

QEN14

20.7 x 13.1 mm, 14 pin DIL package



Frequency and Electrical Characteristics

| Parameter | Min. | Typ. | Max. | Unit | Test condition / Description | | | | | | | | | | | | | | | | | |
|---|--|------------------------|------------------------|-----------------|---|------------------|----------------------|------------------------|------------------------|------------------------|--------------------|-----------------|-------|--------------------|-----------------|-------|--------------------|-------|-------|--------------------|-------|-------|
| Nominal frequency (Fn) | 0.4096 | | 150 | MHz | | | | | | | | | | | | | | | | | | |
| Operating temperature range | | 0 to +70 | -40 to +85 | °C | See 'Order Part Example' | | | | | | | | | | | | | | | | | |
| Storage temperature range | -55 | | +125 | °C | | | | | | | | | | | | | | | | | | |
| Frequency stability over temperature ¹ | | | ±15 to ±100 | ppm | See 'Order Part Example' | | | | | | | | | | | | | | | | | |
| Long-term stability (Ageing) | | | ±5 | ppm | Frequency drift over 1 year at 25°C | | | | | | | | | | | | | | | | | |
| Power supply voltage(V _{CC}) | | | | | | | | | | | | | | | | | | | | | | |
| 3.3V (BH option) | 3.135 | 3.3 | 3.465 | V _{DC} | See 'Order Part Example' | | | | | | | | | | | | | | | | | |
| 5.0V (H option) | 4.750 | 5.0 | 5.250 | | | | | | | | | | | | | | | | | | | |
| Duty cycle | 40 | 50 | 60 | % | | | | | | | | | | | | | | | | | | |
| Rise & fall time | | | 10 | ns | From 10% V _{CC} to 90% V _{CC} | | | | | | | | | | | | | | | | | |
| Start-up time | | | 10 | ms | | | | | | | | | | | | | | | | | | |
| Output load | | | | | | | | | | | | | | | | | | | | | | |
| HCMOS | | | 15 | pF | | | | | | | | | | | | | | | | | | |
| TTL load | | | 5 | LS-TTL | | | | | | | | | | | | | | | | | | |
| Maximum output load | <table border="1"> <thead> <tr> <th>Frequency</th> <th>V_{CC} = 5V</th> <th>V_{CC} = 3.3V</th> </tr> </thead> <tbody> <tr> <td>Up to 50.000MHz</td> <td>50 pF</td> <td>30 pF</td> </tr> <tr> <td>Up to 70.000MHz</td> <td>30 pF</td> <td>20 pF</td> </tr> <tr> <td>Up to 150.00MHz</td> <td>15 pF</td> <td>15 pF</td> </tr> </tbody> </table> | | | | | Frequency | V _{CC} = 5V | V _{CC} = 3.3V | Up to 50.000MHz | 50 pF | 30 pF | Up to 70.000MHz | 30 pF | 20 pF | Up to 150.00MHz | 15 pF | 15 pF | | | | | |
| Frequency | V _{CC} = 5V | V _{CC} = 3.3V | | | | | | | | | | | | | | | | | | | | |
| Up to 50.000MHz | 50 pF | 30 pF | | | | | | | | | | | | | | | | | | | | |
| Up to 70.000MHz | 30 pF | 20 pF | | | | | | | | | | | | | | | | | | | | |
| Up to 150.00MHz | 15 pF | 15 pF | | | | | | | | | | | | | | | | | | | | |
| Input current | <table border="1"> <thead> <tr> <th>Load capacitance</th> <th>Frequency</th> <th>V_{CC} = 5V</th> <th>V_{CC} = 3.3V</th> </tr> </thead> <tbody> <tr> <td rowspan="4">C_L = 15 pF</td> <td>0.500 to 23.999MHz</td> <td>20 mA</td> <td>15 mA</td> </tr> <tr> <td>24.00 to 49.999MHz</td> <td>30 mA</td> <td>20 mA</td> </tr> <tr> <td>50.00 to 69.999MHz</td> <td>40 mA</td> <td>30 mA</td> </tr> <tr> <td>70.0 to 150.000MHz</td> <td>60 mA</td> <td>45 mA</td> </tr> </tbody> </table> | | | | | Load capacitance | Frequency | V _{CC} = 5V | V _{CC} = 3.3V | C _L = 15 pF | 0.500 to 23.999MHz | 20 mA | 15 mA | 24.00 to 49.999MHz | 30 mA | 20 mA | 50.00 to 69.999MHz | 40 mA | 30 mA | 70.0 to 150.000MHz | 60 mA | 45 mA |
| Load capacitance | Frequency | V _{CC} = 5V | V _{CC} = 3.3V | | | | | | | | | | | | | | | | | | | |
| C _L = 15 pF | 0.500 to 23.999MHz | 20 mA | 15 mA | | | | | | | | | | | | | | | | | | | |
| | 24.00 to 49.999MHz | 30 mA | 20 mA | | | | | | | | | | | | | | | | | | | |
| | 50.00 to 69.999MHz | 40 mA | 30 mA | | | | | | | | | | | | | | | | | | | |
| | 70.0 to 150.000MHz | 60 mA | 45 mA | | | | | | | | | | | | | | | | | | | |

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

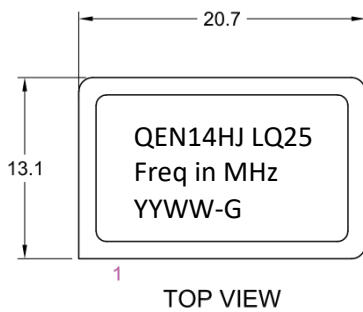
Order Part Example – QEN14HJ LQ25 / 10.000MHZ

| Parameter | Product family and package | Supply Voltage (V _{CC}) | Option | Operating temperature range | Frequency stability** (FvT) | Nominal Frequency (Fn. MHz) |
|-----------|--|-------------------------------------|--|--|--|-----------------------------|
| Code | QEN14 | H | J | LQ | 25 | 10.000MHZ |
| Decode | QEN = VCXO 14 = 14 pin, Full size DIL | H = 5.0V BH = 3.3V | J = Tri-state R = Duty cycle 45/55% | LQ = 0 to 70°C JQ = -10 to 70°C HQ = -20 to 70°C DT = -40 to 85°C | 15 = ±15ppm 25 = ±25ppm 50 = ±50ppm 100 = ±100ppm | Please enter Fn |

** Maximum deviation:

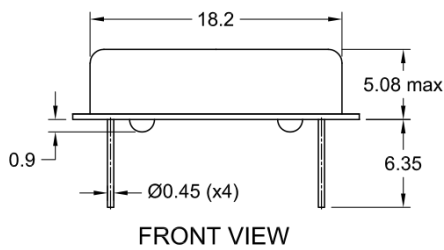
| Operating temperature range | ±15ppm | ±25ppm | ±50ppm | ±100ppm |
|-----------------------------|--------|--------|--------|---------|
| 0 to 70°C | Yes | Yes | Yes | Yes |
| -10 to 70°C | – | Yes | Yes | Yes |
| -20 to 70°C | – | Yes | Yes | Yes |
| -400 to 85°C | – | Yes | Yes | Yes |

Model Outline, Recommended Pad Layout, Marking and Packaging

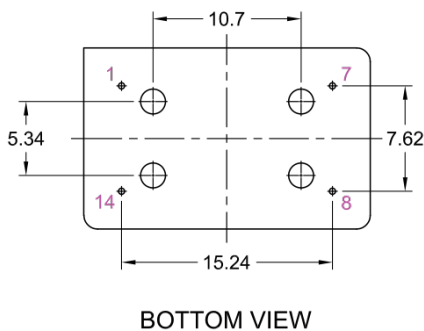


| Marking | Note |
|---------|--------------|
| Line 1 | QEN14HJ LQ25 |
| Line 2 | 10.000 |
| Line 3 | 1350-G |

Note: Product code: See order example
Frequency in MHz (6 digits)
Year code (YY): 13 = 2013, Week code (WW): 50 = Week 50 of the year, G = Manufacturing code



| Pin | Connections |
|-----------|---|
| 1 | NC / Tri-state Open = Active, 1 = Active, 0 = High Z |
| 7 | GND |
| 8 | Output |
| 14 | V _{CC} |



NOTE:

- Packaging: ESD carton box
- Dimension unit is in millimetre.