

## nA Current 32.768kHz 7 x 5 x 1.8mm

- Stability  $\pm 5\text{ppm max.}$ , =  $\pm 2.62$  minutes/year
- Standard 7 x 5 x 1.8mm SMD package
- Frequency: 32.768kHz
- Supply voltage 1.8, 2.5, 3.0, 3.3 or 5.0 Volts



Page 1 of 2

### DESCRIPTION

- ME83 series are 32.768kHz CMOS output TCXOs with a maximum frequency deviation of  $\pm 5\text{ppm}$ .
- A proprietary temperature compensation technique is applied to the built-in 32.768kHz tuning fork crystal and temperature sensor.
- A 400 nA typical current consumption makes it ideal for battery operated devices.
- 7 x 5 x 1.8mm standard ceramic SMD package, ideal for miniaturizing applications.

### TEMPERATURE MEASUREMENT PERIOD

Model Number:	ME831	ME832	ME833	ME834
Temperature measurement period:	Every 1 minute	Every 2 minutes	Every 30 seconds	Every 4 minutes

(Standard)

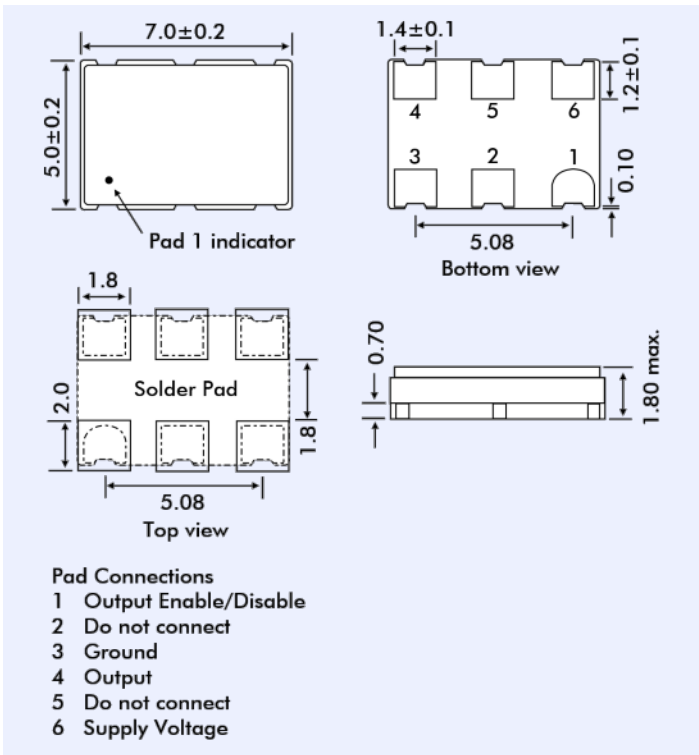
During the temperature measurement period the power consumption increases.  
For the lowest power consumption the 4 minute measurement period (ME834) is recommended.  
For peak current during measurement see I<sub>DD</sub> data below.

### SPECIFICATION

Supply Voltage (V <sub>DD</sub> ):	1.8 $\pm$ 5%	2.5 $\pm$ 5%	3.0 $\pm$ 5%	3.3 $\pm$ 5%	5.0 $\pm$ 5%
Voltage Tolerance:	1.71~1.89V	2.37~2.62V	2.7~3.3V	2.97~3.63V	4.5~5.51V
Voltage Code:	18	25	3	33	5
Supply Current I <sub>DD1</sub> - No Load	0.79 $\mu$ A	1.05 $\mu$ A	1.25 $\mu$ A	1.37 $\mu$ A	2.05 $\mu$ A
Peak Current when measuring I <sub>DD2</sub> :	1.95 $\mu$ A	2.00 $\mu$ A	2.03 $\mu$ A	2.05 $\mu$ A	2.14 $\mu$ A
Current when Disabled (Pad 1) I <sub>DD3</sub> :	0.39 $\mu$ A	0.47 $\mu$ A	0.53 $\mu$ A	0.56 $\mu$ A	0.80 $\mu$ A
Current when disabled (Pad 1) I <sub>DD4</sub> :	327nA	408nA	460nA	470nA	700nA

Initial Calibration Tolerance:	$\pm 1.5\text{ppm max. at } T_{\text{AMB}} = +25 \pm 2^\circ\text{C}$
Frequency Stability over Temp:	$\pm 5\text{ppm } (\pm 0.432 \text{ s/day; } \pm 12.960 \text{ s/month; } \pm 2.628 \text{ min/year}), -40^\circ \sim +85^\circ\text{C w.r.t. to } 25^\circ\text{C}$
vs. Ageing:	$\pm 3.0\text{ppm/ first year at } 25^\circ\text{C}$
vs. V <sub>DD</sub> Tolerance Change:	$\pm 0.2\text{ppm max. for } \pm 5\% \text{ input voltage change.}$
vs. Load Change:	$\pm 0.2\text{ppm max. for a } \pm 10\% \text{ load change}$
vs. Reflow:	$\pm 1\text{ppm max. 1 reflow, (measured after 24 hours.)}$
vs. all range of V <sub>DD</sub> :	$\pm 1\text{ppm/Volt max. V}_{\text{DD}} 1.7\text{V to } 5.5\text{V}$
Supply Voltage Variation:	0.25V max. Condition: $\Delta V/t = 1\text{V}/\mu\text{s}$
Output Voltage Level V <sub>OH</sub> :	V <sub>DD</sub> - 0.4V min., I <sub>OH</sub> = -0.1mA, all V <sub>DD</sub> range
Output Voltage Level V <sub>OL</sub> :	0.4V max., I <sub>OH</sub> = -0.1mA, all V <sub>DD</sub> range
Start-up Time:	1s max. at +25°C. 3s max over -40 to +85°C
Rise/Fall Time:	100ns max, 20%~80% waveform, 15pF
Duty Cycle:	32768Hz, 4096Hz and 1024Hz: 50% $\pm$ 10% max. 128Hz, 32Hz, 1Hz, 1/10Hz, 1/60Hz: 50% $\pm$ 5% max.
Pad 1 OE Thresholds:	V <sub>ih</sub> = 0.8*V <sub>DD</sub> , V <sub>il</sub> = 0.2*V <sub>DD</sub>

ME83 - OUTLINE AND DIMENSIONS



PART NUMBERING PROCEDURE

Example:

18ME831-32768

Supply Voltage

- 18 = 1.8 VDC
- 25 = 2.5 VDC
- 33 = 3.3 VDC
- 3 = 3.0 VDC
- 5 = 5.0 VDC

Product series

ME83  
 1, 2, 3 or 4 depending upon  
 temperature measurement period

Frequency in Hz

FREQUENCY - TEMPERATURE CHARACTERISTIC

