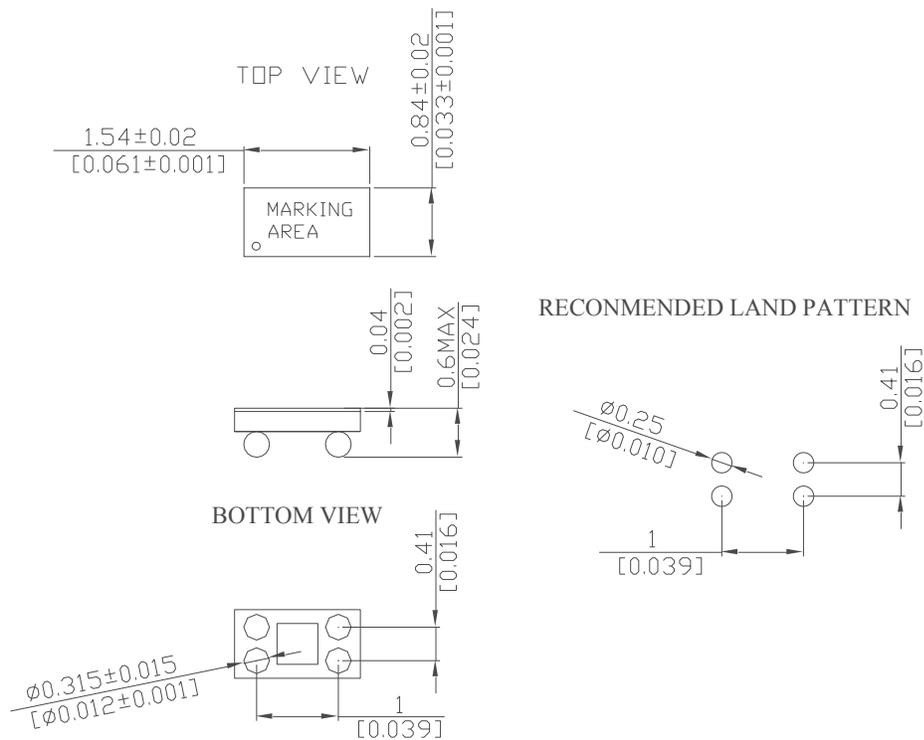# CMC159-SERIES

- **Ultra Low power: < 1μA**

- **Fixed 32.768 kHz**

- **No Supply Voltage external bypass capacitors required**

- **Frequency Stability over Temperature as low as ±5ppm**

- **Small SMD package 1.5 x 0.8 mm**

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Frequency nominal	f_0			32.768		kHz
Supply Voltage	Vs	T_a = -40°C to +85°C	1.5		3.63	V
Core Supply Current	Is	Vs = 1.8V, no load condition, LVCMOS, T_a = 25°C Vs = 3.63V max, T_a = -10°C to +70°C no load condition Vs = 1.5V to 3.63V, T_a = -40°C to +85°C, no load condition Is does not include output stage current or load.		0.99	1.52	μA μA
Operating Temperature	T_a	Commercial Industrial	0 -40		+70 +85	°C °C
Frequency Stability vs. Temperature (without initial offset)	$\Delta f/T_a$	Initial offset is defined as the frequency deviation from the nominal value at room temperature after reflow	-5 -10 -20		+5 +10 +20	ppm ppm ppm
Frequency Stability vs. Temperature (with initial offset)	$\Delta f/T_a$	Initial offset is defined as the frequency deviation from the nominal value at room temperature after reflow	-10 -13 -22		+10 +13 +22	ppm ppm ppm
Frequency stability vs. Supply Voltage	$\Delta f/Vs$	Vs= 1.8V±10% Vs= 1.5V ~ 3.63V	-0.75 -1.5		+0.75 +1.5	ppm ppm
Power supply Ramp		T_a = -40°C to +85°C, 0 to 90% Vs			100	ms
Start-up Time	T START	T_a = -40°C ≤ T_a ≤ +60°C, valid output T_a = +60°C ≤ T_a ≤ +70°C, valid output T_a = +70°C ≤ T_a ≤ +85°C, valid output		180	300 350 380	ms ms ms
Long Term Frequency Stability	$\Delta f/T$	T_a=25°C, Vs=3.3V	-1.0		+1.0	ppm
Period Jitter RMS		Cycles = 10,000,T_a=25°C, Vs= 1.5V ~ 3.63V		35		ns
Long Term Jitter		81920 cycles (2.5 sec), 100 samples			2.5	μs p-p

CMC159-SERIES

MECHANICAL DIMENSIONS AND PIN FUNCTIONING

TOP VIEW

1.54±0.02
[0.061±0.001]

0.84±0.02
[0.033±0.001]

MARKING
AREA

0.04
[0.002]

0.6MAX
[0.024]

RECONMENDED LAND PATTERN

0.41
[0.016]

Ø0.25
[Ø0.010]

1
[0.039]

BOTTOM VIEW

0.41
[0.016]

Ø0.315±0.015
[Ø0.012±0.001]

1
[0.039]

PIN	SYMBOL	FUNCTION
1	GND	Electrical Ground
2	OUTPUT	Output Signal [1]
3	Vs	Supply Voltage [2]
4	GND	Electrical Ground