

CRYSTAL OSCILLATOR (SPXO)

OUTPUT : LV-PECL, LVDS

SG2016EHN / VHN
SG2520EHN / VHN

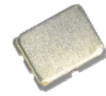


Product Number
SG2016EHN: X1G006141xxxx15
SG2016VHN: X1G006121xxxx15
SG2520EHN: X1G005921xxxx15
SG2520VHN: X1G005941xxxx15

- Frequency range : 25 MHz to 500 MHz
- Supply voltage : 1.8 V Typ. (LVDS only) / 2.5 V Typ. / 3.3 V Typ.
- Frequency tolerance : $\pm 20 \times 10^{-6}$
- Operating temperature range : -40 °C to +85 °C, -40 °C to +105 °C
- Function : Output enable (OE) or Standby (\overline{ST})
- Phase jitter : 50 fs Max.
(391 MHz < fo ≤ 500 MHz, V_{CC} = 2.5 V, 3.3 V)



SG2016EHN
SG2016VHN
(2.0 × 1.6 × 0.63 mm)



SG2520EHN
SG2520VHN
(2.5 × 2.0 × 0.74 mm)

Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		LV-PECL SG2016EHN / SG2520EHN	LVDS SG2016VHN / SG2520VHN		
Output frequency range	fo	25 MHz to 500 MHz			Please contact us for available frequencies.
Supply voltage	V _{CC}	C: 3.3 V ± 5 % D: 2.5 V ± 5 %		E: 1.8 V ± 5 %	
Storage temperature range	T _{stg}	-55 °C to +125 °C			
Operating temperature range	T _{use}	G: -40 °C to +85 °C, H: -40 °C to +105 °C			
Frequency tolerance	f _{tol}	C: $\pm 20 \times 10^{-6}$ Max.			Includes initial frequency tolerance, frequency / temperature characteristics, frequency / voltage coefficient and 10 years aging (+25 °C)
Current consumption	I _{CC}	60 mA Max.	-		OE or \overline{ST} = V _{CC} , L _{ECL} = 50 Ω
		-	25 mA / 30 mA / 25 mA Max. 28 mA / 35 mA / 28 mA Max. 28 mA / 35 mA / 30 mA Max.	25 mA / - / 25 mA Max.	25 MHz ≤ fo < 212 MHz 212 MHz ≤ fo < 392 MHz 392 MHz ≤ fo ≤ 500 MHz
Disable current	I _{dis}	35 mA Max.	20 mA Max.		OE = GND
Stand-by current	I _{std}	30 μA Max.			\overline{ST} = GND, T _{use} Max. = +85 °C
		60 μA Max.			\overline{ST} = GND, T _{use} Max. = +105 °C
Symmetry	SYM	45 % to 55 %			At output crossing point
Output voltage (LV-PECL)	V _{OH} V _{OL}	V _{CC} - 1.1 V Min.	-		Output option: A, DC characteristic
		V _{CC} - 1.5 V Max.	-		
Differential swing	V _{sw}	0.8 V to 2.0 V	500 mV to 900 mV	500 mV to 900 mV	Output option: A
		-	800 mV to 1 600 mV	-	Output option: B
Output voltage (LVDS)	V _{OD}	-	600 mV to 1 200 mV	600 mV to 1 200 mV	Output option: C
		-	250 mV to 450 mV	250 mV to 450 mV	Output option: A
		-	400 mV to 800 mV	-	Output option: B
		-	300 mV to 600 mV	300 mV to 600 mV	Output option: C
	dV _{OD}	-	50 mV Max.		dV _{OD} = V _{OD1} - V _{OD2}
	V _{OS}	-	1.15 V to 1.35 V	0.65 V to 0.85 V	Offset voltage, V _{OS1} , V _{OS2}
	dV _{OS}	-	50 mV Max.		dV _{OS} = V _{OS1} - V _{OS2}
Output load condition	L _{ECL}	50 Ω	-		Terminated to V _{CC} - 2.0 V
	L _{LVDS}	-	100 Ω		Connected between OUT and \overline{OUT}
Input voltage	V _{IH}	70 % V _{CC} Min.			OE or \overline{ST} terminal
	V _{IL}	30 % V _{CC} Max.			
Rise/Fall times	tr/tf	0.35 ns Max.			LV-PECL: 20 % - 80 % (V _{OH} - V _{OL}) LVDS: 20 % - 80 % differential output peak to peak
Start-up time	t _{str}	10 ms Max.			t = 0 at 90 % V _{CC}
Phase jitter	t _{pj}	250 fs Max.	250 fs Max.	400 fs Max.	25 MHz ≤ fo < 100 MHz
		90 fs Max.	100 fs Max.	130 fs Max.	100 MHz ≤ fo ≤ 156 MHz
		70 fs Max.	60 fs Max.	70 fs Max.	156 MHz < fo ≤ 212 MHz
		60 fs Max.	50 fs Max.	60 fs Max.	212 MHz < fo ≤ 391 MHz
50 fs Max.	391 MHz < fo ≤ 500 MHz				

Product Name SG2016 EHN 156.25000MHz C C H P Z A

(Standard form) ① ② ③ ④⑤⑥⑦⑧⑨

- ①Model ②Output (E: LV-PECL, V: LVDS) ③Frequency ④Supply voltage ⑤Frequency tolerance
⑥Operating temperature ⑦Function ⑧Output disable type (Z: High impedance) ⑨Output option

④Supply voltage
C 3.3 V Typ.
D 2.5 V Typ.
E* 1.8 V Typ.

⑤Freq. tolerance
C $\pm 20 \times 10^{-6}$

⑥Operating temp.
G -40 °C to +85 °C
H -40 °C to +105 °C

⑦Function
P OE
S \overline{ST}

⑨Output option		
	SG2016EHN / SG2520EHN	SG2016VHN / SG2520VHN
A	Default	V _{OD} = 250 mV to 450 mV
B*	-	V _{OD} = 400 mV to 800 mV
C	-	V _{OD} = 300 mV to 600 mV

E is only for SG2016VHN and SG2520VHN

*Not available for V_{CC} = 1.8 V Typ.

External dimensions

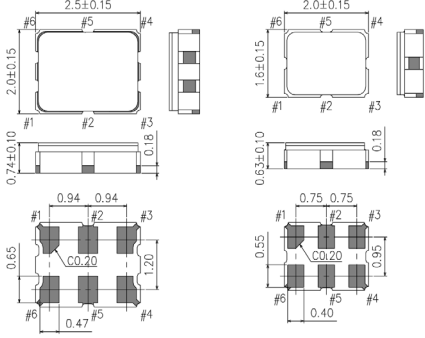
(Unit:mm)

Footprint (Recommended)

(Unit:mm)



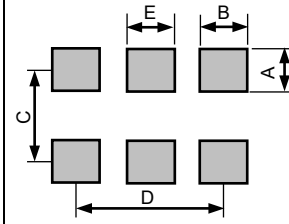
SG2520EHN / SG2520VHN SG2016EHN / SG2016VHN



Pin map

Pin	Connection
1	OE or ST
2	N.C. (Open or V _{CC})
3	GND
4	OUT
5	OUT
6	V _{CC}

Note:
 OE or ST pin = HIGH or "Open":
 Specified frequency output.
 OE or ST pin = LOW:
 Output is high impedance



	SG2520EHN SG2520VHN	SG2016EHN SG2016VHN
A	0.88	0.85
B	0.76	0.574
C	1.38	1.15
D	1.99	1.564
E	0.63	0.574

In order to achieve optimum jitter performance, it is recommended that 0.1 μF and 10 μF bypass capacitors should be connected between V_{CC} and GND and placed as close to the V_{CC} pin as possible.

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All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

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