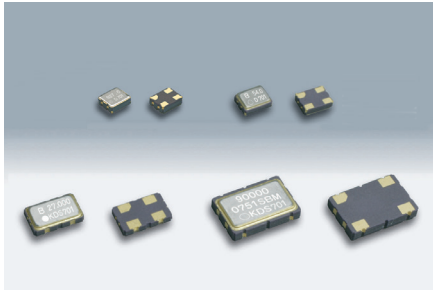


SMD Crystal Oscillators

DSO221SBM/DSO321SBM/DSO531SBM/DSO751SBM



Actual size DSO221SBM DSO321SBM
DSO531SBM DSO751SBM

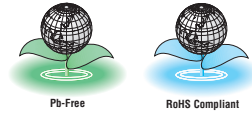
Features

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

Applications

- PC, visual and FA equipment applications

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



[Function Code]

DSO***SBM Y A
 Y : 5.0V $\left\{ \begin{array}{l} A : \pm 100 \times 10^{-6} \\ B : \pm 50 \times 10^{-6} \\ C : \pm 30 \times 10^{-6} \end{array} \right.$

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

Standard Specification

Item	Legend	Function Code		DSO221SBM			DSO321, 531, 751 SBM				Condition		
		Supply Voltage	Frequency tolerance	Output Frequency Range (MHz)	Spec.			Output Frequency Range (MHz)	Spec.				
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 -20 to +70°C (Standard Operating Temperature Range)
			B	3.25 ≤ f ₀ ≤ 52	-50	-	+50	0.7 ≤ f ₀ ≤ 90	-50	-	+50		
			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	-	-	4.0	mA	No Load
								32 ≤ f ₀ < 54	-	-	6.0		
								54 ≤ f ₀ < 90	-	-	8.0		
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	45	50	55	%	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	t _r , t _f	*	*	3.25 ≤ f ₀ ≤ 52	-	-	4.0	0.7 ≤ f ₀ ≤ 54	-	-	7 (6)	ns	L _{CMOS} : 30pF 10 to 90% V _{CC} Level (20 to 80% V _{CC} Level)
								54 < f ₀ ≤ 90	-	-	5 (4)		
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	t _{PLZ}	*	*	*	-	-	100	*	-	-	150	ns	
Output Enable Time	t _{PZL}	*	*	*	-	-	2.0	*	-	-	1	ms	
Period Jitter (1)	t _{RMS}	*	*	*	-	2.5	-	*	-	2.5	-	ps	σ Peak to peak
	t _{p-p}	*	*	*	-	20	-	*	-	20	-		
Total Jitter (1)	t _{TJ}	*	*	*	-	35	-	*	-	35	-	ps	t _{DJ} + n × t _{RJ} n=14.1 (BER=1 × 10 ⁻¹²) (2)
Phase Jitter	t _{pj}	*	*	40 ≤ f ₀ ≤ 52	-	-	1	40 ≤ f ₀ ≤ 90	-	-	1	ps	fo offset: 12kHz to 20MHz fo 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) 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.

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

Model	Dimensions (mm)	Recommended Land Pattern (Top View)
DSO221SBM	<p>Model Code: #4, #3, #2, #1 Frequency Lot No. #1 Index</p> <p>2.5 ± 0.15 2.0 ± 0.15 0.81 ± 0.08 1.58 1.23 0.68 0.53</p>	<p>Pin Connections #1 OE/Output Enable #2 GND #3 Output #4 V_{CC}</p> <p>Function #1 Input I_S Output condition H Oscillation out Open Oscillation out L High Z</p>
DSO321SBM	<p>Model Code: #4, #3, #2, #1 Frequency Lot No. #1 Index</p> <p>3.2 ± 0.15 2.5 ± 0.15 1.1 ± 0.1</p> <p>2.1 1.65 0.65</p>	<p>Pin Connections #1 OE/Output Enable #2 GND #3 Output #4 V_{CC}</p> <p>Function #1 Input I_S Output condition H Oscillation out Open Oscillation out L High Z</p>
DSO531SBM	<p>Model Code: #4, #3, #2, #1 Frequency Lot No. #1 Index</p> <p>5.0 ± 0.2 3.2 ± 0.2 1.1 ± 0.1</p> <p>2.54 2.10 1.2</p>	<p>Pin Connections #1 OE/Output Enable #2 GND #3 Output #4 V_{CC}</p> <p>Function #1 Input I_S Output condition H Oscillation out Open Oscillation out L High Z</p>
DSO751SBM	<p>Model Code: #4, #3, #2, #1 Frequency (1kHz) Lot No. #1 Index</p> <p>7.3 ± 0.2 4.9 ± 0.2 1.5 ± 0.2</p> <p>5.08 3.65 1.4</p>	<p>Pin Connections #1 OE/Output Enable #2 GND #3 Output #4 V_{CC}</p> <p>Function #1 Input I_S Output condition H Oscillation out Open Oscillation out L High Z</p>