## Specifications (characteristics)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>VC-TCXO</th>
<th>TCXO</th>
<th>Conditions / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output frequency range</td>
<td>f0</td>
<td>12 MHz to 52MHz</td>
<td>12MHz, 16MHz, 24MHz, 25MHz, 26MHz, 27MHz, 30MHz, 32MHz, 36MHz, 38.4MHz, 39MHz and 40MHz</td>
<td>Standard frequency</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>Vcc</td>
<td>2.8 V Typ., 3.0 V Typ., 3.3 V Typ.</td>
<td>K: 2.5 to 3.3, M: 2.8 to 3.3, D: 2.6 to 3.3</td>
<td>Supply voltage range: 2.375 V to 3.63 V</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>T_stg</td>
<td>-40 °C to +90 °C</td>
<td>-40 °C to +85 °C</td>
<td>Storage as single product.</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>T_use</td>
<td>G: -40 °C to +85 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>f_tol</td>
<td>±2.0 × 10^-6 Max.</td>
<td></td>
<td>After reflow, +25 °C</td>
</tr>
<tr>
<td>Frequency/temperature characteristics</td>
<td>f0-Tc</td>
<td>F: ±2.0 × 10^-6 Max.</td>
<td>G: -40 °C to +85 °C</td>
<td>Standard stability version</td>
</tr>
<tr>
<td>Frequency/load coefficient</td>
<td>f0-Load</td>
<td>±0.2 × 10^-6 Max.</td>
<td>15 pF ±10 %</td>
<td></td>
</tr>
<tr>
<td>Frequency/voltage coefficient</td>
<td>f0-Vcc</td>
<td>±0.3 × 10^-6 Max.</td>
<td>Vcc = 5 %</td>
<td></td>
</tr>
<tr>
<td>Frequency aging</td>
<td>f_age</td>
<td>±1.0 × 10^-6 Max.</td>
<td>+25 °C, First year, 12 MHz f0 ±20 MHz, 24 MHz f0 ±40 MHz</td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>Icc</td>
<td>4.0 mA Max.</td>
<td>12 MHz f0 ≤ 26 MHz</td>
<td></td>
</tr>
<tr>
<td>Input resistance</td>
<td>Rin</td>
<td>500 kΩ Min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency control range</td>
<td>f_cont</td>
<td>±8.0 × 10^-6 to ±15.0 × 10^-6</td>
<td>C: Vcc = 1.4 V ±1.0 V (Vcc = 2.8 V) or D: Vcc = 1.5 V ±1.0 V (Vcc = 3.0 V) or E: Vcc = 1.65 V ±1.0 V (Vcc = 3.3 V)</td>
<td></td>
</tr>
<tr>
<td>Frequency change polarity</td>
<td>SYM</td>
<td>-</td>
<td>Positive polarity</td>
<td>-</td>
</tr>
<tr>
<td>Output voltage</td>
<td>Vcc</td>
<td>90 % Vcc Min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start-up time</td>
<td>t_str</td>
<td>2.0 ma Max.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rise time / Fall time</td>
<td>t_r/ tf</td>
<td>8.0 ns Max.</td>
<td>10 % Vcc to 90 % Vcc level, Load:15 pF</td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td></td>
<td>15 pF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Note: Please contact us for requirements not listed in this specification.

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### External dimensions (Unit:mm)

**TG3225CEN**

- Size: 3.2 × 2.5 mm
- Pin map:
  - Pin 1: Vcc
  - Pin 2: GND
  - Pin 3: OUT
  - Pin 4: N.C.

**TG2520CEN**

- Size: 2.5 × 2.0 mm
- Pin map:
  - Pin 1: Vcc
  - Pin 2: N.C.
  - Pin 3: OUT
  - Pin 4: GND

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### Footprint (Recommended) (Unit:mm)

**TG3225CEN**

- Size: 3.2 × 2.5 mm
- For stable operation, please add a bypass capacitor (0.01µF to 0.1µF) between Vcc and GND. Please place it as close to TCXO as possible.

**TG2520CEN**

- Size: 2.5 × 2.0 mm

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**VC-TCXO/TCXO**

**HIGH STABILITY, CMOS OUTPUT**

**TG3225CEN / TG2520CEN**

- Output frequency: 12 MHz to 52MHz
- Supply voltage: 2.8 V Typ., 3.0 V Typ., 3.3 V Typ.

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**Applications**

- Reference clock for measurement machine
- Wireless communication devices (Smart meter, Telemeter, other)
- High stability, CMOS output

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**Features**

- High stability, CMOS output

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**Product Number (Please contact us)**

- TG3225CEN: X1G005101xxxxxx
- TG2520CEN: X1G005161xxxxxx
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► Complies with EU RoHS directive.
  * About the products without the Pb-free mark.
  Contains Pb in products exempted by EU RoHS directive.
  (Contains Pb in sealing glass, high melting temperature type solder or other.)

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► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc.).

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