

CFSS-2 SPREAD SPECTRUM CLOCK OSCILLATORS

ISSUE 5; 27 NOVEMBER 2009 - RoHS 2002/95/EC

Description

- Spread spectrum surface mount oscillators in a ceramic package with a hermetically sealed metal lid

Package Outline

- 7 x 5mm

Frequency Range

- 8 to 170MHz

Output Compatibility & Load

- Tri-state CMOS
- Drive Capability 15pF max

Frequency Stabilities (averaged frequency)

- ±100ppm (inclusive of supply voltage and output load variations over the operating temperature range)

Operating Temperature Ranges

- 10 to 70°C (CFSS-2)
- 40 to 85°C (CFSS-2I)

Storage Temperature Range

- 40 to 85°C

Tri-state Operation

- Logic '1' to pad 1 (>70% Vs) enables oscillator output.
- Logic '0' to pad 1 (<30% Vs) disables oscillator output, the oscillator output goes to a high impedance state.
- No connection to pad 1 enables oscillator outputs.

Modulation Ratios

- Centre Spread ±0.25, ±0.5%, ±0.75%, ±1%, ±1.5%, ±2%
- Down Spread -0.5%, -1%, -1.5%, -2%, -3%, -4%

Internal Spread Spectrum Modulation Frequency

- 30kHz to 33kHz

Spread Spectrum Enable Connection (pad 2)

- Logic '1' to pad 2 (>70% Vs), spread spectrum is off.
- Logic '0' to pad 2 (<30% Vs), spread spectrum is on.
- No connection to pad 1, spread spectrum is on.

Cycle to Cycle Jitter (SS on)

- 8MHz to <133MHz 400ps max pk-pk
- 133MHz to 170MHz 250ps max pk-pk

Start Up Time

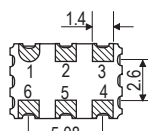
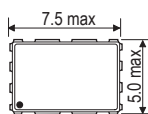
- 10ms max

Note: Power-up time for all Vs to reach minimum specified voltage 0.05ms ~ 500ms (power ramp must be monotonic)

Environmental Specification

- Shock: MIL-STD-202F, Method 213B (1000g, 0.5ms)
- Vibration: MIL-STD-202F, Method 204D, Cond.D 20g, 10-2000Hz, 4 hrs duration in each of 3 mutually perpendicular axis

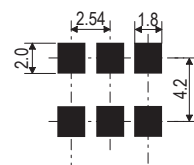
Outline (mm)



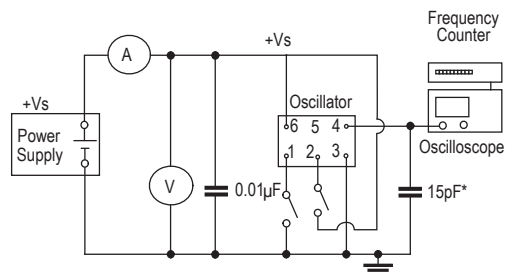
Underside View

- Pad Connections
1. Enable/Disable
 2. SSON
 3. GND
 4. Output
 5. N/C
 6. +Vs

Solder pad layout



Test Circuit



*Inclusive of jigging and equipment capacitance

Marking Includes

- Model Number + Frequency

Packaging

- Loose in bulk pack or tape and reel
- Tape & Reel in accordance with EIA-481-D

Minimum Order Information Required

- Frequency + Model Number + Operating Temperature Code (if applicable) + Modulation Ratio

Electrical Specifications - maximum limiting values

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (tr) (20-80%)	Fall Time (tf) (80-20%)	Duty Cycle	Model Number
8.0 to 170.0MHz	±100ppm	3.3V ±5%	50mA	3ns	3ns	45/55%	CFSS-2, CFSS-2I

Ordering Example 10.0MHz CFSS-2 I M ±1% C

Frequency _____

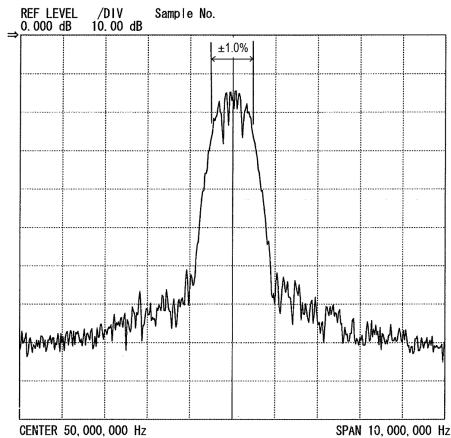
Model No. _____

Operating Temperature Code: I = -40 to 85°C; not applicable for -10 to 70°C _____

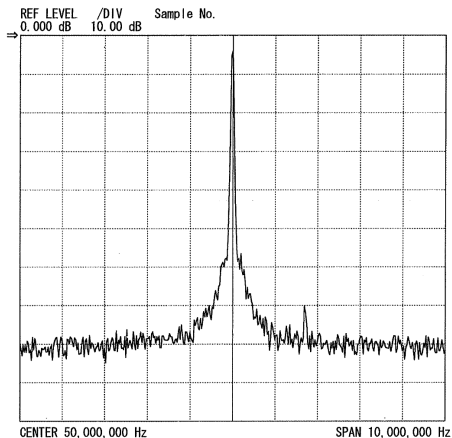
Modulation Ratio: M plus ratio required _____

Frequency Stability: C = ±100ppm _____

Example Output Spectrum (SSon)



Example Output Spectrum (SSoff)



CLOCK
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