

# ECS Inc. International

# NEW!!

# MultiVolt™ Series Oscillators



## ECS-2520MVLC – Low Current Series

1.5 mA Max. (No Load) @ +1.8V 20 MHz.  
Standby Current 10 $\mu$ A

## ECX2-LMV – Low Jitter Series

RMS jitter (12 kHz to 20 MHz) sub 50 fs at 156.250 MHz  
Complimentary LVDS output

- The ECS Inc. MultiVolt™ series of oscillators are the most flexible oscillator products available in today market. MultiVolt™ Oscillators are available as standard oscillators (MV)  $\pm 20$ ppm, tight stability oscillators (SMV)  $\pm 5$ ppm or Temperature Compensated Crystal Oscillators (TXO-MV)  $\pm 2.5$ ppm for HCMOS and (TXO-CSMV)  $\pm 0.5$ ppm for clipped sine wave. We also offer them as AEC-Q200 automotive grade (MVQ).
- Most MultiVolt™ series oscillators can operate across supply voltage 1.8V, 2.5V, 3.0V, and 3.3V. These quartz-based oscillators offer better jitter, and overall better performance than MEMS oscillators at a lower cost point.
- For more product options and information, contact our engineering team at [engineering@ecsxtal.com](mailto:engineering@ecsxtal.com).

# ECS-2520MVLC Low Current MultiVolt™ Oscillator



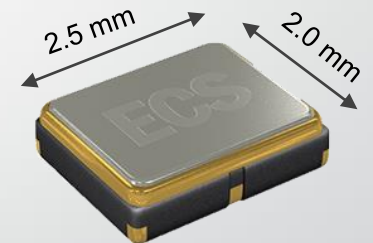
The ECS-2520MVLC low current oscillator with a stability of  $\pm 50$  ppm over  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ . The ECS-2520MVLC MultiVolt™ is compatible with 1.8V, 2.5V, or 3.3V power supply, and is available in a variety of output frequencies suitable for a wide array of clocking applications. The ECS-2520MVLC comes in a 2.5 x 2.0 x 0.8 mm ceramic package. This device is a compact, high performance, low current, and cost competitive crystal oscillator ideal for portable and space constrained applications in the consumer, industrial, and communications areas.

## Features:

- 2.5 x 2.0 mm Footprint
- Extended Temperature Range
- Compatible with +1.8V, +2.5V, or +3.3V Power Supply
- Low Jitter 150 fs typical
- Low Current Consumption 1.5 mA Max. (No Load) @ +1.8V 20 MHz
- Standby Current 10 $\mu$ A

## Applications:

- IoT
- Storage Devices
- Navigation
- Medical (non-life sustaining)
- Mobile Devices
- Industrial
- Wireless Devices
- IP cameras



[ECS-2520MVLC Datasheet](#)

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.

**OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS**



- 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		60.000	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, 1 <sup>st</sup> Year			±3	ppm
Operating Temp*		-40		+85	°C
Storage Temp		-55		+125	°C

**DIMENSIONS (mm)**

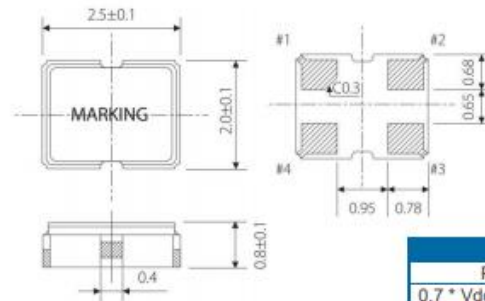


Figure 1) Top, Side, and Bottom views

**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

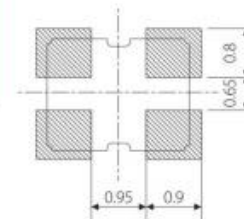


Figure 2) Suggested Land

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

ECS	SERIES	FREQUENCY ABBREVIATION	* STABILITY	TEMP RANGE	PACKAGING
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ECS	2520MVLC 2.5 x 2.0 mm MultiVolt™ Oscillator Low Current	250 = 25,000 MHz See Developed Frequencies Pg.2	A = ±100 ppm B = ±50 ppm C = ±25 ppm D = ±20 ppm	M = -20 ~ +70°C N = -40 ~ +85°C P = -40 ~ +105°C S = -40 ~ +125°C	-TR = Tape & Reel 1K/Reel
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\* Frequency Stability includes initial tolerance, temperature, supply voltage and load change and reflow.

‡ Contact ECS for availability over extended tempo.

# ECX2-LMV 50fs LVDS MultiVolt™ Oscillator



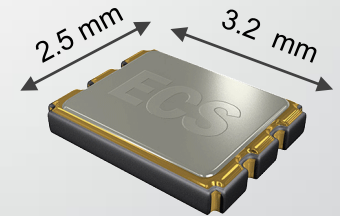
The ECX2-LMV MultiVolt™ oscillator is a low-jitter oscillator with LVDS outputs in a 3.2 x 2.5 mm package size. The ECX2-LMV features excellent integrated phase jitter, below 50 fs RMS (12 kHz ~ 20 MHz). The ECX2-LMV operates from a 2.5V ~ 3.3V power supply and in temperature ranges from -20°C ~ 70°C or -40°C ~ 85°C.

## Features:

- MultiVolt™ compatible with 2.5V or 3.3V supply voltage
- RMS jitter (12 kHz to 20 MHz) sub 50 fs at 156.250 MHz
- Wide temperature range -20°C ~ 70°C or -40°C ~ 85°C
- LVDS Output
- RoHS 2 & REACH Compliant
- MSL 1
- Lead Finish Au

## Applications:

- SONET/SDH
- Gigabit Ethernet
- Serial ATAs
- Storage area network
- Broadband access
- Fiber channels
- Test and measurement
- Communications



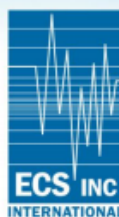
[ECX2-LMV Datasheet](#)



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.

**ECX2-LMV**  
SMD MultiVolt™ LVDS, low jitter  
Crystal Oscillator

Request a Sample



**OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS**



**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

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		0.247	0.33	0.454	mV
Differential Output error				50	mV
Output offset voltage		0.247	0.33	0.454	mV
Output offset error				50	mV
Start Up Time				10	mS
Disable delay time				200	ns
Enable delay time				2	ms
Aging	1 <sup>st</sup> 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

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

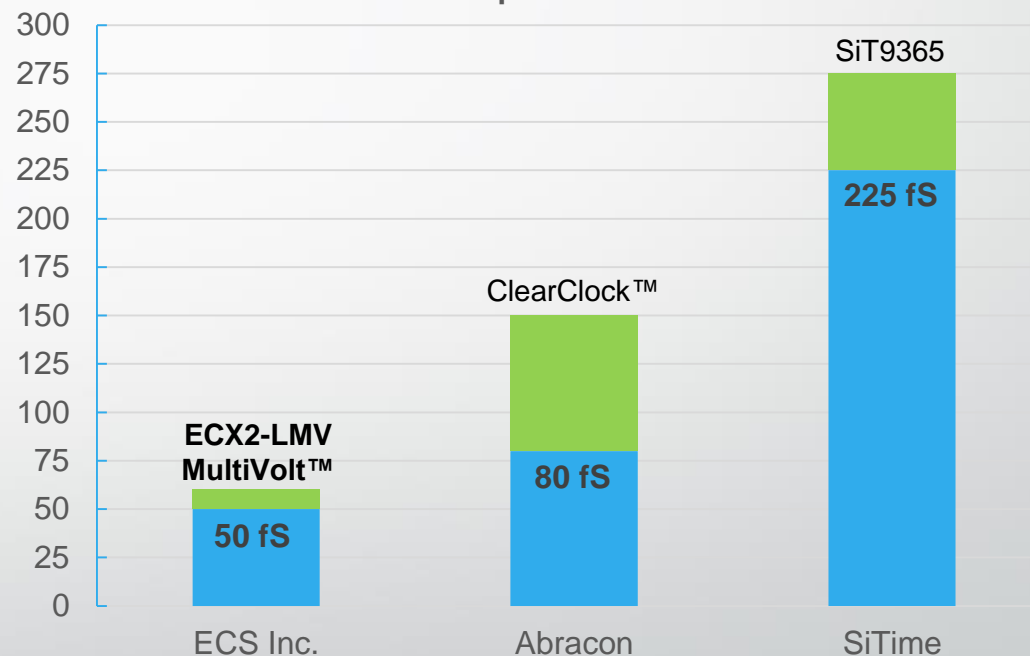
SERIES	Package Size (mm)	Stability	Temp Range	Frequency	PACKAGING
ECX2-LMV LVDS, Ultra Low Jitter MultiVolt™ Oscillator	3 = 3.2 x 2.5 5 = 5 x 3.2 7 = 7 x 5	A = ±100 ppm B = ±50 ppm C = ±25 ppm ** D = ±20 ppm	M = -20 ~ +70°C N = -40 ~ +85°C	156.250 MHz	-TR = Tape & Reel

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

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



**Jitter Comparison Chart**



■ Typical ■ Max