

DAISHINKU develops world's smallest crystal oscillator (SPXO), the DSO1612AR

May 29, 2012

DAISHINKU CORP. (President: Sohei Hasegawa) announces development of the DSO1612AR, the world's smallest crystal oscillator (SPXO), measuring 0.5 mm product height in the 1612 size.

In recent years, high-performance mobile products, such as smartphones and tablet PCs, have come into popular use. Offering convenient functions equivalent to PCs, these mobile products have been bringing significant changes to daily life. With the increasing performance of mobile products, built-in electronic circuits have grown in capacity, together with increases in electric power and battery size required to operate greater capacity circuits. Built-in electronic circuits, therefore, must be large in capacity and high in performance, while meeting size reduction needs. Electronic components used must also meet the needs of further reduction in size (including thickness) and weight. We began to meet such needs with the DSO211AR (SPXO in 2016 size), released in April 2008. Notably, we have succeeded in achieving further size reduction with the DSO1612AR in 1612 size. Product size reduction makes it difficult to secure wiring space in packages. To cope with this challenge, we minimized the number of vias and optimized wiring patterns in the package, to achieve the 1612 size. Part thickness has been reduced by employing high-precision machining technologies, to achieve a product thickness of 0.50 mm, the thinnest in the world*.

The DSO1612AR (external dimensions: $1.6 \times 1.2 \times 0.50$ mm), the smallest crystal oscillator in the world*, is optimally suited to high-performance small mobile products, including smartphones, tablet PCs, small media players and high sound quality small headsets, wherein it is difficult to secure space for built-in electronic circuits. Compared with its conventional 2016 size, the volume is reduced by 58% (0.00230cc to 0.00096cc), and the area is reduced by 40% (3.20mm^2 to 1.92mm^2). The downsizing makes high density packaging possible.

The DSO1612AR's output frequency range and operational temperature range are 0.6 MHz–80 MHz and -40°C – $+85^{\circ}\text{C}$, respectively. Phase noise characteristics have been successfully improved, while ensuring low power consumption (feature of our SPXO products).

The oscillator can operate at +1.6V supply voltage. The oscillator is an environmental responsive product which is lead-free and RoHS compliant.

* Source: survey by DAISHINKU CORP., valid as of May 29, 2012

■ Product
DSO1612AR

■ Features

- Ultra miniature:1612 size (1.6*1.2mm), height 0.50mm (0.58mm max.)
- Output Frequency Range: 0.6 to 80MHz
- Supply voltage: 1.6V to 3.6V
- Lead-Free and RoHS Compliant

[Applications]

Smartphone, Mobile PC, Media Player, PND(Personal Navigation Device), DSC(Digital Still Camera), DVC(Digital Video Camera),HDTV(PDP,LC), Small Medical Device

[Mass Production data]

October, 2012

[Sample price]

800 yen Samples are available now.

[Manufacturing Capacity]

1 million/month

■ Electrical specification

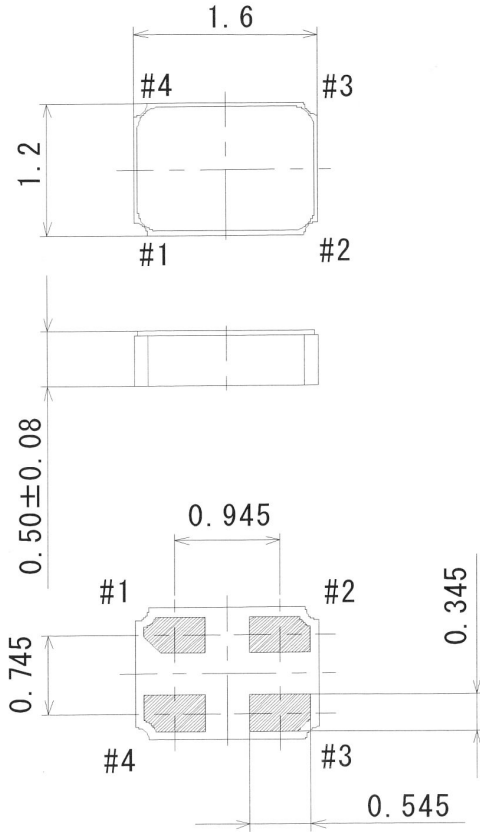
Item	Legend	Specification	Condition	
Output Frequency Range	fo	0.6~80MHz		
Supply Voltage	Vcc	1.6~3.6V		
Frequency Tolerance	f_tol	$\pm 100 \sim \pm 20 \times 10^{-6}$ max.		
Current Consumption	Icc	2.8mA max.	1.8V, No Load, 80MHz	
		4.2mA max.	2.8V, No Load, 80MHz	
		5.4mA max.	3.3V, No Load, 80MHz	
Waveform	Symmetry	-	50±5% (at CL=15pF) 0.5×Vcc Level	
	Rise Time	tr	5 ns max. 0.1×Vcc to 0.9×Vcc	
	Fall Time	tf	5 ns max. 0.1×Vcc to 0.9×Vcc	
	0 Level Output Voltage	V _{OL}	0.1×Vcc max.	
	1 Level Output Voltage	V _{OH}	0.9×Vcc min.	

*Consult our sales representative for other specifications.

■ Product Photograph



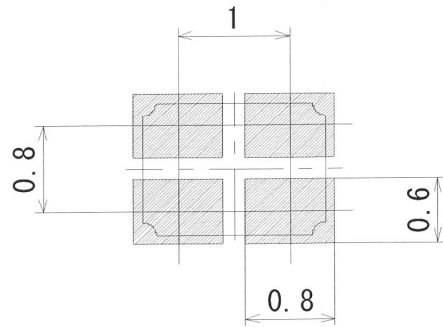
■ Outline View



Pin connection

Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

Unit: mm Tolerance: +/-0.1



Recommended Land Pattern (Top View)