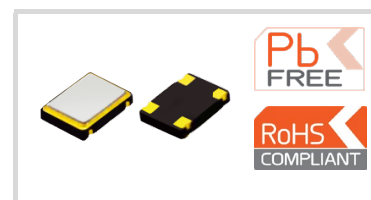


QEN101

7.0 x 5.0 mm, SMD



Frequency and Electrical Characteristics

Parameter	Min.	Typ.	Max.	Unit	Test condition / Description																									
Nominal frequency (Fn)	1		133	MHz	All frequencies are not available for all supply voltage options																									
Operating temperature range		-10 to +70	-40 to +85	°C	See 'Order Part Example'																									
Frequency stability over temperature ¹	±25	±50	±100	ppm	See 'Order Part Example'																									
Storage temperature range	-55		+125	°C																										
Long-term stability (Ageing)			±2	ppm	Frequency drift over 1 year at 25°C																									
Power supply voltage (V _{CC})																														
1.8V (N option)	1.710	1.8	1.890	V _{DC}	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 ² output load		15	50	pF																										
Output logic levels																														
Output logic high (V _{OH})	90%V _{CC}			V _{DC}																										
Output logic low (V _{OL})			10%V _{CC}																											
Duty cycle ³	45	50	55	%																										
Start-up time			10	ms																										
RMS phase jitter [12kHz ~ 20MHz]			1.0	ps																										
Period jitter (pk-pk)			25	ps																										
Input current	<table border="1"> <thead> <tr> <th>Frequency</th> <th>V_{CC} = 5V</th> <th>V_{CC} = 3.3V</th> <th>V_{CC} = 2.5V</th> <th>V_{CC} = 1.8V</th> </tr> </thead> <tbody> <tr> <td>1.000 to 9.999MHz</td> <td>15 mA</td> <td>8 mA</td> <td>7 mA</td> <td>6 mA</td> </tr> <tr> <td>10.00 to 34.999MHz</td> <td>20 mA</td> <td>10 mA</td> <td>8 mA</td> <td>7 mA</td> </tr> <tr> <td>35.00 to 49.999MHz</td> <td>35 mA</td> <td>25 mA</td> <td>20 mA</td> <td>15 mA</td> </tr> <tr> <td>50.0 to 133MHz</td> <td>40 mA</td> <td>35mA</td> <td>30 mA</td> <td>25 mA</td> </tr> </tbody> </table>					Frequency	V _{CC} = 5V	V _{CC} = 3.3V	V _{CC} = 2.5V	V _{CC} = 1.8V	1.000 to 9.999MHz	15 mA	8 mA	7 mA	6 mA	10.00 to 34.999MHz	20 mA	10 mA	8 mA	7 mA	35.00 to 49.999MHz	35 mA	25 mA	20 mA	15 mA	50.0 to 133MHz	40 mA	35mA	30 mA	25 mA
Frequency	V _{CC} = 5V	V _{CC} = 3.3V	V _{CC} = 2.5V	V _{CC} = 1.8V																										
1.000 to 9.999MHz	15 mA	8 mA	7 mA	6 mA																										
10.00 to 34.999MHz	20 mA	10 mA	8 mA	7 mA																										
35.00 to 49.999MHz	35 mA	25 mA	20 mA	15 mA																										
50.0 to 133MHz	40 mA	35mA	30 mA	25 mA																										
Rise & fall time	<table border="1"> <thead> <tr> <th>Condition</th> <th>V_{CC} = 5V</th> <th>V_{CC} = 3.3V</th> <th>V_{CC} = 2.5V</th> <th>V_{CC} = 1.8V</th> </tr> </thead> <tbody> <tr> <td>10%V_{CC} to 90% V_{CC}</td> <td>6 ns</td> <td>6 ns</td> <td>7 ns</td> <td>8 ns</td> </tr> <tr> <td>90%V_{CC} to 10% V_{CC}</td> <td>6 ns</td> <td>6 ns</td> <td>7 ns</td> <td>8 ns</td> </tr> </tbody> </table>					Condition	V _{CC} = 5V	V _{CC} = 3.3V	V _{CC} = 2.5V	V _{CC} = 1.8V	10%V _{CC} to 90% V _{CC}	6 ns	6 ns	7 ns	8 ns	90%V _{CC} to 10% V _{CC}	6 ns	6 ns	7 ns	8 ns										
Condition	V _{CC} = 5V	V _{CC} = 3.3V	V _{CC} = 2.5V	V _{CC} = 1.8V																										
10%V _{CC} to 90% V _{CC}	6 ns	6 ns	7 ns	8 ns																										
90%V _{CC} to 10% V _{CC}	6 ns	6 ns	7 ns	8 ns																										

Environmental Specifications

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

² HCMOS load 50pF or TTL load 50 LS-TTL is only available with 5.0V version

³ For frequency upper than 50MHz, in 3.3V, 2.5V & 1.8V version, the duty cycle is 40/60%

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

Order Part Example – QEN101BDA / 50.000MHZ

Parameter	Product family and package	Frequency stability (FvT)	Supply Voltage (Vcc)	Output	Nominal Frequency (Fn. MHz)
Code	QEN101	B	D	A	50.000MHZ
Decode	QEN = XO 101 = SMD, 7 x 5 mm	A = ±50ppm vs -10 to +70°C B = ±100ppm vs -10 to +70°C C = ±25ppm vs -10 to +70°C D = ±100ppm vs -40 to +85°C F = ±50ppm vs -40 to +85°C G = ±25ppm vs -40 to +85°C	A = 5.0V D = 3.3V M = 2.5V N = 1.8V	A = HCMOS, 15pF B = ±HCMOS, 50pF	Please enter Fn

Model Outline, Recommended Pad Layout and Marking

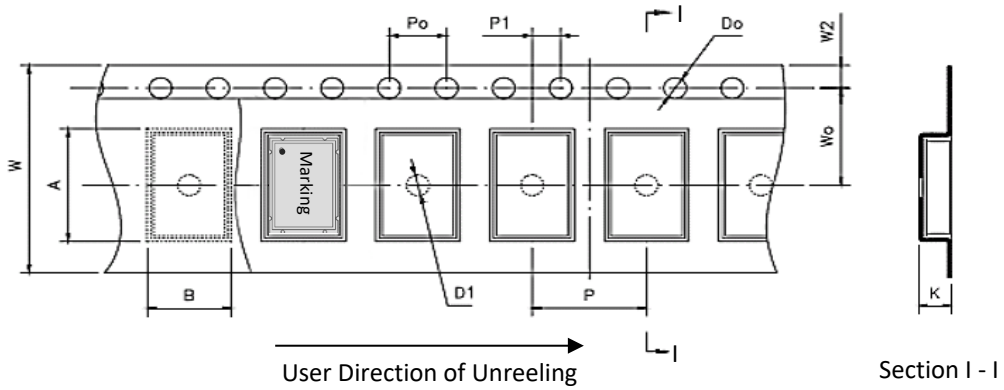
Marking	Note
Line 1	GAOBDA G = Manufacturing code, AO = 7x5 SMD XO, B = ±100ppm vs -40 to +85°C, D = Vcc 3.3V, A = HCMOS 15pF
Line 2	10.000 Frequency in MHz (6 digits)
Line 3	2214 Year code (YY): 22 = 2022, Week code (WW): 14 = Week 14 of the year

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

NOTE:
Dimension unit is in millimetre.

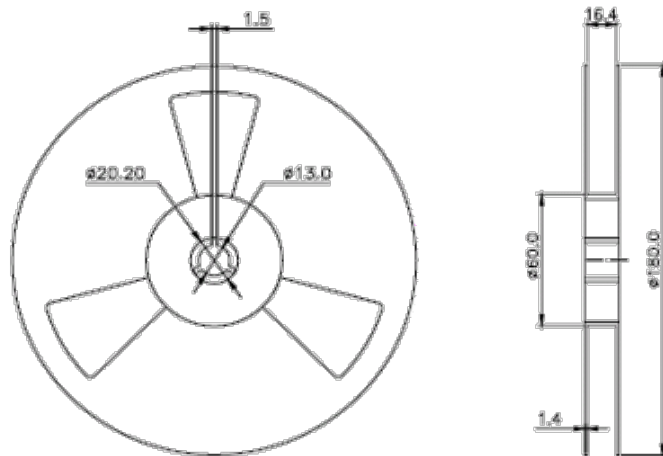
Packaging

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 pocket	A	8.18	± 0.1
Width of component pocket	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

