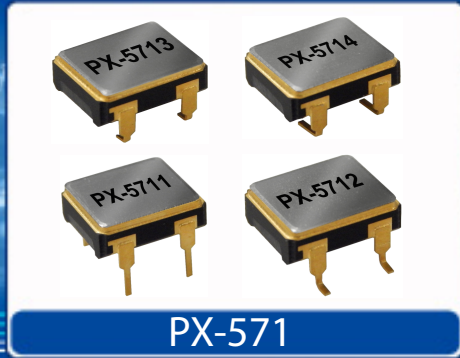


Helping Customers Innovate, Improve & Grow



### Features

- Frequency: 1 to 125 MHz
- 8X9mm 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

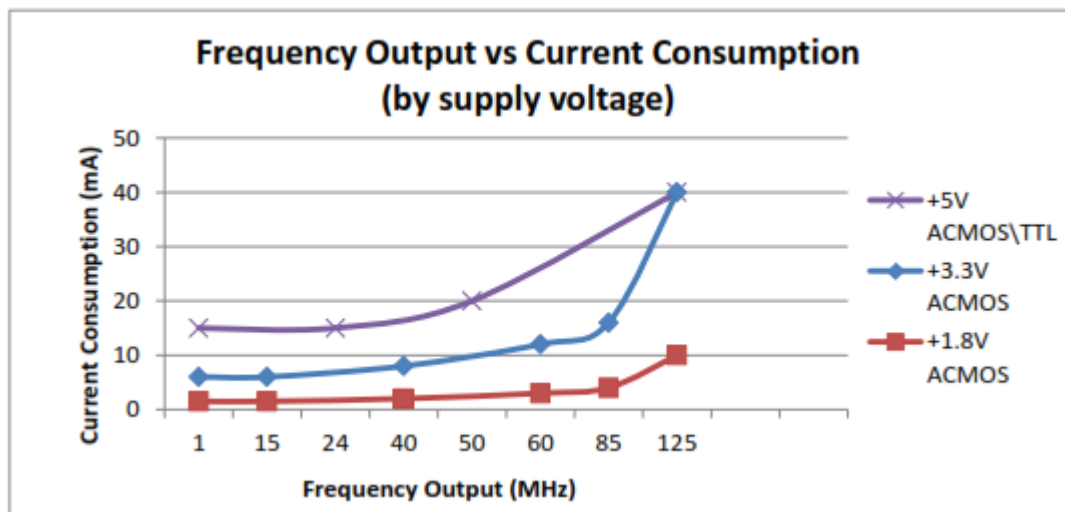


### Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
<b>Frequency Stabilities<sup>1</sup></b>					
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

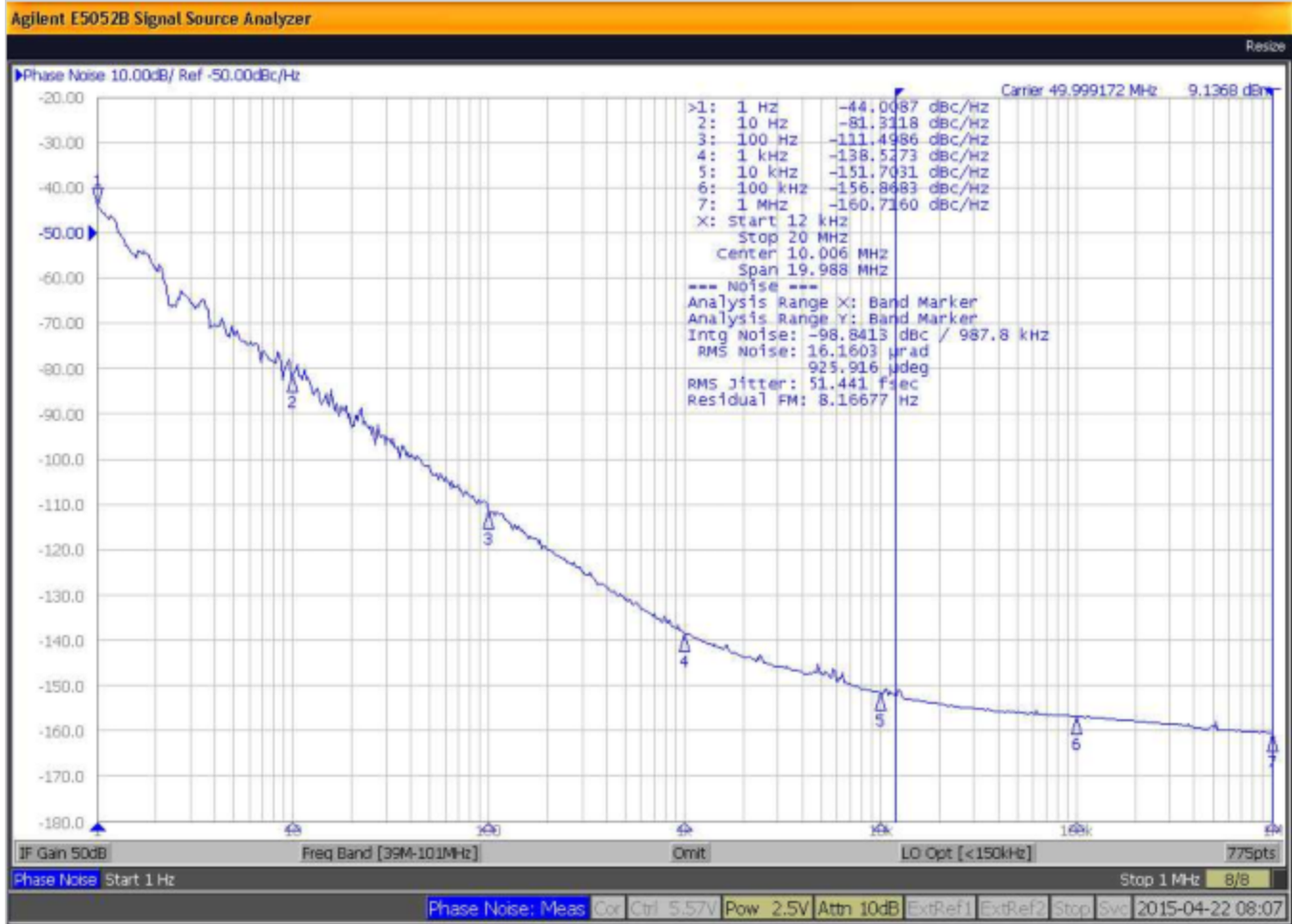
Parameter	Min	Typ	Max	Units	Condition
Overall tolerance (Referenced to +25°C) (includes operating temperature and initial accuracy)	-25		-25	ppm	0..... +70°C
	-50		-50	ppm	
	-65		-65	ppm	
	-80		+80	ppm	
	-100		+100	ppm	
	-50		+50	ppm	-40..... +85°C
	-65		+65	ppm	-55..... +85°C
	-80		+80	ppm	-55... +105°C
	-100		+100	ppm	
	-65		+65	ppm	-55... +125°C
	-80		+80	ppm	
	-100		+100	ppm	
				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 * No load (+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 * No load (+3.3 VDC or +2.5 VDC)			6 8 12 16 40	mA mA mA mA mA	ACMOS 1.0 to 14.9 MHz ACMOS 15.0 to 39.9 MHz ACMOS 40.0 to 59.9 MHz ACMOS 60.0 to 84.9 MHz ACMOS 85.0 to 125.0 MHz
Current consumption * No load (+1.8 VDC)			1.5 2 3 4 10	mA mA mA mA mA	ACMOS 1.0 to 14.9 MHz ACMOS 15.0 to 39.9 MHz ACMOS 40.0 to 59.9 MHz ACMOS 60.0 to 84.9 MHz ACMOS 85.0 to 125.0 MHz



## Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
<b>Signal</b>					
<b>HCMOS / ACMOS</b>					
Load		15		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
<b>Signal</b>					
<b>TTL</b>					
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
<b>Jitter Performance (typical)</b>					
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	
<b>Phase Noise (50 MHz @ 3.3V HCMOS) dBc/Hz</b>					
10 Hz		-82			
100 Hz		-110			
1 KHz		-135			
10 KHz		-147			
100 KHz		-152			
1 MHz		-158			
<b>Absolute Maximum Ratings</b>					
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



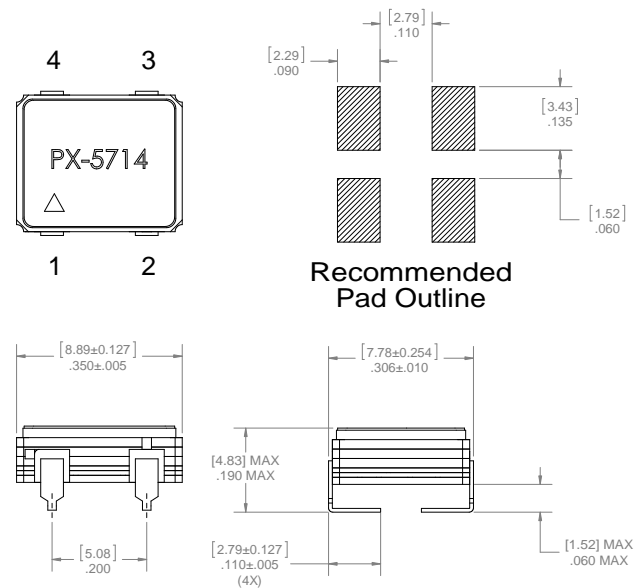
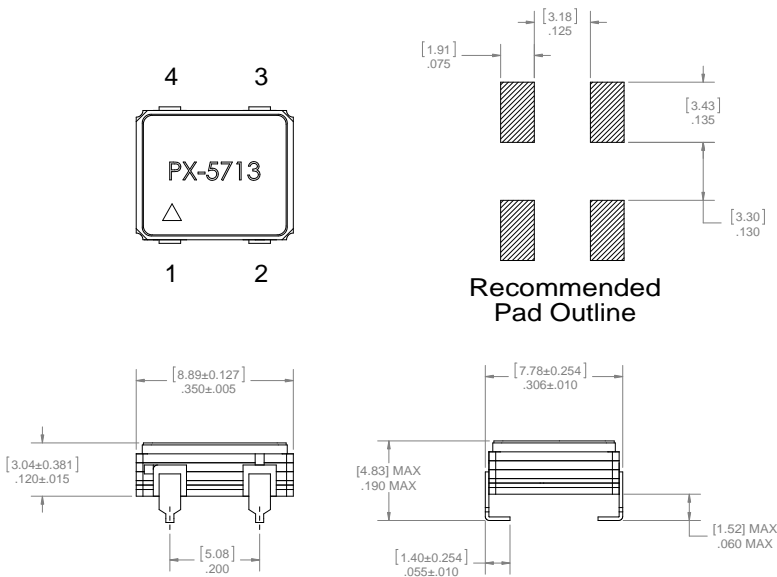
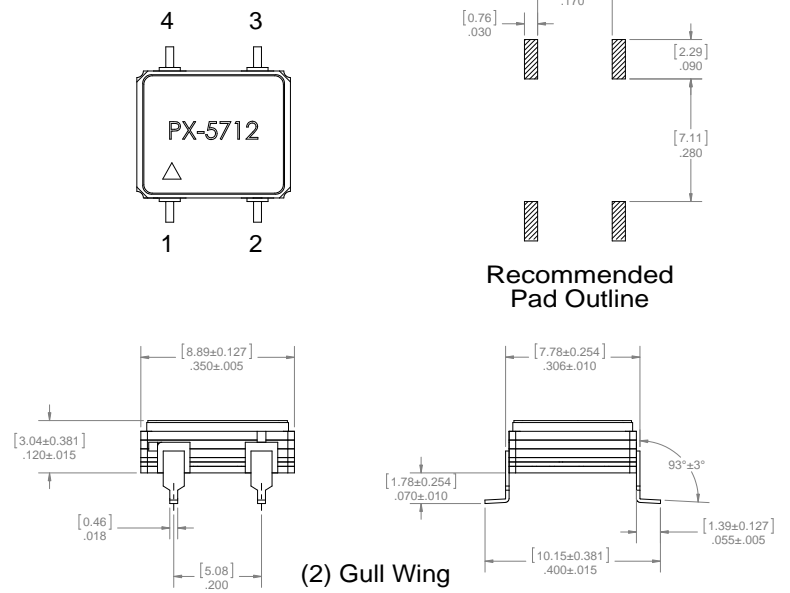
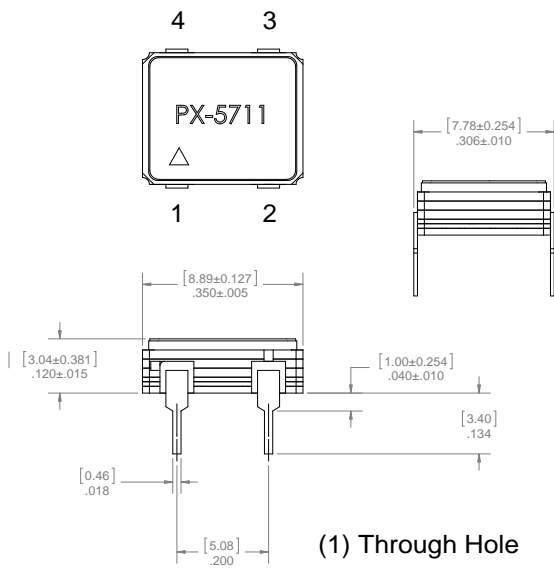
## Additional Parameters

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	

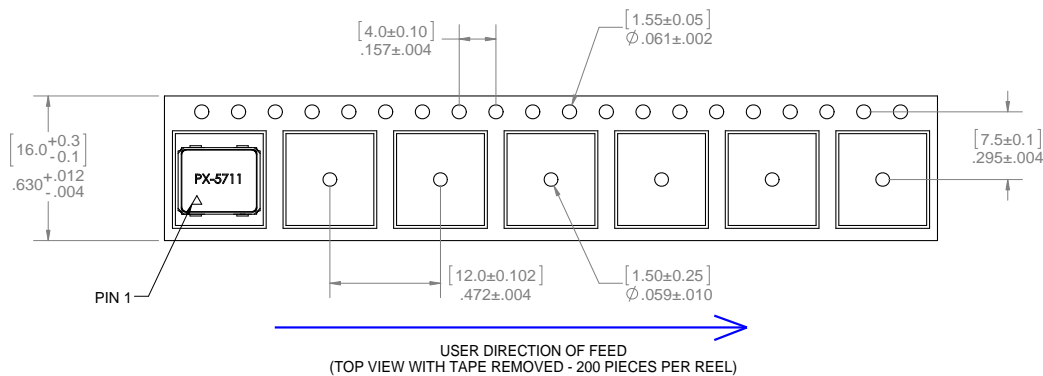
## Standard Environmentals

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])

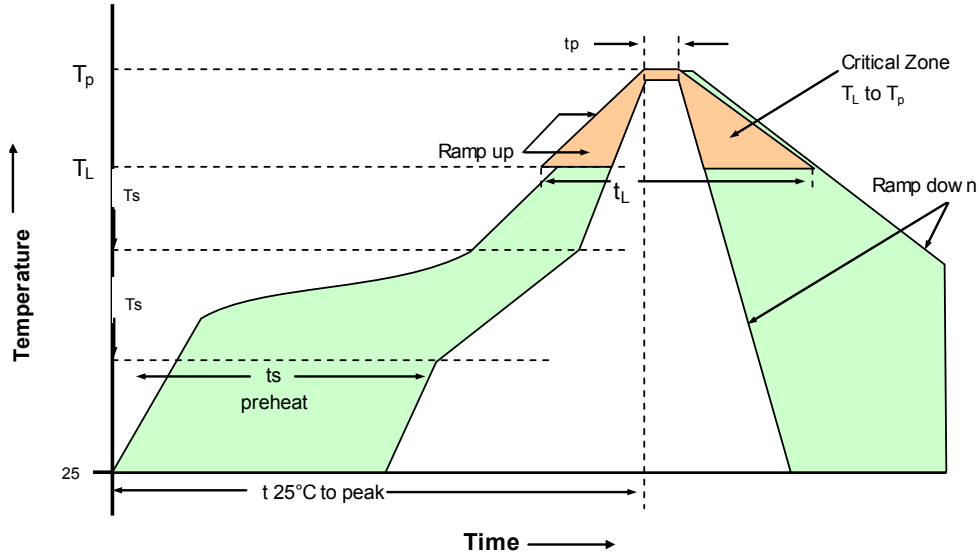


## Standard Shipping Method



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/second max.	Time 25°C to Peak Temperature	4 minutes max.
Preheat - Temperature min T <sub>min</sub> - Temperature Min T <sub>max</sub> - Time (min to max) (ts)	135°C 155°C 60-90 seconds	Time maintained above - Temperature (TL) - Time (tL)	183°C 45-60 seconds
T <sub>max</sub> to TL -Ramp-up Rate	3°C/second max.		
Time maintained above - Temperature (TL) - Time (TL)	183°C 40-60 seconds	Time within 5°C of actual Peak Temperature (tp)	10-20 seconds max.
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/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat - Temperature min T <sub>min</sub> - Temperature min T <sub>max</sub> - Time (min to max) (ts)	150°C 200°C 60-180 seconds	Time maintained above - Temperature (TL) - Time (tL)	217°C 60-150 seconds
T <sub>max</sub> to TL -Ramp-up Rate	3°C/second max.		
Time maintained above - Temperature (TL) - Time (TL)	217°C 60-150 seconds	Time within 5°C of actual Peak Temperature (tp)	20-40 seconds max.
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 - 10M000000

**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 ±5%  
E: 3.3 Vdc ±5%  
H: 2.5 Vdc ±5%  
J: 1.8 Vdc ±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: ±15ppm  
F: ±25ppm  
K: ±50ppm  
P: ±80ppm  
S: ±100ppm  
Z: ±65ppm  
X: Use with Overall Tolerance Code

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

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

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

**Table: I**

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

#### **USA:**

Vectron International  
267 Lowell Road, Unit 102  
Hudson, NH 03051  
Tel: 1.888.328.7661  
Fax: 1.888.329.8328

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Landstrasse, D-74924  
Neckarbischofsheim, Germany  
Tel: +49 (0) 3328.4784.17  
Fax: +49 (0) 3328.4784.30

#### **Asia:**

Vectron International  
68 Yin Cheng Road (C), 22d Floor  
One LuJiaZui  
Pudong, Shanghai 200120, China  
Tel: 86.21.6194.6886  
Fax: 86.21.6194.6699

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