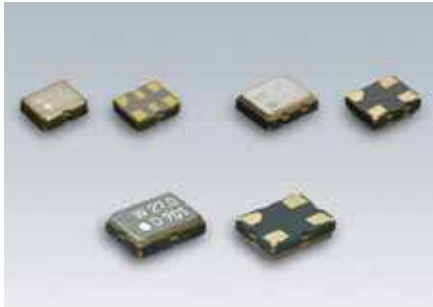


SMD Crystal Oscillators

DSO213AW/DSO221SW/DSO321SW



Actual size DSO213AW DSO221SW
DSO321SW

Features

- Offers narrow deviation : $\pm 30 \times 10^{-6}$ ($-40 \sim +105^\circ\text{C}$)
 $\pm 15 \times 10^{-6}$ ($-40 \sim +85^\circ\text{C}$)
 $\pm 12 \times 10^{-6}$ ($-30 \sim +85^\circ\text{C}$)
 $\pm 10 \times 10^{-6}$ ($-20 \sim +70^\circ\text{C}$)
- Low profile: 0.53mm (DSO213AW)
- AEC-Q100 Compliant



Applications

- WiLAN, WiMAX, Smart Grid, PLC, visual applications and automotive multimedia device

[Function Code]

DSO****W A C

A : 3.3V	C : $\pm 30 \times 10^{-6}$
M : 3.0V	F : $\pm 15 \times 10^{-6}$
B : 2.8V	G : $\pm 12 \times 10^{-6}$
C : 2.5V	H : $\pm 10 \times 10^{-6}$
D : 1.8V	

DSO213AW	2016 size
DSO221SW	2520 size
DSO321SW	3225 size

Standard Specification

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

Item	Function Code		Output Frequency Range (MHz)	Legend	Spec.			Unit	Condition	
	Supply Voltage	Frequency tolerance			min.	Typ.	max.			
Supply Voltage	A	*	3 (3.25) $\leq f_0 \leq 60$ () \rightarrow DSO213AW	V _{cc}	+3.0	+3.3	+3.6	V		
	M	*			+2.7	+3.0	+3.3			
	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.)	*	C		f _{tol}	-30	-	+30	X10 ⁻⁶		-40 ~ +105°C
		F			-15	-	+15			-40 ~ +85°C
		G			-12	-	+12			-30 ~ +85°C
		H			-10	-	+10			-20 ~ +70°C
Current Consumption	A,M	*	3 (3.25) $\leq f_0 \leq 32$ () \rightarrow DSO213AW	I _{cc}	-	-	+3.2	mA	No Load	
	B				-	-	+2.8			
	C				-	-	+2.5			
	D				-	-	+2.2			
	A,M	*	32 < f ₀ \leq 40		-	-	+3.6			
	B				-	-	+3.2			
	C				-	-	+3.0			
	D				-	-	+2.5			
	A,M	*	40 < f ₀ \leq 48		-	-	+4.0			
	B				-	-	+3.5			
	C				-	-	+3.3			
	D				-	-	+2.8			
A,M	*	48 < f ₀ \leq 60		-	-	+4.5				
B				-	-	+4.0				
C				-	-	+3.8				
D				-	-	+3.2				
Stand-by Current (#1 pin "L" Level)	*	*	*	I _{std}	-	-	10	μ A		
Load Condition	*	*	*	L _{CMOS}	-	-	15	pF		
Symmetry	*	*	*	SYM	45	50	55	%	at 50% V _{CC}	
0 Level Output Voltage	*	*	*	V _{OL}	-	-	V _{CC} × 0.1	V		
1 Level Output Voltage	*	*	*	V _{OH}	V _{CC} × 0.9	-	-	V		
Rise and Fall Time	*	*	*	tr, tf	-	-	6 (5)	ns	10 ~ 90% V _{CC} Level (20 ~ 80% V _{CC} Level)	
OE Pin 0 Level Input Voltage	*	*	*	V _{IL}	-	-	V _{CC} × 0.2	V		
OE Pin 1 Level Input Voltage	*	*	*	V _{IH}	V _{CC} × 0.8	-	-	V		
Output Disable Time	*	*	*	tPZ	-	-	200	ns		
Output Enable Time	*	*	3 (3.25) $\leq f_0 \leq 40$ () \rightarrow DSO213AW 40 < f ₀ \leq 60	tPZL	-	-	2	ms		
					-	-	3			
					-	-	-			
					-	-	-			
Phase Noise	*	*	3 (3.25) $\leq f_0 \leq 15$ () \rightarrow DSO213AW 15 < f ₀ \leq 26 26 < f ₀ \leq 40 40 < f ₀ \leq 60	PHN	-	-140	-	dBc/Hz		Offset 1kHz
					-	-134	-			
					-	-130	-			
					-	-125	-			
	*	*	3 (3.25) $\leq f_0 \leq 60$ () \rightarrow DSO213AW		-	-153	-		Offset 100kHz	
	Period Jitter (1)	*	*	*	tRMS	-	2.4	-	ps	σ Peak to peak
tp-p						-	23	-		
Total Jitter (1)	*	*	*	tTL	-	34	-	ps	tDJ+n*tRJ n=14.1 (BER=1*10 ⁻¹⁵) (2)	
Phase Jitter	*	*	40 $\leq f_0 \leq$ 60 10 $\leq f_0 <$ 40	tpj	-	-	1	ps	fo offset: 1.2kHz ~ 20MHz fo offset: 1.2kHz ~ 5MHz	
Packing Unit	2000pcs./reel(ϕ 180)									

(1) Measured WAVECREST DTS-2075

(2) tDJ:Deterministic jitter tRJ:Random jitter

Consult our sales representative for other specifications.

Dimensions [mm]

