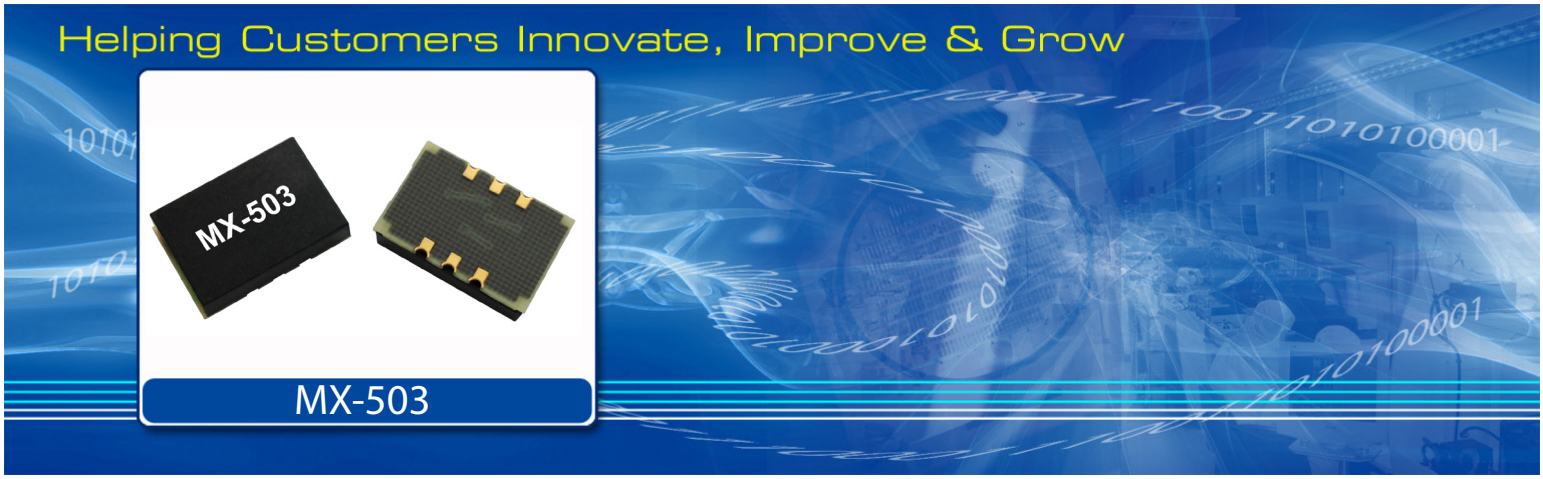
MX-503

Microprocessor Controlled Crystal Oscillator
High Precision



Features

- Ultra High Stability MCXO
- Low Power Consumption
- Meets Stratum 3 acc. GR-1244
- ROHS 6 Compliant
- Frequency Range[1]: 8 - 26 MHz
- Standard Frequencies : 10, 12.8, 16.384, 19.2, 20, 22.1184,
- 24.576, 25 MHz
- Uses Vectron's Ultra Smooth Compensation (USC) Algorithm
- Excellent Phase Noise and Allan Deviation

Applications

- 1588 Application
- Test Equipment
- Femto Base Station
- Communication Equipment

Performance Specifications

Frequency Stabilities[1,3] (Standard - 8 to 26 MHz)						
Parameter	Min	Typical	Max	Units	Condition[2]	
vs. operating temperature range referenced to (dFmax+dFmin)/2	-50 -30		+50 +30	ppb ppb	-40 to +85°C -20 to +70°C	Options[3]
In a 24h period at constant temperature	-5		+5	ppb	after 7 days of continous operation	
Frequency vs. temperature slope		±1.0 ±1.5		ppb/°C ppb/°C	-30 to +80°C, 10 & 20MHz -40 to +85°C, 10 & 20MHz	
Initial tolerance vs. supply voltage change vs. load change vs. aging / 1. year vs. aging / 10 years	-0.5 -10 -10 -0.8 -2.5		+0.5 +10 +10 +0.8 +2.5	ppm ppb ppb ppm ppm	 V_S ±5% static Load ±10% static after 30 days of operation after 30 days of operation	

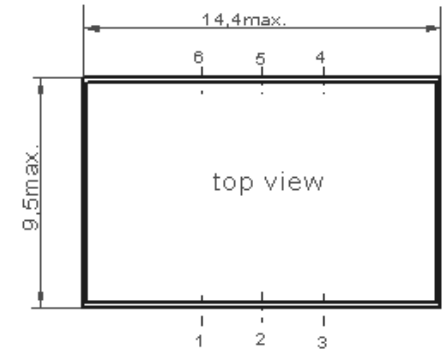
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Performance Specifications

Parameter	Min	Typical	Max	Units	Condition[2]
Supply Voltage (V_s)					
Supply Voltage (standard)	3.135	3.3	3.465	V	8 - 26MHz
Current Consumption			12	mA	
RF Output					
Signal [standard]	HCMOS				
Load		15		pF	
Signal Level (Vol)			0.3	V	Vs = 3.3V
Signal Level (Voh)	3			V	Vs = 3.3V
Duty Cycle	45		55	%	@ V_s/2
Rise and Fall time			5	ns	10 to 90 %
Frequency Tuning (EFC) 8 to 26 MHz					
Tuning Range	Fixed frequency; No adjust				Option[3]
Tuning Range	±3.5		+10	ppm	Option[3]
Linearity			2	%	10 & 20MHz
Tuning Slope	Positive				
Control Input Impedance	20			kOhm	
Control Voltage (V_c) Range	0.0	1.65	3.3	V	
Additional Parameters					
Phase Noise[4]		-65 -93 -118 -140 -154 -156		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz
Jitter		0.2		ps RMS	@ 10 kHz to 5 MHz
ADEV			80	E-12	@ 1sec.
			80	E-12	@10sec
Weight			2.0	g	
Processing & Packing	Handling & Processing Note				
Reflow Profile	IPC / JEDEC J-STD-020 (latest version)				
Absolute Maximum Ratings					
Supply Voltage (V_s)	-0.6		6.0	V	
Output Load			50	pF	
Operable Temperature Range	-40		+85	°C	
Storage Temperature Range	-40		+90	°C	
Environmental Conditions					
Rapid Temperature Changes	MIL-883-1010 Cond B 500 cycles -55/125C				
Vibration	MIL-STD-883 Meth 2007 Cond A 20G 20-2000Hz 4x in each 3axis 4 min				
Shock	MIL-STD-202 Meth 213B Cond. F; 1500g 0,5ms 6 shocks in each direction				
Solderability	J_STD_002C Cond A, Through hole device/ Cond. B, SMD 255C (diving time 50,5sec.) Dip+Look with 8h damp pre-treatment: solder wetting >95%				
Solvent Resistance	MIL-STD-883 Meth 2015 Solv. 1,3,4				
ESD	JESD22-A114F Class 1B; 10* 2000V				
Moisture Sensitivity	Level 1 JESD22-A113-B				
RoHS Compliance	100% ROHS Compliant				

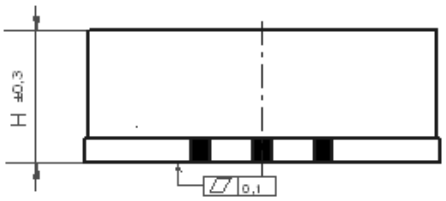
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Outline Drawing / Enclosure

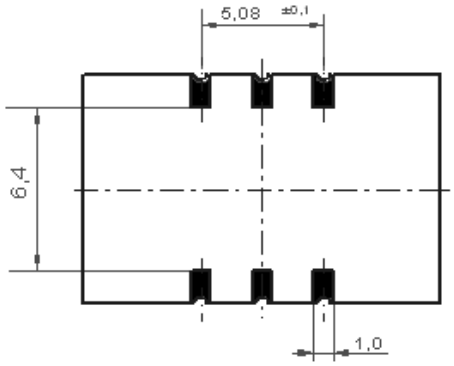


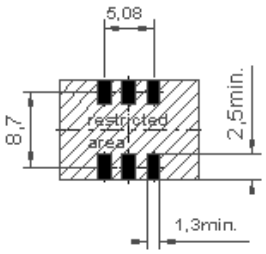
G 287

MX-503	
Height "H"	Pin Length "L"
3.8	NA



Pin Connections	
1	Control Voltage Input (Vc) / N.C.
2	Enable / N.C.
3	Ground (Case)
4	RF-Output
5	N.C.
6	Supply Voltage Input (Vs)





Padvorschlag
land pattern
recommendation

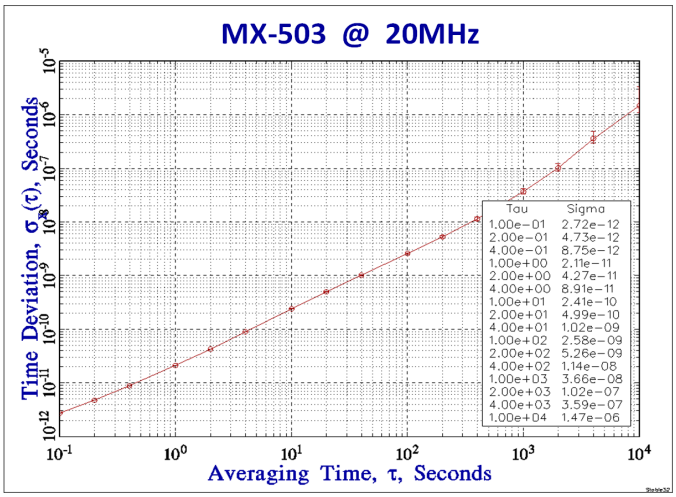
Enable true table (optional): MX-503	
Pin 2	Pin 4
High	Data
Open	Data
Low	High Tristate

Dimensions in mm

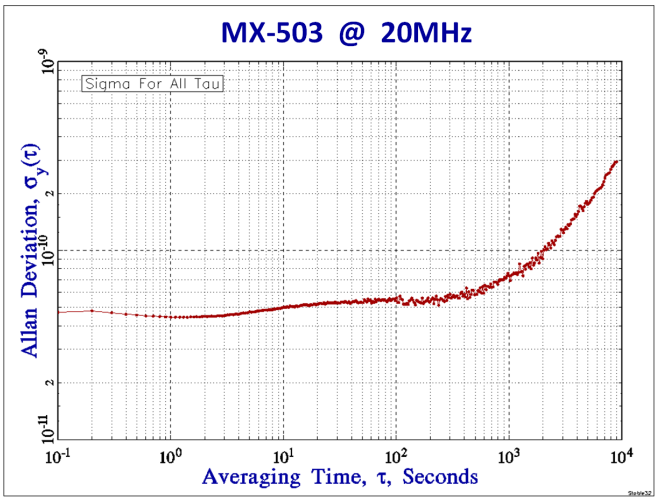
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Performance Data

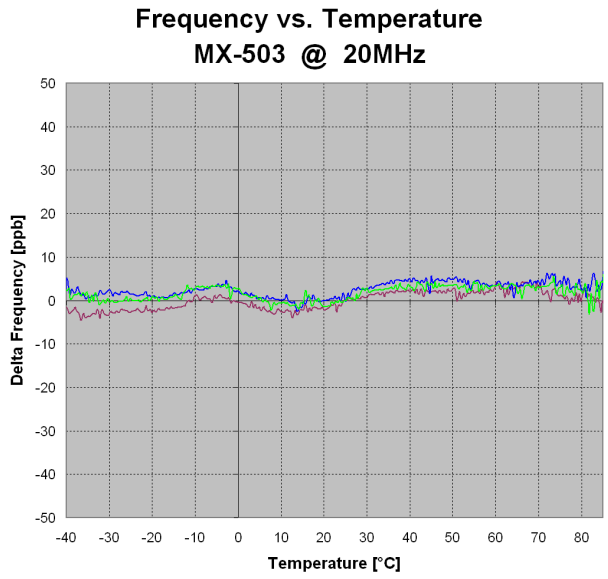
TDEV-without filter



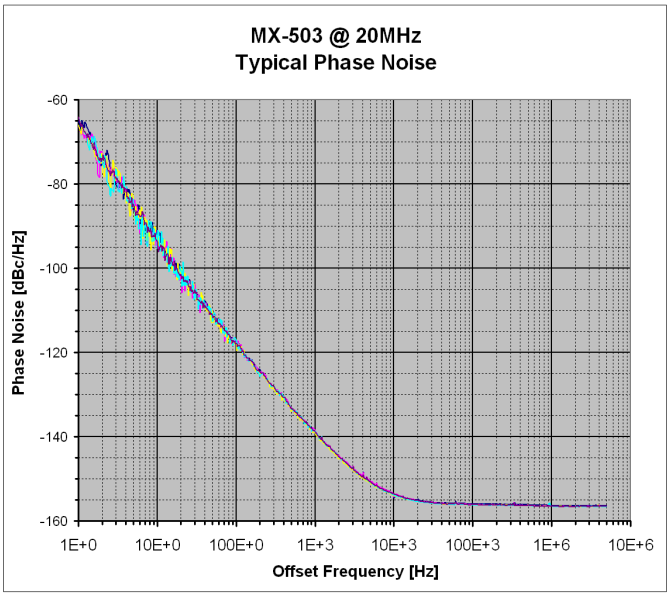
ADEV



Temperature Stability



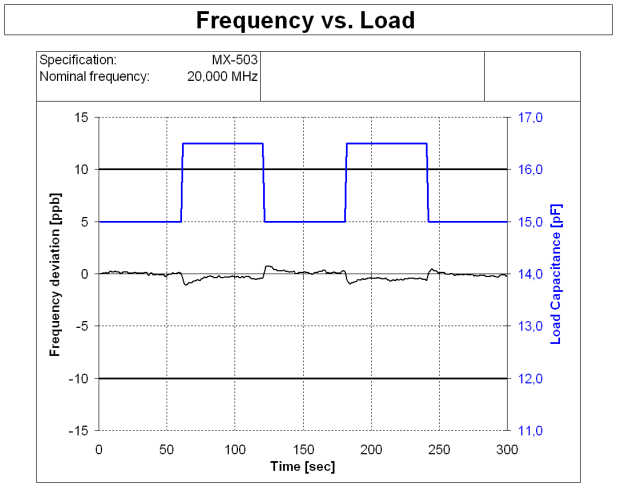
Phase Noise[4]



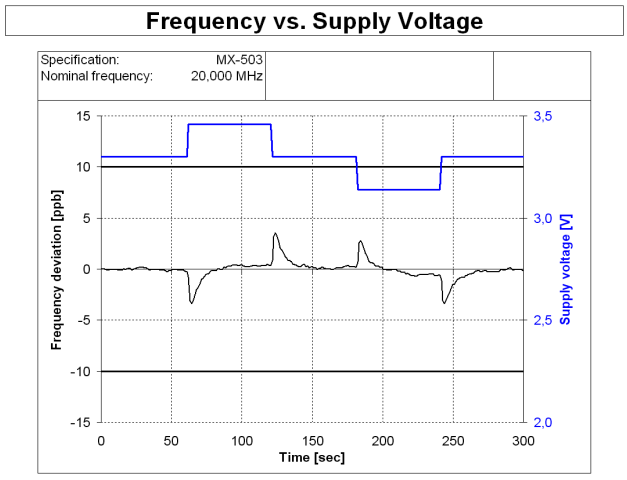
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Performance Data

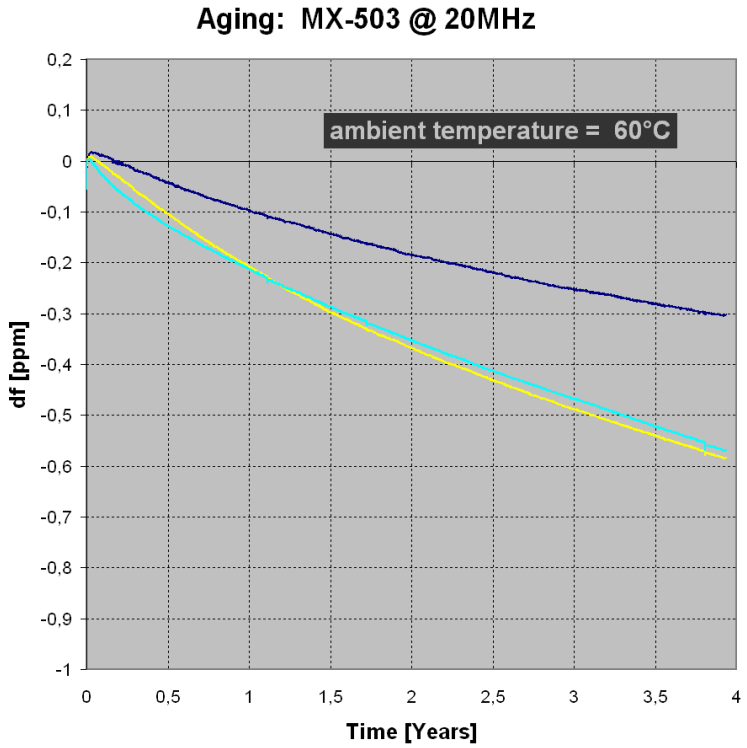
Frequency vs. Load



Frequency vs. Supply Voltage

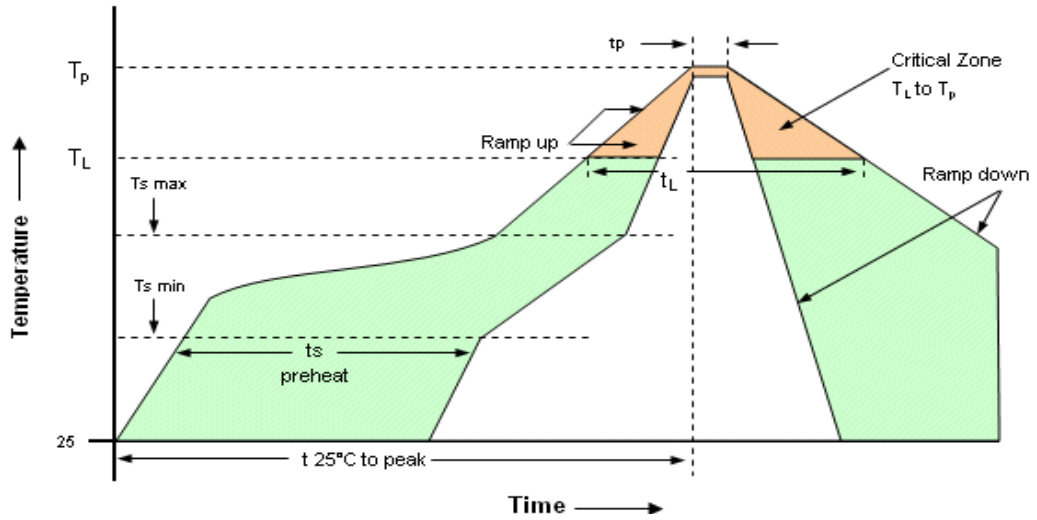


Aging



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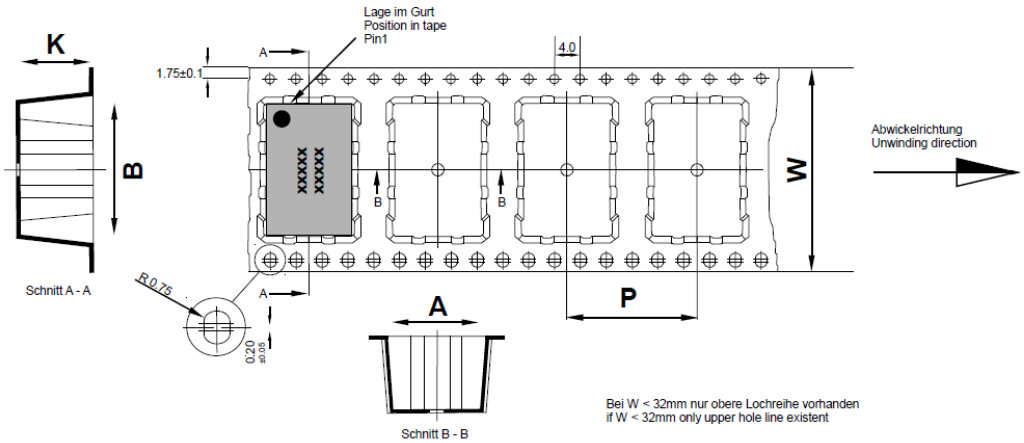
Recommended Reflow Profile



Profile Feature	Pb-Free Assembly/ Sn-Pb Assembly	Profile Feature	Pb-Free Assembly/ Sn-Pb Assembly
Average ramp-up rate (T_L to T_p)	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min T_{Smin} -Temperature Min T_{Smax} -Time (min to max) t_S	150°C 200°C 60-180 seconds	Time maintained above -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
TSmax to TL -Ramp-up Rate	3°C/second max		
Time maintained above -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds	Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Peak Temperature (T_p)	max 260°C	Ramp-down Rate	6°C/ second max

Note: All temperatures refer to topside of the package, measured on the package body surface.
SMD oscillators must be on the top side of the PCB during the reflow process.

Standard Shipping Method (MX-503)

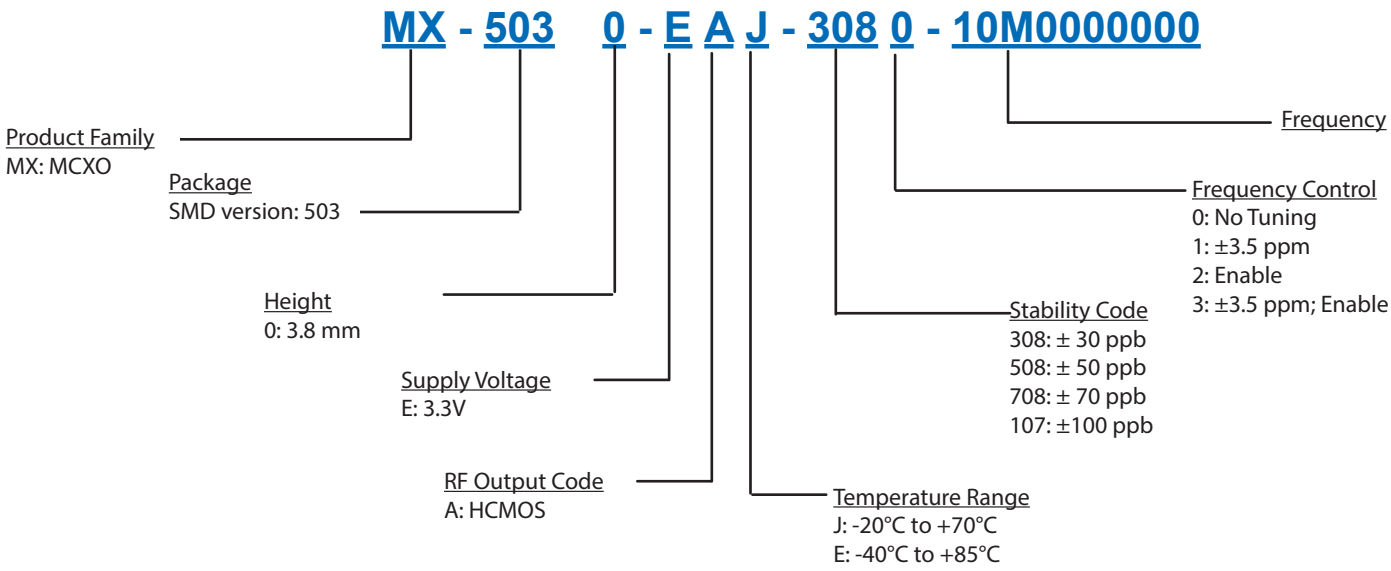


Maßangaben in mm:	Dimension in mm:
A, B und K Maße von Bauelement abhängig	A, B und K are dependent uppon component dimensions
Fertigungstoleranzen entsprechen der DIN IEC 286-3	production tolerance complying DIN IEC 286-3

All dimensions in millimeters unless otherwise stated

Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G287	24	83,3	850	12

Ordering Information[1,3]



Notes:

1. Contact factory for other frequencies. Not all options and codes are available at all frequencies.
2. Unless otherwise stated conditions are valid at F=20MHz; V_s=3.3V; V_c=1.65; T=25°C; Output Signal=HCMOS; load=15pF
3. Contact factory for availability.
4. Phase noise degrades with increasing output frequency.

Subject to technical modification.

For Additional Information, Please Contact

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