

1. Device Name SPXO
2. Model Name DSO1612AR
3. Nominal Frequency 32.768 kHz

4. Absolute Maximum Ratings

	Item	Symbol	Rating	Unit
1	Supply Voltage	V_{CC}	-0.3 ~ +4.5	V
2	Storage Temperature Range	T_{stg}	-40 ~ +125	°C

5. Recommended Operating Conditions

	Item	Symbol	min.	typ.	max.	Unit
1	Supply Voltage	V_{CC}	+1.6	+1.8	+2.25	V
			+2.25	+2.5	+2.75	V
			+2.6	+2.8	+3.0	V
			+2.7	+3.0	+3.3	V
			+3.0	+3.3	+3.6	V
2	Output Load	L_{CMOS}	-	-	15	pF
3	Operating Temperature Range	T_{use}	-40	-	+125	°C

6. Electrical Characteristics ($T_a=+25^{\circ}\text{C}$, $V_{CC}=+1.8\text{V}\sim+3.3\text{V}$, $L_{CMOS}=15\text{ pF}$, unless otherwise noted)

	Item	Symbol	Condition	Limits			Unit
				min.	typ.	max.	
1	Frequency Tolerance	f_{tol}	$V_{CC}=+1.8+1.8/-0.2\text{V}$, $T_a=-40\sim+85^{\circ}\text{C}$	-50	-	+50	ppm
			$V_{CC}=+1.8+1.8/-0.2\text{V}$, $T_a=-40\sim+105^{\circ}\text{C}$	-70	-	+70	ppm
			$V_{CC}=+1.8+1.8/-0.2\text{V}$, $T_a=-40\sim+125^{\circ}\text{C}$	-100	-	+100	ppm
2	Current Consumption	I_{CC}	At No Load	-	18	32	μA
3	Stand-by Current	I_{std}	#1 pin "L" Level	-	-	5	μA
4	Output Characteristics						
	1.Symmetry	SYM	$V_{CC}\times 0.5$ Level	45	-	55	%
	2.Rise Time	t_r	$V_{CC}\times 0.1 \sim V_{CC}\times 0.9$ Level	-	-	50	ns
	3.Fall Time	t_f	$V_{CC}\times 0.1 \sim V_{CC}\times 0.9$ Level	-	-	50	ns
	4.0 Level Voltage	V_{OL}		-	-	$V_{CC}\times 0.1$	V
	5.1 Level Voltage	V_{OH}		$V_{CC}\times 0.9$	-	-	V
5	Input OE						
	1.Output Enable Time	t_{PZL}		-	-	10	ms
	2.Output Disable Time	t_{PLZ}		-	-	1	μs
	3.0 Level Input Voltage	V_{IL}		-	-	$V_{CC}\times 0.3$	V
	4.1 Level Input Voltage	V_{IH}		$V_{CC}\times 0.7$	-	-	V

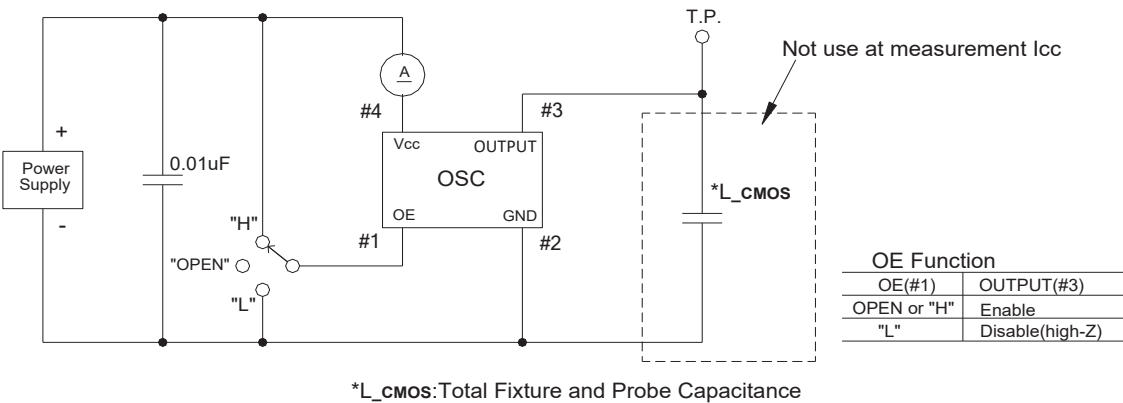


Fig1. Measurement Circuits

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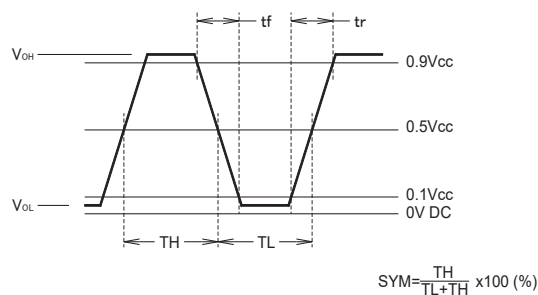


Fig2. Output Waveform

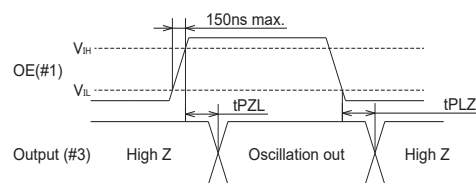
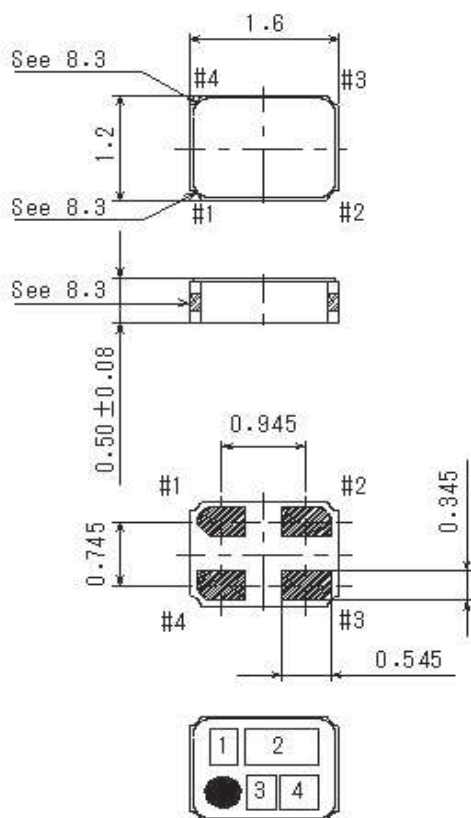


Fig3. Input output condition

7. Outline, Pin Connections



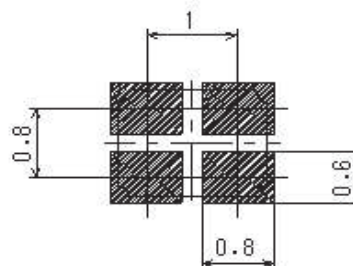
Pin connection

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

Tolerance: ± 0.1

Unit: mm

Land pattern layout (Example)



1. Model code

2. Frequency

3. KDS Logo

4. Lot No.

(Lot No.)

R

0.03

D

refer to (Lot No.)

Year(1digit)+Week(2digits)

e.g. 2025/1/1 → 501

8. Supplement

8.1. Soldering

Peak-temperature 260°C 10sec max., 2times max.

If the temperature is higher than 280 °C, there is a possibility for the sealing alloy to remelt.

8.2. Solder Iron

Bit temp.: 350 °C max., Time: 3 s max., Each terminal solder a 1 time max.

Please take care so that a soldering iron should not touch a product directly.

8.3. Do not connect to PCB as not in use at customer and inspection terminals at supplier.

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