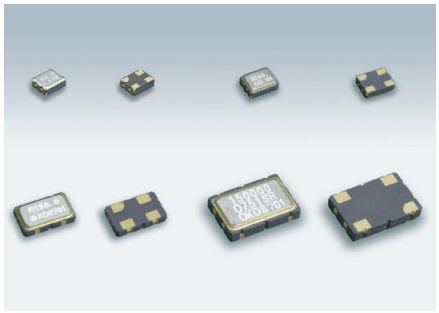
SMD Crystal Oscillators

DSO221SR/DSO321SR/DSO531SR/DSO751SR



Actual size DSO221SR DSO321SR
DSO531SR DSO751SR

■ Features

- Low current consumption: 8mA max (167MHz, 3.3V)
- Supply Voltage: 1.8V/2.5V/2.8V/3.0V/3.3V
- Offers Narrow deviation: $\pm 20\times10^{-6}/\pm 30\times10^{-6}/\pm 50\times10^{-6}/\pm 100\times10^{-6}$
- Available up to 167MHz by using AT cut fundamental resonator.
- Low jitter provides for high performance.
- Low profile: 0.815mm(DSO221SR),
  1.1mm(DSO321SR/DSO531SR),
  1.5mm(DSO751SR)
- AEC-Q200 Compliant
  (Option: Equivalent to AEC-Q100)
  (DSO221SR/DSO321SR)
- CMOS Level Output

Pb-Free

RoHS Compliant

[Type]

DSO221SR	2520 size
DSO321SR	3225 size
DSO531SR	5032 size
DSO751SR	7349 size

[Function Code]

DSO***SR A A

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

A : $\pm 100\times10^{-6}$
B : $\pm 50\times10^{-6}$
C : $\pm 30\times10^{-6}$
D : $\pm 25\times10^{-6}$
E : $\pm 20\times10^{-6}$

■ 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	A	*	0.2≦f0≦167	VCC	+3.0	+3.3	+3.6	V		
	M		0.2≦f0≦167		+2.7	+3.0	+3.3			
	B		0.2≦f0≦157		+2.6	+2.8	+3.0			
	C		0.2≦f0≦157		+2.25	+2.5	+2.75			
	D		0.2≦f0≦80		+1.6	+1.8	+2.0			
Frequency Tolerance (Includes frequency tolerance at room temperature.)	*	A	0.2≦f0≦167	f_tol	−100	−	+100	×10⁻⁶	−40 to +85℃	−10 to +70℃ (Standard Operating Temperature Range)
		B	0.2≦f0≦125		−50	−	+50			
		C	0.2≦f0≦80		−30	−	+30		−20 to +70℃	
		D	0.2≦f0≦80		−25	−	+25			
		E	0.2≦f0≦50		−20	−	+20		−10 to +70℃	
Current Consumption	A,M	*	0.2≦f0<32	ICC	−	−	1.8	mA	No Load	
			32≦f0<54		−	−	2.5			
			54≦f0<80		−	−	5.0			
			80≦f0<125		−	−	6.0			
			125≦f0≦167		−	−	8.0			
	B	*	0.2≦f0<32		−	−	1.8			
			32≦f0<54		−	−	2.5			
			54≦f0<125		−	−	5.0			
			125≦f0≦157		−	−	7.0			
	C	*	0.2≦f0<32		−	−	1.5			
			32≦f0<54		−	−	2.0			
			54≦f0<125		−	−	4.0			
			125≦f0≦157		−	−	6.0			
	D	*	0.2≦f0<32		−	−	1.0			
			32≦f0<54		−	−	1.4			
			54≦f0≦80		−	−	3.0			
Stand-by Current (#1 pin "L" Level)	*	*	*	I_std	−	−	10	μA		
Load Condition	*	*	*	L_CMOS	−	−	15	pF		
	A,M		0.2≦f0≦80		−	−	30			
Symmetry	*	*	f0<50	SYM	45	50	55	%	50% VCC Level	
			f0≧50		40	50	60			
0 Level Output Voltage	*	*	*	VOL	−	−	VCC×0.1	V		
1 Level Output Voltage	*	*	*	VOH	VCC×0.9	−	−			
Rise and Fall Time	A,M,B,C	*	0.2≦f0≦54	tr, tf	−	−	5 (4)	ns	L_CMOS:15pF 10 to 90% VCC Level (20 to 80% VCC Level)	
	D		0.2≦f0≦54		−	−	7 (6)			
	*		54<f0<100		−	−	4 (3)			
	*		100≦f0≦167		−	−	3 (2.5)			
	A,M		0.2≦f0≦54		−	−	10		L_CMOS:30pF 10 to 90% VCC Level	
	A,M		54<f0≦80		−	−	6			
OE Pin 0 Level Input Voltage	*	*	*	VIL	−	−	VCC×0.2	V		
OE Pin 1 Level Input Voltage	*	*	*	VIH	VCC×0.8	−	−			
Output Disable Time	*	*	*	tPLZ	−	−	150	ns		
Output Enable Time	*	*	*	tPZL	−	−	1	ms		
Period Jitter (1)	*	*	*	tRMS	−	2.2	−	ps	σ	
				tp-p	−	20	−		Peak to peak	
Total Jitter (1)	*	*	*	tTL	−	31	−	ps	tDJ+n×tRJ n=14.1(BER=1×10⁻¹²) (2)	
Phase Jitter	*	*	40≦f0≦167	tpj	−	−	1	ps	f0 offset:12kHz to 20MHz	
			10≦f0<40						f0 offset:12kHz to 5MHz	
Packing Unit (3)	DSO221SR, DSO321SR: 2000pcs./reel (φ180) , DSO531SR: 1000pcs./reel (φ180) , DSO751SR: 1000pcs./reel (φ254)									

(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.

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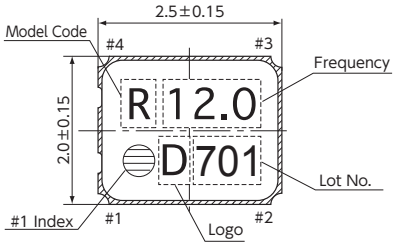
■ Applications

- PC, gaming equipment
- DSC, DVD, Blu-ray, HDTV, DVC, HDD
- WiMAX
- Camera module
- GbEthernet
- Automotive multimedia device

■ Dimensions

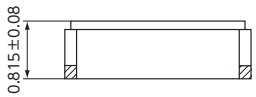
[mm]

DSO221SR

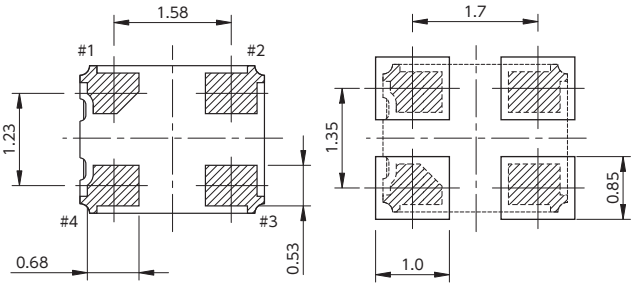


Pin Connections	
Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

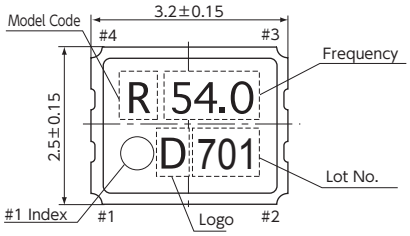
Function	
#1Input	#3 Output condition
H	Oscillation out
Open	Oscillation out
L	High Z



■ Recommended Land Pattern
〈Top View〉



DSO321SR



Pin Connections	
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#3	Output
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Function	
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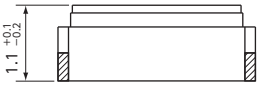
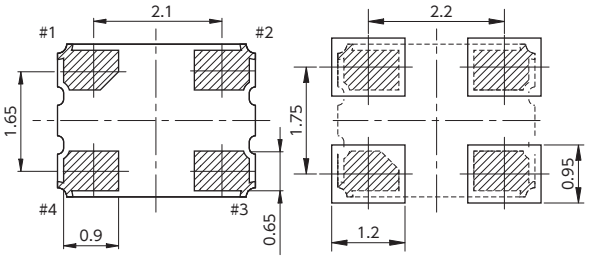
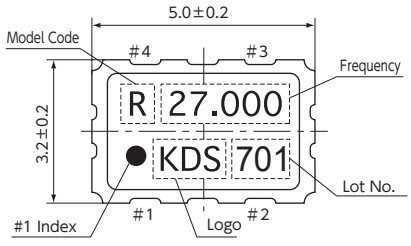
H	Oscillation out
Open	Oscillation out
L	High Z



■ Recommended Land Pattern
〈Top View〉

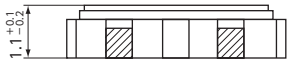


DSO531SR

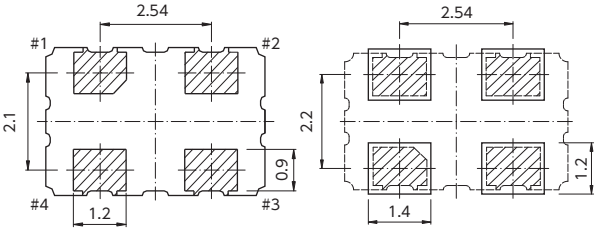


Pin Connections	
Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

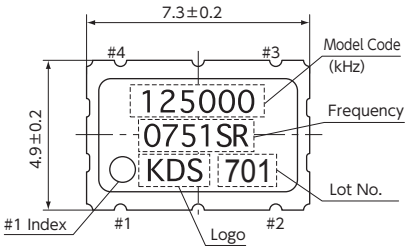
Function	
#1Input	#3 Output condition
H	Oscillation out
Open	Oscillation out
L	High Z



■ Recommended Land Pattern
〈Top View〉



DSO751SR



Pin Connections	
Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

Function	
#1Input	#3 Output condition
H	Oscillation out
Open	Oscillation out
L	High Z

■ Recommended Land Pattern
〈Top View〉