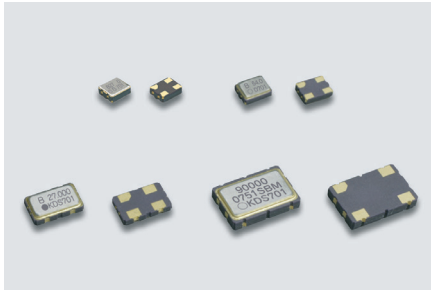


SMD Crystal Oscillators

DSO221SBM/DSO321SBM/DSO531SBM/DSO751SBM



Actual size DSO221SBM DSO321SBM
DSO531SBM DSO751SBM

■ Features

- Low current consumption
- 3-state function
- General purpose +5.0V HCMOS oscillator
- CMOS Level Output

■ Applications

- PC, visual and FA equipment applications



Pb-Free



RoHS Compliant

[Type]	DSO221SBM	2520 size
	DSO321SBM	3225 size
	DSO531SBM	5032 size
	DSO751SBM	7349 size

[Function Code]

DSO***SBM Y A

Y : 5.0V

A : $\pm 100 \times 10^{-6}$

B : $\pm 50 \times 10^{-6}$

C : $\pm 30 \times 10^{-6}$

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

■ Standard Specification

				DSO221SBM				DSO321, 531, 751 SBM						
Item	Legend	Function Code		Output Frequency Range (MHz)	Spec.			Output Frequency Range (MHz)	Spec.			Unit	Condition	
		Supply Voltage	Frequency tolerance		min.	typ.	max.		min.	Typ.	max.			
Supply Voltage	V _{CC}	*	*	3.25≤f ₀ ≤52	+4.5	+5.0	+5.5	0.7≤f ₀ ≤90	+4.5	+5.0	+5.5	V		
Frequency Tolerance (Includes frequency tolerance at room temperature.)	f _{tol}	*	A	3.25≤f ₀ ≤52	-100	—	+100	0.7≤f ₀ ≤90	-100	—	+100	X10 ⁻⁶	-40 to +85°C	-10 to +70°C (Standard Operating Temperature Range)
			B	3.25≤f ₀ ≤52	-50	—	+50	0.7≤f ₀ ≤90	-50	—	+50		-20 to +70°C	
			C	3.25≤f ₀ ≤52	-30	—	+30	0.7≤f ₀ ≤54	-30	—	+30			
Current Consumption	I _{CC}	*	*	3.25≤f ₀ ≤52	—	—	8.0	0.7≤f ₀ <32 32≤f ₀ <54 54≤f ₀ <90	— — —	— — —	4.0 6.0 8.0	mA	No Load	
Stand-by Current (#1 pin "L" Level)	I _{std}	*	*	*	—	—	10	*	—	—	50	μA		
Load Condition	L _{CMOS}	*	*	*	—	—	15	*	—	—	30	pF		
Symmetry	SYM	*	*	*	45	50	55	f ₀ <26 f ₀ ≥26	45 40	50 50	55 60	%	50% V _{CC} Level	
0 Level Output Voltage	V _{OL}	*	*	*	—	—	V _{CC} ×0.1	*	—	—	V _{CC} ×0.1	V		
1 Level Output Voltage	V _{OH}	*	*	*	V _{CC} ×0.9	—	—	*	V _{CC} ×0.9	—	—	V		
Rise and Fall Time	tr, tf	*	*	3.25≤f ₀ ≤52	—	—	4.0	0.7≤f ₀ ≤54 54<f ₀ ≤90	— —	— —	7 (6) 5 (4)	ns	L _{CMOS} :30pF 10 to 90% V _{CC} Level (20 to 80% V _{CC} Level)	
OE Pin 0 Level Input Voltage	V _{IL}	*	*	*	—	—	V _{CC} ×0.2	*	—	—	V _{CC} ×0.2	V		
OE Pin 1 Level Input Voltage	V _{IH}	*	*	*	V _{CC} ×0.8	—	—	*	V _{CC} ×0.8	—	—	V		
Output Disable Time	tPLZ	*	*	*	—	—	100	*	—	—	150	ns		
Output Enable Time	tPZL	*	*	*	—	—	2.0	*	—	—	1	ms		
Period Jitter (1)	tRMS	*	*	*	—	2.5	—	*	—	2.5	—	ps	σ	
	tp-p	*	*	*	—	20	—	*	—	20	—	ps	Peak to peak	
Total Jitter (1)	tTL	*	*	*	—	35	—	*	—	35	—	ps	tDJ+n×trJ n=14.1 (BER=1×10 ⁻¹²) (2)	
Phase Jitter	tpj	*	*	40≤f ₀ ≤52	—	—	1	40≤f ₀ ≤90	—	—	1	ps	f ₀ offset:12kHz to 20MHz	
				10≤f ₀ <40				10≤f ₀ <40					f ₀ offset:12kHz to 5MHz	
Packing Unit (3)	DSO221SBM, DSO321SBM: 2000pcs./reel (φ 180) , DSO531SBM: 1000pcs./reel (φ 180) , DSO751SBM: 1000pcs./reel (φ 254)													

(1) Measured WAVECREST DTS-2075

(2) tDJ : Deterministic jitter tRJ : 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.

■ DSO221SBM [mm] ■ DSO321SBM [mm] ■ DSO531SBM [mm] ■ DSO751SBM [mm]

■ Dimensions	■ Dimensions	■ Dimensions	■ Dimensions
Model Code #4 2.5 ± 0.15 #3 Frequency #1 Index #1 #2 Logo Lot No. #3 #4 0.81 ± 0.08 1.58 1.23 0.68 0.53 ■ Recommended Land Pattern (Top View) 1.7 1.35 1.0 0.85 Pin Connections Pin No. Connection #1 OE/Output Enable #2 GND #3 Output #4 V_{CC} Function #1 Input #3 Output condition H Oscillation out Open Oscillation out L High Z	Model Code #4 3.2 ± 0.15 #3 Frequency #1 Index #1 #2 Logo Lot No. #3 #4 1.1 ± 0.1 2.1 1.65 0.9 0.65 ■ Recommended Land Pattern (Top View) 2.2 1.2 0.95 Pin Connections Pin No. Connection #1 OE/Output Enable #2 GND #3 Output #4 V_{CC} Function #1 Input #3 Output condition H Oscillation out Open Oscillation out L High Z	Model Code #4 5.0 ± 0.2 #3 Frequency #1 Index #1 #2 Logo Lot No. #3 #4 1.1 ± 0.1 2.54 2.10 1.2 0.5 ■ Recommended Land Pattern (Top View) 2.54 2.2 1.4 Pin Connections Pin No. Connection #1 OE/Output Enable #2 GND #3 Output #4 V_{CC} Function #1 Input #3 Output condition H Oscillation out Open Oscillation out L High Z	Model Code #4 7.3 ± 0.2 #3 Frequency #1 Index #1 #2 Logo Lot No. #3 #4 1.5 ± 0.2 5.08 3.65 1.4 0.5 ■ Recommended Land Pattern (Top View) 5.08 4.2 1.8 Pin Connections Pin No. Connection #1 OE/Output Enable #2 GND #3 Output #4 V_{CC} Function #1 Input #3 Output condition H Oscillation out Open Oscillation out L High Z