

The ECS-1612MV is a miniature SMD HCMOS Oscillator with MultiVolt™ capability of 1.6 ~ 3.6 V. The 1.6 x 1.2 x 0.7 mm ceramic package is ideal for LoRa WAN, Low Power/Portable, Industrial, and IoT applications.

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## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS



- 1.6 x 1.2 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-1612MV			UNITS
		MIN	TYP	MAX	
Frequency Range		3.000		80.000	MHz
* Frequency Stability	-40 ~ +85°C (CN Opt)			±25	ppm
Supply Voltage		1.6		3.63	V
Output Load	CMOS			15	pF
Output voltage Level	VOL: 0.4 Max. / VOH: Vdd-0.4 Min. V DC				
Rise & Fall time	10% Vdd – 90% Vdd			4.5	ns
Start Up Time	VDD 1.8V			5	mS
Phase Jitter	12 kHz to 5 MHz			1	pS
Duty Cycle	@ ½ Vdd			45/55	%
Standby Current				10	µA
Operating Temp*	N Option	-40		+85	°C
Storage Temp		-40		+105	°C

## DIMENSIONS (mm)

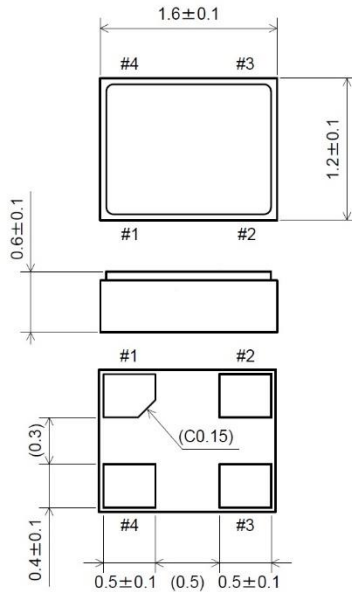


Figure 1) Top, Side, and Bottom views

## CURRENT CONSUMPTION mA

FREQ.	~ 20 MHz	~ 50 MHz	~ 80 MHz
+1.8V	2 Typ. / 2.5 Max.	2.5 Typ. / 3 Max.	3 Typ. / 4 Max.
+2.5V	2 Typ. / 3 Max.	2.5 Typ. / 4 Max.	3 Typ. / 5 Max.
+3.3V	3 Typ. / 4 Max.	4 Typ. / 5 Max.	5 Typ. / 7 Max.

## PAD CONNECTIONS

1	Stand-by
2	Gnd
3	Output
4	Vdd

## Tri State Function

Pin 1	Output
0.7 * Vdd Min	Active
0.3 * Vdd Max.	High-Z

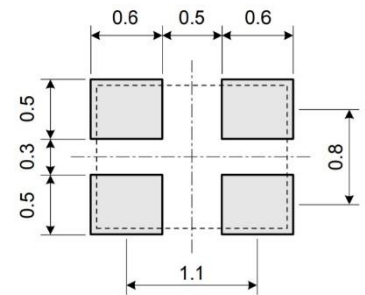


Figure 2) Suggested Land Pattern

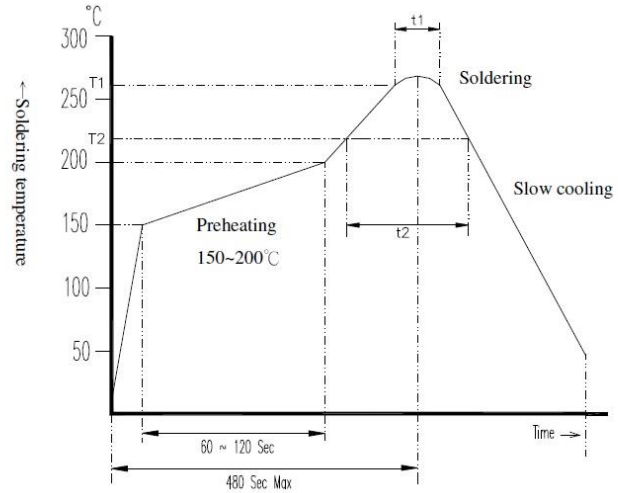
## PART NUMBERING GUIDE: Example ECS-1612MV-250-CN-TR

ECS	SERIES	FREQUENCY ABBREVIATION	* STABILITY	TEMP RANGE -	PACKAGING
ECS	1612MV 1.6 x 1.2 mm MultiVolt™ Oscillator	250 = 25.000 MHz See Developed Frequencies Pg.2	A = ±100 ppm B = ±50 ppm G = ±30 ppm C = ±25 ppm D = ±20 ppm	M = -20 ~ +70°C N = -40 ~ +85°C	-TR = Tape & Reel 3K/Reel

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

**DEVELOPED FREQUENCIES**

CODE	FREQUENCY MHz
80	8.000
120	12.000
122.8	12.288
192	19.200
240	24.000
250	25.000
260	26.000
500	50.000

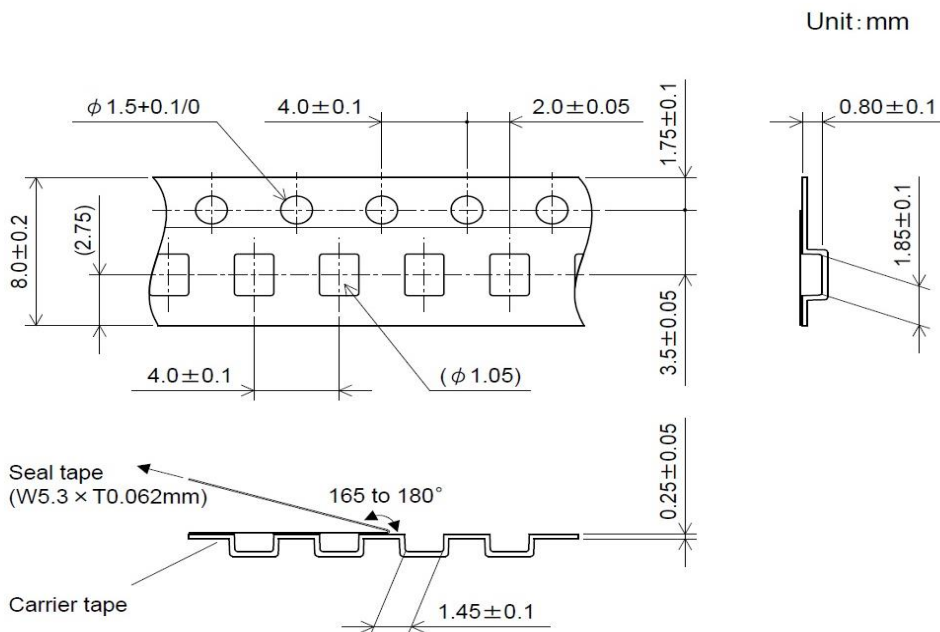


Application / Temperature Time	T1 / t1	T2 / t2
Lead Free	260 ± 5°C / 10 ± 5 Sec Max.	217°C Min / 60 ~ 150 Sec
Non-Lead Free	260 ± 5°C / 10 ± 5 Sec Max.	183°C Min / 60 ~ 150 Sec

Figure 3) Suggested Reflow Profile

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

**POCKET TAPE DIMENSIONS (mm)**



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