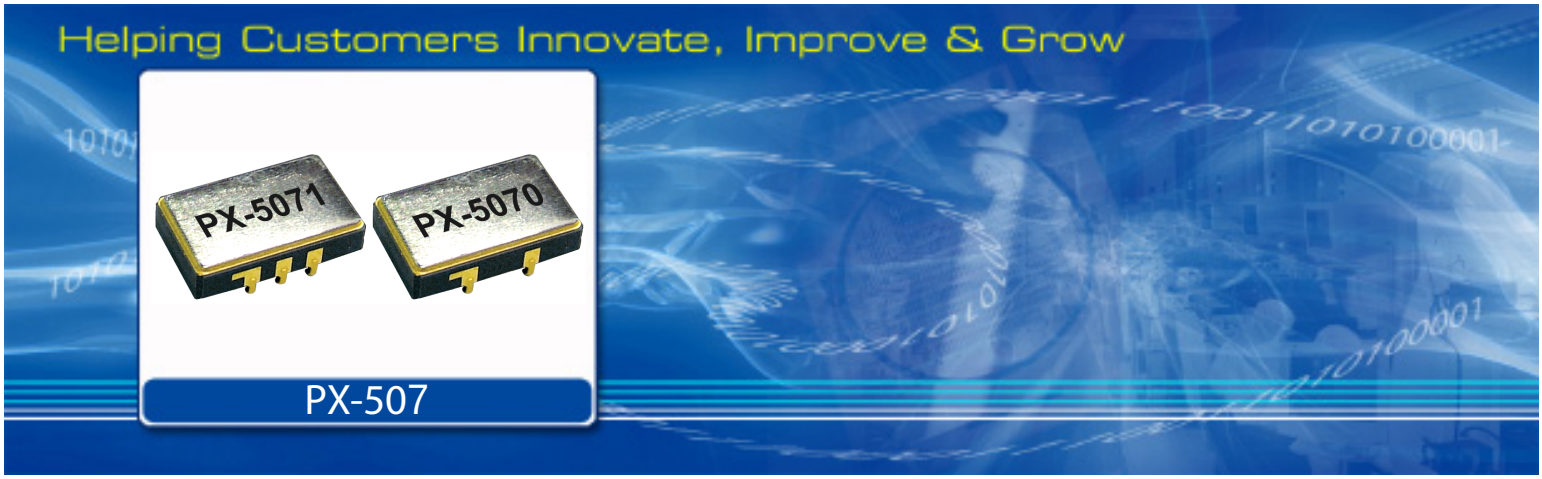
PX-507
Crystal Oscillator



Features

- Frequency: 1MHz to 800 MHz
- 9x14 J-Leaded Surface Mount Package
- 4-point crystal mount for Harsh Environment Applications
- Surface Mount, Low Profile
- No Pure Tin is used in this product
- High Shock Survival up to 20Kg
- Previous Model: C1300; 042; 342
- Available as QPL MIL-PRF-55310/27, /28, or /30
- ECCN: EAR99
- COO: USA

Applications

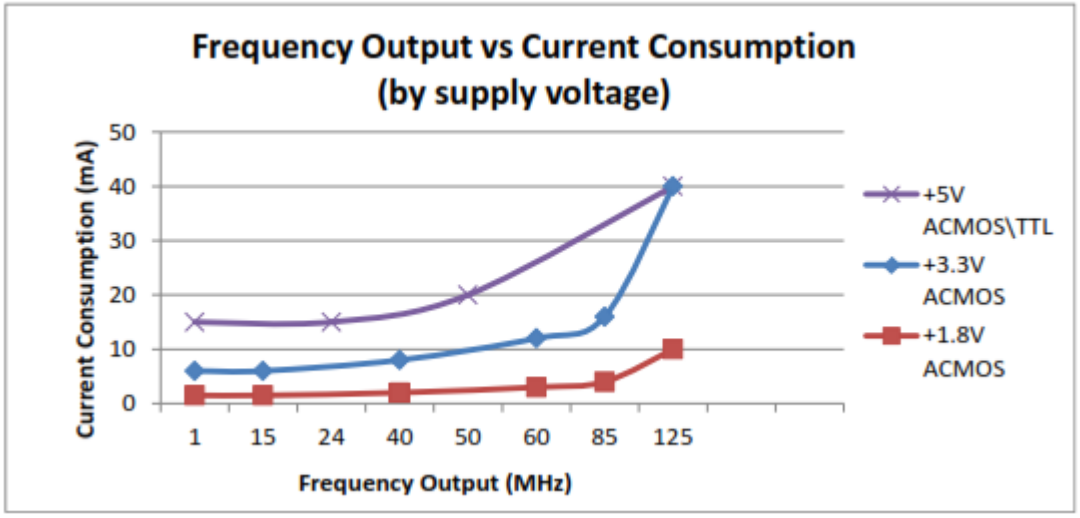
- Low Voltage Clock Applications
- Military Portable Radios
- Avionics and Instrumentation
- Test and Measurement Equipment
- Medical Equipment
- Navigation

Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
Frequency Stabilities[1]					
vs. operating temperature range (referenced to +25°C)	-15 -25 -50 -65 -80 -100		+15 +25 +50 +65 +80 +100	ppm ppm ppm ppm ppm ppm	0… +70°C
	-25 -50 -65 -80 -100		+25 +50 +65 +80 +100	ppm ppm ppm ppm ppm	-40… +85°C
	-50 -65 -80 -100		+50 +65 +80 +100	ppm ppm ppm ppm	-55…… +85°C -55… +105°C -55… +125°C
Initial tolerance	-15 -25 -50 -65 -80 -100		+15 +25 +50 +65 +80 +100	ppm ppm ppm ppm ppm ppm	@+25°C

Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
Overall tolerance (Referenced to +25°C) (includes operating temperature and initial accuracy)	-25 -50 -65 -80 -100		-25 -50 -65 +80 +100	ppm ppm ppm ppm ppm	0..... +70°C
	-50 -65 -80 -100		+50 +65 +80 +100	ppm ppm ppm ppm	-40..... +85°C -55..... +85°C -55… +105°C
	-65 -80 -100		+65 +80 +100	ppm ppm ppm	-55… +125°C
vs. supply voltage change vs. load change vs. aging / 1st year vs. aging / year (following years)	-2 -1 -3 -1		+2 +1 +3 +1	ppm ppm ppm ppm	VS ± 5% Load ± 5% after 30 days of operation
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 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 (+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

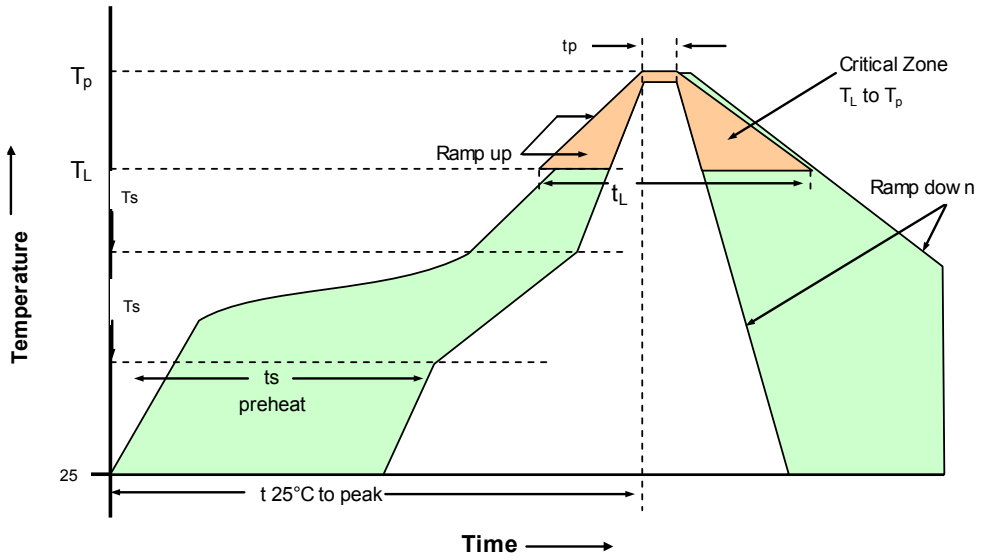
Parameter	Min	Typ	Max	Units	Condition
Signal		**HCMOS / ACMOS**			
Load		15	50	pF	
Signal Level (Vol)			0.50 0.30 0.25 0.20	VDC VDC VDC VDC	with Vs=5.00V and 15pF load with Vs=3.30V and 15pF load with Vs= 2.50V and 15pF load with Vs= 1.80V and 15pF load
Signal Level (Voh)	4.50 3.00 2.25 1.62			VDC VDC 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

Recommended Reflow Profiles for Pb-Free & Sn-Pb

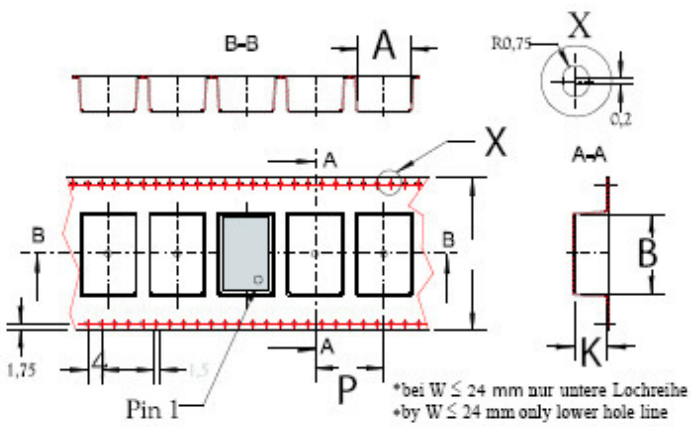


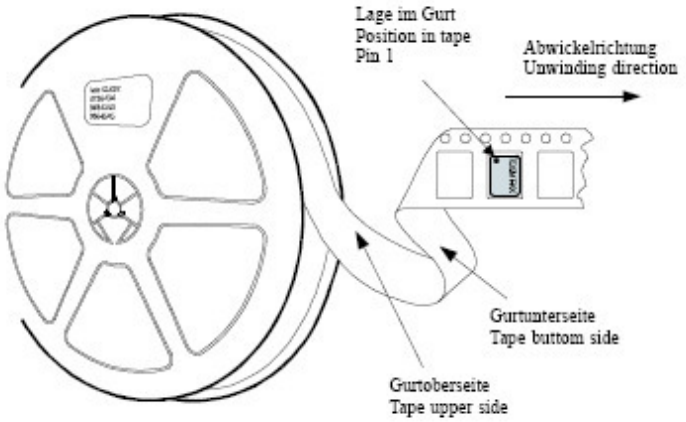
230°C Reflow Profile

Profile Feature	Sn-Pb Assembly	Profile Feature	Sn-Pb Assembly
Average ramp-up rate (TL to TP)	3°C/seconds max.	Time 25°C to Peak Temperature	4 minutes max.
Preheat - Temperature min Tsmin	135°C	Time maintained above	
- Temperature Min Tsmax	155°C	- Temperature (TL)	183°C
- Time (min to max) (ts)	60-90 seconds	- Time (tL)	45-60 seconds
Tsmax to TL -Ramp-up Rate	3°C/seconds max.		
Time maintained above - Temperature (TL)	183°C	Time within 5°C of actual	10-20 seconds max.
- Time (TL)	40-60 seconds	Peak Temperature (tp)	
Peak Temperature (Tp)	max 230°C	Ramp-down Rate	6°C/seconds max.
Note: All temperatures refer to topside of the package, measured on the package body surface.			

Profile Feature	Pb-Free Assembly	Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/seconds max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat - Temperature min Tsmin	150°C	Time maintained above	
- Temperature min Tsmax	200°C	- Temperature (TL)	217°C
- Time (min to max) (ts)	60-180 seconds	- Time (tL)	60-150 seconds
Tsmax to TL -Ramp-up Rate	3°C/seconds max.		
Time maintained above - Temperature (TL)	217°C	Time within 5°C of actual	20-40 seconds max.
- Time (TL)	60-150 seconds	Peak Temperature (tp)	
Peak Temperature (Tp)	max 260°C	Ramp-down Rate	6°C/seconds max.
Note: All temperatures refer to topside of the package, measured on the package body surface.			

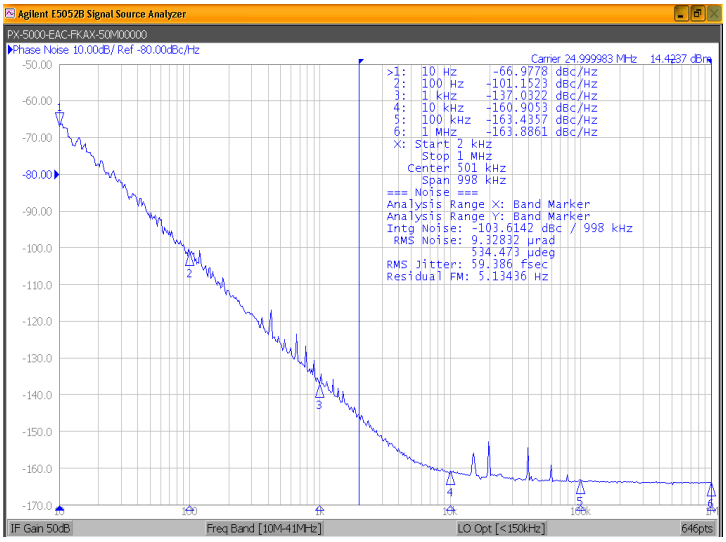
Standard Shipping Method

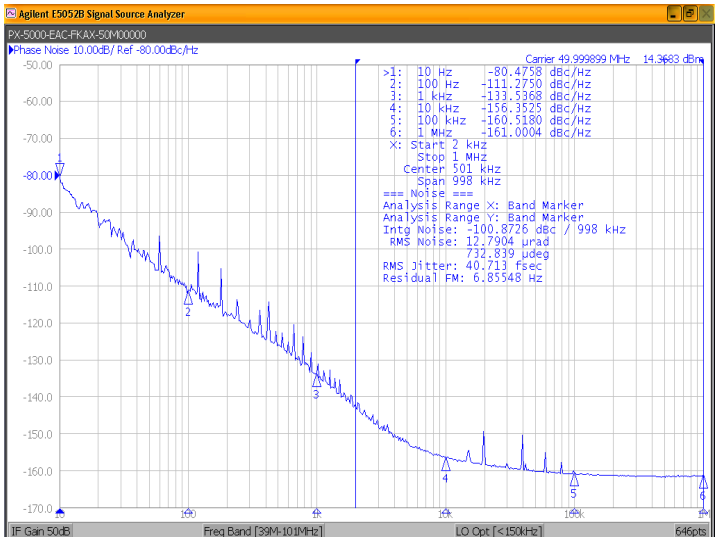


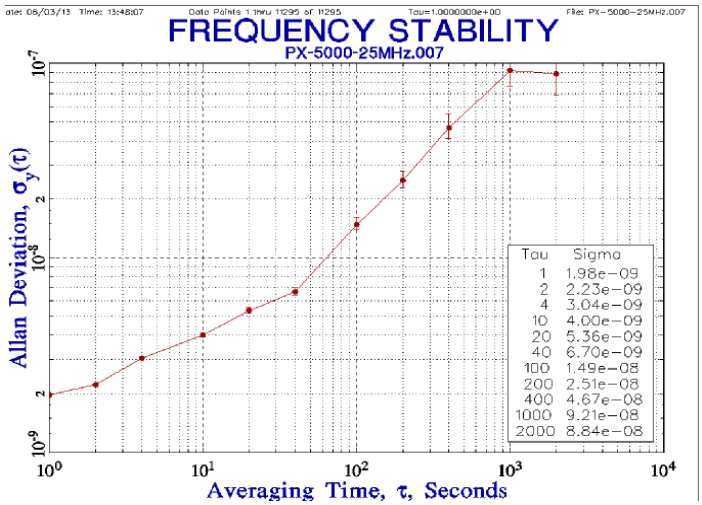


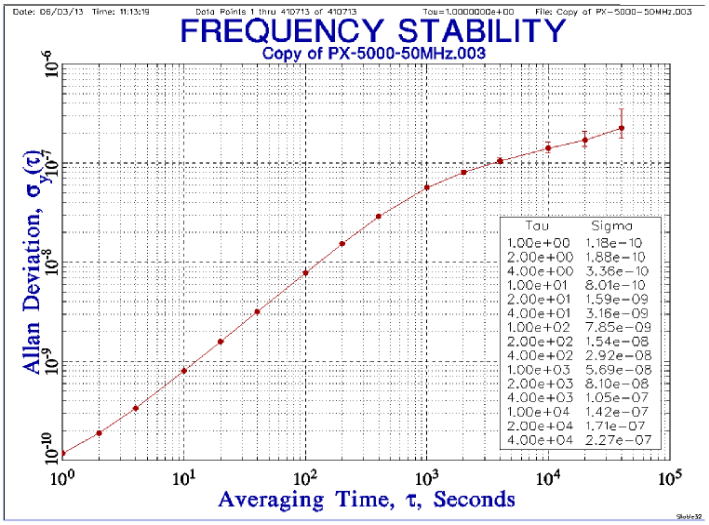
Production tolerance complying DIN IEC 286-3				
Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
9x14 mm	24 ± 0.3	44.5	1000 max	12 ± 0.1

Phase Noise and Short Term Stability Performance (Typical)









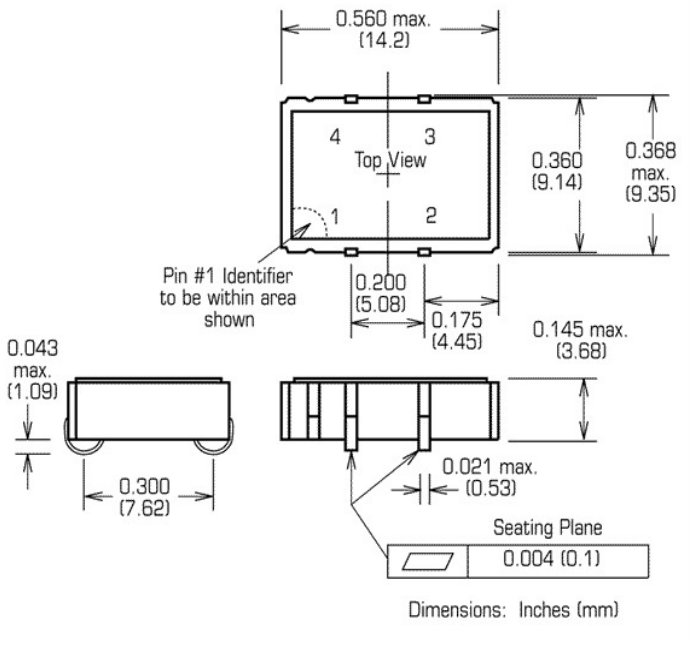
Outline Drawing / Enclosure

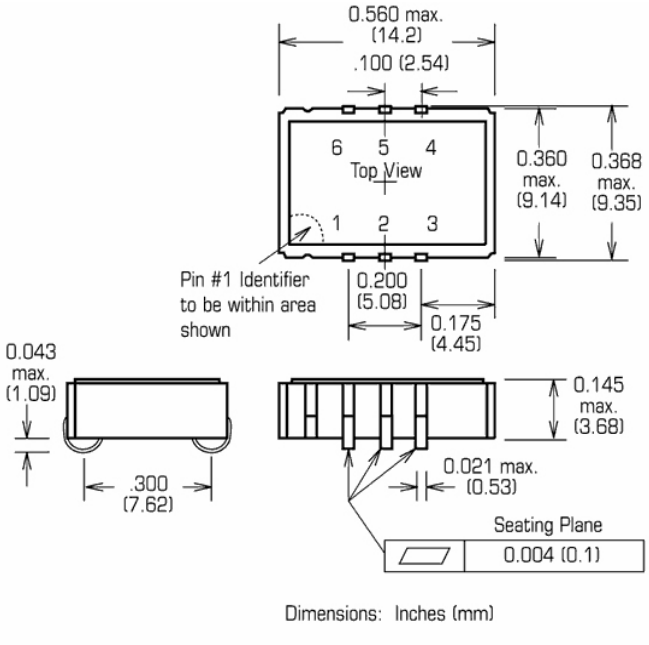
Type A (ACMOS or TTL)	
Code	Lead Finish
0	Gold plate 30 µin min over 80 µin min nickel
2	63/37 SnPb solder coated

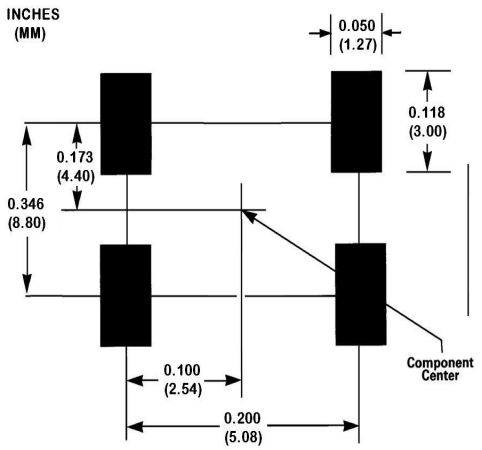
Pin Connections	
1	Enable/Disable or N/C
2	Ground (Case)
3	RF Output
4	Supply Voltage

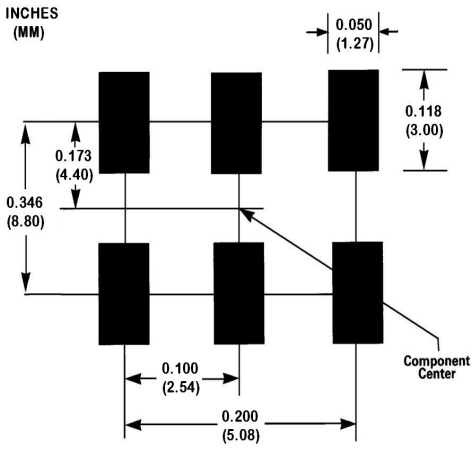
Type B (LVPECL or LVDS)	
Code	Lead Finish
1	Gold plate 30 µin min over 80 µin min nickel
3	63/37 SnPb solder coated

Pin Connections	
1	Enable/Disable or N/C
2	Enable/Disable or N/C (custom number required)
3	Ground (Case)
4	RF Output
5	Complementary Output
6	Supply Voltage









Ordering Information

PX - 507 0 - D A T - F K X B - 10M0000000

Product Family
PX: PXO

Package
9 x 14 mm

Enclosure
0: 4 pin gold plated
1: 6 pin gold plated
2: 4 pin with solder coated leads
3: 6 pin with solder coated leads

Supply Voltage
D: 5 Vdc
E: 3.3 Vdc
H: 2.5 Vdc

RF Output Code
A: ACMOS
B: TTL
C: LVPECL
D: LVDS

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

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

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

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

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

Frequency

Available Temperature Stability Code	
Temp Range	**Temp Stability**
A: -55°C to +85°C	K: ± 50ppm
	Z ± 65ppm
B: -55°C to +105°C	P ± 80ppm
C: -55°C to +125°C	S ± 100ppm
E: -40°C to +85°C	F: ± 25ppm
	K: ± 50ppm
	Z ± 65ppm
	P ± 80ppm
	S ± 100ppm
T: 0°C to +70°C	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 B: -55°C to +105°C E: -40°C to +85°C	K: ± 50ppm	X
	Z: ± 65ppm	X
	P: ± 80ppm	X
	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. Subject to technical modification.
4. Contact factory for custom requirements.

For Additional Information, Please Contact

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