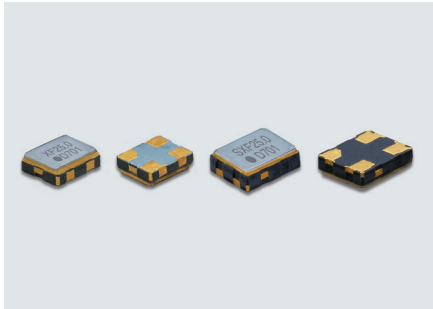


# SMD Crystal Oscillators

## DSO211SXF/DSO221SXF



Actual size DSO211SXF □ DSO221SXF □

### Features

- Supply Voltage: 1.8V/2.5V/2.8V/3.3V
- Available frequency range: 1 to 125MHz
- Low profile: 0.7mm (DSO211SXF), 0.8mm (DSO221SXF)
- CMOS Level Output
- Capable of operating over a wide temperature range, from -40 to +125°C.
- 3-state function

### Applications

- Audio equipment, communication equipment, visual equipment, FA equipment, PC, gaming equipment and WiLAN



[Function Code]

DSO\*\*\*SXF A Z

- |          |                           |
|----------|---------------------------|
| A : 3.3V | A : ±100×10 <sup>-6</sup> |
| B : 2.8V | Z : ±80×10 <sup>-6</sup>  |
| C : 2.5V | B : ±50×10 <sup>-6</sup>  |
| D : 1.8V | C : ±30×10 <sup>-6</sup>  |
|          | D : ±25×10 <sup>-6</sup>  |
|          | E : ±20×10 <sup>-6</sup>  |

When requesting the product, please select the model and function code of your request.

[Type]

DSO211SXF	2016 size
DSO221SXF	2520 size

### Standard Specification

Item	Function Code		Output Frequency Range (MHz)	Legend	Spec.			Unit	Condition		
	Supply Voltage	Frequency tolerance			min.	typ.	max.				
Supply Voltage	A	*	1 ≤ f <sub>0</sub> ≤ 125	V <sub>cc</sub>	+3.0	+3.3	+3.6	V			
	B				+2.6	+2.8	+3.0				
	C		+2.25		+2.5	+2.75					
	D		+1.6		+1.8	+2.0					
Frequency Tolerance (includes frequency tolerance at room temperature)	*	A	*	f <sub>tol</sub>	-	-	±100	×10 <sup>-6</sup>	-40 to +125°C	-10 to +70°C (Standard Operating Temperature Range)	
		Z			-	-	±80				
		B			-	-	±50				
		C			-	-	±50				
		D			-	-	±30				
Current Consumption	A, B, C, D	*	1 ≤ f <sub>0</sub> ≤ 40	I <sub>cc</sub>	-	-	2.4	mA	No Load		
					40 < f <sub>0</sub> ≤ 100	-	-				4.2
					100 < f <sub>0</sub> ≤ 125	-	-				10.0
					1 ≤ f <sub>0</sub> ≤ 40	-	-				2.2
					40 < f <sub>0</sub> ≤ 100	-	-				3.7
					100 < f <sub>0</sub> ≤ 125	-	-				9.0
					1 ≤ f <sub>0</sub> ≤ 40	-	-				2.0
					40 < f <sub>0</sub> ≤ 100	-	-				3.4
					100 < f <sub>0</sub> ≤ 125	-	-				8.0
					1 ≤ f <sub>0</sub> ≤ 40	-	-				1.7
					40 < f <sub>0</sub> ≤ 100	-	-				2.7
					Stand-by Current (#1 pin "L" Level)	*	*				*
Load Condition	*	*	*	L <sub>CMOS</sub>	-	-	15	pF			
Symmetry	*	*	*	SYM	45	50	55	%	50% V <sub>cc</sub> Level		
0 Level Output Voltage	*	*	*	V <sub>OL</sub>	-	-	V <sub>cc</sub> ×0.1	V			
1 Level Output Voltage	*	*	*	V <sub>OH</sub>	V <sub>cc</sub> ×0.9	-	-	V			
Rise and Fall Time	A, B, C, D	*	*	tr, tf	-	-	3	ns	10 to 90% V <sub>cc</sub> Level		
OE Pin 0 Level Input Voltage	*	*	*	V <sub>IL</sub>	-	-	V <sub>cc</sub> ×0.3	V			
OE Pin 1 Level Input Voltage	*	*	*	V <sub>IH</sub>	V <sub>cc</sub> ×0.7	-	-	V			
Output Disable Time	*	*	*	t <sub>PLZ</sub>	-	-	200	ns			
Output Enable Time	*	*	*	t <sub>PZL</sub>	-	-	2	ms			
Period Jitter (1)	*	*	*	t <sub>RMS</sub>	-	2.4	-	ps	σ		
Total Jitter (1)	*	*	*	tp-p	-	23	-	ps	Peak to peak		
Phase Jitter	*	*	40 ≤ f <sub>0</sub> ≤ 125	t <sub>TL</sub>	-	34	-	ps	t <sub>DJ</sub> +n×t <sub>RJ</sub> n=14.1 (BER=1×10 <sup>-12</sup> ) (2)		
			10 ≤ f <sub>0</sub> < 40	tpj	-	-	1	ps	f <sub>0</sub> offset: 12kHz to 20MHz f <sub>0</sub> offset: 12kHz to 5MHz		
Packing Unit (3)					3000pcs./reel (φ 180)						

(1) Measured WAVECREST DTS-2075

(2) t<sub>DJ</sub>:Deterministic jitter t<sub>RJ</sub>:Random jitter

(3) Moisture prevention packing is unnecessary. Moisture Sensitivity Level : Level1 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications.

### DSO211SXF

[mm]

### DSO221SXF

[mm]

<h4>Dimensions</h4> <p><b>Pin Connections</b></p> <table border="1"> <tr><th>Pin No.</th><th>Connection</th></tr> <tr><td>#1</td><td>OE(Output Enable)</td></tr> <tr><td>#2</td><td>GND</td></tr> <tr><td>#3</td><td>Output</td></tr> <tr><td>#4</td><td>V<sub>cc</sub></td></tr> </table> <p><b>Function</b></p> <table border="1"> <tr><th>#1 Input</th><th>#3 Output condition</th></tr> <tr><td>H</td><td>Oscillation out</td></tr> <tr><td>L</td><td>High Z</td></tr> </table> <h4>Recommended Land Pattern (Top View)</h4>	Pin No.	Connection	#1	OE(Output Enable)	#2	GND	#3	Output	#4	V <sub>cc</sub>	#1 Input	#3 Output condition	H	Oscillation out	L	High Z	<h4>Dimensions</h4> <p><b>Pin Connections</b></p> <table border="1"> <tr><th>Pin No.</th><th>Connection</th></tr> <tr><td>#1</td><td>OE(Output Enable)</td></tr> <tr><td>#2</td><td>GND</td></tr> <tr><td>#3</td><td>Output</td></tr> <tr><td>#4</td><td>V<sub>cc</sub></td></tr> </table> <p><b>Function</b></p> <table border="1"> <tr><th>#1 Input</th><th>#3 Output condition</th></tr> <tr><td>H</td><td>Oscillation out</td></tr> <tr><td>L</td><td>High Z</td></tr> </table> <h4>Recommended Land Pattern (Top View)</h4>	Pin No.	Connection	#1	OE(Output Enable)	#2	GND	#3	Output	#4	V <sub>cc</sub>	#1 Input	#3 Output condition	H	Oscillation out	L	High Z
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