



3.3V Surface Mount FR-4 Based Crystal Oscillators

Applications:

- Phase Locked Loops
- Clock Recovery Circuits
- Optical Transmission Equipment
- Digital Cross Connect Equipment
- Clock Filtering Circuitry

Features:

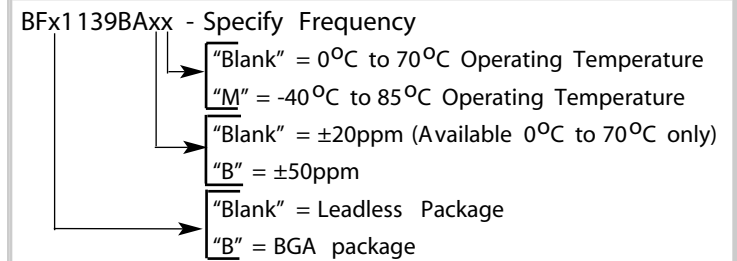
- Tape and Reel Packaging
- 45/55% Symmetry
- -40°C to +85°C Operating Temperature
- LVPECL Compatible
- Standard Complementary Outputs

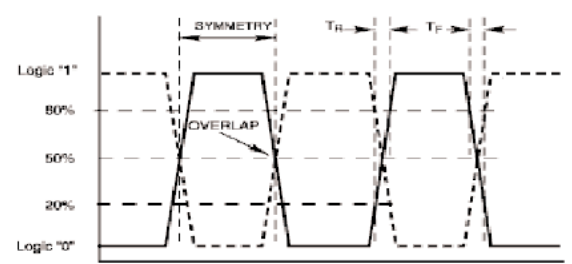
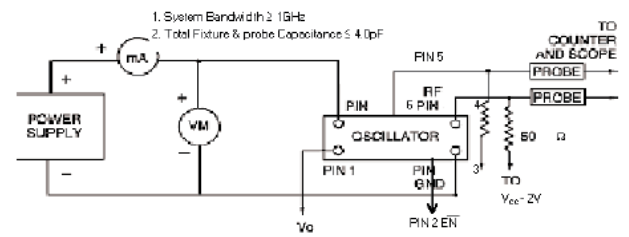
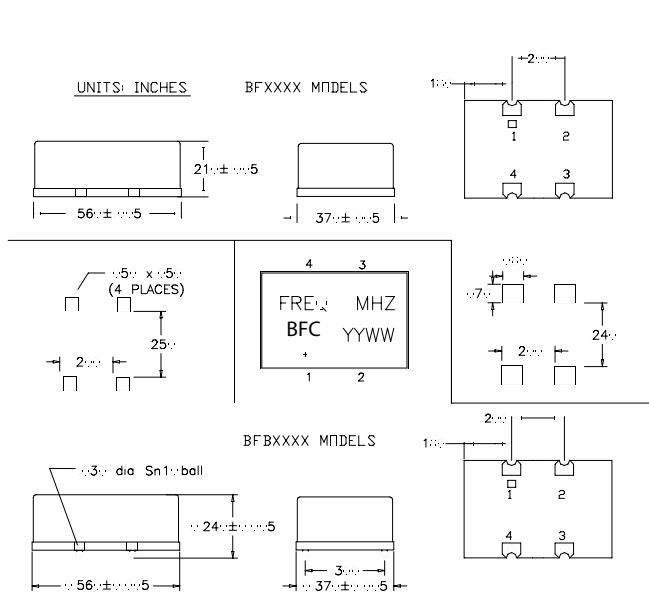
Electrical Specifications

Model	BF1139BA
Frequency Range (MHz)	Up to 180
Input Current (mA)	< 70
Frequency Stability (ppm)	
Overall	Inclusive of Calibration, Temperature, Voltage, Load and 1 Yr. Aging
0°C to +70°C	±20
-40°C to +85°C	±50
Temperature Range (°C)	
Operating	-40°C to +85°C
Storage	-40°C to +85°C
Supply Voltage (V)	+3.3V ±5%
Symmetry (%)	45/55 (See Below)
Jitter (fj > 1KHz)	1ps RMS
Sub-harmonics & Spurious Modes (dB)	< -70
Start Up Time (ms)	<10

PIN	Function
1	Output
2	V <sub>SS</sub> / Ground
3	Output
4	+V <sub>CC</sub>

Part Numbering Guide





Output Specification	LVPECL					
Parameter	Symbol	Units	Test Cond.	Min.	Typ.	Max.
Ground Reference	V <sub>SS</sub>	Volts	Reference		0	
Power Supply	V <sub>CC</sub>	Volts	Reference	3.135	3.3	3.465
"0" Level	V <sub>OL</sub>	Volts	50 into V <sub>CC</sub> -2	V <sub>CC</sub> -1.95		V <sub>CC</sub> -1.55
"1" Level	V <sub>OH</sub>	Volts	50 into V <sub>CC</sub> -2	V <sub>CC</sub> -1.1		V <sub>CC</sub> -0.88
Rise Time	T <sub>R</sub>	ns	50 into, 20% to 80%			450
Fall Time	T <sub>F</sub>	ns	50 into, 80% to 20%			450
Overlap	T <sub>OL</sub>	ps	50%			50
Symmetry	S	%	V <sub>CC</sub> -1.3	45		55

## Mechanical and Environmental Specifications

Test	Reference Documents	Test Description
Temperature Cycle	MIL-STD-883, Mtd 1010, Cond. B	-55°C to + 25°C; Air to Air; 100 cycles; 10 min. dwell
Mechanical Shock	MIL-STD-883, Mtd 2002, Cond. B	1500g's
Vibration	MIL-STD-883, Mtd 2007, Cond. B	20-2000 Hz; 0.06 inch; 15 g's; 3 planes
Humidity Steady State	MIL-STD-202, Mtd 103	40°C; 90%-95% R.H.; 56 days
Thermal Shock	MIL-STD-883, Mtd 1011.7, Cond. B	100°C to 0°C; Water-to-Water; 15 cycles
Electrostatic Discharge	MIL-STD-883, Mtd 3015, Class II	2 KV to 4 KV Threshold
Solderability	MIL-STD-883, Mtd 2022.2	Solder dip; Meniscograph Criteria
Hermeticity	MIL-STD-883, Mtd 1014.8, Cond. A1	Mass spectro. 2 X 10 <sup>-8</sup> atmos. CC/sec He
Resistance to Soldering	MIL-STD-202, Mtd 210D, Cond. J	235°C; 30 seconds
Lead Integrity	MIL-STD-883, Mtd 2004.5, Cond. A, B1	Lead tension and bend stress
Marking Permanence	MIL-STD-883, Mtd 2015.8	Resistance to solvents
Life Test	MIL-STD-883, Mtd 1005.6	125°C, powered, 1000 hours minimum

**Brookdale Frequency Controls, Inc.**  
**36-B Grant Ave. Bay Shore, NY 11706 USA**  
**Phone: 1-866-280-7700 or 631-242-1402**  
**Fax: 631-595-1845**  
**E mail: [sales@bfc-inc.com](mailto:sales@bfc-inc.com)**  
[www.bfc-inc.com](http://www.bfc-inc.com)