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code ⁵
vs. operating temperature range					-20 ... +70°C	D205
Parameter	Min	Typ	Max.	Units	Condition	
overall tolerance	-20.0		+20.0	ppm	(15 Years aging, temp, initial, supply, load)	

Supply voltage

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code ⁵
Supply voltage (Vs)	4.75	5.0	5.25	VDC		SV050
Current consumption			40	mA	@ HCMOS < 155 MHz	
Current consumption			90	mA	@ PECL < 155 MHz	
Supply voltage (Vs)	3.135	3.3	3.465	VDC		SV033
Current consumption			30	mA	@ LVHCMOS < 155 MHz	
Current consumption			80	mA	@ LVPECL < 155 MHz	
Current consumption			25	mA	@ LVDS < 155 MHz	

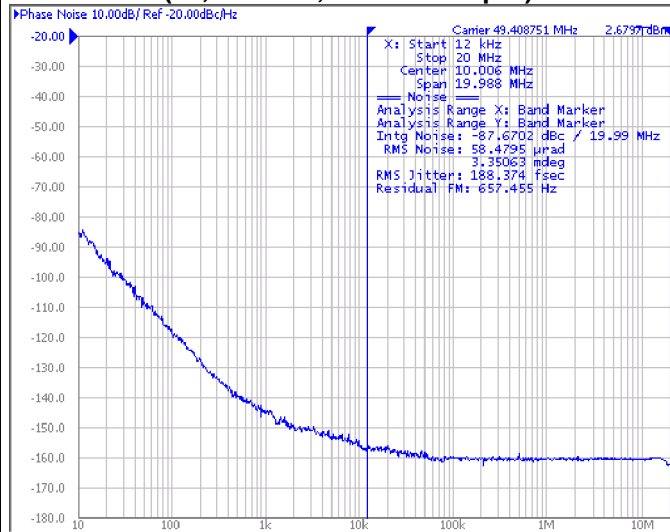
RF output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code ⁵
Signal	HCMOS				@ 15 pF 10 to 90 % @ Vs/2	RFH
Load		15.0		pF		
Rise and Fall time			5	ns		
Duty cycle	40		60	%		
Signal	PECL				Vs - 2V 20 to 80 %	RFP
Load		50		Ω		
Rise and Fall time			1	ns		
Duty cycle	45		55	%		
Signal	LVDS				10 to 90 %	RFL
Load		100		Ω		
Rise and Fall time			1	ns		
Duty cycle	40		60	%		
Signal	Sinewave					RFS
Load		50		Ω		
Output Power	-3	0	3	dBm		

Additional parameters

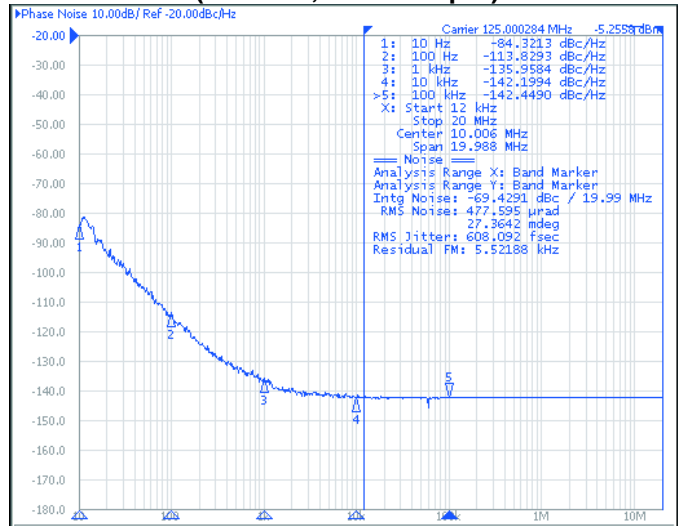
Parameter	Min	Typ	Max.	Units	Condition
Phase Noise		-85		dBc/Hz	10 Hz @49,408 MHz
		-120		dBc/Hz	100 Hz HCMOS
		-145		dBc/Hz	1 kHz 3,3V
		-155		dBc/Hz	10 kHz
		-160		dBc/Hz	100 kHz
Jitter		0,2		ps RMS	@ 12 kHz to 20 MHz
Phase Noise		-80		dBc/Hz	10 Hz @125 MHz
		-115		dBc/Hz	100 Hz PECL
		-135		dBc/Hz	1 kHz 3,3V
		-141		dBc/Hz	10 kHz
		-141		dBc/Hz	100 kHz
Jitter		0,6		ps RMS	@ 12 kHz to 20 MHz
Phase Noise		-62		dBc/Hz	10 Hz @400 MHz
		-93		dBc/Hz	100 Hz PECL
		-124		dBc/Hz	1 kHz 3,3V
		-142		dBc/Hz	10 kHz
		-143		dBc/Hz	100 kHz
Jitter		0,2		ps RMS	@ 12 kHz to 20 MHz
Weight				2	g
Processing & Packing	handling&processing note				

Typical Phase Noise and Jitter (49,408 MHz; HCMOS output)



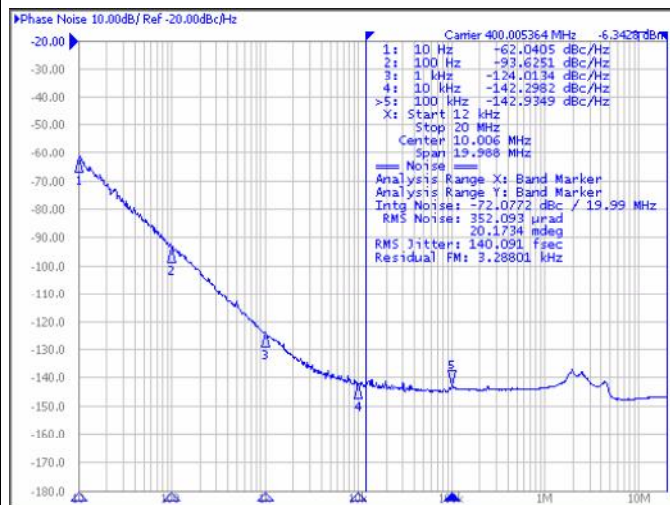
Frequency range [Hz]	Jitter [ps rms]
12kHz to 20MHz	0.188ps

(125 MHz; PECL output)



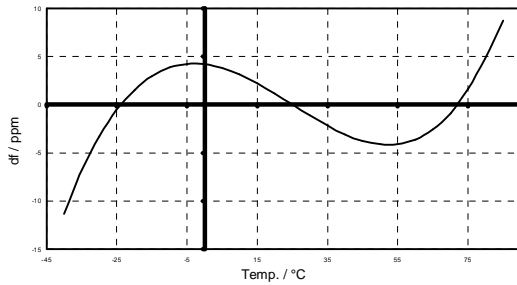
Frequency range [Hz]	Jitter [ps rms]
12kHz to 20MHz	0.608ps

(400 MHz; PECL output)



Frequency range [Hz]	Jitter [ps rms]
12kHz to 20MHz	0.140ps

Typical frequency stability vs temp



Standard Shipping Method

Lage im Gurt
Position in tape
Pin 1

Abwickelrichtung
Unwinding direction

Gurtunterseite
Tape bottom side

Gurtoberseite
Tape upper side

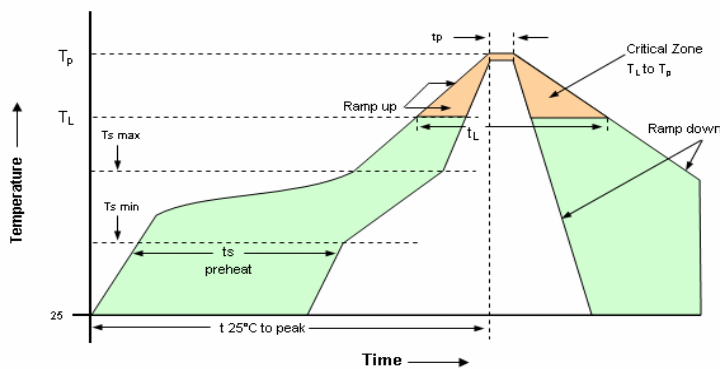
*bei $W \leq 24$ mm nur untere Lochreihe
*by $W \leq 24$ mm only lower hole line

Production tolerance complying DIN IEC 286-3

Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
G218B / G223B	24	83,3	850	12

Recommended Reflow Profile

Solderprofile:



Profile Feature	Pb-Free Assembly /Sn-Pb Assembly	Profile Feature	Pb-Free Assembly /Sn-Pb Assembly

Average ramp-up rate (T_L to T_p)	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min $T_{S_{min}}$ -Temperature Min $T_{S_{max}}$ -Time (min to max) (ts)	150°C 200°C 60-180 seconds	Time maintained above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds
$T_{S_{max}}$ to T_L - Ramp-up Rate	3°C/second max.		
Time maintained above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds	Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Peak Temperature (T_p)	max 260°C	Ramp-down Rate	6°C/second max.

Note: All temperatures refer to topside of the package, measured on the package body surface.
SMD oscillators must be on the top side of the PCB during the reflow process.

How to Order this Product:

Model	Stability Code	Supply Voltage Code	RF Output Code	Package Code	Frequency Control / Enable	Frequency
C1310	D105	SV050	RFH	A1		

vs.operat. temp. range:

D105: ±10ppm -20 ... +70°C
D205: -20 ... +70°C

Enclosures:

A1: G223B (4 pad)
B1: G218B (6 pad)

Signal:

RFH: HCMOS
RFP: PECL
RFL: LVDS
RFS: Sinewave

Supply:

SV050: 5V
SV033: 3.3V

Dimension: mm