

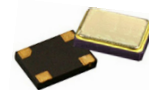
9200SSC Series

Spread spectrum, Low EMI clock oscillator, 7.0 x 5.0mm, HCMOS



REACH and RoHS compliant
 Spread spectrum technology to assist with EMI emission reduction
 0.5%, 1.0%, 3.0% spread option
 Tristate available for 1.0% and 3.0% spread only

Not recommended for new designs



Parameters	Specification	Remarks
Frequency range	F_nom 3.5MHz ~ 160.0MHz	
Supply voltage	Vcc 3.3V	±5% tolerance
Frequency stability	F_stb ±25.0ppm, ±50.0ppm, ±100.0ppm	Includes room temp. Tolerance + stability over temp. + Load + Vcc
Aging	F_age ±5.0ppm max	For 1 st year
Operating temperature range (°C)	Topr -10°C ~ +70°C, -40°C ~ +85°C	
Storage temperature (°C)	Tstg -55°C ~ +125°C	
Output waveform	HCMOS	
Output load	15pF typical	
Output voltage high	Voh 2.4V min at 90% Vcc min	
Output voltage low	Vol 0.5V max at 10% Vcc max	
Spread type and Spread percentage	Table 1	
EMI reduction	Table 2	
Modulation carrier frequency	6.9kHz min ; 55.5kHz max	Frequency dependent
Rise time	Tr 4nsec max	10%Vcc to 90%Vcc
Fall time	Tf 4nsec max	10%Vcc to 90%Vcc
Duty cycle	45%/55%, 40%/60%	
Current consumption	Icc Table 3	
Start-up time	T_str 2.0msec typical, 5.0msec max	
Tristate	Pad 1 enable high	
Cycle - cycle jitter	±250.0psec rms typical ; ±300.0psec rms max	
Static discharge voltage	>2kV	
Moisture sensitive level	1	

Table 1. Spread type and percentage spread

Total	Down spread "D"	Centre spread "C"	Comment
0.50%	-0.50%	±0.25%	Tristate not available
1.00%	-1.00%	±0.50%	Tristate available
3.00%	-3.00%	±1.50%	Tristate available

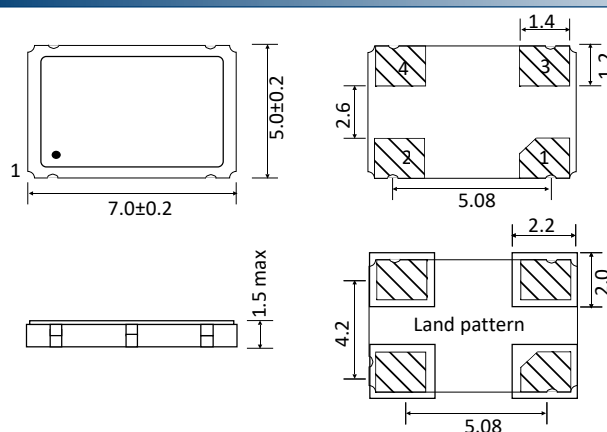
Table 2. EMI reduction

EMI in dB	Centre spread @ 100MHz
7dB min	±0.25%
9 dB min	±0.50%
15 dB min	±1.50%

Table 3. Current consumption (mA)

Frequency range (Mhz)	Current Icc typical (mA)
10.0 ~ 50.0	10.0
50.0 ~ 100.0	18.0
100.0 ~ 160.0	35.0

Dimensions(Unit:mm)



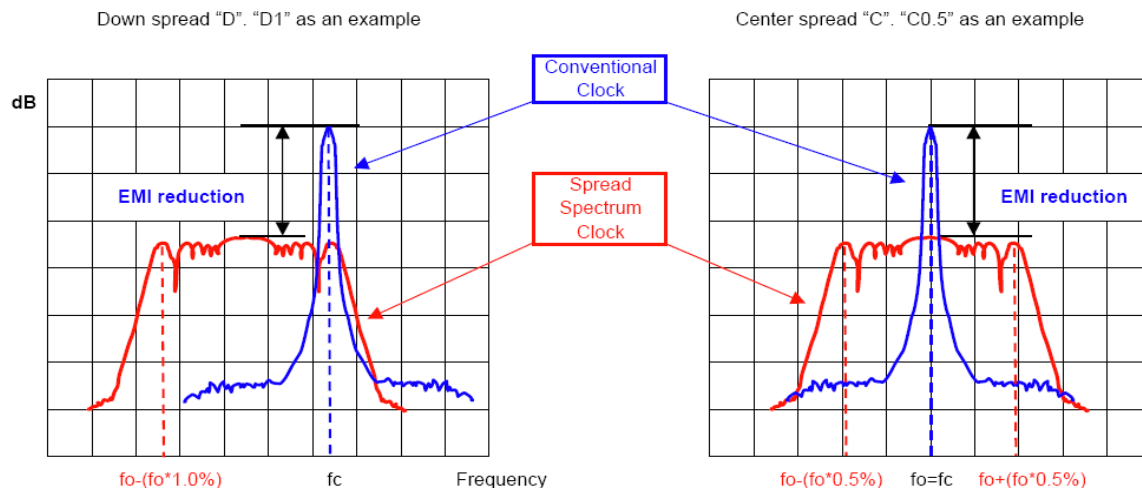
Pad 1 : Tristate or No connection

Pad 2 : Ground

Pad 3 : Output

Pad 4 : Supply voltage

Spread spectrum clock (SSC) : The mode emery of a spread spectrum clock is spread over a wider bandwidth compared to a standard clock by the utilization of the frequency modulation technique. The modulation carrier frequency is in the kHz range which makes the modulation process transparent to oscillator frequency. The modulation technique can be on all of one side of the nominal frequency (down spread) or equally spread on either side of the nominal frequency (centre spread). If over clocking is a problem to the system then the down spread is preferred.



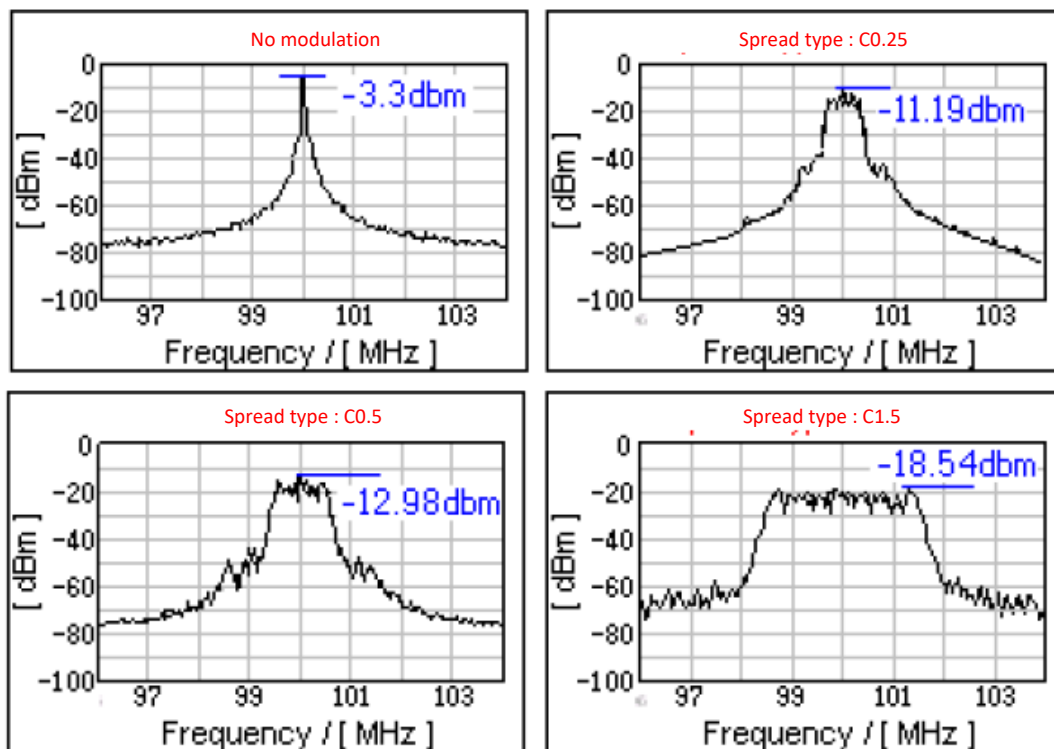
EMI reduction :

$$\text{EMI reduction main mode} : 10 \log \frac{\text{Total spread\%} \times \text{Frequency (fo)} \times 1}{0.12} \text{ dBc}$$

$$\text{EMI reduction (ha) harmonic} : 10 \log \frac{\text{Total spread\%} \times \text{Frequency (fo)} \times \text{ha}}{0.12} \text{ dBc}$$

Example maid mode (100MHz) 0.5% = -7dBc, 1% = -9dBc, 3.0% = -15dBc

EMI test data : 100MHz, Modulation frequency = 34.687kHz



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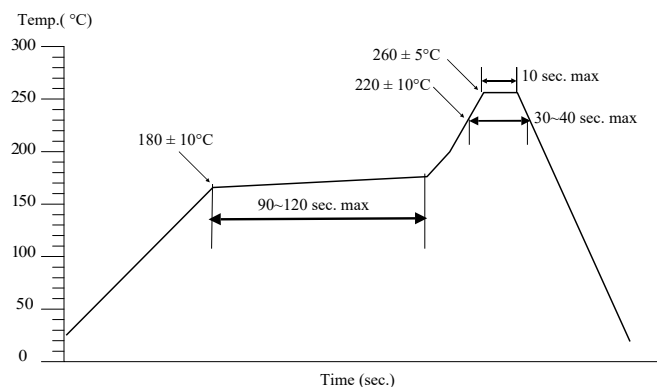
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Part number generation										
RP	2600	B	B	I	S	E	P	C02	L	-PF
ACT series Code	Frequency (MHz)	Frequency stability (±ppm)	Supply voltage (V)	Operating temp. range (°C)	Duty Cycle (%/%)	Output wave	Tristate	Spread (%)	Tape & Reel	RoHS Code
RP	<p>< 100MHz First 4 digit of frequency</p> <p>> 100MHz First 5 digit of frequency</p> <p>Ex. 26.00MHz = 2600 8.00MHz = 0800 14.7456MHz = 1474</p>	<p>25 = C 50 = B 100 = A</p>	3.3 = B	<p>-10 ~ +70 = C -20 ~ +70 = B -40 ~ +85 = I</p>	<p>40/60 = S 45/55 = H</p>	HCMOS 15pF = E	Tristate = P None = N	<p><u>Centre spread</u> ±0.25% = C02 ±0.50% = C05 ±1.50% = C15</p> <p><u>Down spread</u> -0.5 = D05 -1.0 = D10 -3.0 = D30</p>	<p>Loose = L 3000 = D</p>	-PF

Note: It is important to suffix the above part number with full frequency required to give a completed part number as illustrated below.
Full Example part number : **RP2600BBISEPC02L-PF [26MHz]**, **RP1474BBISEPD05L-PF [14.7456MHz]**

Solder reflow profile



Drawing control: (Internal use only)
Commodity code:
854370 90 45 for 1.8MHz ~ 67MHz
854370 90 45 for < 1.8MHz and > 67MHz
Issue number : N1
Date : 01/02/2017
Internal reference : M6

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+44 (0) 118 978 8878 | sales@act.co.uk | www.act.co.uk
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