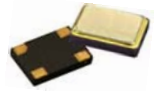


9300SSC Series

Spread spectrum, Low EMI clock oscillator, 5.0 x 3.2mm, 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



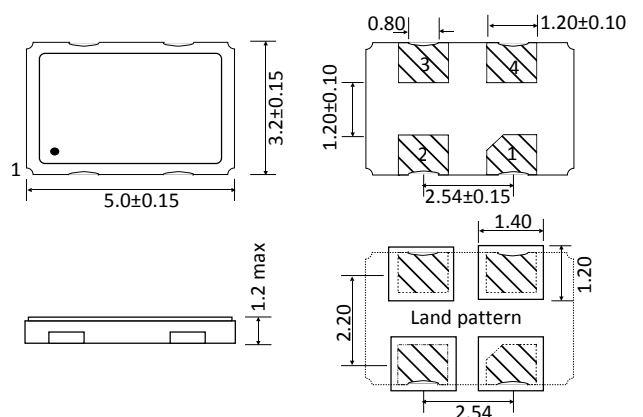
Parameters	Specification		Remarks
Frequency range	F_nom	6.0MHz ~ 160.0MHz	
Supply voltage	Vcc	3.3V	±5% tolerance
Frequency stability	F_stb	±25.0ppm, ±50.0ppm, ±100.0ppm	Includes initial tolerance, stability over temperature, Load, Vcc
Aging	F_age	±5.0ppm max	For 1 st year
Operating temperature range (°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	90% Vcc min	
Output voltage low	Vol	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	

Total	Down spread "D"	Centre spread "C"
0.50%	-0.50%	±0.25%
1.00%	-1.00%	±0.50%
3.00%	-3.00%	±1.50%

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

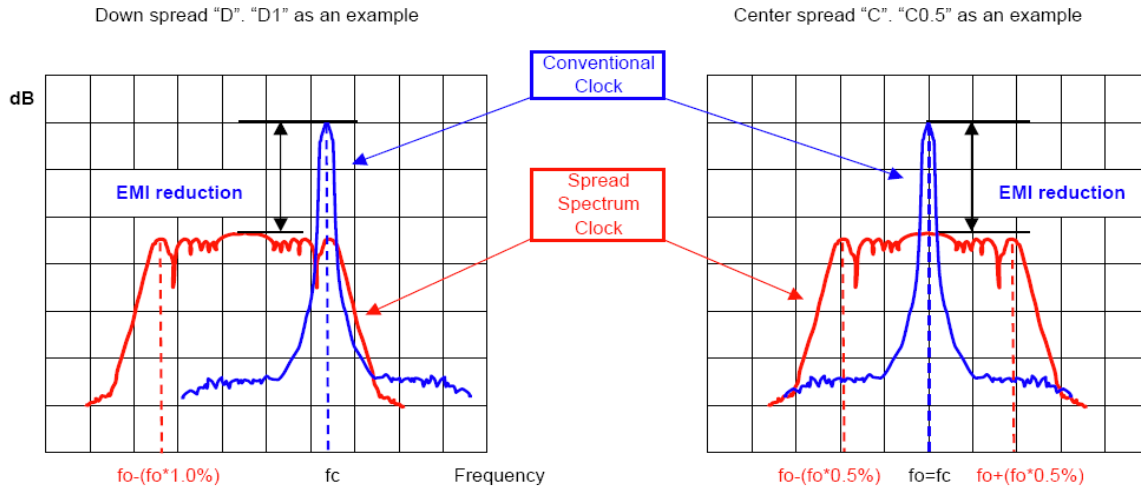
Frequency range (Mhz)	Current Icc typical (mA)
10.0MHz	7.0mA
32.768MHz	8.0mA
75.0MHz	17.0mA
125.0MHz	18.0mA

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 energy 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.



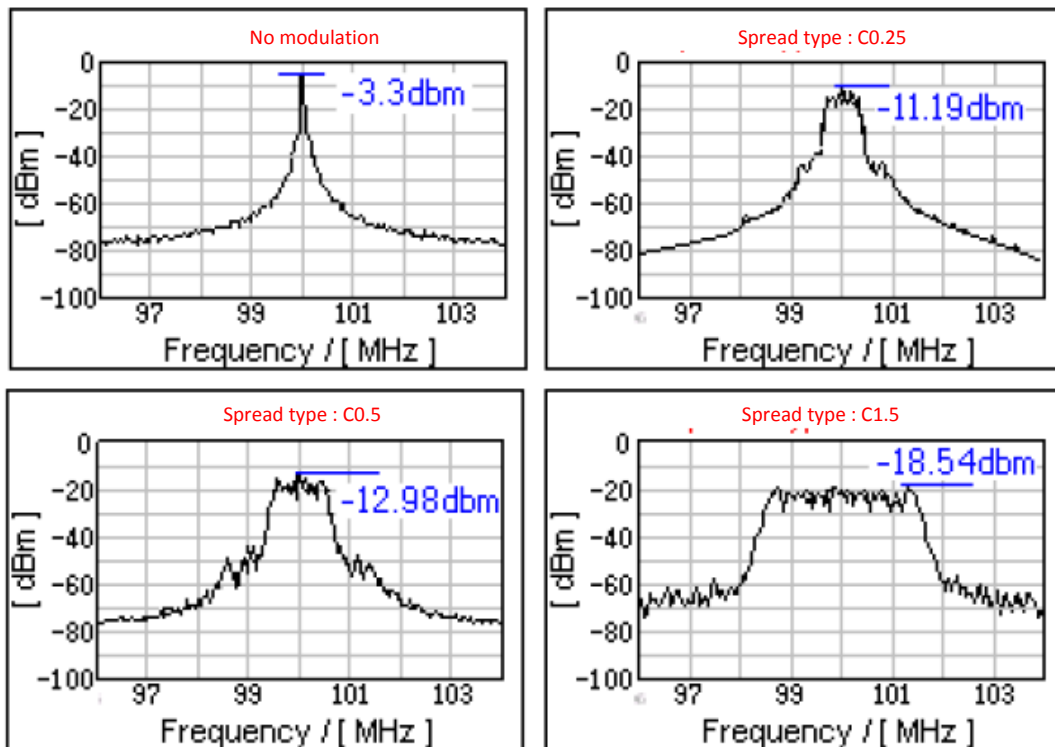
EMI reduction :

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

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

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

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



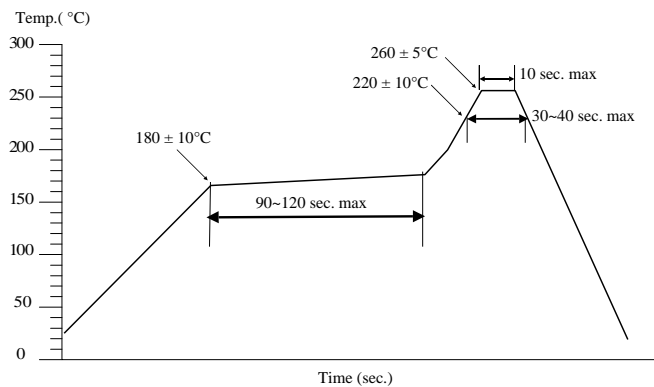
9300SSC Series

Spread spectrum low EMI clock oscillator, 5.0 x 3.2mm, HCMOS



Part number generation										
RW	2600	B	B	I	S	E	P	C02	L	-PF
ACT series Code	Frequency (MHz)	Frequency stability (\pm ppm)	Supply voltage (V)	Operating temp. range ($^{\circ}$ C)	Duty Cycle (%/%)	Output wave	Tristate	Spread (%)	Tape & Reel	RoHS Code
RW	< 100MHz First 4 digit of frequency > 100MHz First 5 digit of frequency Ex. 26.00MHz = 2600 8.00MHz = 0800 14.7456MHz = 1474	25 = C 50 = B 100 = A	3.3 = B	-10 ~ +70 = C -20 ~ +70 = B -40 ~ +85 = I	40/60 = S 45/55 = H	HCMOS 15pF = E	Tristate = P None = N	<u>Centre spread</u> $\pm 0.25\%$ = C02 $\pm 0.50\%$ = C05 $\pm 1.50\%$ = C15 <u>Down spread</u> -0.5 = D05 -1.0 = D10 -3.0 = D30	Loose = L 1000 = C	-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 : RW2600BBISEPC02L-PF [26MHz] , RW1474BBISEPD05L-PF [14.7456MHz]										

Solder reflow profile



Drawing control: (Internal use only)
 Commodity code:
 854370 90 45 for 1.8MHz<F<67MHz
 854370 90 99 for <1.8MHz and >67MHz
 Issue number : N1
 Date : 01/02/2017
 Internal reference : M6