# QEV101

7.0 x 5.0 mm, SMD


## Frequency and Electrical Characteristics

| Parameter | Min. | Typ. | Max. | Unit | Test condition / Description |
|---|---|---|---|---|---|
| Nominal frequency (Fn) | 1 | | 170 | MHz | All frequencies are not available for all supply voltage options |
| Operating temperature range | | 0 to +70 | -40 to +85 | °C | See 'Order Part Example' |
| Frequency stability over temperature[1] | | | ±25 to ±50 | ppm | Referenced to frequency reading at 25°C and the specified load capacitance |
| Storage temperature range | -55 | | +125 | °C | |
| Long-term stability (Ageing) | | | ±3 | ppm | Frequency drift over 1 year at 25°C |
| Power supply voltage($V_{CC}$)<br>1.8V (N option<br>2.5V (M option)<br>3.3V (D option)<br>5.0V (A option) | <br>1.710<br>2.375<br>3.135<br>4.750 | <br>1.8<br>2.5<br>3.3<br>5.0 | <br>1.890<br>2.625<br>3.465<br>5.250 | $V_{DC}$ | See 'Order Part Example' |
| Input current | | | 35 | mA | |
| HCMOS output load | | 15 | 30 | pF | |
| Output logic levels<br>Output logic high ($V_{OH}$)<br>Output logic low ($V_{OL}$) | <br>90%Vcc | | <br>10%Vcc | $V_{DC}$ | With 30pF HCMOS load |
| Pullability | | ±50,<br>±100,<br>or ±150 | | ±ppm | Positive slope. See 'Order Part Example'<br>$V_C$=1.25±1.05V for 2.5V<br>$V_C$=1.65±1.35V for 3.3V<br>$V_C$=2.50±2.0V for 5.0V |
| Linearity | | | 20 | % | |
| Duty cycle | 45 | 50 | 55 | % | |
| Rise & fall time | | | 10 | ns | 20% VCC ~ 80% VCC |
| Start-up time | | | 5 | ms | |
| Input impedance | 100 | | | KΩ | |
| RMS phase jitter [12kHz ~ 20MHz] | | | 1.0 | ps | |
| Period jitter (pk-pk) | | | 25 | ps | |
| Modulation bandwidth | 15 | | | kHz | At -3dB |

## SSB Phase Noise @ 20 MHz

| Parameter | | Min. | Typ. | Max. | Unit | Test condition / Description |
|---|---|---|---|---|---|---|
| Offset: | 10 Hz<br>100 Hz<br>1 kHz<br>10 kHz<br>Floor | | | -60<br>-90<br>-120<br>-135<br>-145 | dBc/Hz | |

[1] Include 25°C tolerance, operating temperature range, input voltage change ($V_{CC}$ ±5%), load change (15pF ±10%), first year ageing, shock and vibration.

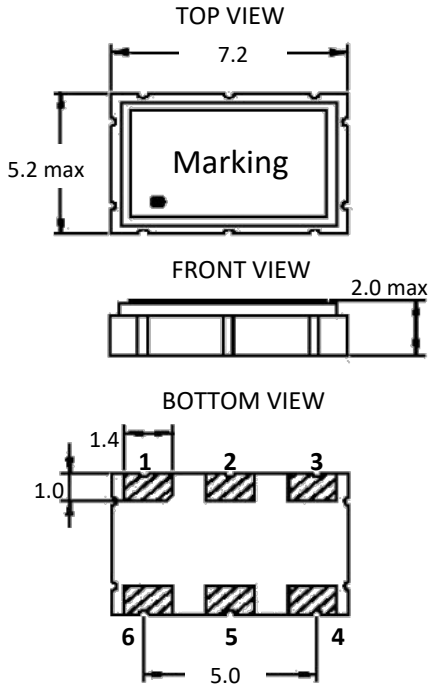
## Environmental Specifications

| Parameter | Test condition / Description |
|---|---|
| Mechanical vibration | 10*g*, Frequency: 10Hz ~ 2KHz according to standard CEI 68-2-63 |
| Shock | 100*g*, 6ms according to standard CEI 68-2-27 |

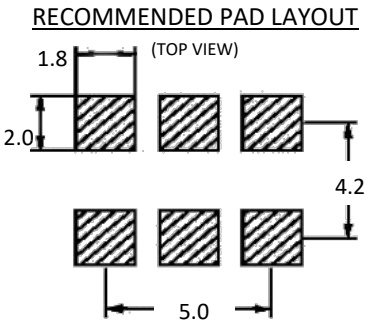
## Order Part Example – QEV101.B.A.B / 10.000MHZ

| Parameter | Product family and package | Frequency stability over Temperature (FvT) | Supply Voltage (Vcc) | Pullability | Nominal Frenquency (Fn. MHz) |
|---|---|---|---|---|---|
| Code | QEV101 | B | A | B | 10.000MHZ |
| Decode | QEV = VCXO<br>101 = SMD, 7 x 5 mm | A = ±50ppm vs 0 to +70°C<br>B = ±50ppm vs -40 to +85°C<br>C = ±25ppm vs 0 to +70°C<br>D = ±25ppm vs -40 to +85°C | A = 5.0V<br>D = 3.3V<br>M = 2.5V<br>N = 1.8V | A = ±100ppm min<br>B = ±150ppm min<br>D = ±50ppm min | Please enter Fn |

## Model Outline, Recommended Pad Layout and Marking




| Marking | | Note |
|---|---|---|
| Line 1 | NV1BAB | Product code: N = Manufacturing code, V1 = 7x5 SMD VCXO, B = ±50ppm vs -40 to +85°C, A = Vcc 5.0V, B = Pullability ±150ppm min. |
| Line 2 | 10.000 | Frequency in MHz (6 digits) |
| Line 3 | 2214 | Date code: 22 = 2022, 14 = Week 14 of the year |

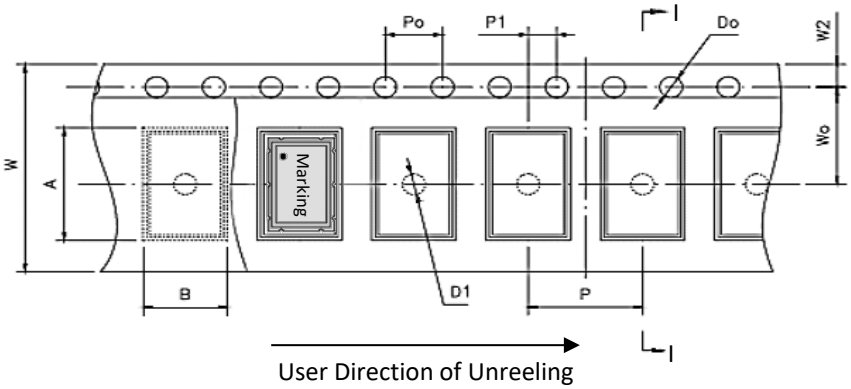



| Pin | Connections |
|---|---|
| 1 | Vc |
| 2 | Tri-state<br>(Open = Active, 1 = Active, 0 = High Z) |
| 3 | GND |
| 4 | Output |
| 5 | NC |
| 6 | Vcc |

**NOTE:**
Dimension unit is in millimetre.

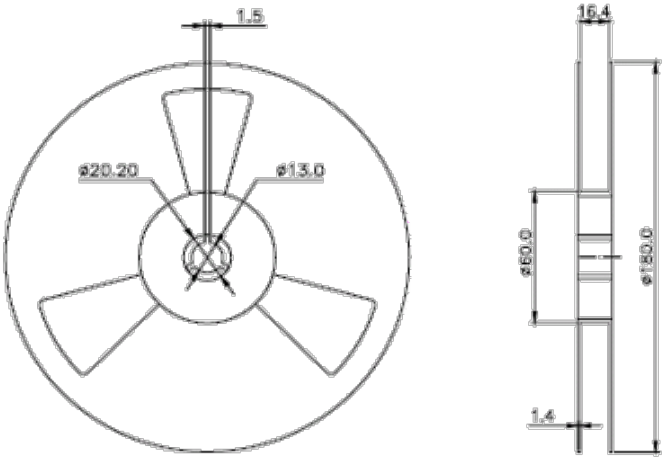
## Packaging

TAPRE DETAILS:




| Parameter | Code | Dimension | Tolerance |
|---|---|---|---|
| Pitch of components | P | 8.0 | ± 0.1 |
| Pitch of sprocket hole | $P_0$ | 4.0 | ± 0.1 |
| Length from hole center to component center | $P_1$ | 2.0 | ± 0.1 |
| Width of carrier tape | W | 16.0 | +0.3/-0.1 |
| Width of adhesive tape | $W_0$ | 7.5 | ± 0.1 |
| Height of component hole | A | 8.18 | ± 0.1 |
| Width of component hole | B | 5.56 | ± 0.1 |
| Gap of hold down tape and carrier tape | $W_2$ | 1.75 | ± 0.1 |
| Diameter of sprocket hole | $D_0$ | Φ 1.5 | ± 0.05 |
| Diameter of feed hole | $D_1$ | Φ 1.5 | ± 0.25 |
| Total of tape thickness | K | 2.16 | ± 0.1 |

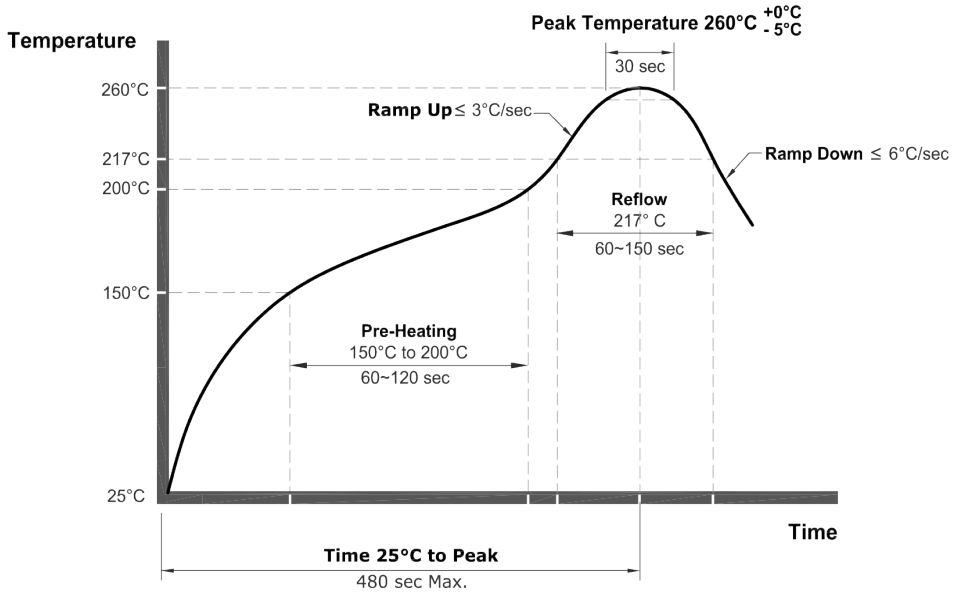
REEL DETAILS




NOTE:

- Standard Packing Quantity (SPQ): 1000 pcs/reel
- Unit: mm

## Reflow soldering Profile




Referred to JEDEC J-STD-020E