



**THE DATASHEET OF
ECS-2333-200-BN-TR**



ECS-2325 (2.5V) and ECS-2333 (3.3V) subminiature SMD oscillators. Ideal for today's high density applications.

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OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS



- Low Voltage HCMOS
- 3.2 x 2.5 mm Footprint
- Low current consumption
- PbFree/RoHS Compliant

| Parameters | Conditions | ECS-2325 (+2.5V) | | | ECS-2333 (+3.3V) | | | Units |
|------------------------------|-----------------------------|------------------|------|---------|------------------|------|---------|-------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Frequency Range | | 1.000 | | 95.000 | 1.000 | | 95.000 | MHz |
| Operating Temperature | Standard | -10 | | +70 | -10 | | +70 | °C |
| | Extended (N Option) | -40 | | +85 | -40 | | +85 | °C |
| Storage Temperature | | -55 | | +125 | -55 | | +125 | °C |
| Supply Voltage | VDD | +2.25 | +2.5 | +2.75 | +2.97 | +3.3 | +3.63 | VDC |
| Frequency Stability* | Option A | | | ±100 | | | ±100 | PPM |
| | Option B | | | ±50 | | | ±50 | PPM |
| | Option C | | | ±25 | | | ±25 | PPM |
| Input Current | 0.75 ~ 20.0 MHz | | | 5 | | | 7 | mA |
| | 20.1 ~ 40.0 MHz | | | 9 | | | 13 | mA |
| | 40.1 ~ 60.0 MHz | | | 11 | | | 19 | mA |
| | 60.1 ~ 95.0 MHz | | | 14 | | | 24 | mA |
| Stand-by Current | Pin 1 = VIL | | | 10 | | | 10 | µA |
| Output Symmetry | @50% VDD Level | | | 40/60 | | | 45/55 | % |
| | @50% VDD Level (**T Option) | | | 45/55 | | | - | |
| Rise and Fall Times | 10% VDD to 90% Level | | | 10 | | | 10 | ns |
| "0" Level | VOL | | | 10% VDD | | | 10% VDD | VDC |
| "1" Level | VOH | 90% VDD | | | 90% VDD | | | VDC |
| Output Load | CMOS | | | 15 | | | 15 | pF |
| Disable Delay Time | | | | 150 | | | 150 | ns |
| Enable/Startup Time | | | | 10 | | | 10 | ms |
| Aging | | | | ±5 | | | ±5 | PPM |

* Note: Inclusive of 25°C tolerance, operating temperature, input voltage change, load change, shock and vibration.
 ** Symmetry "T" option applies to ECS-2325 Series only.

Part Numbering Guide: Example ECS-2333-200-BN-TR

ECS - Series - Frequency Abbreviations - Stability Tolerance - Temperature - Output Symmetry - Packaging

ECS

2325 = +2.5V
2333 = +3.3V

200 = 20 MHz

A = ±100 ppm
B = ±50 ppm
C = ±25 ppm

Blank = -10 ~ 70°C
M = -20 ~ +70°C
N = -40 ~ +85°C
P = -40 ~ +105°C

Blank = Standard
**T = 45/55

TR = 1K/Reel
TR3 = 3K/Reel
Qty/Reel

Package Dimensions (mm)

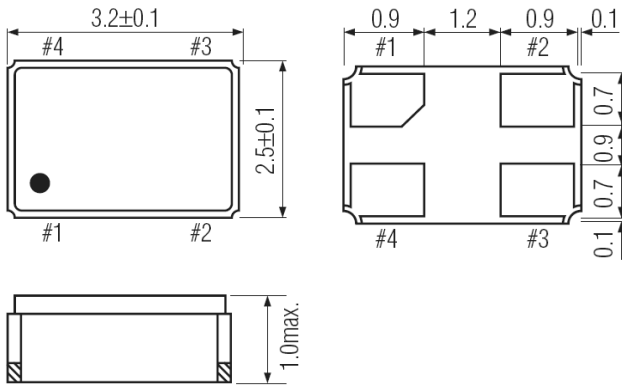


Figure 1) Top, Side, and Bottom views

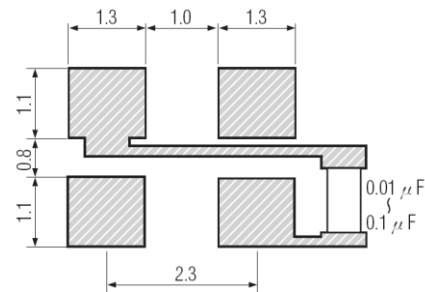


Figure 2) Land Pattern

| 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)

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