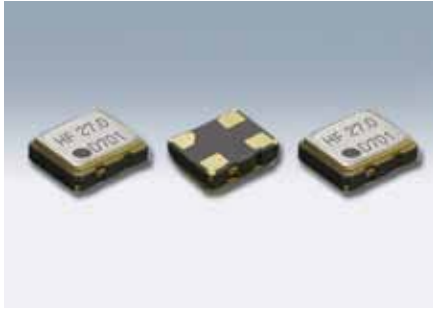


SMD Crystal Oscillators

DSO221SHF



Actual size

■ Features

- Supply Voltage: 1.8V/2.5V/2.8V/3.0V/3.3V/5.0V
- 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: 0.8mm
- 3-state function
- AEC-Q100/AEC-Q200 compliant

■ Applications

- WiLAN, WiMAX, Bluetooth
- DVC, HDTV, Blu-ray
- PC, gaming equipment, audio equipment
- Camera module
- Automotive multimedia device

[Function Code]

DSO221SHF Y A

Y : 5.0V
A : 3.3V
M : 3.0V
B : 2.8V
C : 2.5V
D : 1.8V



A : $\pm 100 \times 10^{-6}$
B : $\pm 50 \times 10^{-6}$
C : $\pm 30 \times 10^{-6}$
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.

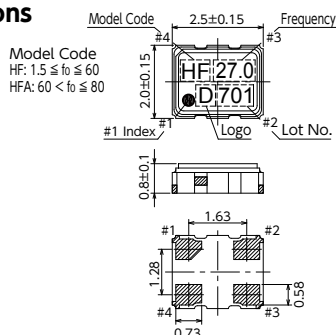
Item	Function Code		Output Frequency Range (MHz)	Legend	Spec.				Condition		
	Supply Voltage	Frequency tolerance			min.	typ.	max.	Unit			
Supply Voltage	Y	*	$1.5 \leq f_0 \leq [48]$ 80 [] → Supply Voltage : Y	V _{CC}	+4.5	+5.0	+5.5	V			
	A				+3.0	+3.3	+3.6				
	M				+2.7	+3.0	+3.3				
	B				+2.6	+2.8	+3.0				
	C				+2.25	+2.5	+2.75				
D	+1.6	+1.8	+2.0								
Frequency Tolerance (Includes frequency tolerance at room temperature.)	*	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	Y	*	$1.5 \leq f_0 \leq 48$	I _{CC}	-	-	8.0	mA	No Load		
	A·M				-	-	4.0				
	B				-	-	9.1				
	C				$1.5 \leq f_0 \leq 60$	-	-				3.6
					$60 < f_0 \leq 80$	-	-				8.1
	D				$1.5 \leq f_0 \leq 60$	-	-				3.4
					$60 < f_0 \leq 80$	-	-				7.6
	$1.5 \leq f_0 \leq 60$	-	-	2.8							
	$60 < f_0 \leq 80$	-	-	6.2							
Stand-by Current (#1 pin "L" Level)	*	*	*	I _{std}	-	-	10	μA			
Load Condition	Y·A	*	$1.5 \leq f_0 \leq 48$	L _{CMOS}	-	-	30	pF			
	A·M·B·C·D		$1.5 \leq f_0 \leq 80$	-	-	15					
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	-	-	-			
Rise and Fall Time	Y·A	*	$1.5 \leq f_0 \leq 48$	tr,rf	-	-	10(8)	ns	10 to 90% V _{CC} Level (20 to 80% V _{CC} Level)	L _{CMOS} =30pF L _{CMOS} =15pF	
	Y·A·M·B·C		$1.5 \leq f_0 \leq [48]$ 60 [] → Supply Voltage : Y		-	-	5(4)				
	D		$60 < f_0 \leq 80$		-	-	6(5)				
A·M·B·C·D	$60 < f_0 \leq 80$	-	-	6							
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	*	*	*	t _{PLZ}	-	-	150	ns			
Output Enable Time	*	*	$1.5 \leq f_0 \leq [48]$ 60 [] → Supply Voltage : Y	t _{PZL}	-	-	1	ms			
	A·M·B·C·D				$60 < f_0 \leq 80$	-	-				3
Phase Noise	Y·A·M·B·C	*	$1.5 \leq f_0 \leq [48]$ 60	-	-	-145	-	dBc/Hz	Offset 1kHz		
	D		$60 < f_0 \leq 80$		-	-140	-				
	A·M·B·C·D		$60 < f_0 \leq 80$		-	-135	-				
	Y·A·M·B·C		$1.5 \leq f_0 \leq [48]$ 60		-	-158	-		Offset 100kHz		
	D		$60 < f_0 \leq 80$		-	-152	-				
	A·M·B·C		$60 < f_0 \leq 80$		-	-156	-				
	$60 < f_0 \leq 80$	-	-150	-							
Period Jitter (1)	*	*	*	t _{RMS}	-	2.4	-	ps	σ		
Total Jitter (1)	*	*	*	tp-p	-	23	-	ps	Peak to peak		
				t _{TL}	-	34	-	ps	t _{DJ} +n×t _{RJ} n=14.1(BER=1×10 ⁻¹⁴) (2)		
Phase Jitter	*	*	*	tpj	-	-	1	ps	fo offset: 1.2kHz to 20MHz fo offset: 1.2kHz to 5MHz		
Packing Unit (3)	3000pcs./reel (φ 180)										

- (1) Measured WAVECREST DTS-2075
- (2) t_{DJ}: Deterministic jitter t_{RJ}: Random jitter
- (3) Moisture prevention packing is unnecessary.
Moisture Sensitivity Level: Level 1 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications.

[mm]

■ Dimensions



■ Recommended Land Pattern

