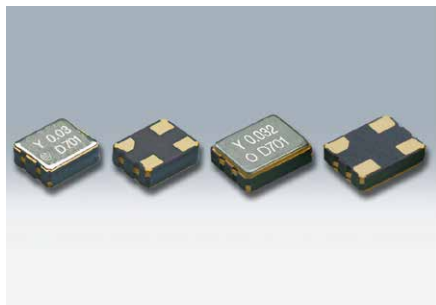


# SMD Crystal Oscillators (For Automotive)

## DSO221SY/DSO321SY



Actual size DSO221SY □ DSO321SY □

### ■ Features

- Available frequency range : 32.768kHz, 1.049 to 8.5MHz
- Supply Voltage: 1.8V/2.5V/2.8V/3.3V
- 3-state function
- Low current consumption: 10μA typ.(32.768kHz)
- CMOS Level Output
- Stable frequency variation realized by adopting an At cut resonator
- AEC-Q200 Compliant (Option: Equivalent to AEC-Q100)

### ■ Applications

- Multimedia devices such as car navigation systems and car audio

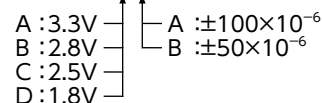


[Type]

DSO221SY	2520 size
DSO321SY	3225 size

[Function Code]

DSO\*\*\*SY A A



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

### ■ Standard Specification

Item	Function Code		Output Frequency Range	Legend	Spec.				Condition
	Supply Voltage	Frequency tolerance			min.	typ.	max.	Unit	
Supply Voltage	A	*	32.768kHz 1.049 ≤ f <sub>o</sub> ≤ 8.5MHz	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	32.768kHz 1.049 ≤ f <sub>o</sub> ≤ 8.5MHz	f <sub>tol</sub>	-100	-	+100	× 10 <sup>-6</sup>	-40 to +85°C
		B			-50	-	+50		
Current Consumption	*	*	32.768kHz 1.049 ≤ f <sub>o</sub> ≤ 8.5MHz	I <sub>cc</sub>	-	-	18	μA	No Load
Stand-by Current (#1 pin "L" Level)	*	*	*	I <sub>std</sub>	-	-	3	μA	
Load Condition	*	*	*	L <sub>CMOS</sub>	-	-	15	pF	
Symmetry	*	*	32.768kHz 1.049 ≤ f <sub>o</sub> ≤ 8.5MHz	SYM	45	50	55	%	at 50% V <sub>cc</sub>
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	*	*	*	tr, tf	-	-	15	ns	10 to 90% V <sub>cc</sub> Level
OE Pin 0 Level Input Voltage	*	*	*	V <sub>IL</sub>	-	-	V <sub>cc</sub> × 0.2	V	
OE Pin 1 Level Input Voltage	*	*	*	V <sub>IH</sub>	V <sub>cc</sub> × 0.8	-	-	V	
Output Disable Time	*	*	*	t <sub>PLZ</sub>	-	-	100	ns	
Output Enable Time	*	*	*	t <sub>PZL</sub>	-	-	20	ms	
Reliability	AEC-Q100/AEC-Q200								
Packing Unit (1)	2000pcs./reel (φ 180)								

(1) Moisture prevention packing is unnecessary.  
Moisture Sensitivity Level: Level 1 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications.

### ■ DSO221SY

### ■ DSO321SY

