

ECS-2018 (1.8V) subminiature SMD oscillators. Ideal for today's high density applications.

[Request a Sample](#)

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

ECS-2018



- Low Voltage HCMOS
- 2.5 x 2.0 mm Footprint
- Low Current Consumption
- PbFree/RoHS Compliant

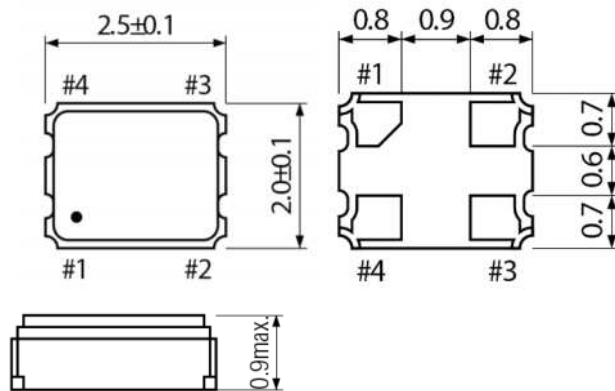
| Parameters            | Conditions           | ECS-2018 (+1.8V) |       |         | Units |
|-----------------------|----------------------|------------------|-------|---------|-------|
|                       |                      | MIN              | TYP   | MAX     |       |
| Frequency Range       |                      | 0.750            |       | 50.000  | MHz   |
| Operating Temperature | Standard             | -10              |       | +70     | °C    |
|                       | Extended (N Option)  | -40              |       | +85     | °C    |
| Storage Temperature   |                      | -55              |       | +100    | °C    |
| Input Voltage         | VDD                  | +1.71            | +1.80 | +1.89   | VDC   |
| Frequency Stability*  | Option A             |                  |       | ±100    | PPM   |
|                       | Option B             |                  |       | ±50     | PPM   |
|                       | Option C             |                  |       | ±25     | PPM   |
| Input Current         | 0.75 ~ 30.000 MHz    |                  |       | 2.5     | mA    |
|                       | 30.1 ~ 40.000 MHz    |                  |       | 3.0     | mA    |
|                       | 40.1 ~ 50.000 MHz    |                  |       | 3.5     | mA    |
| Stand-by Current      | Pin 1 = VIL          |                  |       | 10      | µA    |
| Output Symmetry       | @50% VDD Level       |                  |       | 45/55   | %     |
| Rise and Fall Times   | 10% VDD to 90% Level |                  |       | 10      | ns    |
| "0" Level             | VOL                  |                  |       | 10% VDD | VDC   |
| "1" Level             | VOH                  | 90% VDD          |       |         | VDC   |
| Output Load           | CMOS                 |                  |       | 15      | pF    |
| Disable Delay         |                      |                  |       | 150     | ns    |
| Startup Time          |                      |                  |       | 10      | ms    |
| Aging                 |                      |                  |       | ±5      | PPM   |

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

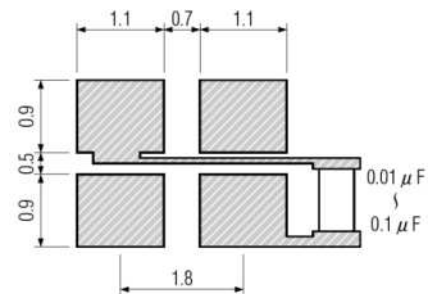
## Part Numbering Guide: Example ECS-2018-200-BN-TR

| ECS | - | Series       | - | Frequency Abbreviations | - | Stability Tolerance                        | - | Temperature                                              | - | Packaging                       |
|-----|---|--------------|---|-------------------------|---|--------------------------------------------|---|----------------------------------------------------------|---|---------------------------------|
| ECS |   | 2018 = +1.8V |   | 200 = 20 MHz            |   | A = ±100 ppm<br>B = ±50 ppm<br>C = ±25 ppm |   | Blank = -10 ~ 70°C<br>M = -20 ~ +70°C<br>N = -40 ~ +85°C |   | TR = 1K<br>TR3 = 3K<br>Qty/Reel |

## Package Dimensions (mm)



**Figure 1)** Top, Side, and Bottom views



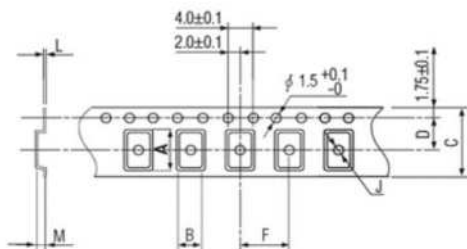
**Figure 2)** Land Pattern

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

| Tri-State Control Voltage |                |
|---------------------------|----------------|
| Pad 1                     | Pad 3          |
| Open                      | Oscillation    |
| VIH 70% VDD Min.          | Oscillation    |
| VIL 30% VDD Max.          | No Oscillation |

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

## Tape Dimensions (mm)



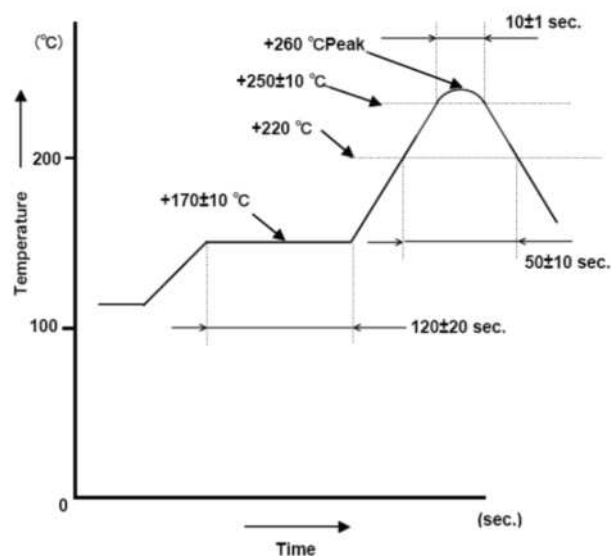
| A   | B   | C   | D   | F   | J   | L    | M   | Reel Dia. |
|-----|-----|-----|-----|-----|-----|------|-----|-----------|
| 2.8 | 2.3 | 8.0 | 3.5 | 4.0 | 1.0 | 0.25 | 1.1 | 180       |

**Figure 3)** Pocket Tape Dimensions

| Package Data |                                  |
|--------------|----------------------------------|
| Item         | Description                      |
| Lid          | Metal                            |
| Base         | Ceramic                          |
| Sealing      | AuSn                             |
| Terminal     | Tungsten (metalized)             |
| Plating      | Gold/Nickel<br>(Surface)/(Under) |
| RoHS         | Compliant (Pb Free)              |

### Frequency Abbreviations

| FREQUENCY<br>MHz | CODE  |
|------------------|-------|
| 3.579545         | 035   |
| 3.6864           | 036   |
| 4.000            | 040   |
| 6.000            | 060   |
| 7.3728           | 073   |
| 8.000            | 080   |
| 10.000           | 100   |
| 12.000           | 120   |
| 13.000           | 130   |
| 14.31818         | 143   |
| 14.7456          | 147.4 |
| 16.000           | 160   |
| 20.000           | 200   |
| 24.000           | 240   |
| 25.000           | 250   |
| 27.000           | 270   |
| 30.000           | 300   |
| 32.000           | 320   |
| 40.000           | 400   |
| 48.000           | 480   |
| 50.000           | 500   |



*Figure 4) Suggested Reflow Profile*