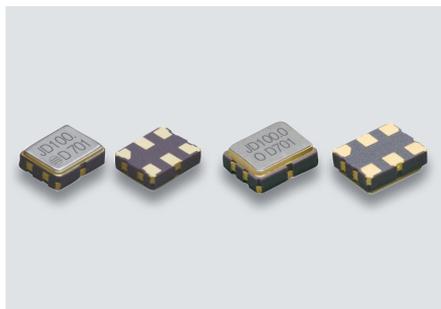


# SMD Differential Output Crystal Oscillators - Low Voltage (For Automotive)

## DSO223SJ/DSO323SJ/DSO223SD/DSO323SD



Actual size DSO223S SERIES  DSO323S SERIES

### Features

- 1.8V operating voltage, High speed type
- 3-state function
- LVDS output (DSO223/323SJ)
- HCSL output (DSO223/323SD)
- AEC-Q200 Compliant (Option: Equivalent to AEC-Q100)

### Applications

- Multimedia devices such as car navigation systems and car audio



[Function Code]

DSO\*\*\*S

Model Code

J : LVDS

D : HCSL

Supply Voltage

D : 1.8V

J D A C

Operating Temperature Range

C : -40 to +85°C

E : -40 to +105°C

Frequency Tolerance

A :  $\pm 100 \times 10^{-6}$

B :  $\pm 50 \times 10^{-6}$

### Standard Specification

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

Item	Type	Legend	DSO223SJ DSO323SJ	DSO223SD DSO323SD
Output Specification		-	LVDS	HCSL
Output Frequency Range	fo		27 to 100MHz	
Supply Voltage	V <sub>CC</sub>		+1.8V±0.09V	
Frequency Tolerance (Includes frequency tolerance at room temperature.)	f <sub>tol</sub>		±50×10 <sup>-6</sup> max., ±80×10 <sup>-6</sup> max. / ±100×10 <sup>-6</sup> max.	
Storage Temperature Range	T <sub>stg</sub>		-40 to +105°C	
Operating Temperature Range	T <sub>use</sub>		-40 to +85°C, -40 to +105°C	
Current Consumption	I <sub>cc</sub>		12mA max.	25mA max.
Stand-by Current (#1 pin "L" Level)	I <sub>std</sub>		10μA max.	
Load Resistance	Load-R		100Ω (Output-OutputN)	50Ω
Symmetry	SYM		45 to 55% [at outputs cross point]	
0 Level Output Voltage	V <sub>OL</sub>		-	-0.15 to 0.15V
1 Level Output Voltage	V <sub>OH</sub>		-	0.50 to 1.0V
Rise and Fall Time	tr, tf		0.5ns max. [20 to 80% Output-OutputN]	0.6ns max. [20 to 80% V <sub>opp</sub> ]
Differential Output Voltage	V <sub>OD1</sub> , V <sub>OD2</sub>		0.247 to 0.454V	-
Change to V <sub>OD</sub>	ΔV <sub>OD</sub>		50mV [ΔV <sub>OD</sub> = V <sub>OD1</sub> -V <sub>OD2</sub>  ]	-
Offset Voltage	V <sub>OS</sub>		1.125 to 1.375V	-
Offset to V <sub>OS</sub>	ΔV <sub>OS</sub>		50mV	-
OE Pin 0 Level input Voltage	V <sub>IL</sub>		V <sub>CC</sub> ×0.3 max.	
OE Pin 1 Level input Voltage	V <sub>IH</sub>		V <sub>CC</sub> ×0.7 min.	
Output Disable Time	t <sub>PLZ</sub>		200ns	
Output Enable Time	t <sub>PZL</sub>		2ms	
Period Jitter (1)	t <sub>RMS</sub>		2.5ps typ. (σ)	
	t <sub>p-p</sub>		22ps typ. (Peak to peak)	
Total Jitter (1)	t <sub>TJ</sub>		35ps typ. [t <sub>DJ</sub> + n×t <sub>RJ</sub> n=14.1 (BER=1×10 <sup>-12</sup> ) (2)]	
Phase Jitter	t <sub>pj</sub>		1ps max.	
Reliability			AEC-Q100/AEC-Q200	
Packing Unit (3)			2000pcs./reel(φ180)	

- (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: LEVEL 1 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications.

### DSO223S SERIES

[mm]

### DSO323S SERIES

[mm]

#### Dimensions

Model Code: DSO223SJ : JD, DSO223SD : DD

Pin No.	Connection
#1	OE(Output Enable)
#2	NC
#3	GND
#4	Output
#5	OutputN
#6	V <sub>CC</sub>

Function: #1 Input, #4,#5 Output condition, H Oscillation out, Open Oscillation out, L High Z

#### Recommended Land Pattern

<Top View>

#### Dimensions

Model Code: DSO323SJ : JD, DSO323SD : DD

Pin No.	Connection
#1	OE(Output Enable)
#2	NC
#3	GND
#4	Output
#5	OutputN
#6	V <sub>CC</sub>

Function: #1 Input, #4,#5 Output condition, H Oscillation out, Open Oscillation out, L High Z

#### Recommended Land Pattern

<Top View>