

## QEN07

3.2 x 2.5 mm, SMD



### Frequency and Electrical Characteristics

Parameter	Min.	Typ.	Max.	Unit	Test condition / Description																												
Nominal frequency <sup>1</sup> (Fn)	0.25		125	MHz																													
Operating temperature range		-10 to +70	-55 to +125	°C	See 'Order Part Example'																												
Frequency stability over temperature <sup>2</sup>			±25 to ±100	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 <sub>CC</sub> )																																	
1.8V (N option)	1.710	1.8	1.890	V <sub>DC</sub>	See 'Order Part Example'																												
2.5V (M option)	2.375	2.5	2.625																														
3.3V (D option)	3.135	3.3	3.465																														
5.0V (A option)	4.750	5.0	5.250																														
HCMOS output load			15	pF																													
Output logic levels																																	
Output logic high (V <sub>OH</sub> )	90%V <sub>CC</sub>			V <sub>DC</sub>	With 15pF HCMOS load																												
Output logic low (V <sub>OL</sub> )			10%V <sub>CC</sub>																														
Duty cycle <sup>3</sup>	40	50	60	%	See 'Order Part Example'																												
Rise & fall time			7	ns	10% VCC ~ 90% VCC																												
Start-up time			5	ms																													
Input current	<table border="1"> <thead> <tr> <th>Load capacitance</th> <th>Frequency</th> <th>V<sub>CC</sub> = 5V</th> <th>V<sub>CC</sub> = 3.3V</th> <th>V<sub>CC</sub> = 2.5V</th> <th>V<sub>CC</sub> = 1.8V</th> </tr> </thead> <tbody> <tr> <td rowspan="4">C<sub>L</sub> = 15 pF</td> <td>0.250 to 24.999MHz</td> <td>15 mA</td> <td>10mA</td> <td>6 mA</td> <td>4 mA</td> </tr> <tr> <td>25.00 to 39.999MHz</td> <td>20 mA</td> <td>15 mA</td> <td>8 mA</td> <td>6 mA</td> </tr> <tr> <td>40.00 to 59.999MHz</td> <td>30 mA</td> <td>20 mA</td> <td>12 mA</td> <td>10 mA</td> </tr> <tr> <td>60.00 to 125.00MHz</td> <td>50 mA</td> <td>40 mA</td> <td>30 mA</td> <td>25 mA</td> </tr> </tbody> </table>						Load capacitance	Frequency	V <sub>CC</sub> = 5V	V <sub>CC</sub> = 3.3V	V <sub>CC</sub> = 2.5V	V <sub>CC</sub> = 1.8V	C <sub>L</sub> = 15 pF	0.250 to 24.999MHz	15 mA	10mA	6 mA	4 mA	25.00 to 39.999MHz	20 mA	15 mA	8 mA	6 mA	40.00 to 59.999MHz	30 mA	20 mA	12 mA	10 mA	60.00 to 125.00MHz	50 mA	40 mA	30 mA	25 mA
Load capacitance	Frequency	V <sub>CC</sub> = 5V	V <sub>CC</sub> = 3.3V	V <sub>CC</sub> = 2.5V	V <sub>CC</sub> = 1.8V																												
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	60.00 to 125.00MHz	50 mA	40 mA	30 mA	25 mA																												

### Order Part Example – QEN07BDAR / 50.000MHZ

Parameter	Product family and package	Frequency stability (FvT)	Supply Voltage (V <sub>CC</sub> )	Output	Output Symmetry	Nominal Frequency (Fn. MHz)
Code	<b>QEN07</b>	<b>B</b>	<b>D</b>	<b>A</b>	<b>R</b>	<b>50.000MHZ</b>
Decode	<b>QEN</b> = XO <b>07</b> = SMD, 3.2x2.5 mm	<b>A</b> = ±100ppm vs -10 to +70°C <b>B</b> = ±50ppm vs -10 to +70°C <b>C</b> = ±25ppm vs -10 to +70°C <b>D</b> = ±100ppm vs -40 to +85°C <b>F</b> = ±50ppm vs -40 to +85°C <b>G</b> = ±25ppm vs -40 to +85°C <b>J</b> = ±100ppm vs -55 to +125°C <b>K</b> = ±50ppm vs -55 to +125°C	<b>A</b> = 5.0V <b>D</b> = 3.3V <b>M</b> = 2.5V <b>N</b> = 1.8V	<b>A</b> = HCMOS, 15pF	<b>Blank</b> = 40/60% <b>R</b> = 45/55%	Please enter Fn

<sup>1</sup> For 5V version, maximum frequency is 54MHz only.

<sup>2</sup> Include 25°C tolerance, operating temperature range, input voltage change (V<sub>CC</sub> ±5%), load change (15pF ±10%), first year ageing, shock and vibration.

<sup>3</sup> Duty cycle 45/55% is available on option

**Model Outline, Recommended Pad Layout and Marking**

**TOP VIEW**

**FRONT VIEW**

**BOTTOM VIEW**

Marking		Example for QEN07ADA / 26.000 MHz
Line 1	1xxxxx	Product code: 104142
Line 2	YYWW-M	Date and Manufacturing code: 2116-G Year code (YY): 21 = 2021, Week code (WW): 16 = Week 16 of the year, G = Manufacturing code

Pin	Connections
1	Tri-state (Open = Active, 1 = Active, 0 = High)
2	GND
3	Output
4	Vcc

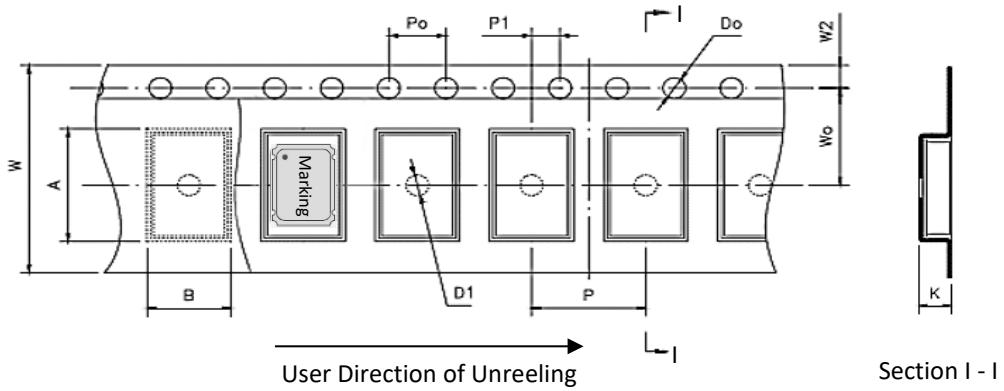
**NOTE:**  
Dimension unit is in millimetre.

**SIDE VIEW**

**RECOMMENDED PAD LAYOUT (TOP VIEW)**

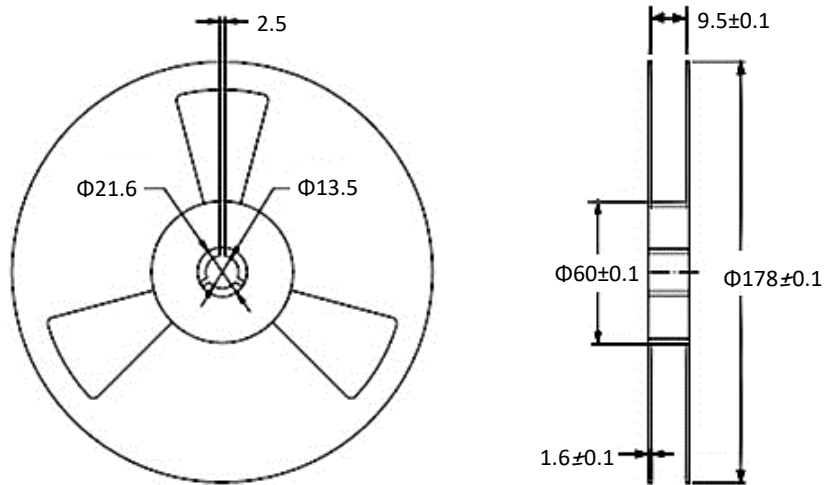
**Packaging**

TAPRE DETAILS:



Parameter	Code	Dimension	Tolerance
Pitch of components	P	4.0	± 0.1
Pitch of sprocket hole	P <sub>0</sub>	4.0	± 0.1
Length from hole center to component center	P <sub>1</sub>	2.0	± 0.1
Width of carrier tape	W	8.0	±0.3
Width of adhesive tape	W <sub>0</sub>	3.5	± 0.1
Height of component pocket	A	3.5	± 0.1
Width of component pocket	B	2.7	± 0.1
Gap of hold down tape and carrier tape	W <sub>2</sub>	1.75	± 0.1
Diameter of sprocket hole	D <sub>0</sub>	Φ 1.5	± 0.05
Diameter of feed hole	D <sub>1</sub>	Φ 1.5	± 0.25
Total of tape thickness	K	1.3	± 0.1

REEL DETAILS



NOTE:

- Standard Packing Quantity (SPQ): 3000 pcs/reel
- Unit: mm

### Reflow soldering Profile

