# THE DATASHEET OF

# ECS-2520MVLC-225.792-BN-TR

# ECS-2520MVLC

## SMD MultiVolt™ Low Current Crystal Oscillator

The ECS-2520MVLC is a miniature SMD low current CMOS Oscillator with MultiVolt™ capability of 1.6 ~ 3.6 V. The 2.5 x 2.0 x 0.8 mm ceramic package is ideal for LoRa WAN, Low Power/Portable, Industrial and IoT applications.

Request a Sample

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

**ECS-2520MVLC SMD XO**

- 2.5 x 2.0 mm Footprint
- Low Current
- Extended Temp Range
- Wide Supply Voltage
- Low Jitter
- Compatible with 1.8V, 2.5V or 3.3V Power Supply

| PARAMETERS | CONDITIONS | ECS-2520MVLC | | | UNITS |
|---|---|---|---|---|---|
| | | MIN | TYP | MAX | |
| Frequency Range | | 1.000 | | 75.000 | 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 | | | 7 | ns |
| Start Up Time | @ 90% Vdd | | | 5 | mS |
| Phase Jitter | 12 kHz to 20 MHz, F=50 MHz | | 150 | | fS |
| Duty Cycle | @ ½ Vdd | | | 45/55 | % |
| Standby Current | | | | 10 | µA |
| Frequency Aging | @ +25°C, 1st Year | | | ±3 | ppm |
| Operating Temp* | | -40 | | +85 | °C |
| Storage Temp | | -55 | | +125 | °C |

## DIMENSIONS (mm)

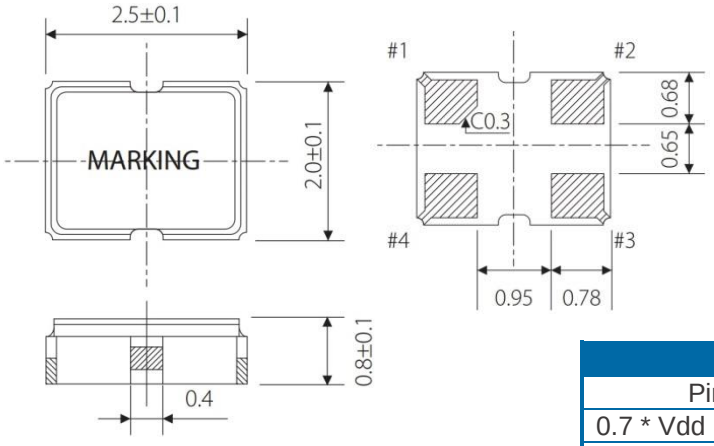



***Figure 1)*** *Top, Side, and Bottom views*

## CURRENT CONSUMPTION (No Load) mA Max

| FREQ. | ≤ 20 MHz | ≤ 40 MHz | ≤ 50 MHz | ≤ 60 MHz |
|---|---|---|---|---|
| +1.8V | 1.5 | 1.8 | 2.1 | 2.4 |
| +2.5V | 1.6 | 2.0 | 2.4 | 2.8 |
| +3.3V | 1.8 | 2.2 | 2.6 | 3.0 |

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

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

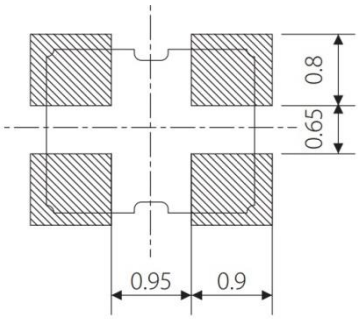



***Figure 2)*** *Suggested Land*

## PART NUMBERING GUIDE: Example ECS-2520MVLC-250-BN-TR

| ECS | - | SERIES | FREQUENCY ABBREVIATION | - | * STABILITY | TEMP RANGE | - | PACKAGING |
|---|---|---|---|---|---|---|---|---|
| ECS | | 2520MVLC<br>2.5 x 2.0 mm<br>MultiVolt™ Oscillator<br>Low Current | 250 = 25.000 MHz<br>See Developed 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<br>P = -40 ~ +105°C<br>S = -40 ~ +125°C | | -TR = 1K/Reel<br>-TR3 = 3K/Reel<br>Qty/Reel |

‡ Contact ECS for availability over extended temp.

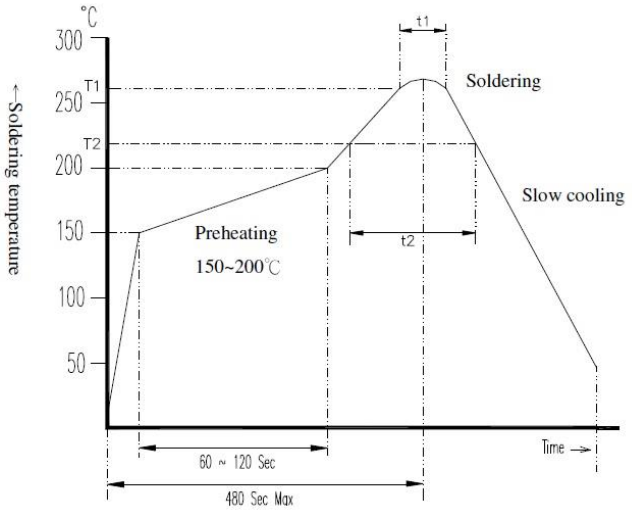
* Frequency Stability includes initial tolerance, temperature, supply voltage and load change and reflow.

Rev. 2022

## DEVELOPED FREQUENCIES

| FREQUENCY MHz | CODE |
|---|---|
| 1.000 | 010 |
| 1.8432 | 018 |
| 2.000 | 020 |
| 2.048 | 020.48 |
| 3.6864 | 036 |
| 4.000 | 040 |
| 4.096 | 041 |
| 4.9152 | 049 |
| 7.3728 | 073 |
| 8.000 | 080 |
| 8.192 | 081.92 |
| 10.000 | 100 |
| 12.000 | 120 |
| 12.288 | 122.8 |
| 13.560 | 135.6 |
| 14.31818 | 143 |
| 14.7456 | 147.4 |
| 16.000 | 160 |
| 16.384 | 163 |

| FREQUENCY MHz | CODE |
|---|---|
| 19.200 | 192 |
| 20.000 | 200 |
| 22.5792 | 225.792 |
| 24.000 | 240 |
| 24.576 | 245.7 |
| 25.000 | 250 |
| 26.000 | 260 |
| 27.000 | 270 |
| 27.120 | 271.2 |
| 30.000 | 300 |
| 32.000 | 320 |
| 33.3333 | 333.3 |
| 40.000 | 400 |
| 48.000 | 480 |
| 50.000 | 500 |
| 52.000 | 520 |
| 54.000 | 540 |
| 60.000 | 600 |

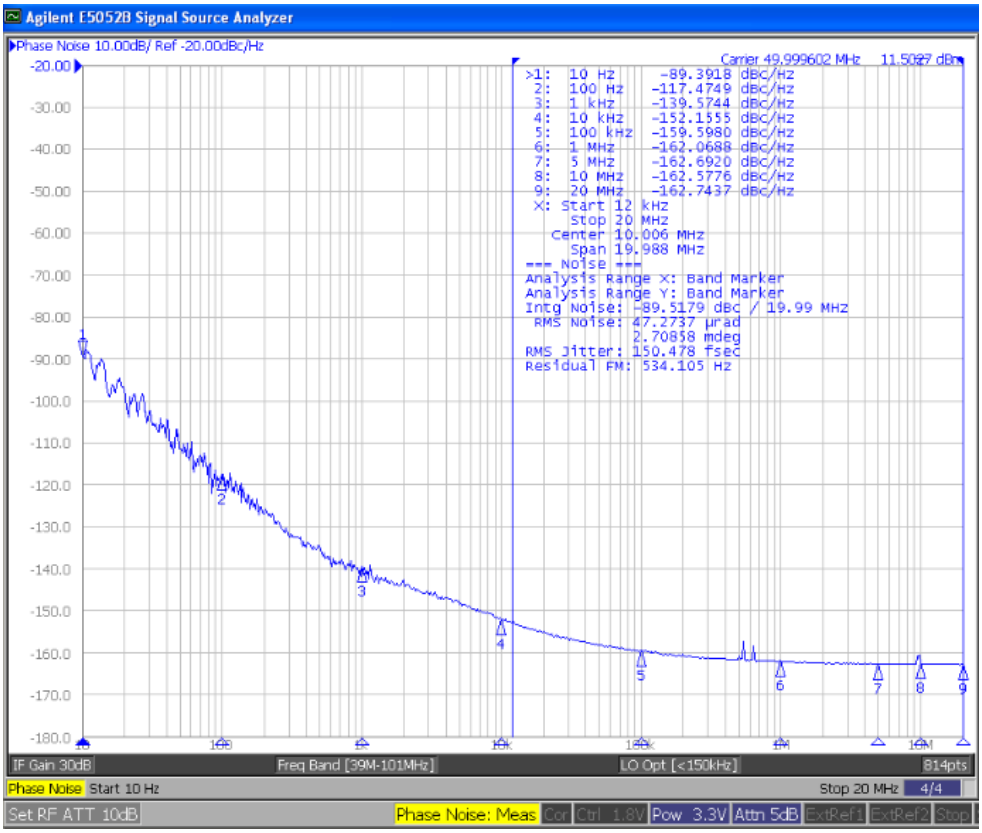



| SOLDER PROFILE |
|---|
| Peak solder Temp +260°C ±5°C<br>10 ±5 Sec Max. |
| 2 Cycles Max. |
| MSL 1, Lead Finish Au |

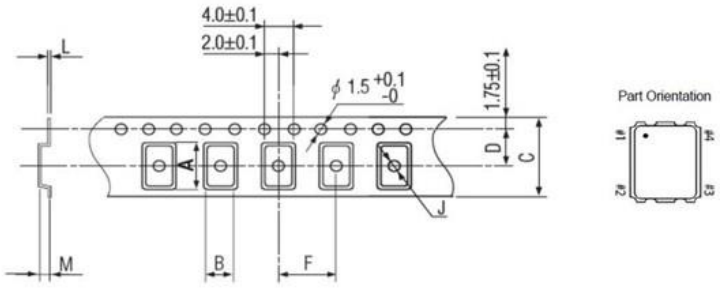
| Application / Temperature Time | T1 / t1 | T2 / t2 |
|---|---|---|
| Lead Free | 260 ± 5°C / 10 ± 5 See Max. | 217°C Min / 60 ~ 150 Sec |
| Non-Lead Free | 260 ± 5°C / 10 ± 5 See Max. | 183°C Min / 60 ~ 150 Sec |

***Figure 3)*** *Suggested Reflow Profile*

## Typical Phase Noise




## POCKET 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 |

## Looking for pricing, stock, or lifecycle information?

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- ECS Inc. Information

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- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management