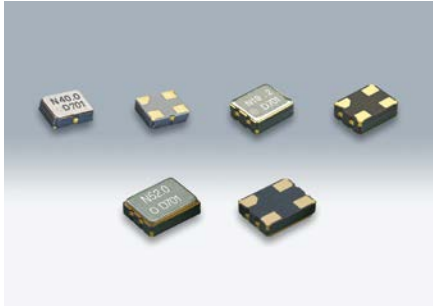


SMD Crystal Oscillators

DSO211AN/DSO221SN/DSO321SN



Actual size DSO211AN DSO221SN
DSO321SN

Features

- Supply Voltage: 0.9V/1.2V/1.3V/1.5V
- Available frequency range : 1.5625 to 100MHz
- Low profile: 0.72mm (DSO211AN), 0.815mm (DSO221SN), 1.1mm (DSO321SN)

Applications

- PC, Memory module, USB
- DSC, DVC
- WiMAX, Bluetooth, Wireless-LAN
- Mobile phones, Silicon audio player



[Function Code]
DSO****N E A

E : 1.5V	A : $\pm 100 \times 10^{-6}$
F : 1.3V	B : $\pm 50 \times 10^{-6}$
H : 1.2V	C : $\pm 30 \times 10^{-6}$
G : 0.9V	D : $\pm 25 \times 10^{-6}$
	E : $\pm 20 \times 10^{-6}$

[Type]	Model	Size
	DSO211AN	2016 size
	DSO221SN	2520 size
	DSO321SN	3225 size

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

Standard Specification

Item	Function Code		Output Frequency Range (MHz)	Legend	Spec.				Condition	
	Supply Voltage	Frequency tolerance			min.	typ.	max.	Unit		
Supply Voltage	E	*	DSO211AN $9.6 \leq f_0 \leq 80$ DSO221SN/321SN $1.5625 \leq f_0 \leq 100$	V _{CC}	+1.4	+1.5	+1.6	V		
	F				+1.2	+1.3	+1.4			
	H				+1.1	+1.2	+1.3			
	G				+0.8	+0.9	+1.0			
Frequency Tolerance (Includes frequency tolerance at room temperature.)	*	A	*	f _{tol}	-100	-	+100	$\times 10^{-6}$	-40 to +85°C	-10 to +70°C (Standard Operating Temperature Range)
		B			-50	-	+50			
		C			-30	-	+30			
		D			-25	-	+25			
		E			-20	-	+20			
Current Consumption	E, F, H	*		I _{CC}	-	-	2.0	mA	No Load	
					$1.5625 \leq f_0 \leq 50$	-	6.8			
	G				$50 < f_0 \leq 100$	-	1.2	mA		
	$50 < f_0 \leq 100$	-	3.2							
Stand-by Current (#1 pin "L" Level)	*	*	*	I _{std}	-	-	20	μ A		
Load Condition	*	*	*	L _{CMOS}	-	-	15	pF		
Symmetry	*	*	*	SYM	45	50	55	%	50% V _{CC} Level	
0 Level Output Voltage	*	*	*	V _{OL}	-	-	V _{CC} × 0.1	V		
1 Level Output Voltage	*	*	*	V _{OH}	V _{CC} × 0.9	-	-			
Rise and Fall Time	E, F H, G	*	*	tr, tf	-	-	4	ns	10 to 90% V _{CC} Level	
					-	-	8			
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	-	-			
Output Disable Time	*	*	*	tPZ	-	-	10	μ s		
Output Enable Time	*	*	*	tPZL	-	-	2	ms		
Period Jitter (1)	E, F H, G	*	*	tRMS	-	5	-	ps	σ	
					-	7	-			
					-	40	-			
					-	60	-			
Total Jitter (1)	E, F H, G	*	*	tp-p	-	70	-	ps	Peak to peak	
					-	98	-			
Phase Jitter	E, F H, G	*		tTL	-	-	2	ps	tDJ + n × tRJ n = 14.1 (BER = 1×10^{-12}) (2)	
					$10 \leq f_0 < 40$	-	-			4
					$40 \leq f_0 \leq 100$	-	-			4
Packing Unit (3)	DSO211AN: 3000pcs./reel (φ180), DSO221SN/DSO321SN: 2000pcs./reel (φ180)									

(1) Measured WAVECREST DTS-2075

Consult our sales representative for other specifications.

- (2) tDJ : Deterministic jitter tRJ : Random jitter
 (3) Moisture prevention packing is unnecessary.
 Moisture Sensitivity Level : Level 1 (IPC/JEDEC J-STD-033)

DSO211AN

[mm]

DSO221SN

[mm]

DSO321SN

[mm]

Model Code	Frequency	Pin Connections	Function
N40.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N19.2	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N52.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z

Model Code	Frequency	Pin Connections	Function
N40.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N19.2	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N52.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z

Model Code	Frequency	Pin Connections	Function
N40.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N19.2	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N52.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z

Model Code	Frequency	Pin Connections	Function
N40.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N19.2	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z
N52.0	#3	#1 OE (Output Enable) #2 GND #3 Output #4 V _{CC}	#1 Input #3 Output condition H Oscillation out Open High Z L High Z