

True Sine Wave Clock Oscillators [HS series]

HS _ _	True Sine Wave	Thru-Hole	3.3V	5.0V	Min. 10 MHz	Max. 200 MHz
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Features

- 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

Model	" HS " series				
Package Dimensions , unit : mm	Thru-Hole HS14 (20.2 * 12.8 * 6.8)			Gull - Wing HS24 (20.2 * 12.8 * 7.8)	
Output Waveform	True Sine Wave				
Output Load	50Ω. (Internally AC coupled)				
Supply Voltage (V _{DD})	+3.3V ± 10%			+5.0V ± 10%	
Frequency Range	10.0 ~ 200 MHz			10.0 ~ 156.250 MHz	
Output Level	Standard: +3.0 dBm (min.) Tolerance: ± 1 dBm Maximum Power: +7 dBm (User to specify)			Standard: +5.0 dBm (min.) Tolerance: ± 1 dBm Maximum Power: +13 dBm (User to specify)	
Current Consumption	10 MHz : 9 mA (typ.)			10 MHz : 18 mA (typ.)	
	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	5.0 msec. (max.)				
Storage Temperature	- 50°C to 125°C				
Aging at Ta=+25°C	± 5 ppm per year (max.)				
Pin 1 option	OE Function ; No OE Function option				
Output Enable / Disable Function (OE Function)	70% of V _{DD} (min.) to enable output. 30% of V _{DD} (max.) to disable output.				
Frequency Stability Codes	Frequency Stability over Operating Temperature Range	± 25 ppm	± 50 ppm	± 100 ppm	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
	Commercial -10°C to +70°C	A	B	C	
	Industrial -40°C to +85°C	D	E	F	

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

[HS14]	[HS24]
<p>Top View 20.2 ± 0.2 12.8 ± 0.2 18.3 10.7 ± 0.1 10.7 ± 0.1 7.6 ± 0.1 14 15.2 ± 0.1 8</p> <p>Side View 0.8 6.0 ± 0.2 6.3 max. Ø 0.45</p> <p>Bottom View 5.3 ± 0.1</p> <p>4-Ø1.8 glass stand-off</p> <p>Pad Connections : Pad 1 : (1) No Connection (2) OE Function Pad 7 : Ground Pad 8 : Output Pad 14 : Supply Voltage</p>	<p>Top View 20.2 ± 0.2 12.8 ± 0.2 18.3 10.7 ± 0.1 10.7 ± 0.1 7.6 ± 0.1 14 15.2 ± 0.1 8</p> <p>Side View 0.8 7.8 ± 0.2 13.1 ± 0.2 1.8 ± 0.1 Ø 0.45</p> <p>Bottom View 5.3 ± 0.1</p> <p>4-Ø1.8 glass stand-off</p> <p>Pad Connections : Pad 1 : (1) No Connection (2) OE Function Pad 7 : Ground Pad 8 : Output Pad 14 : Supply Voltage</p>

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Part Number Format and Example

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

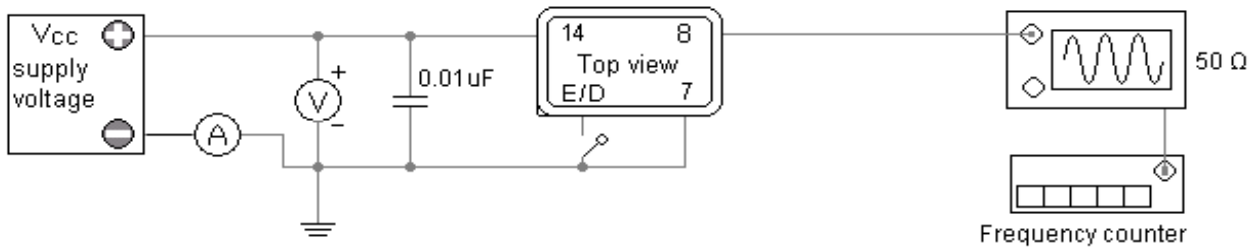
Example	3	HS14	-	A	-	-	-	100.000	-	5
	5	HS24	-	D	-	T	-	24.000	-	10

Ex(1) : **3HS14 - 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]

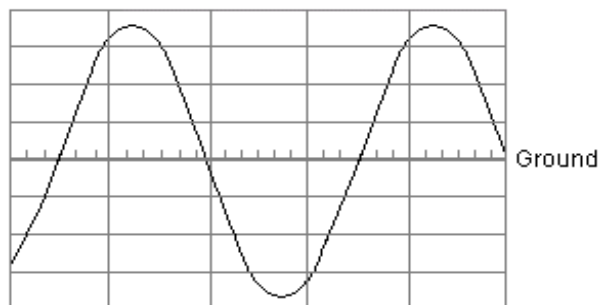
Ex(2) : **5HS24 - DT - 24.000 - 10** [+5.0V , True Sine wave , 50 Ω load , RoHS , ±25ppm from -40°C to 85°C , OE Function , 24.000MHz , Output power is 10dBm ±1dB]

[1]	Supply voltage , " 3 " for +3.3V ; " 5 " for +5.0V	
[2]	Holder Type	
[3]	-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
[4]	" T " for Pin 1 option , Leave this space blank if no connection on pad 1.	
[5]	Frequency in MHz	
[6]	Output power in dBm	

HS - series test circuit

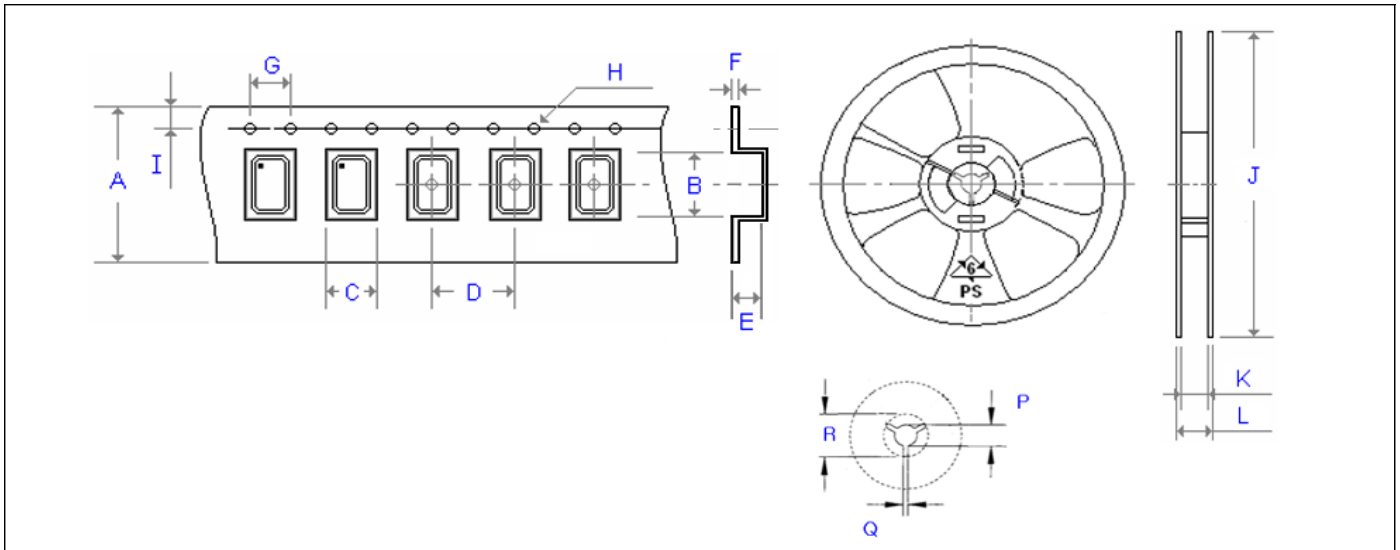


True Sine Waveform



Emboss Taping and Reel Specifications

[Crystal Oscillator Units]



Carrier Type Dimensions (unit : mm) ±0.3mm

	A	B	C	D	E	F	G	H	I	pcs / reel
H21	8.00	2.30	1.90	4.00	0.90	0.25	4.00	Ø 1.50	1.75	3000
H_22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
H_32	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
H_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
H_57	16.00	7.30	5.30	8.00	1.90	0.32	4.00	Ø 1.50	1.75	1000
SWO	16.00	7.20	5.40	8.00	1.80	0.32	4.00	Ø 1.50	1.75	1000
H_226	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
H_326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
H_536	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
H_576	16.00	7.30	5.30	8.00	1.90	0.32	4.00	Ø 1.50	1.75	1000
H_328	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
H_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
H_578	16.00	7.30	5.30	8.00	1.90	0.32	4.00	Ø 1.50	1.75	1000
H_43	24.00	11.80	10.00	16.00	5.00	0.30	4.00	Ø 1.50	1.75	500

Reel Dimensions (unit : mm) ±2mm

	J	K	L	P	Q	R	pcs / reel
H21	180.00	9.00	12.00	13.00	2.50	20.20	3000
H_22	180.00	8.40	11.40	13.00	2.50	20.20	3000
H_32	180.00	9.00	12.00	13.00	2.50	20.20	3000
H_53	180.00	13.00	16.00	13.00	2.50	20.20	1000
H_57	180.00	17.20	19.30	13.00	2.50	20.20	1000
SWO	180.00	17.20	19.30	13.00	2.50	20.20	1000
H_226	180.00	8.40	11.40	13.00	2.50	20.20	3000
H_326	180.00	9.00	12.00	13.00	2.50	20.20	3000
H_536	180.00	13.00	16.00	13.00	2.50	20.20	1000
H_576	180.00	17.20	19.30	13.00	2.50	20.20	1000
H_328	180.00	8.00	12.00	13.00	2.50	20.20	3000
H_538	180.00	13.00	16.00	13.00	2.50	20.20	1000
H_578	180.00	17.20	19.30	13.00	2.50	20.20	1000
H_43	330.00	24.50	29.10	13.00	2.50	20.20	500