

DAISHINKU Develops the DSO213AW, Slimmest Crystal Oscillator (SPXO) * in the World

April 19, 2010

DAISHINKU CORP. (President: Sohei Hasegawa) announces the development of the DSO213AW, the slimmest crystal oscillator in the world (thickness: 0.53 mm), designed to achieve narrower tolerances over wider temperature ranges.

In recent years, electronic devices continue to reduce in size while achieving ever higher performance and functionality. Demand continues growing for electronic components making up these devices to meet this trend. In the field of short-distance wireless communication modules especially, there has been growing need for reduction in size and thickness. Meanwhile, improved communication precision is an important challenge, for accommodating ever-higher communication speeds. Enhanced multifunctionality has accompanied increased device density as well as additional heat from the ICs, which raises concern about higher temperatures in product sets. For these reasons, it is imperative that electronic components ensure high precision over broader operational temperature ranges.

The DSO213AW crystal oscillator has been developed to address these challenges. This product, the slimmest in the world (2.0×1.6×0.53 mm externally), is approximately 58% smaller in volume than the conventional DSO221 series (2.5×2.0×0.8 mm), which achieved narrow tolerances over wider temperature ranges (e.g., $\pm 10 \times 10^{-6}$ at -20 to +70 deg.C, and $\pm 30 \times 10^{-6}$ at -40 to +105 deg.C). The DSO213AW thus meets the needs of reduced size and thickness, as well as enhanced multifunctionality in short-distance wireless modules and data cards.

Thickness has been successfully reduced by the new back-grinding technology (which helped make the IC slimmer), while ensuring ceramic base strength. The product thickness of 0.53 mm has been achieved by employing molten metal encapsulation to control stress applied to the ceramic base, in lieu of conventional electric welding encapsulation.

Narrower tolerances have been achieved compared with conventional SPXOs by taking advantage of the frequency control technology used in temperature-compensated crystal oscillators (TCXOs).

With operation guaranteed at temperatures up to +105 deg.C, the DSO213AW is well suited for automotive electronics applications. Featuring a broad frequency range (3.25 to 60 MHz), the DSO213AW is operable from low (+1.8V) to high(+3.3V) voltages.

The DSO213AW also boasts excellent environmental performance that meets the lead-free requirements and RoHS Directive in Europe.

*Source: survey on crystal oscillators conducted by DAISHINKU CORP., valid as of April 19, 2010

[Product]

DSO213AW

[Features]

2016size (2.0*1.6*0.53mm)

Offers Narrow deviation: $\pm 10 \times 10^{-6}$ / -20 to +70 deg.C , $\pm 12 \times 10^{-6}$ / -30 to +85 deg.C
 $\pm 15 \times 10^{-6}$ / -40 to +85 deg.C , $\pm 30 \times 10^{-6}$ / -40 to +105 deg.C

Output Frequency Range: 3.25 to 60 MHz

Supply Voltage: +1.8 to +3.3V

Output: C-MOS

[Applications]

WiLAN, WiMAX, PLC, Smart Grid, SSD, UWB, MIDs, Medical instruments, Mobile phones, Audio-Visual equipment, and Automotive electronics

[Mass Production date]

May,2010

[Sample price]

500 yen

[Manufacturing capacity]

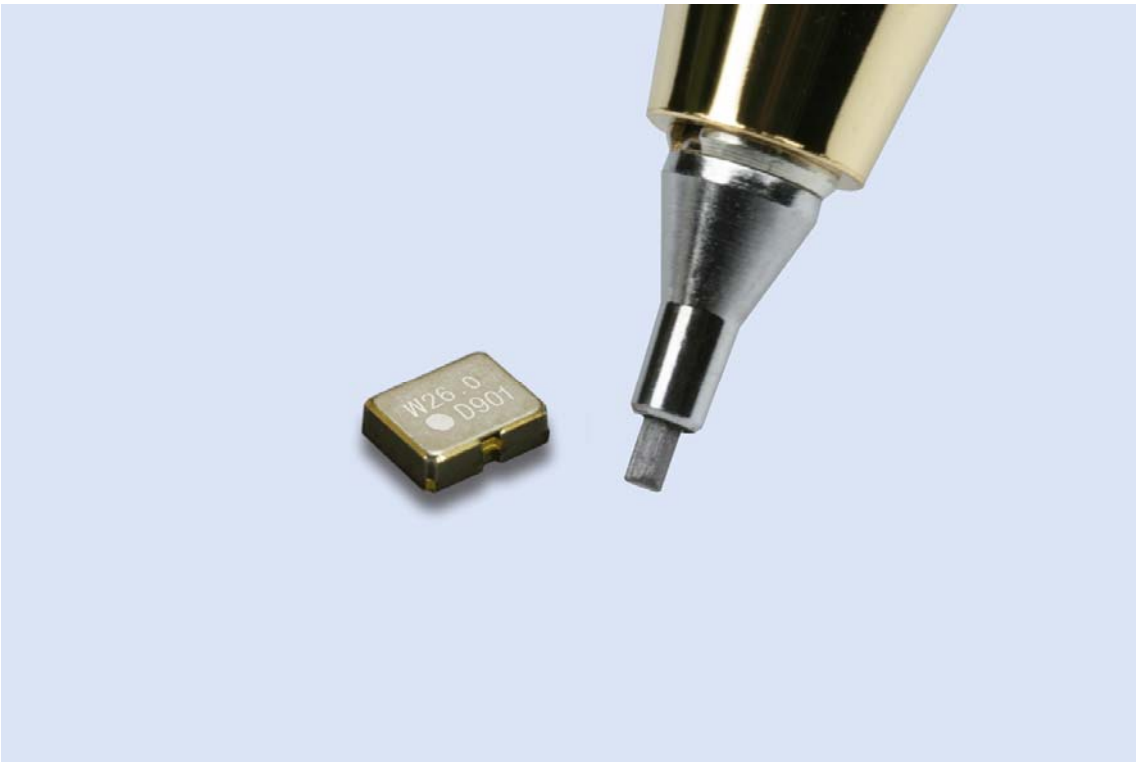
1million/month

[Electrical Specification]

Item		Legend	Spec.			Unit	Condition	
			min.	typ.	max.			
Supply Voltage		Vdd	+1.6	+1.8	+2.0	V	—	
			+2.25	+2.5	+2.75			
			+2.6	+2.8	+3.0			
			+3.0	+3.3	+3.6			
Operating Temperature Range		T_use	-40	—	+105	°C	—	
Frequency Tolerance		F_tol 1	-10	—	+10	*10 ⁻⁶	-20to+70°C	
		F_tol 2	-12	—	+12		-30to+85°C	
		F_tol 3	-15	—	+15		-40to+85°C	
		F_tol 4	-30	—	+30		-40to+105°C	
Current Consumption	3.25 ≤ F0 < 26 (MHz)	Idd	—	—	2.0	mA	Vdd=+1.8V	No Load
			—	—	2.5		Vdd=+2.5V	
			—	—	2.8		Vdd=+2.8V	
			—	—	3.0		Vdd=+3.3V	
	26 ≤ F0 ≤ 60 (MHz)		—	—	4.0		Vdd=+1.8V	
			—	—	4.5		Vdd=+2.5V	
			—	—	5.0		Vdd=+2.8V	
			—	—	5.5		Vdd=+3.3V	
Stand-byCurrent	Output Disable	I_std	—	—	10	μA	—	
Symmetry	0.5*Vdd	SYM	45	50	55	%	—	
Output	0Level Output voltage	Vol	—	—	Vdd*0.1	V	—	
	1Level Output voltage	Voh	Vdd*0.9	—	—			
	Rise Time	Tr	—	—	10	ns	Vdd*0.1-Vdd*0.9	
	Fall Time	Tf	—	—	10			
	Output Load	L_CMOS	15			pF	—	
#1pin Input	0Level Input Current	Iil	—	—	-0.01	mA	—	
	1Level Input Current	Iih	—	—	0.01			
	0Level Input Voltage	Vil	—	—	Vdd*0.2	V		
	1Level Input Voltage	Vih	Vdd*0.8	—	—			
Output Disable Time		Tplz	—	—	150	ns	—	
Output Enable Time		Tpzl	—	—	5	ms		

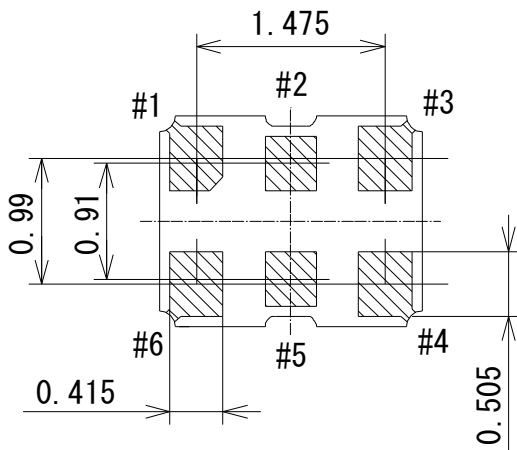
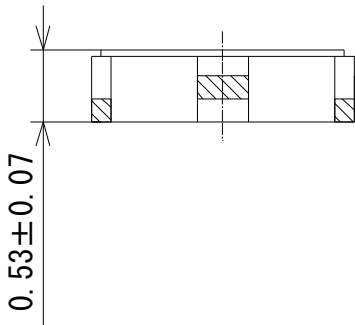
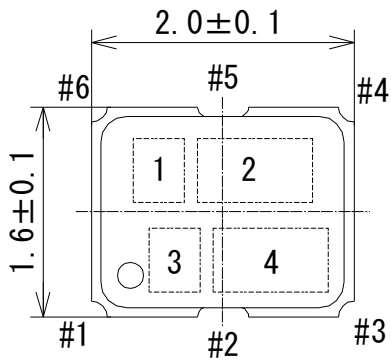
*Consult our sales representative for other specifications.

[Product Photograph]

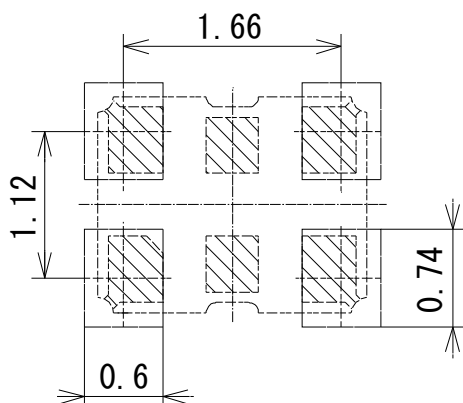


[Dimensions]

DSO213AW



Recommended Land Pattern
[TOP VIEW]



Pin Connections

Pin No.	Connection
#1	OE
#2	NC
#3	GND
#4	OUTPUT
#5	NC
#6	Vdd

Marking

- (1) Model Code W
- (2) Frequency 27.0(MHz, 4digits)
- (3) Logo D
- (4) Lot No. Year(1digit)+Week(2digits)
e.g. 2010/01/01 -> 001

unit:mm

Dimensional Tolerance: ± 0.15

(Unless otherwise noted)