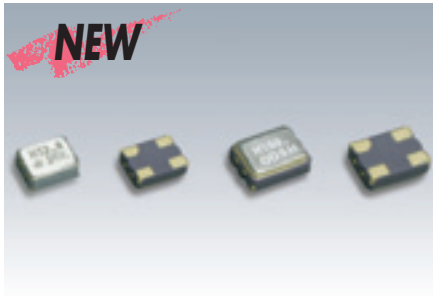


# SMD Crystal Oscillators

## DS0221SH/DS0321SH/DS0321LH



### Product

**DS0321SH AB** ← 3225 Size 3.3V,  $\pm 50 \times 10^{-6}$

**DS0221SH CC** ← 2520 Size 2.5V,  $\pm 30 \times 10^{-6}$

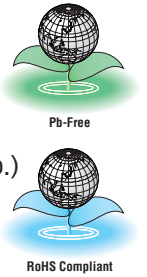
Type      Function Code (Frequency tolerance)  
 Function Code (Supply Voltage)

### Features

- Low current consumption: 2.5mA Max.(44MHz, 3.3V)
- Low voltage operation: 2.5V/2.8V/3.3V
- Low phase noise: Fo offset  $\pm 1$ kHz -145 dBc/Hz(Typ.)  
 Fo offset  $\pm 100$ kHz -158 dBc/Hz(Typ.)
- Low profile: 0.82mm(DS0221SH), 0.855mm(DS0321LH)  
 1.1mm(DS0321SH)

### Applications

- Wireless-LAN



Frequency tolerance (-10~+70°C)	Supply Voltage	3.0V-3.6V 3.3V typ.	2.6V-3.0V 2.8V typ.	2.25V-2.75V 2.5V typ.
$\pm 100 \times 10^{-6}$		<b>AA</b>	<b>BA</b>	<b>CA</b>
$\pm 50 \times 10^{-6}$		<b>AB</b>	<b>BB</b>	<b>CB</b>
$\pm 30 \times 10^{-6}$		<b>AC</b>	<b>BC</b>	<b>CC</b>
$\pm 25 \times 10^{-6}$		<b>AD</b>	<b>BD</b>	<b>CD</b>
$\pm 20 \times 10^{-6}$		<b>AE</b>	<b>BE</b>	<b>CE</b>

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

### Standard Specification

Item	Function Code		Available Frequency Range (MHz)	Legend	Spec.			Unit	Condition
	Supply Voltage	Frequency tolerance			MIN.	TYP.	MAX.		
Operating Temperature Range	*	*	*	T <sub>use</sub>	-10	+25	+70	deg. C	
Supply Voltage	A	*	26 ≤ Fo ≤ 44	V <sub>dd</sub>	+3.0	+3.3	+3.6	v	
	B	*			+2.6	+2.8	+3.0		
	C	*			+2.25	+2.5	+2.75		
Frequency Tolerance	*	A	26 ≤ Fo ≤ 44	F <sub>tol</sub>	-	-	±100	×10 <sup>6</sup>	-10~+70deg. C Includes frequency tolerance at room temperature.
	*	B			-	-	±50		
	*	C			-	-	±30		
	*	D			-	-	±25		
	*	E			-	-	±20		
Current Consumption	A	*	26 ≤ Fo ≤ 44	I <sub>dd</sub>	-	-	+2.5	mA	No Load
	B	*			-	-	+2.5		
	C	*			-	-	+2.0		
Stand-by current (#1 pin "L" Level)	*	*	*	I <sub>std</sub>	-	-	+10	μA	
Symmetry	*	*	Fo ≤ 44	SYM	45	50	55	%	at 50% V <sub>dd</sub>
"0" Level	*	*	*	V <sub>ol</sub>	-	-	0.1V <sub>dd</sub>	v	
"1" Level	*	*	*	V <sub>oh</sub>	0.9V <sub>dd</sub>	-	-	v	
Rise and Fall Time	*	*	Fo ≤ 44	tr, tf	-	-	10	ns	0.1 V <sub>dd</sub> - 0.9 V <sub>dd</sub>
Output Load	*	*	*	L <sub>CMOS</sub>	-	-	15	pF	
#1 (OE) Pin 0 Level Input Voltage	*	*	*	V <sub>il</sub>	-	-	0.2V <sub>dd</sub>	v	
#1 (OE) Pin 1 Level Input Voltage	*	*	*	V <sub>ih</sub>	0.8V <sub>dd</sub>	-	-	v	
Output Disable Time	*	*	*	T <sub>plz</sub>	-	-	150	ns	
Output Enable Time	*	*	*	T <sub>pzl</sub>	-	-	5	ms	
Phase Noise	F <sub>out</sub> ±1kHz		*	PHN	-	-145	-	dBc/Hz	V <sub>dd</sub> =2.8V
	F <sub>out</sub> ±100kHz				-	-158	-		
Packing Unit	2000pcs./reel (φ 180)								

Consult our sales representative for other specifications.

### Dimensions [mm]

