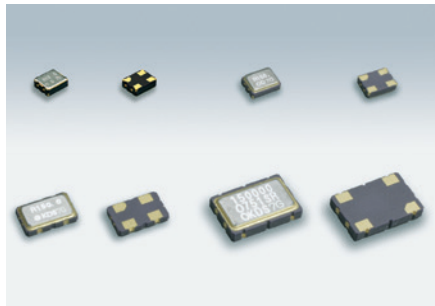


SMD Crystal Oscillators

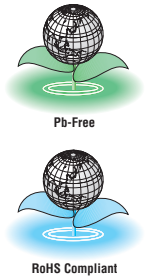
DS0221SR/DS0321SR/DS0531SR/DS0751SR



Actual size DS0221SR DS0321SR DS0531SR DS0751SR

■ Features

- Low current consumption: 8mA max (167MHz, 3.3V)
- Supply Voltage: 1.8V/2.5V/2.8V/3.0V/3.3V
- Offers Narrow deviation: $\pm 20 \times 10^{-6}$ / $\pm 30 \times 10^{-6}$ / $\pm 50 \times 10^{-6}$ / $\pm 100 \times 10^{-6}$
- Available up to 167MHz by using AT cut fundamental resonator. Low jitter provides for high performance.
- Low profile: 0.815mm(DS0221SR), 1.1mm(DS0321SR/DS0531SR), 1.5mm(DS0751SR)
- AEC-Q100 compliant



[Type]		
DS0221SR		2520 size
DS0321SR		3225 size
DS0531SR		5032 size
DS0751SR		7349 size

[Function Code]

DS0***SR

A A

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	A	*	$0.2 \leq f_o \leq 167$	V _{cc}	+3.0	+3.3	+3.6	V		
	M		$0.2 \leq f_o \leq 167$		+2.7	+3.0	+3.3			
	B		$0.2 \leq f_o \leq 157$		+2.6	+2.8	+3.0			
	C		$0.2 \leq f_o \leq 157$		+2.25	+2.5	+2.75			
	D		$0.2 \leq f_o \leq 80$		+1.6	+1.8	+2.0			
Frequency Tolerance (Includes frequency tolerance at room temperature.)	*	A	$0.2 \leq f_o \leq 167$	f _{tol}	−100	—	+100	×10 ^{−6}	−40~+85℃	−10~+70℃ (Standard Operating Temperature Range)
		B	$0.2 \leq f_o \leq 125$		−50	—	+50		−20~+70℃	
		C	$0.2 \leq f_o \leq 80$		−30	—	+30			
		D	$0.2 \leq f_o \leq 80$		−25	—	+25			
		E	$0.2 \leq f_o \leq 50$		−20	—	+20		−10~+70℃	
Current Consumption	A,M	*	$0.2 \leq f_o < 32$	I _{cc}	—	—	1.8	mA	No Load	
			$32 \leq f_o < 54$		—	—	2.5			
			$54 \leq f_o < 80$		—	—	5.0			
			$80 \leq f_o < 125$		—	—	6.0			
			$125 \leq f_o \leq 167$		—	—	8.0			
	B	*	$0.2 \leq f_o < 32$		—	—	1.8			
			$32 \leq f_o < 54$		—	—	2.5			
			$54 \leq f_o < 125$		—	—	5.0			
			$125 \leq f_o \leq 157$		—	—	7.0			
	C	*	$0.2 \leq f_o < 32$		—	—	1.5			
			$32 \leq f_o < 54$		—	—	2.0			
			$54 \leq f_o < 125$		—	—	4.0			
			$125 \leq f_o \leq 157$		—	—	6.0			
	D	*	$0.2 \leq f_o < 32$		—	—	1.0			
			$32 \leq f_o < 54$		—	—	1.4			
			$54 \leq f_o \leq 80$		—	—	3.0			
Stand-by Current(#1 pin "L" Level)	*	*	*	I _{std}	—	—	10	μA		
Load Condition	*	*	*	L _{CMOS}	—	—	15	pF		
	A,M		$0.2 \leq f_o \leq 80$		—	—	30			
Symmetry	*	*	$f_o < 50$ $f_o \geq 50$	SYM	45 40	50 50	55 60	%	50% V _{cc} Level	
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	A,M,B,C	*	$0.2 \leq f_o \leq 54$	tr, tf	—	—	5(4)	ns	L _{CMOS} :15pF 10~90% V _{cc} Level (20~80% V _{cc} Level)	
	D		$0.2 \leq f_o \leq 54$		—	—	7(6)			
	*		$54 < f_o < 100$		—	—	4(3)			
	*		$100 \leq f_o \leq 167$		—	—	3(2.5)			
	A,M		$0.2 \leq f_o \leq 54$		—	—	10		L _{CMOS} :30pF 10~90% V _{cc} Level	
	A,M		$54 < f_o \leq 80$		—	—	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	*	*	*	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	*	*	$40 \leq f_o \leq 167$	tpj	—	—	1	ps	fo offset:12kHz~20MHz	
			$10 \leq f_o < 40$						fo offset:12kHz~5MHz	
Packing Unit	DS0221SR, DS0321SR: 2000pcs./reel (φ 180) , DS0531SR: 1000pcs./reel (φ 180) , DS0751SR: 1000pcs./reel (φ 254)									

(1) Measured WAVECREST DTS-2075

(2) tDJ: Deterministic jitter tRJ: Random jitter

Consult our sales representative for other specifications.

SMD Crystal Oscillators

DS0221SR/DS0321SR/DS0531SR/DS0751SR

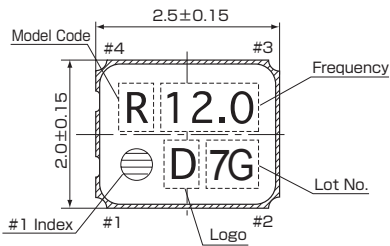
Applications

- PC, PDA, and peripherals, gaming equipment
- DSC, DVD, Blu-ray Disk, TV, HDTV, DVC, HDD
- WiMAX
- Mobile phones: camera module
- Telecommunications: GbEthernet, ISDN
- Automotive multimedia device

Dimensions

[mm]

DS0221SR Model code: R

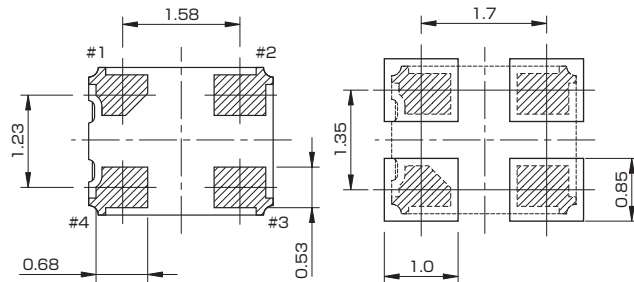


Pin Connections	
Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

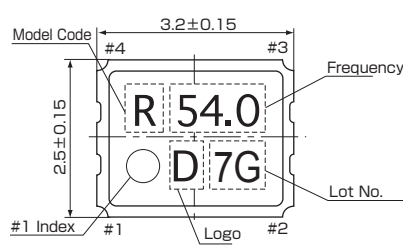
Function	
#1 Input	#3 Output condition
H	Oscillation out
Open	Oscillation out
L	High Z

0.815±0.08

Recommended Land Pattern (Top View)



DS0321SR Model code: R

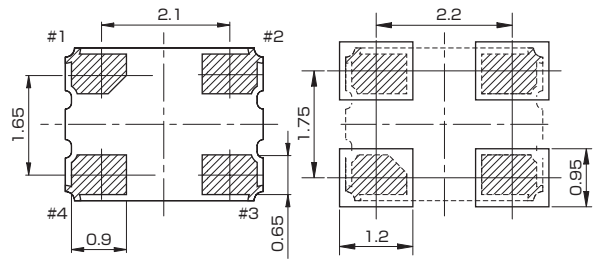


Pin Connections	
Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

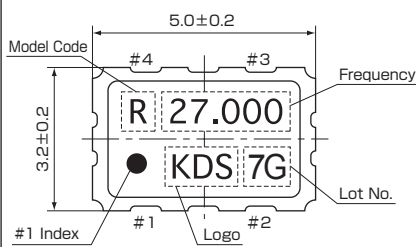
Function	
#1 Input	#3 Output condition
H	Oscillation out
Open	Oscillation out
L	High Z

1.1±0.2

Recommended Land Pattern (Top View)



DS0531SR Model code: R

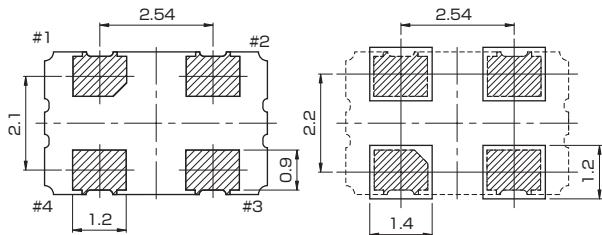


Pin Connections	
Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

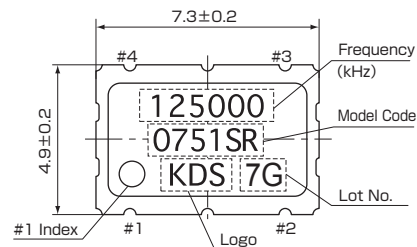
Function	
#1 Input	#3 Output condition
H	Oscillation out
Open	Oscillation out
L	High Z

1.1±0.2

Recommended Land Pattern (Top View)



DS0751SR Model code: 0751SR



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

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

1.5±0.2

Recommended Land Pattern (Top View)

