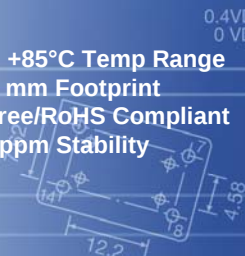




- ▶ -40 ~ +85°C Temp Range
- ▶ 5 x 7 mm Footprint
- ▶ Pb Free/RoHS Compliant
- ▶  $\pm 50$  ppm Stability



# ECS-3951M/3953M-BN

## SMD CLOCK OSCILLATOR

ECS-3951M-BN (5.0V) and ECS-3953M-BN (3.3V) Industrial Grade (-40 to +85°C) miniature SMD oscillators. Ideal for today's high temperature range applications.

### OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS            | CONDITIONS             | ECS-3951M-BN (+5V) |      |          | ECS-3953M-BN (+3.3V) |      |          | UNITS |
|-----------------------|------------------------|--------------------|------|----------|----------------------|------|----------|-------|
|                       |                        | MIN                | TYP  | MAX      | MIN                  | TYP  | MAX      |       |
| Frequency Range       |                        | 1.800              |      | 125.00   | 1.800                |      | 125.00   | MHz   |
| Operating Temperature |                        | -40                |      | +85      | -40                  |      | +85      | °C    |
| Storage Temperature   |                        | -55                |      | +125     | -55                  |      | +125     | °C    |
| Supply Voltage        | VDD                    | +4.5               | +5.0 | +5.5     | +2.97                | +3.3 | +3.63    | VDC   |
| Frequency Stability * | Option B               |                    |      | $\pm 50$ |                      |      | $\pm 50$ | ppm   |
| Input Current         | 1.800 to 36.000 MHz    |                    |      | 20       |                      |      | 15       | mA    |
|                       | 36.100 to 70.000 MHz   |                    |      | 55       |                      |      | 25       | mA    |
|                       | 70.100 to 100.000 MHz  |                    |      | 60       |                      |      | 30       | mA    |
|                       | 100.100 to 125.000 MHz |                    |      | 65       |                      |      | 35       | mA    |
| Output Symmetry       | @ 50% VDD level        |                    |      | 40/60    |                      |      | 40/60    | %     |
| Rise and Fall Times   | 1.800 to 70.000 MHz    |                    |      | 15       |                      |      | 5        | ns    |
|                       | 70.001 to 125.000 MHz  |                    |      | 5        |                      |      | 5        | ns    |
| "0" level             | VOL                    |                    |      | 10% VDD  |                      |      | 10% VDD  | VDC   |
| "1" level             | VOH                    | 90% VDD            |      |          | 90% VDD              |      |          | VDC   |
| Output Load           | HCMOS                  |                    |      | 30       |                      |      | 15       | pF    |
| Startup time          | 1.800 to 36.000 MHz    |                    |      | 5        |                      |      | 5        | ms    |
|                       | 36.100 to 70.000 MHz   |                    |      | 10       |                      |      | 10       | ms    |
|                       | 70.100 to 100.000 MHz  |                    |      | 15       |                      |      | 15       | ms    |
| Disable delay time    |                        |                    |      | 100      |                      |      | 100      | ns    |

ECS-3953M-BN is also compatible with a supply voltage of +3.0V DC  $\pm 0.3$ V.

\* Note: Inclusive of 25°C tolerance, operating temperature, input voltage change, aging, shock and vibration.

### DIMENSIONS (mm)

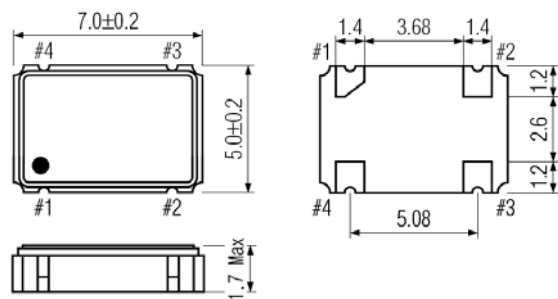


Figure 1) Top, Side and Bottom views

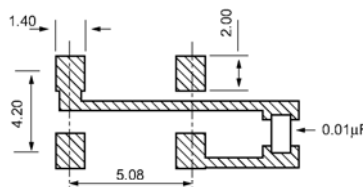


Figure 2) Suggested Land Pattern

#### Pin Connections

|        |           |
|--------|-----------|
| Pin #1 | Tri-State |
| Pin #2 | Ground    |
| Pin #3 | Output    |
| Pin #4 | VDD       |

#### Tri-State Control Voltage

|           |                |
|-----------|----------------|
| Pad 1     | Pad 3          |
| Open      | Oscillation    |
| +2.2V Min | Oscillation    |
| +0.8V Max | No Oscillation |

Note: Internal crystal oscillation to be halted (Pin #1=VIL)

### PART NUMBERING GUIDE: Example ECS-3953M-200-BN

| ECS | Series                         | Frequency Abbreviation                          | Stability        | Temperature     |
|-----|--------------------------------|-------------------------------------------------|------------------|-----------------|
|     | 3951M = +5.0V<br>3953M = +3.3V | 200 = 20.000 MHz<br>See Frequency Abbreviations | B = $\pm 50$ ppm | N = -40 ~ +85°C |