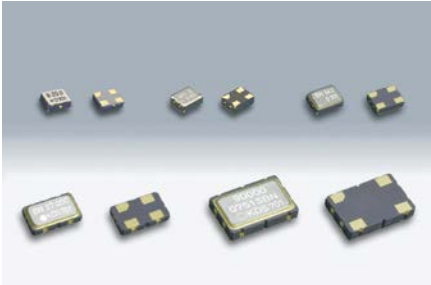


SMD Crystal Oscillators

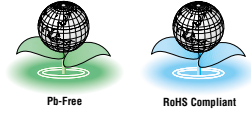
DSO211AB/DSO221SBM
DSO321SBM, DSO321SBN/DSO321SVN/DSO531SBM, DSO531SBN/DSO531SVN/DSO751SBM, DSO751SBN/DSO751SVN



Actual size DSO211AB □ DSO221SBM □ DSO321SBM/SBN □
DSO531SBM/SBN □ DSO751SBM/SBN □

Features

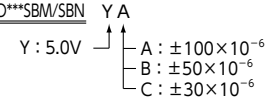
- Low current consumption(5V type DSO211AB, DSO***SBM/SBN)
(3.3V type DSO***SVN)
- 3-state function
- DSO211AB, DSO***SBM:
General purpose +5.0V HCMOS oscillator
- DSO***SBN/SVN:Optimized characteristic for single gate drive/lower loading conditions



Applications

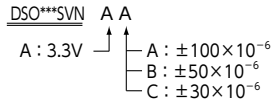
- PC, visual and FA equipment applications

[Function Code]



[Type]

DSO211AB	2016 size
DSO221SBM	2520 size
DSO321SBM/SBN/SVN	3225 size
DSO531SBM/SBN/SVN	5032 size
DSO751SBM/SBN/SVN	7349 size



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

Standard Specification

Item	Legend	Function Code		DSO211AB/DSO221SBM			DSO321, 531, 751 SBM/ SBN/ SVN			Condition			
		Supply Voltage	Frequency tolerance	Output Frequency Range (MHz)	min.	typ.	max.	Output Frequency Range (MHz)	min.		Typ.	max.	Unit
Supply Voltage	V _{cc}	Y A	*	3.25 ≤ f _o ≤ 52	+4.5	+5.0	+5.5	0.7 ≤ f _o ≤ 90	+4.5 +3.0	+5.0 +3.3	+5.5 +3.6	V	DSO***SBM/SBN DSO***SVN
Frequency Tolerance (Includes frequency tolerance at room temperature.)	f _{tol}	*	A B C	3.25 ≤ f _o ≤ 52	-100	-	+100	0.7 ≤ f _o ≤ 90	-100	-	+100	X10 ⁻⁶	-40 to +85°C -20 to +70°C (Standard Operating Temperature Range)
Current Consumption	I _{cc}	Y A	*	3.25 ≤ f _o ≤ 52	-	-	8.0	0.7 ≤ f _o < 32	-	-	4.0	mA	DSO***SBM/SBN No Load
								32 ≤ f _o < 54	-	-	6.0		
Stand-by Current (#1 pin 'L' Level)	I _{std}	*	*	3.25 ≤ f _o ≤ 52	-	-	-	0.7 ≤ f _o < 32	-	-	2.0	mA	DSO***SVN No Load
								32 ≤ f _o < 54	-	-	3.0		
Load Condition	L _{CMOS}	*	*	*	-	-	30	*	-	-	30	pF	DSO***SBM DSO***SBN/SVN
Symmetry	SYM	*	*	f _o < 26	45	50	55	f _o < 26	45	50	55		
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	-	-		
Rise and Fall Time	tr, tf	*	*	3.25 ≤ f _o ≤ 52	-	-	10	0.7 ≤ f _o ≤ 54	-	-	7 (6)	ns	DSO***SBM (20 to 80% V _{cc} Level) L _{CMOS} :30pF 10 to 90% V _{cc} Level DSO***SBN/SVN (20 to 80% V _{cc} Level) L _{CMOS} :15pF 10 to 90% V _{cc} Level
								54 < f _o ≤ 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	-	-		
Output Disable Time	tPZL	*	*	*	-	-	150	*	-	-	150	ns	
Output Enable Time	tPZL	*	*	*	-	-	5	*	-	-	1	ms	
Period Jitter (1)	tRMS	*	*	*	-	2.5	-	*	-	2.5	-	ps	σ Peak to peak
Total Jitter (1)	tTL	*	*	*	-	35	-	*	-	35	-	ps	t _{DJ} +t _{RJ} (n=14.1, BER=1×10 ⁻¹⁵) (2)
Phase Jitter	tpj	*	*	40 ≤ f _o ≤ 52	-	-	1	40 ≤ f _o ≤ 90	-	-	1	ps	fo offset:1.2kHz to 20MHz fo offset:1.2kHz to 5MHz
Packing Unit (3)	DSO211AB: 3000pcs./reel (φ180), DSO221SBM, DSO321SBM/SBN/SVN: 2000pcs./reel (φ180), DSO531SBM/SBN/SVN: 1000pcs./reel (φ180), DSO751SBM/SBN/SVN: 1000pcs./reel (φ254)												

(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.

DSO211AB [mm] ■ DSO221SBM [mm] ■ DSO321SBM/SBN/SVN [mm] ■ DSO531SBM/SBN/SVN [mm] ■ DSO751SBM/SBN/SVN [mm]

Dimensions

Model Code: #4

Frequency: 20.0

Lot No.: D701

Pin No. #1: Index

Pin No. #2: Logo

Pin No. #3: Frequency

Pin No. #4: Vcc

Pin Connections:
#1: OE/Output Enable
#2: GND
#3: Output
#4: Vcc

Function:
#1 Input: Output condition
#2: Oscillation out
#3: Oscillation out
#4: High Z

Recommended Land Pattern (Top View)

Dimensions

Model Code: #4

Frequency: 27.0

Lot No.: D701

Pin No. #1: Index

Pin No. #2: Logo

Pin No. #3: Frequency

Pin No. #4: Vcc

Pin Connections:
#1: OE/Output Enable
#2: GND
#3: Output
#4: Vcc

Function:
#1 Input: Output condition
#2: Oscillation out
#3: Oscillation out
#4: High Z

Recommended Land Pattern (Top View)

Dimensions

Model Code: #4

Frequency: 54.0

Lot No.: D701

Pin No. #1: Index

Pin No. #2: Logo

Pin No. #3: Frequency

Pin No. #4: Vcc

Pin Connections:
#1: OE/Output Enable
#2: GND
#3: Output
#4: Vcc

Function:
#1 Input: Output condition
#2: Oscillation out
#3: Oscillation out
#4: High Z

Recommended Land Pattern (Top View)

Dimensions

Model Code: #4

Frequency: 27.000

Lot No.: KDS701

Pin No. #1: Index

Pin No. #2: Logo

Pin No. #3: Frequency

Pin No. #4: Vcc

Pin Connections:
#1: OE/Output Enable
#2: GND
#3: Output
#4: Vcc

Function:
#1 Input: Output condition
#2: Oscillation out
#3: Oscillation out
#4: High Z

Recommended Land Pattern (Top View)

Dimensions

Model Code: #4

Frequency: 9000

Lot No.: KDS701

Pin No. #1: Index

Pin No. #2: Logo

Pin No. #3: Frequency

Pin No. #4: Vcc

Pin Connections:
#1: OE/Output Enable
#2: GND
#3: Output
#4: Vcc

Function:
#1 Input: Output condition
#2: Oscillation out
#3: Oscillation out
#4: High Z

Recommended Land Pattern (Top View)