



Frequency Electronics, Inc.

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MODEL FE-141A



OVEN CONTROLLED CRYSTAL OSCILLATOR WITH PATENTED ACTIVE VIBRATION COMPENSATION, LOW AGING, LOW PHASE NOISE UNDER VIBRATION AND EXCELLENT STABILITY

APPLICATIONS

- Civil and Military
- Stationary Through High Dynamic Environments Including Towed, Tracked and Wheeled Ground Mobile Platforms, Fixed and Rotary Wing Aircraft, Unmanned Aerial Vehicles, Shipboard, Submarine, Unmanned Submersible Vehicles, and Satellites
- Disciplined Clock in GPS-based Assured Position, Navigation and Timing (A-PNT) References
- Signals Intelligence (SIGINT) Systems Requiring Compliance to JASA v3 Annex 1: Time, Frequency, Navigation and Geodesy (TFNG)(U)
- Spread Spectrum Frequency Hopping
- Reference Oscillator for Radar, Software-Defined Radios (SDR), Guidance Systems and Secure Communications Systems
- Clean-up Oscillator for Applications Requiring Low Phase Noise When Paired With a Rubidium Atomic Clock for Long-Term Holdover and Stability

FEATURES

- Rugged Oscillator with Custom External Mechanical Damping Design for High Vibration Applications in a Small, Lightweight Package
- Low g-Sensitivity Quartz Crystal Oscillator with Acceleration Sensitivity Options as Low as 1E-11/g (From DC to 2000 Hz with Vibration Isolators)
- Wide Operating Temperature Range
- Fast Warm-up time to Rated Accuracy
- Built-In Test (BIT) Monitoring Output

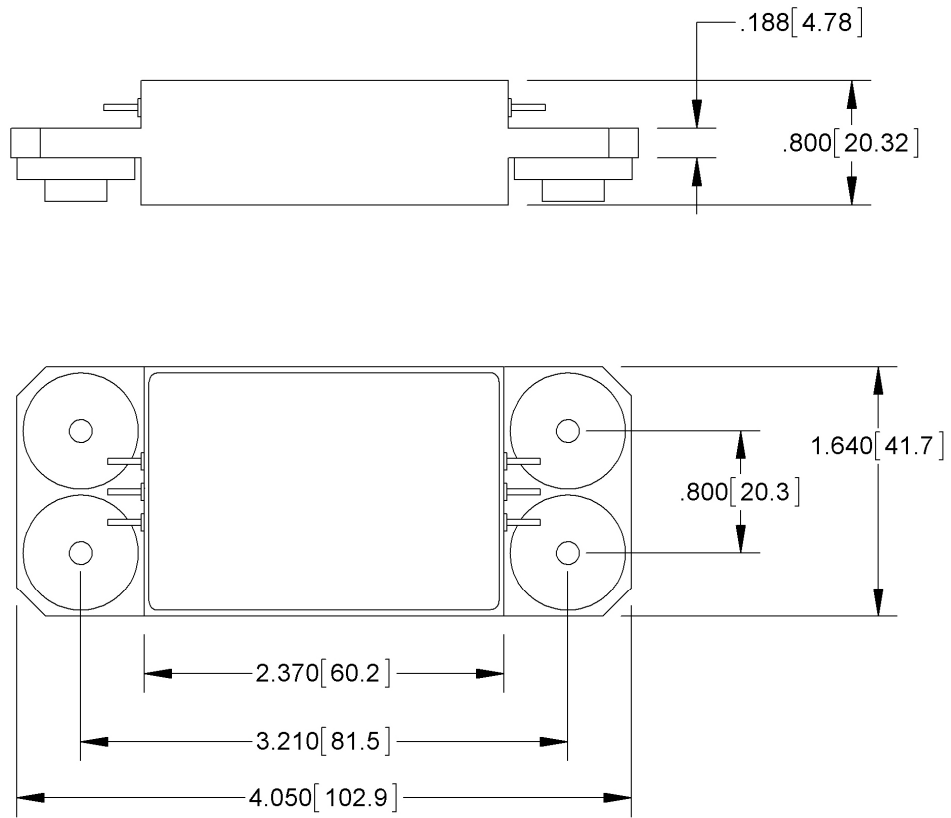
PERFORMANCE SPECIFICATIONS:

PARAMETER		UNIT
Current Draw (Maximum @ 25°C)	550	mA
Current Draw (Steady State @ 25°C)	135	mA
Operating Temperature Range	-40 to +85	°C
Warm-up time @ -40°C (to meet ±2E-8)	10	min
Power Interruption - Shall meet requirements one minute later	10	sec
Storage Temperature Range MIL-STD-810G, Methods 501.4 & 502.4	-54 to +85	°C
Aging (10 years including temperature)	±2	ppm
Initial accuracy (after one year @ 40°C)	±1.5	ppm
Frequency Stability vs. Temperature		
0 °C to +60 °C	±5E-10	
-20 °C to +75 °C	±3E-9	
Short Term Stability (T = 1 to 10 secs)	2.0E-12	
Static Phase Noise (Stationary):		
@ 1 Hz offset	-105	dBc/Hz
@ 10 Hz offset	-130	dBc/Hz
@ 100 Hz offset	-145	dBc/Hz
@ 1 kHz offset	-152	dBc/Hz
@ 10 kHz offset	-155	dBc/Hz
g-Sensitivity per Axis (DC-2000 Hz) with external vibration isolators. (Approximately 50 Hz resonance)		
- Model FE-141A-1	≤5.0E-11	/g
- Model FE-141A-2	≤1.0E-11	/g
Weight	6.4	oz.

PARAMETER		UNIT
Standard Frequency	10.0	MHz
Output Signal Into 50 ohms	9.6 ±1.5	dBm
Return Loss	15	dB
Harmonics	-30	dBc
Spurs	-90	dBc
Power	15	VDC
Status Flag: LVTTTL Compatible	Ready	HI
R _L >10KΩ Oven Current Monitor	Warm-up	LO

PARAMETER	ENVIRONMENTAL COMPLIANCE
Shock	Per MIL-STD-202, Method 213B @ 35g, 37ms, half sine pulse
Vibration	≤ 6g RMS
Fungus Resistance	Will not support fungus growth
Humidity	Hermetically sealed package. Testing per MIL-STD-810G, Method 507.3 Procedure II.
Altitude Transportation Non-pressurized	to 70,000 ft
MTBF	≈ 200,000 hrs

FE-141A PACKAGE OUTLINE DRAWING:



PINOUT: 1: B+, 2: GND, 3: FLAG, 4: VCO CONTROL (NEG. SLOPE 0-5V)
(6 Hz TOTAL RANGE-NO VOLTAGE =Nom. , 5: RF OUT GND, 6: RF OUT

