

Helping Customers Innovate, Improve & Grow



Features

- Frequency: 1 to 125 MHz
- 8X9 Leaded Package (4 lead options)
- Fully RoHS Compliant *
- Surface Mount, Low Profile
- 4-point crystal mount for Harsh Environment Applications
- High Shock Survival
- Low Jitter
- No pure tin is used in this product
- ECCN: EAR99
- COO: USA

* (Except parts with Sn-Pb Solder Coated Option)

Applications

- Low voltage clock applications
- Military Portable Radios
- Avionics and Instrumentation
- Test and Measurement Equipment
- Medical Equipment
- Navigation

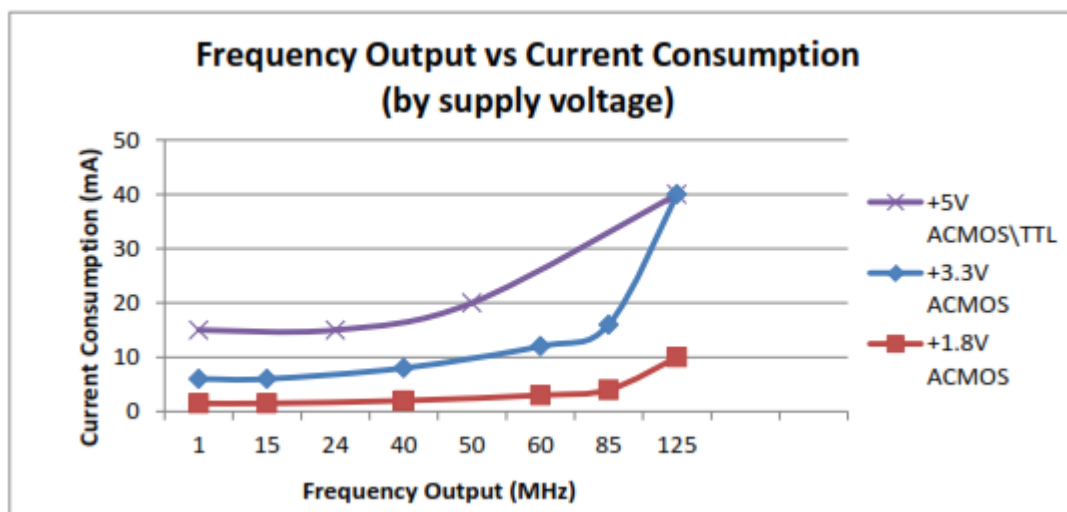


Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
Frequency Stabilities¹					
vs. operating temperature range (referenced to +25°C)	-15		+15	ppm	0... +70°C
	-25		+25	ppm	
	-50		+50	ppm	
	-65		+65	ppm	
	-80		+80	ppm	
	-100		+100	ppm	
	-25		+25	ppm	-40... +85°C
	-50		+50	ppm	
	-65		+65	ppm	
	-80		+80	ppm	
	-100		+100	ppm	
	-50		+50	ppm	-55..... +85°C -55... +105°C -55... +125°C
	-65		+65	ppm	
	-80		+80	ppm	
	-100		+100	ppm	
Initial tolerance	-15		+15	ppm	@+25°C
	-25		+25	ppm	
	-50		+50	ppm	
	-65		+65	ppm	
	-80		+80	ppm	
	-100		+100	ppm	

Performance Specifications

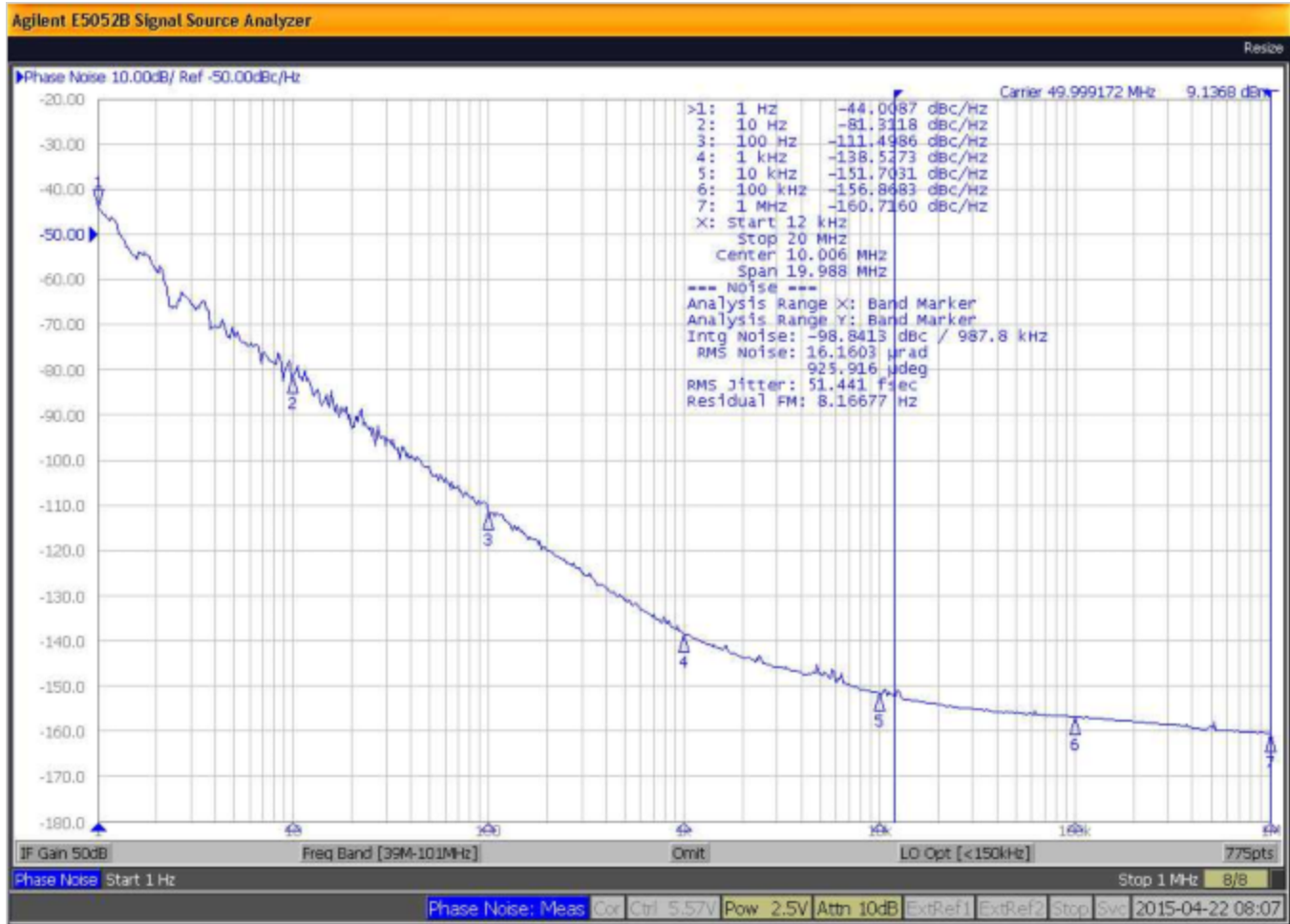
Parameter	Min	Typ	Max	Units	Condition
Overall tolerance (Referenced to +25°C) (includes operating temperature and initial accuracy)	-25		-25	ppm	0..... +70°C
	-50		-50	ppm	
	-65		-65	ppm	
	-80		+80	ppm	
	-100		+100	ppm	
	-50		+50	ppm	-40..... +85°C -55..... +85°C -55... +105°C
	-65		+65	ppm	
	-80		+80	ppm	
	-100		+100	ppm	
	-65		+65	ppm	-55... +125°C
	-80		+80	ppm	
	-100		+100	ppm	
vs. supply voltage change	-2		+2	ppm	VS ± 5% Load ± 5% after 30 days of operation
vs. load change	-1		+1	ppm	
vs. aging / 1st year	-3		+3	ppm	
vs. aging / year (following years)	-1		+1	ppm	
Supply Voltage (Vs)					
Supply voltage	4.75	5.0	5.25	VDC	
Supply voltage	3.135	3.3	3.465	VDC	
Supply voltage	2.375	2.5	2.625	VDC	
Supply voltage	1.71	1.8	1.89	VDC	
Current consumption (+5 VDC)			15 20 40	mA mA mA	ACMOS or TTL 1.0 to 23.9 MHz ACMOS or TTL 24 to 49.9 MHz ACMOS or TTL 50 to 125.00 MHz
Current consumption (+3.3 VDC or +2.5 VDC)			6	mA	ACMOS 1.0 to 14.9 MHZ
			8	mA	ACMOS 15.0 to 39.9 MHZ
			12	mA	ACMOS 40.0 to 59.9 MHZ
			16	mA	ACMOS 60.0 to 84.9 MHZ
			40	mA	ACMOS 85.0 to 125.0 MHZ
Current consumption (+1.8 VDC)			1.5	mA	ACMOS 1.0 to 14.9 MHZ
			2	mA	ACMOS 15.0 to 39.9 MHZ
			3	mA	ACMOS 40.0 to 59.9 MHZ
			4	mA	ACMOS 60.0 to 84.9 MHZ
			10	mA	ACMOS 85.0 to 125.0 MHZ



Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
Signal					
HCMOS / ACMOS					
Load		15	50	pF	
Signal Level (Vol)			0.50 0.30 0.25 0.20	VDC VDC VDC VDC	with Vs=5.00V and 15pF load with Vs=3.30V and 15pF load with Vs= 2.50V and 15pF load with Vs= 1.80V and 15pF load
Signal Level (Voh)	4.50 3.00 2.25 1.62			VDC VDC VDC VDC	with Vs=5.00V and 15pF load with Vs=3.30V and 15pF load with Vs=2.50V and 15pF load with Vs=1.80V and 15pF load
Rise and fall times for ACMOS (measured 10% to 90%)			10 6 3	ns ns ns	1.0 to 23.9 MHz 24.0 to 79.9 MHz 80.0 to 125.0 MHz
Duty cycle	45 40		55 60	% %	@ 50% < 15 MHz @ 50% => 15 MHz
Signal					
TTL					
Load			10	TTL	
Signal Level (Vol)			0.5	VDC	with Vs=5.0V and 10 TTL load
Signal Level (Voh)	2.4			VDC	with Vs=5.0V and 10 TTL load
Rise and fall times for ACMOS (measured 20% to 80%)			5 3	ns ns	1.0 to 23.9 MHz 24.0 to 125 MHz
Duty cycle	45 40		55 60	% %	@ 1.4V < 15 MHz @ 1.4V >= 15 MHz
Jitter Performance (typical)					
Cycle to Cycle					
1- Sigma		4		ps	
Peak to Peak		30		ps	
Period Jitter					
1- Sigma		2.3		ps	
Peak to Peak		19		ps	
RMS Jitter 12KHz-20MHz		80		fs	
Phase Noise (50 MHz @ 3.3V HCMOS) dBc/Hz					
10 Hz		-82			
100 Hz		-110			
1 KHz		-135			
10 KHz		-147			
100 KHz		-152			
1 MHz		-158			
Absolute Maximum Ratings					
Supply voltage (Vs)			7.0	V	with Vs=5.0VDC and 3.3 VDC
Supply voltage (Vs)			3.6	V	with Vs=2.5VDC and 1.8 VDC
Operable temperature range	-55		+125	°C	
Storage temperature range	-62		+125	°C	

Performance Specifications



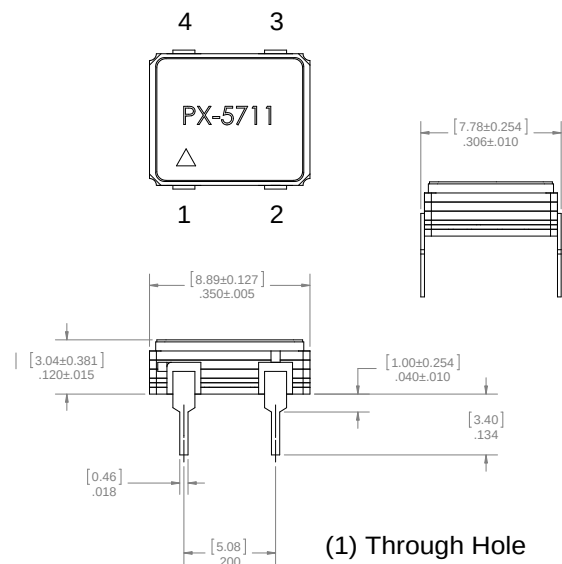
Additional Parameters

Verification Screening	Vectron	
	Class B, MIL-PRF-55310	
Output Enable Hi	Logic "0" input = Outputs disabled (Tri-state) Logic "1" or floating input = Outputs enabled	Standard CMOS, TTL and LVDS
Output Enable Lo	Logic "0" or floating input = Outputs enabled Logic "1" input = Outputs disabled (Tri-state)	Standard LVPECL
Weight	< 2 grams	

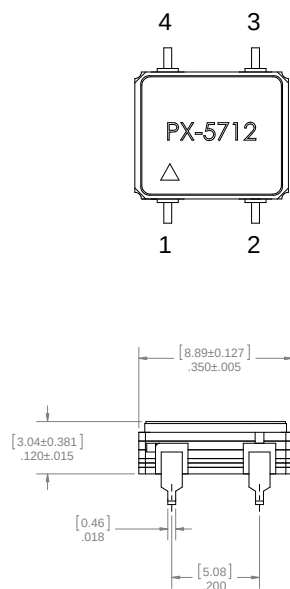
Standard Environmentals

Vibration	MIL-STD-202, Method 204, Condition G (30 G, 10Hz-2000Hz)
Shock	MIL-STD-202, Method 213, Condition I (100 G, 6ms, Sawtooth)
Acceleration	MIL-STD-883, Method 2001, Condition A (5000 G, Y1 Plane)
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Thermal Shock	MIL-STD-883, Method 107, Condition B
Solderability	MIL-STD-202, Method 208
Leak Test (Fine and Gross)	MIL-STD-883, Method 1014, Condition A1 and C1

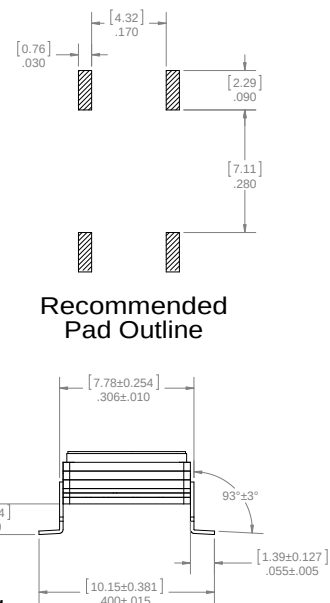
Outline Drawing / Enclosure (Dimensions in inches (mm))



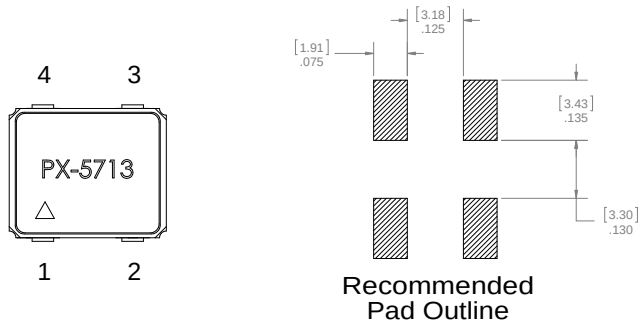
(1) Through Hole



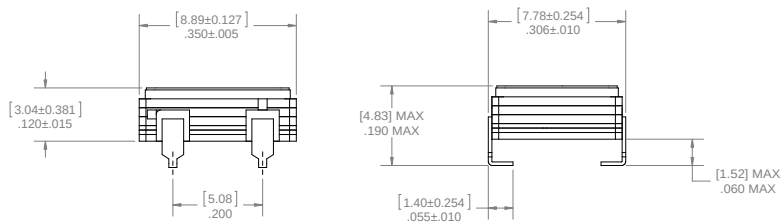
(2) Gull Wing



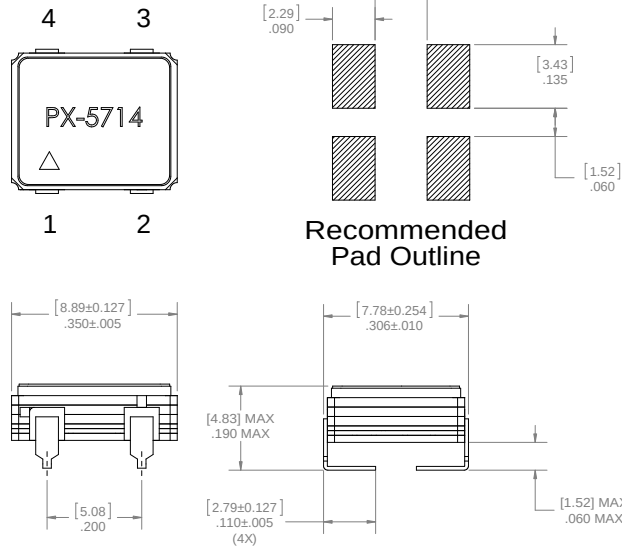
Recommended Pad Outline



Recommended Pad Outline



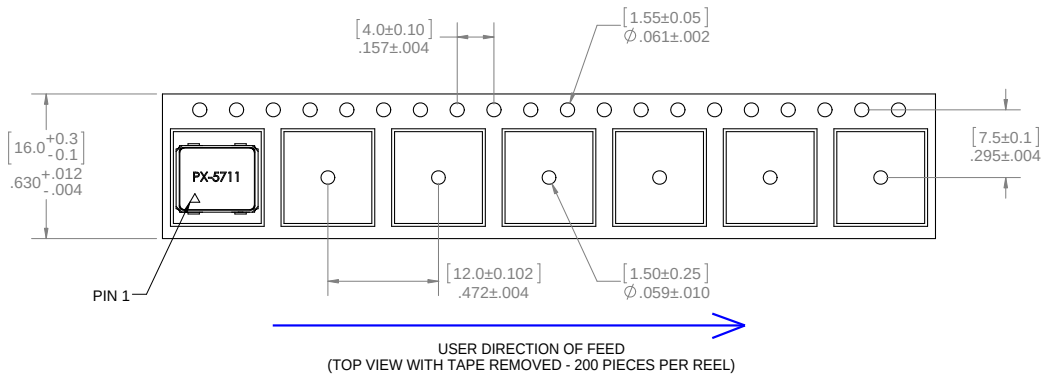
(3) Inward L Type I (J Lead compatible)



Recommended Pad Outline

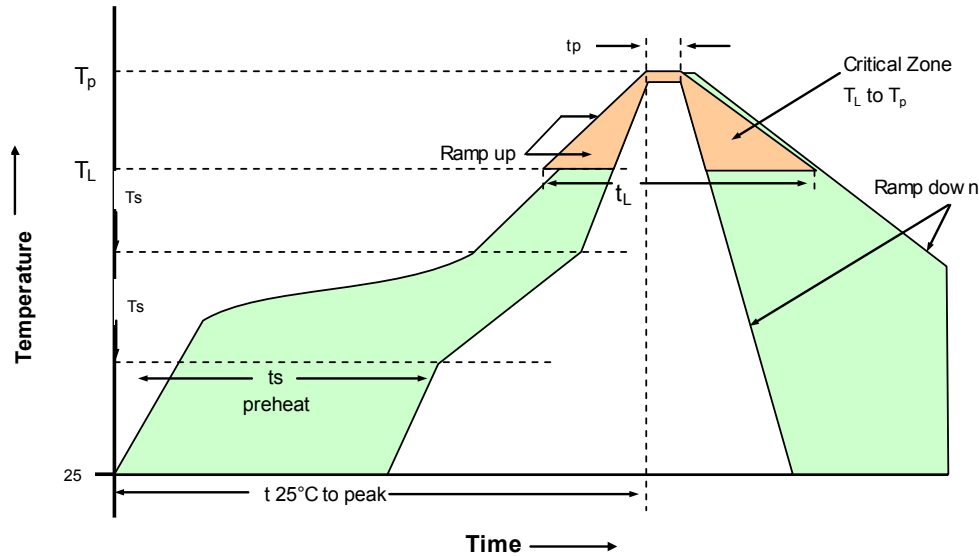
(4) Inward L Type II (M55310 compatible)

Standard Shipping Method



Pin Connections	
1	Enable/Disable or N/C
2	Ground (Case)
3	RF Output
4	Supply Voltage

Recommended Reflow Profiles for Pb-Free & Sn-Pb



230°C Reflow Profile

Profile Feature	Sn-Pb Assembly	Profile Feature	Sn-Pb Assembly
Average ramp-up rate (TL to TP)	3°C/secod max.	Time 25°C to Peak Temperature	4 minutes max.
Preheat - Temperature min T _{smin}	135°C	Time maintained above	
- Temperature Min T _{smax}	155°C	- Temperature (TL)	183°C
- Time (min to max) (ts)	60-90 seconds	- Time (tL)	45-60 seconds
T _{smax} to TL -Ramp-up Rate	3°C/secod max.		
Time maintained above - Temperature (TL)	183°C	Time within 5°C of actual	10-20 seonds max.
- Time (TL)	40-60 seconds	Peak Temperature (tp)	
Peak Temperature (Tp)	max 230°C	Ramp-down Rate	6°C/second max.

Note: All temperatures refer to topside of the package, measured on the package body surface.

260°C Reflow Profile

Profile Feature	Pb-Free Assembly	Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/secod max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat - Temperature min T _{smin}	150°C	Time maintained above	
- Temperature min T _{smax}	200°C	- Temperature (TL)	217°C
- Time (min to max) (ts)	60-180 seconds	- Time (tL)	60-150 seconds
T _{smax} to TL -Ramp-up Rate	3°C/secod max.		
Time maintained above - Temperature (TL)	217°C	Time within 5°C of actual	20-40 seonds max.
- Time (TL)	60-150 seconds	Peak Temperature (tp)	
Peak Temperature (Tp)	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.

Ordering Information

PX - 571 0 - D A E - F K A B - 10M0000000

Product Family
PX: PXO

Package
8 x 9 mm (4 pin)

Configuration
1: Through Hole
2: Gull Wing
3: Inward L Type I (J-Lead Compatible)
4: Inward L Type II (M55310 Compatible)
5: Through Hole (with solder coated leads)
6: Gull Wing (with solder coated leads)
7: Inward L Type I (with solder coated leads)
8: Inward L Type II (with solder coated leads)

Supply Voltage
D: 5 Vdc $\pm 5\%$
E: 3.3 Vdc $\pm 5\%$
H: 2.5 Vdc $\pm 5\%$
J: 1.8 Vdc $\pm 5\%$

RF Output Code
A: HCMOS / ACMOS
B: TTL

Temperature Range
A: -55°C to +85°C
B: -55°C to +105°C
C: -55°C to +125°C
E: -40°C to +85°C
T: 0°C to +70°C

Frequency

Screening Option
B: MIL-PRF-55310 "B" level
X: No Screening

Enable Code
A: Enable Hi, Tristate
X: No Enable

Temperature Stability Code
(Reference to **Table: I**)

D: ± 15 ppm
F: ± 25 ppm
K: ± 50 ppm
P: ± 80 ppm
S: ± 100 ppm
Z: ± 65 ppm
X: Use with Overall Tolerance Code

Accuracy Code @ 25°C or Overall Temp Stability Code
(Reference to **Table: II**)

D: ± 15 ppm
F: ± 25 ppm
K: ± 50 ppm
P: ± 80 ppm
S: ± 100 ppm
Z: ± 65 ppm

Available Temperature Stability Code	
Temp Range	Temp Stability
A: -55°C to +85°C	K: ± 50 ppm
B: -55°C to +105°C	Z: ± 65 ppm
C: -55°C to +125°C	P: ± 80 ppm
	S: ± 100 ppm
E: -40°C to +85°C	F: ± 25 ppm
	K: ± 50 ppm
	Z: ± 65 ppm
	P: ± 80 ppm
	S: ± 100 ppm
T: 0°C to +70°C	D: ± 15 ppm
	F: ± 25 ppm
	K: ± 50 ppm
	Z: ± 65 ppm
	P: ± 80 ppm
	S: ± 100 ppm

Table: I

Available Overall Tolerance Code		
Temp Range	Overall Tolerance	Temp Stability
C: -55°C to +125°C	Z: ± 65 ppm	X
	P: ± 80 ppm	X
	S: ± 100 ppm	X
A: -55°C to +85°C	K: ± 50 ppm	X
B: -55°C to +105°C	Z: ± 65 ppm	X
	P: ± 80 ppm	X
	S: ± 100 ppm	X
E: -40°C to +85°C	F: ± 25 ppm	X
T: 0°C to +70°C	K: ± 50 ppm	X
	Z: ± 65 ppm	X
	P: ± 80 ppm	X
	S: ± 100 ppm	X
	D: ± 15 ppm	X

Table: II

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Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Wavecrest Signal Integrity Analyzer was used to obtain Jitter results.
4. Agilent Technologies E5052B Signal Integrity Analyzer was used to obtain Phase Noise results.
5. Phase noise degrades with increasing output frequency.
6. Subject to technical modification.
7. Contact factory for availability.

For Additional Information, Please Contact

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