

# True Sine Wave Clock Oscillators [ ( HS series ) / ( HSR series ) ]

<b>HS</b> _ _	<b>HSR</b> _ _	<b>True Sine Wave</b>	<b>Thru-Hole</b>	<b>SMD</b>	<b>2.8V</b>	<b>3.3V</b>	<b>5.0V</b>	Min.	Max.
50Ω load	10KΩ // 10pF load							<b>10 MHz</b>	<b>200 MHz</b>

### Features

- True Sine Wave clock oscillators in 3.2 x 5.0 mm & 5.0 x 7.0 mm SMD. First in the market.
- High purity and low total harmonic distortion. Ideal for audio modulation applications.
- For VCXOs with a Sine Wave output, please refer to "GS" series



General specifications of all available packages , at Ta=+25°C

Output Wave Form	True Sine Wave					
Model	" HS " series			" HSR " series		
Load	50Ω. ( Internally AC coupled )			10 KΩ // 10 pF load		
Package	Thru-Hole	HS14 ( 20.2 * 12.8 * 6.0 )		HSR14 ( 20.2 * 12.8 * 5.5 )	HSR8 ( 12.8 * 12.8 * 5.5 )	
	Gull - Wing	HS24 ( 20.2 * 12.8 * 7.3 )		HSR24 ( 20.2 * 12.8 * 7.3 )	HSR18 ( 12.8 * 12.8 * 7.3 )	
Dimensions , unit : mm	SMD	-----		HSR53 ( 5.0 * 3.2 * 1.2 )	HSR57 ( 7.0 * 5.0 * 1.4 )	
				HSR42 ( 11.4 * 9.6 * 2.5 )	HSR43 ( 11.4 * 9.6 * 3.0 )	
Input Voltage ( V <sub>DD</sub> )	+3.3V D.C.±5%	+5.0V D.C.±10%		+2.8V D.C.±5%	+3.3V D.C.±5%	+5.0V D.C.±10%
Frequency Range	10.0 ~ 200 MHz		10.0 ~ 156.250 MHz		10.0MHz ~ 30.0 MHz	
Output Level	Standard: +3.0 dBm min. Tolerance: ± 1 dB Maximum Power: +7 dBm ( User to specify )		Standard: +5.0 dBm min. Tolerance: ± 1 dB Maximum Power: +13 dBm ( User to specify )		1.0 V p-p typical	
Current Consumption	10 MHz : 9 mA ( typ. )		10 MHz : 18 mA ( typ. )		1.0 mA	1.5 mA
	100 MHz : 18 mA ( typ. )		100 MHz : 34 mA ( typ. )			
	150 MHz : 19 mA ( typ. )		150 MHz : 36 mA ( typ. )			
Harmonics	< - 30dBc (frequency dependent)			< - 25dBc (frequency dependent)		
Start -up Time	6.0 m Sec.( typ. )			2.0 m Sec.( typ. )		
Storage Temperature	- 50°C to 125°C			- 55°C to 125°C		
Pin 1 option	Tri-state , Output disable when taken low			No Tri-state option		
Frequency Stability Codes	Frequency Stability over Operating Temperature Range	± 25 ppm	± 50 ppm	± 100 ppm		
	Commercial -10°C to +70°C	A	B	C		
	Industrial -40°C to +85°C	D	E	F		
If non-standard please enter the desired stability after the " C " or " I " represents . For example : " C20 " : ± 20 ppm over -10°C to +70°C " I30 " : ± 30 ppm over -40°C to +85°C						
Sub-Harmonics	None					
Aging	± 5 ppm per year (max.)					

# True Sine Wave Clock Oscillators [ ( HS series ) / ( HSR series ) ]

## Part Number Format and Example

	[ 1 ]	[ 2 ]	[ 3 ]		[ 4 ]		[ 5 ]		[ 6 ]
	Supply Voltage	Holder Type	G	-	Frequency Stability	-	Center Frequency	-	Output Power [ HS series only ]

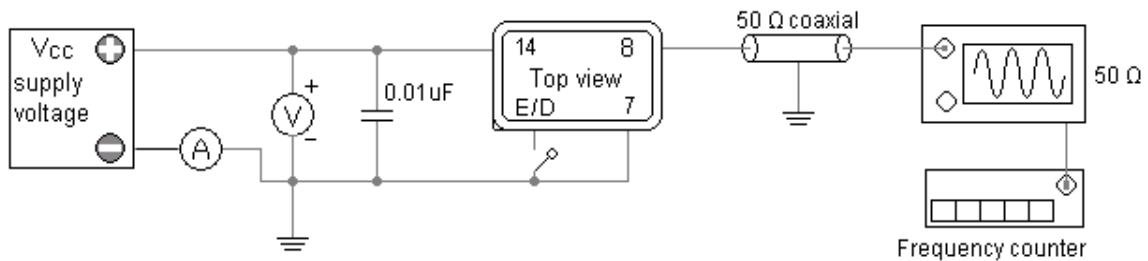
Example	(1)	3	HS14	G	-	A	-	100.000	-	5
	(2)	5	HSR53		-	E	-	20.000	-	

Ex (1) : **3HS14G - A - 100.000 - 5** [ +3.3V , True Sine wave , 50 Ω load , RoHS , ±25ppm from -10°C to 70°C , 100.000MHz , Output power is 5dBm ±1dB ]

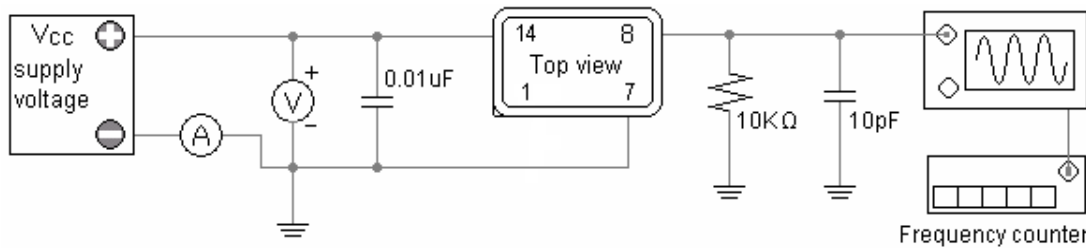
Ex (2) : **5HSR53 - E - 20.000** [ +5.0V , True Sine wave , 10 KΩ // 10 pF load , ±50ppm from -40°C to 85°C , 20.000MHz ]

[ 1 ]	Supply voltage , " 28 " for +2.8V ; " 3 " for +3.3V ; " 5 " for +5.0V
[ 2 ]	Holder Type
[ 3 ]	Please add " G " after the " type code " for RoHS compliance . Omit " G " if not required.
[ 4 ]	-10°C ~ 70 °C " A " ± 25ppm ; " B " ± 50ppm ; " C " ± 100ppm ; If non-standard please enter the desired stability after " C " , for example " C15 " : represents ±15ppm over -10 to +70°C
	-40°C ~ 85 °C " D " ± 25ppm ; " E " ± 50ppm ; " F " ± 100ppm ; If non-standard please enter the desired stability after " I " , for example " I20 " : represents ±20ppm over -40 to +85°C
[ 5 ]	Frequency in MHz
[ 6 ]	Output power in dBm ( HS series only )

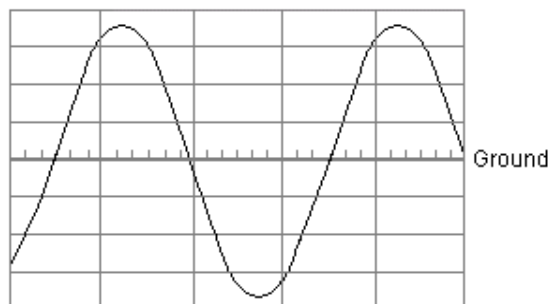
50 Ω Load Test Circuit : For " HS " series



10 KΩ // 10 pF Load Test Circuit : For " HSR " series



Output Wave Form



# True Sine Wave Clock Oscillators [ ( HS series ) / ( HSR series ) ]

Outline Dimensions ( Unit : mm ) , Suggested pad Layout for SMDs

<p style="text-align: center;"><b>[ HSR57 ]</b></p> <p>Land Pattern ( reference )</p> <p>Pad Connections :          Pad 1 : No connection          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>	<p style="text-align: center;"><b>[ HSR53 ]</b></p> <p>Land Pattern ( reference )</p> <p>Pad Connections :          Pad 1 : No connection          Pad 2 : Ground          Pad 3 : Output          Pad 4 : Supply Voltage</p>
<p style="text-align: center;"><b>[ HSR42 ]</b></p> <p>Pin Connections :          Pin 1 : No connection          Pin 2 : Ground          Pin 3 : Output          Pin 4 : Supply voltage</p>	<p style="text-align: center;"><b>[ HSR43 ]</b></p> <p>Pin Connections :          Pin 1 : No connection          Pin 2 : Ground          Pin 3 : Output          Pin 4 : Supply voltage</p>
<p style="text-align: center;"><b>[ HS14 ] , [ HSR14 ]</b></p> <p>4-Ø1.8 glass stand-off</p> <p>Pin Connections :          Pin 1 : No connection          Pin 7 : Ground          Pin 8 : Output          Pin 14 : Supply voltage</p>	<p style="text-align: center;"><b>[ HSR 8 ]</b></p> <p>3-Ø1.6 glass stand-off</p> <p>Pin Connections :          Pin 1 : No connection          Pin 4 : Ground          Pin 5 : Output          Pin 8 : Supply voltage</p>
<p style="text-align: center;"><b>[ HS24 ] , [ HSR24 ]</b></p> <p>4-Ø1.8 glass stand-off</p> <p>Pin Connections :          Pin 1 : No connection          Pin 7 : Ground          Pin 8 : Output          Pin 14 : Supply voltage</p>	<p style="text-align: center;"><b>[ HSR18 ]</b></p> <p>3-Ø1.6 glass stand-off</p> <p>Pin Connections :          Pin 1 : No connection          Pin 4 : Ground          Pin 5 : Output          Pin 8 : Supply voltage</p>