Claims:

1. A temperature sensing device for an integrated circuit comprising an oscillator having a characteristic frequency dependent on the temperature, said oscillator comprising a plurality of inverters connected together in a ring so that the output of one inverter is the input to the next in the ring, and a digital counter arranged to count a number of pulses generated by the oscillator in a given time interval, or the time taken for the oscillator to generate a given number of pulses to give, in either case, a measured value, wherein said device is configured to use a difference between the measured value and a stored reference value in a linearisation algorithm to estimate a temperature; and wherein said device further comprises a voltage reference which supplies said inverters, said voltage reference comprising an inverter with its input and output connected together and a voltage buffer.

~~2. A device as claimed in claim 1 wherein said oscillator comprises a ring oscillator,~~

~~3. A device as claimed in claim 1 wherein said oscillator comprises a plurality of inverters connected together in a ring so that the output of one inverter is the input to the next in the ring.~~

~~4~~2. A device as claimed in ~~any preceding~~ claim 1 arranged to measure the number of pulses generated in a given time.

~~5~~3. A device as claimed in any preceding claim arranged to carry out the time measurement by counting the number of pulses generated by a second oscillator which has a low or negligible dependence on temperature within the desired measurement range.

~~6~~4. A device as claimed in claim ~~5~~ 3 wherein the second oscillator comprises a crystal oscillator.

~~7~~5. A device as claimed in claim ~~5~~ 3 or ~~6~~ 4 wherein the second oscillator is used to clock the rest of the integrated circuit.

~~8~~6. A device as claimed in any preceding claim configured to activate the ~~frequency~~ temperature dependent oscillator only when a temperature measurement is required.

~~9~~7. A device as claimed in any preceding claim wherein the integrated circuit comprises a radio transmitter.

~~10~~8. A device as claimed in any preceding claim wherein the stored reference value corresponds to a temperature within the range 15º to 35º.

~~11~~9. A device as claimed in any preceding claim wherein the linearisation algorithm comprises a plurality of splines - e.g. linear or second order polynomial splines fitted to a known temperature-frequency relationship.

~~12~~10. An integrated circuit comprising a temperature sensing device as claimed in any preceding claim.

~~13~~11. An integrated circuit as claimed in claim ~~12~~ 10 comprising a radio transmitter.