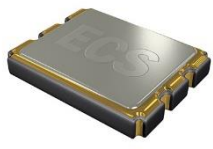


The ECX2-LMV is SMD LVDS Oscillator with MultiVolt™ capability of 2.375 ~ 3.63 V. Lowest in-class RMS jitter (12 KHz to 20 MHz) sub 50 fs at 156.250 MHz.

Request a Sample

OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| ECX2-LMV LVDS XO | PARAMETERS | CONDITIONS | ECX2-LMV | | | UNITS |
|---|------------------------------------|-------------------------|----------|-------|---------|-------|
| | | | MIN | TYP | MAX | |
|  | Frequency Range | | 100.000 | | 320.000 | MHz |
| | * Frequency Stability | -40 ~ +85°C (CN Opt) | | | ±25 | ppm |
| | Supply Voltage | | 2.375 | | 3.63 | V |
| | Input Current | Pin 1 Open or ViH | | | 24 | mA |
| | Stand-by Current | Pin 1 ViL | | | 30 | µA |
| | Symmetry | @ crossing point | | 45/55 | | % |
| | Rise & Fall time | 20% Vdd – 80% Vdd | | | 0.3 | nS |
| | “0” Level | VOL | 0.9 | +1.10 | | V |
| | “1” Level | VOH | | +1.43 | +1.6 | V |
| | Output Load | LVDS | | | 100 | Ω |
| | Differential Output Voltage | | 247 | 330 | 454 | mV |
| | Differential Output error | | | | 50 | mV |
| | Output offset voltage | | 1.125 | 1.25 | 1.375 | V |
| | Output offset error | | | | 50 | mV |
| | Start Up Time | | | | 10 | mS |
| | Disable delay time | | | | 200 | ns |
| | Enable delay time | | | | 2 | ms |
| | Aging | 1 st year | | | ±5 | ppm |
| | RMS Jitter (12 kHz to 20 MHz Band) | @ 156.25 MHz 3.3V | | 46.8 | 60 | fs |
| | Operating Temp* | (N Opt) | -40 | | +85 | °C |
| | Storage Temp | | -55 | | +125 | °C |

Features

- Ultra-low jitter: sub 50 fs at 156.25 MHz
- RoHS Compliant
- Tight Stability
- Wide Supply Voltage
- Compatible with +2.5V or +3.3V Power Supply
- Low Power consumption

Applications

- Networking & communications
- Optical Transceivers
- Fibre Channel
- Ethernet/Gbe/SyncE
- PON
- Test and measurement

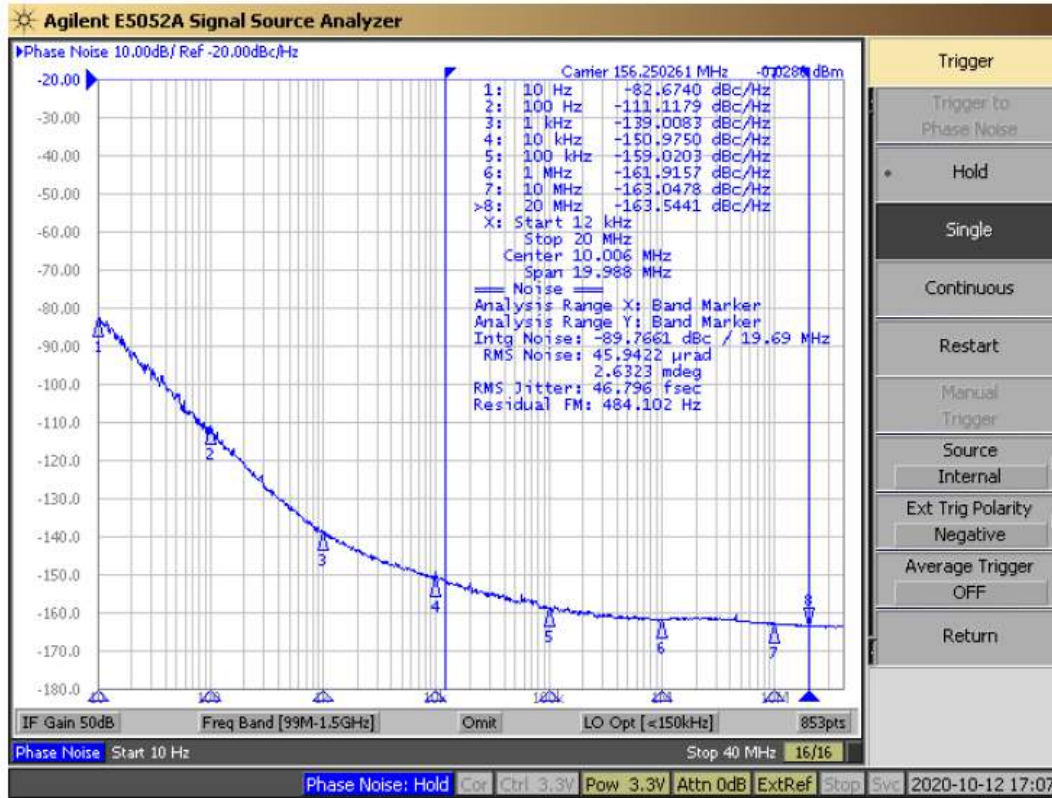
PART NUMBERING GUIDE: Example ECX2-LMV-3CN-156.250-TR

| SERIES | Package Size (mm) | Stability | Temp Range | Frequency | PACKAGING |
|---|--|--|------------------------------------|-------------|-------------------|
| ECX2-LMV LVDS, Ultra Low Jitter MultiVolt™ Oscillator | 2 = 2.5 x 2.0 3 = 3.2 x 2.5 5 = 5 x 3.2 7 = 7 x 5 | A = ±100 ppm B = ±50 ppm C = ±25 ppm ** D = ±20 ppm | M = -20 ~ +70°C N = -40 ~ +85°C | 156.250 MHz | -TR = Tape & Reel |

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

** Contact ECS for availability over -40 ~ +85°C.

Typical Phase noise/Jitter



| SSB Phase Noise Data (dBc/Hz typical) | Frequency (offset) | 100.000 | 125.000 | 156.250 | 200.000 | 285.714 | 312.500 |
|---|--------------------|---------|---------|---------|---------|---------|---------|
| | 10 Hz | -89.3 | -76.7 | -82.6 | -74.0 | -52.57 | -45.2 |
| 100 Hz | -118.2 | -106.7 | -111.1 | -103.8 | -84.2 | -80.2 | |
| 1 KHz | -140.3 | -135.6 | -139.0 | -130.7 | -118.6 | -112.7 | |
| 10 KHz | -154.2 | -153.5 | -150.9 | -150.0 | -146.4 | -142.5 | |
| 100 KHz | -160.0 | -159.7 | -159.0 | -158.4 | -156.1 | -153.8 | |
| 1 MHz | -162.6 | -162.6 | -161.9 | -162.6 | -160.5 | -158.3 | |
| 10 MHz | -163.0 | -163.0 | -163.0 | -163.9 | -161.9 | -159.4 | |
| 20 MHz | -163.2 | -163.3 | -163.5 | -164.0 | -162.3 | -159.7 | |
| RMS Phase Jitter 12 KHz ~ 20 MHz | | 70.9 fs | 56.9 fs | 46.8 fs | 33 fs | 29.1 fs | 35.2 fs |

Table 1) Typical Phase Noise/Jitter

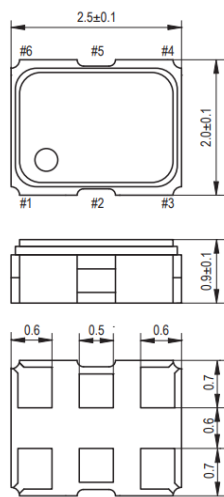
ECX2-LMV

SMD MultiVolt™ LVDS, low jitter
Crystal Oscillator

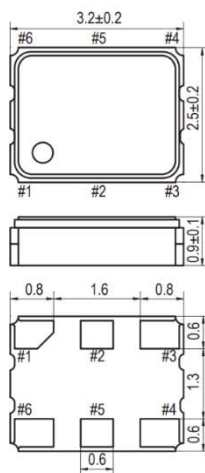


DIMENSIONS (mm)

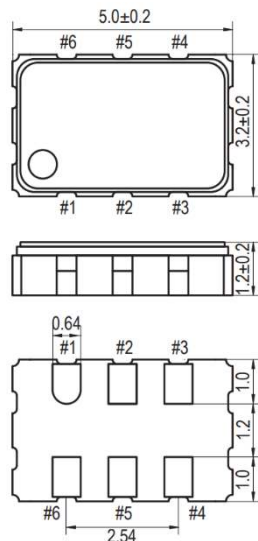
2 = 2.5 x 2.0 Pkg



3 = 3.2 x 2.5 Pkg



5 = 5 x 3.2 Pkg



7 = 7 x 5 Pkg

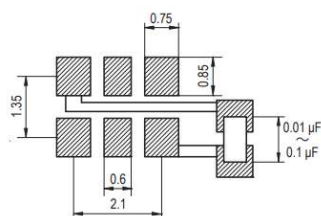
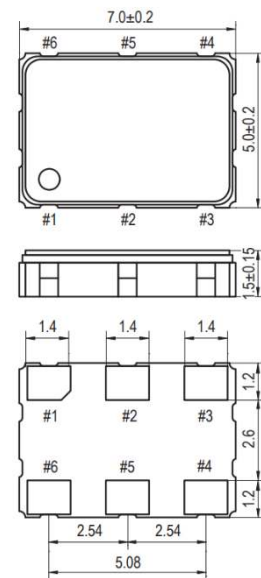


Figure 1) Top, Side, Bottom & Land

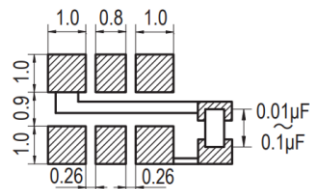


Figure 2) Top, Side, Bottom & Land

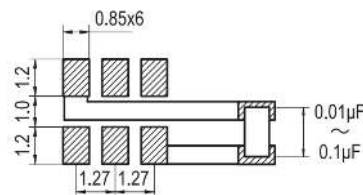


Figure 3) Top, Side, Bottom & Land

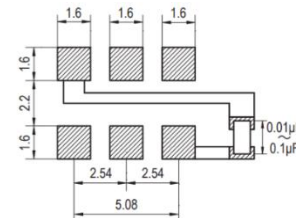


Figure 4) Top, Side, Bottom & Land

| PIN | CONNECTIONS | |
|-----|-------------|-------------|
| 1 | "L" | OPEN or "H" |
| 2 | | NC |
| 3 | | Gnd |
| 4 | Z | OUTPUT |
| 5 | Z | C-OUTPUT |
| 6 | | VDD |

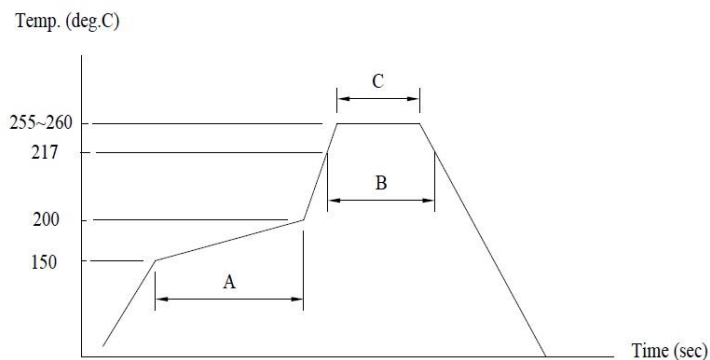
Z : High Impedance

ECX2-LMV

SMD MultiVolt™ LVDS, low jitter
Crystal Oscillator

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

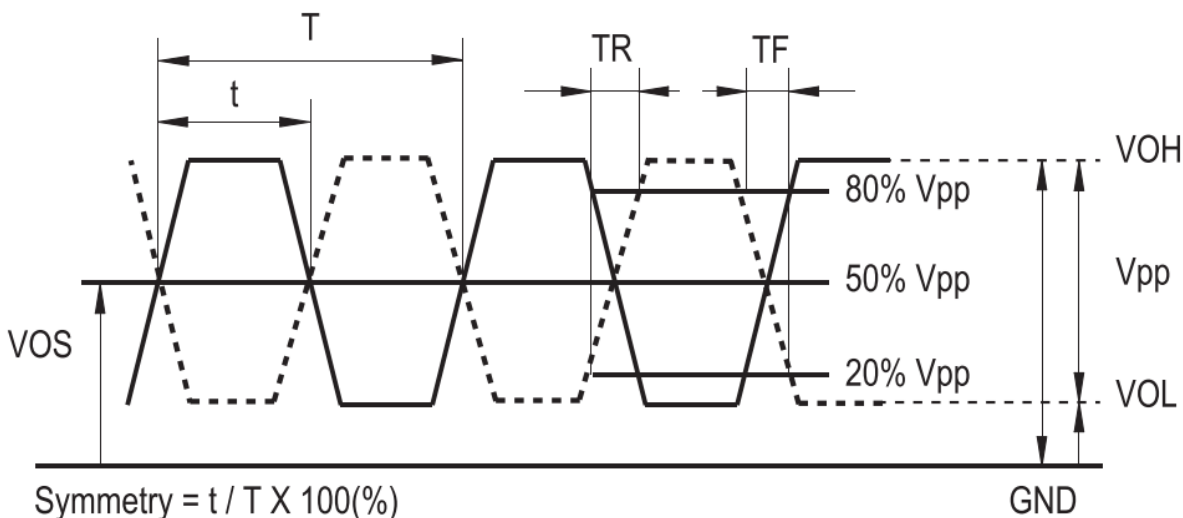
| Develop Frequencies | |
|---------------------|-------------|
| | 100.000 MHz |
| | 125.000 MHz |
| | 156.250 MHz |
| | 200.000 MHz |
| | 285.714 MHz |
| | 312.500 MHz |



(A)→Preheating area : 150~200°C, 60~120sec.
 (B)→Heating area : 217°C, 60~150sec.
 (C)→Peak temperature : 255~260°C, 30sec. Max.
 Ramp-up rate (217→260°C) : 3°C/sec. Max.
 Ramp-down rate (260→217°C) : 6°C/sec. Max.
 Time 25°C→260°C : 480sec. Max.
 *Reference JEDEC J-STD-020

Figure 4) Suggested Reflow Profile

OUTPUT WAVEFORM

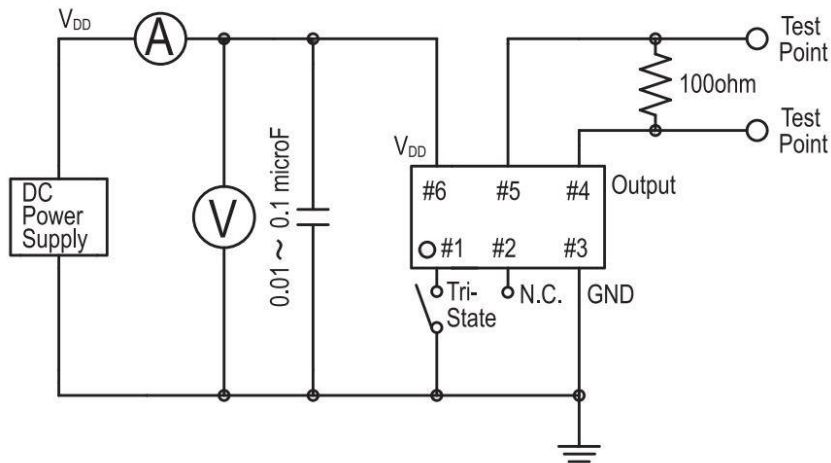


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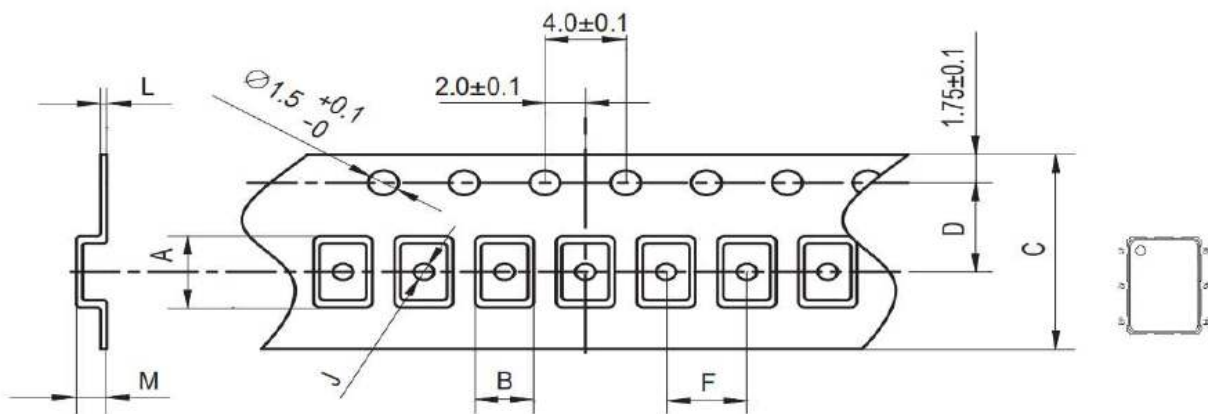
SMD MultiVolt™ LVDS, low jitter
Crystal Oscillator



TEST CIRCUIT



POCKET TAPE DIMENSIONS (mm)



| Pkg | A | B | C | D | F | J | L | M | Reel Dia |
|-----------|-----|-----|------|-----|-----|-----|------|-----|----------|
| 2.5 x 2.0 | 2.7 | 2.3 | 8.0 | 3.5 | 4.0 | 1.1 | 0.25 | 1.1 | 180 mm |
| 3.2 x 2.5 | 3.5 | 2.8 | 8.0 | 3.5 | 4.0 | 1.0 | 0.25 | 1.4 | 180 mm |
| 5 x 3.2 | 5.4 | 3.5 | 12.0 | 5.5 | 8.0 | 1.5 | 0.30 | 1.4 | 180 mm |
| 7 x 5 | 7.4 | 5.4 | 16.0 | 7.5 | 8.0 | 1.5 | 0.30 | 1.9 | 180 mm |