

# **IT2100F**

The IT2100F employs an analogue ASIC for the oscillator and a high order temperature compensation circuit in a 2.0 x 1.6 mm size package. The device can be placed in power down mode through a single input pin. During standard operation, power consumption is minimised by operating down to a supply voltage of 1.8V. The IT2100F's high stability, low power consumption, small footprint and powerful compensation method makes it a TCXO ideally suited for demanding GNSS mobile applications.

#### **Features**

- Excellent phase noise performance
- Low start up drift rate
- Height less than 0.8 mm
- Power down mode
- Standard temperature stability of ±0.5 ppm over wide temperature ranges

## **Applications**

- Time and frequency reference
  - GNSS
  - Smartphone
  - Communications
  - Consumer

#### 2.0 x 1.6 mm



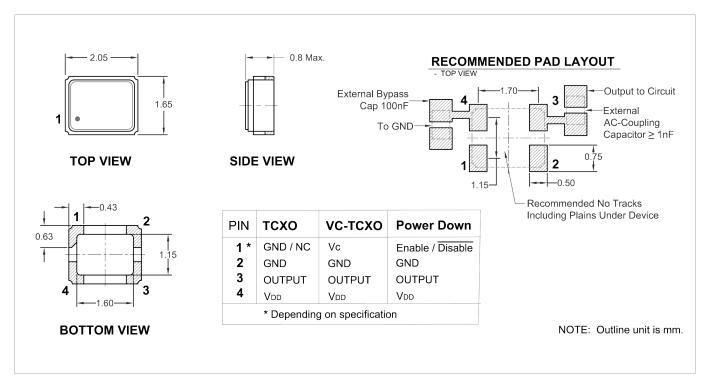
## **Standard Specifications**

Parameter	Min.	Тур.	Max.	Unit	Test Condition / Description
Nominal frequency		13 - 52		MHz	
Frequency calibration			±1	ppm	Offset from nominal frequency measured at 25°C ±2°C
Reflow shift			±1	ppm	Two consecutive reflows as per attached profile after 2 hours relaxation at 25°C
Operating temperature range	-40		85	°C	The operating temperature range over which the frequency stability is measured
Frequency stability over temperature			±0.5 – ±2	ppm	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range <sup>1</sup> .  Control voltage set to midpoint of Vc
Frequency slope			±0.05 – ±1	ppm/°C	Minimum of one frequency reading every 2°C over the operating temperature range <sup>1</sup>
Static temperature hysteresis			0.6	ppm	Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25°C
Sensitivity to supply voltage variations			±0.1	ppm	V <sub>DD</sub> varied ±5% at 25°C
Sensitivity to load variations			±0.2	ppm	±10% load change at 25°C
Long term stability			±1	ppm	Frequency drift over 1 year at 25°C
Supply voltage (V <sub>DD</sub> )		1.8 – 3.3		V	With a tolerance of ±5%
Supply current			2.2	mA	At minimum V <sub>DD</sub>
Control voltage (Vc) range $V_{DD} \le 2.3 \text{ V}$	0.3		1.5	V	The nominal Vc value is midway between the minimum and maximum. Voltage control should not exceed the $V_{\rm DD}$ +0.2 V or GND
Control voltage (Vc) range $V_{DD} > 2.3 \text{ V}$	0.4		2.4	V	The nominal Vc value is midway between the minimum and maximum. Voltage control should not exceed the $V_{\rm DD}$ +0.2 V or GND
Frequency tuning	±6 – ±30			ppm	Frequency shift from minimum to maximum Vc
Linearity			10	%	Deviation from straight line curve fit
Control voltage input resistance		500		kΩ	Measured between Vc and GND pin

<sup>&</sup>lt;sup>1</sup> Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents on the oscillator can lead to short term frequency drift.



### **Model Outline and Recommended Pad Layout**



### **Test Circuit**

