

The ECS-7050MV is a miniature SMD HCMOS Oscillator with MultiVolt™ capability of 1.6 ~ 3.6 V. The 7.0 x 5.0 mm ceramic package is ideal for Low Power/Portable, Industrial, and IoT applications.

[Request a Sample](#)

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS



- 7.0 x 5.0 mm Footprint
- Extended Temp Range
- RoHS Compliant
- Wide Supply Voltage
- Low Jitter
- Compatible with 1.8V, 2.5V or 3.3V Power Supply

| PARAMETERS           | CONDITIONS                                 | ECS-7050MV |     |        | UNITS |
|----------------------|--|------------|-----|--------|-------|
|                      |  | MIN        | TYP | MAX    |       |
| Frequency Range      |  | 1.000      |     | 160.00 | MHz   |
| Frequency Stability* | -40 ~ +85°C (BN Opt)                       |            |     | ±50    | ppm   |
| Supply Voltage       |  | 1.6        |     | 3.6    | V     |
| Output Load          | CMOS                                       |            |     | 15     | pF    |
| Output voltage Level | VOL: 10% Vdd max. / VOH: 90% Vdd min. V DC |            |     |        |       |
| Rise & Fall time     | 10% Vdd – 90% Vdd                          |            |     | 10     | ns    |
| Start Up Time        | @ 90% Vdd                                  |            |     | 5      | mS    |
| Phase Jitter         | 12 kHz to 20 MHz                           |            |     | 1      | pS    |
| Duty Cycle           | @ ½ Vdd                                    |            |     | 45/55  | %     |
| Standby Current      |  |            |     | 10     | µA    |
| Operating Temp*      |  | -40        |     | +85    | °C    |
| Storage Temp         |  | -55        |     | +125   | °C    |

### DIMENSIONS (mm)

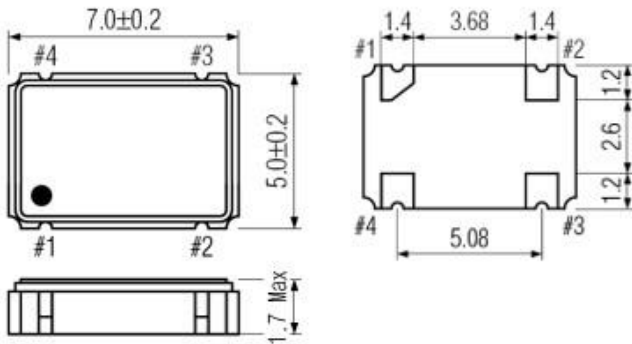


Figure 1) Top, Side, and Bottom views

### CURRENT CONSUMPTION mA Max

| FREQ. | ~ 19 MHz | ~ 39.9 MHz | ~ 50 MHz | ~ 60 MHz | ~ 100 MHz | ~ 160 MHz |
|-------|----------|------------|----------|----------|-----------|-----------|
| +1.8V | 2.5      | 3.0        | 3.5      | 4.0      | 35.0      | 40.0      |
| +2.5V | 4.5      | 5.5        | 6.5      | 7.0      | 35.0      | 40.0      |
| +3.0V | 5.5      | 6.5        | 7.5      | 8.0      | 35.0      | 40.0      |
| +3.3V | 6.0      | 7.0        | 8.0      | 8.5      | 35.0      | 40.0      |

| PAD CONNECTIONS |           |
|-----------------|-----------|
| 1               | Tri-state |
| 2               | Gnd       |
| 3               | Output    |
| 4               | Vdd       |

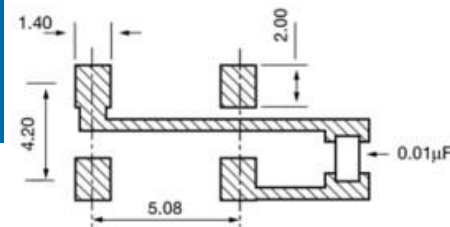


Figure 2) Suggested Land Pattern

| Tri State Function  |                |
|---------------------|----------------|
| Pin 1               | Output         |
| 0.7 * Vdd Min or NC | Active         |
| 0.3 * Vdd Max.      | High Impedance |

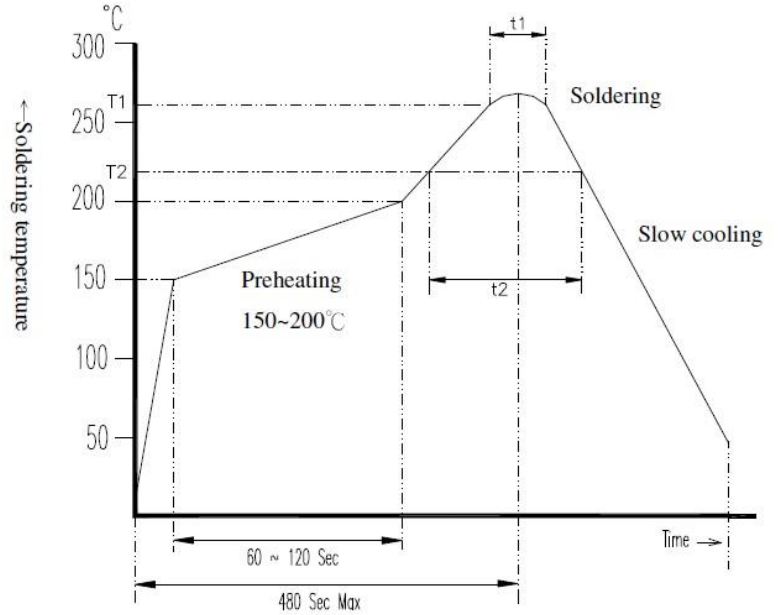
### PART NUMBERING GUIDE: Example ECS-7050MV-250-BN-TR

| ECS | SERIES  | FREQUENCY ABBREVIATION                                 | * STABILITY   | TEMP RANGE -                       | PACKAGING                    |
|-----|---|--|---|------------------------------------|------------------------------|
| ECS | 7050MV<br>7.0 x 5.0 mm<br>MultiVolt™ Oscillator | 250 = 25.000 MHz<br>See Developed<br>Frequencies Pg. 2 | A = ±100 ppm<br>B = ±50 ppm<br>C = ±25 ppm<br>D = ±20 ppm | M = -20 ~ +70°C<br>N = -40 ~ +85°C | -TR = Tape & Reel<br>1K/Reel |

\* Frequency Stability includes initial tolerance, temperature, supply voltage and load change reflow frequency shift, and aging.

**DEVELOPED FREQUENCIES**

| FREQUENCY<br>MHz | CODE  | FREQUENCY<br>MHz | CODE  |
|------------------|-------|------------------|-------|
| 1.000            | 010   | 25.000           | 250   |
| 8.000            | 080   | 27.000           | 270   |
| 10.000           | 100   | 32.000           | 320   |
| 12.000           | 120   | 33.33333         | 333.3 |
| 12.288           | 122.8 | 40.000           | 400   |
| 14.31818         | 143   | 48.000           | 480   |
| 16.000           | 160   | 50.000           | 500   |
| 20.000           | 200   | 100.000          | 1000  |
| 24.576           | 245.7 | 125.000          | 1250  |

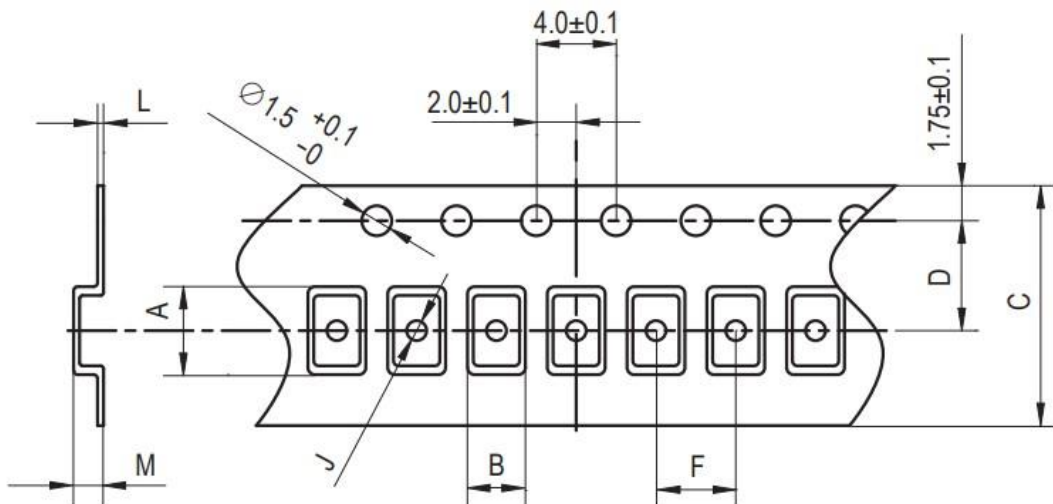


| SOLDER PROFILE                              |
|---|
| Peak solder Temp +260°C ±5°C 10 ±5 Sec Max. |
| 2 Cycles Max.                               |
| MSL 1, Lead Finish Au                       |

| Application / Temperature Time | T1 / t1                     | T2 / t2                  |
|--------------------------------|-----------------------------|--------------------------|
| Lead Free                      | 260 ± 5°C / 10 ± 5 Sec Max. | 217°C Min / 60 ~ 150 Sec |
| Non-Lead Free                  | 260 ± 5°C / 10 ± 5 Sec Max. | 183°C Min / 60 ~ 150 Sec |

Figure 3) Suggested Reflow Profile

**POCKET TAPE DIMENSIONS (mm)**



| A   | B   | C    | D   | F   | J   | L   | M   | Reel Dia. | Qty/Reel |
|-----|-----|------|-----|-----|-----|-----|-----|-----------|----------|
| 7.4 | 5.4 | 16.0 | 7.5 | 8.0 | 1.5 | 0.3 | 1.9 | 180       | 1000pcs  |