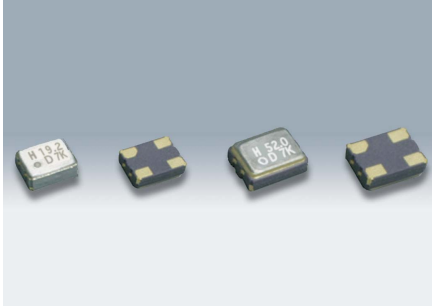


# SMD Crystal Oscillators

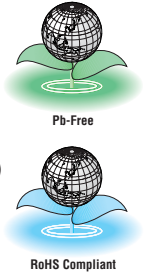
## DSO221SH/DSO321SH



Actual size DSO221SH  DSO321SH

### ■ Features

- Low voltage operation: 1.8V/2.5V/2.8V/3.3V
- Low phase noise:  $f_{out} \pm 1\text{kHz} -145\text{ dBc/Hz(Typ.)}$   
 $f_{out} \pm 100\text{kHz} -158\text{ dBc/Hz(Typ.)}$
- Low profile: 0.815mm(DSO221SH), 1.1mm(DSO321SH)



### ■ Applications

- WiLAN, WiMAX, Bluetooth
- DVC, HDTV, Blu-ray Disk
- PC peripherals, gaming equipment

[Type] [Function Code]  
DSO221SH A C

DSO321SH	3225 size
DSO221SH	2520 size

A : 3.3V	A : $\pm 100 \times 10^{-6}$
B : 2.8V	B : $\pm 50 \times 10^{-6}$
C : 2.5V	C : $\pm 30 \times 10^{-6}$
D : 1.8V	D : $\pm 25 \times 10^{-6}$
	E : $\pm 20 \times 10^{-6}$

### ■ Standard Specification

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

Item	Function Code		Available Frequency Range (MHz)	Legend	Spec.			Unit	Condition	
	Supply Voltage	Frequency tolerance			min.	Typ.	max.			
Supply Voltage	A	*	$3.5 \leq f_o \leq 52$	Vdd	+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	*	A	$3.5 \leq f_o \leq 52$	f <sub>tol</sub>	-100	-	+100	X10 <sup>-6</sup>	-40~+85°C	-10~+70°C (Standard Operating Temperature Range)
		B			-50	-	+50		-20~+70°C	
		C			-30	-	+30		-10~+70°C	
		D			-25	-	+25			
		E			-20	-	+20			
Current Consumption	A	*	*	I <sub>dd</sub>	-	-	4.0	mA	No Load	
	B	*			-	-	3.6			
	C	*			-	-	3.4			
	D	*			-	-	2.8			
Stand-by current (#1 pin "L" Level)	*	*	*	I <sub>std</sub>	-	-	10	μA		
Symmetry	*	*	*	SYM	45	50	55	%	at 50% Vdd	
0 Level Output Voltage	*	*	*	V <sub>ol</sub>	-	-	V <sub>dd</sub> ×0.1	V		
1 Level Output Voltage	*	*	*	V <sub>oh</sub>	V <sub>dd</sub> ×0.9	-	-			
Rise Time	*	*	*	t <sub>r</sub> , t <sub>f</sub>	-	-	6 (5)	ns	10~90% V <sub>dd</sub> Level (20~80%V <sub>dd</sub> Level)	
Output Load	*	*	*	L <sub>CMOS</sub>	-	-	15	pF		
OE Pin 0 Level Input Voltage	*	*	*	V <sub>il</sub>	-	-	V <sub>dd</sub> ×0.2	V		
OE Pin 1 Level Input Voltage	*	*	*	V <sub>ih</sub>	V <sub>dd</sub> ×0.8	-	-			
Output Disable Time	*	*	*	T <sub>pzd</sub>	-	-	150	ns		
Output Enable Time	*	*	*	T <sub>pzl</sub>	-	-	5	ms		
Phase Noise	f <sub>out</sub> ± 1kHz		*	PHN	-	-145	-	dBc/Hz		
	f <sub>out</sub> ± 100kHz				-	-158	-			
Packing Unit	2000pcs./reel (φ180)									

Consult our sales representative for other specifications.

### ■ Dimensions[mm]

