



3.3V Surface Mount FR-4 Based Voltage Controlled 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

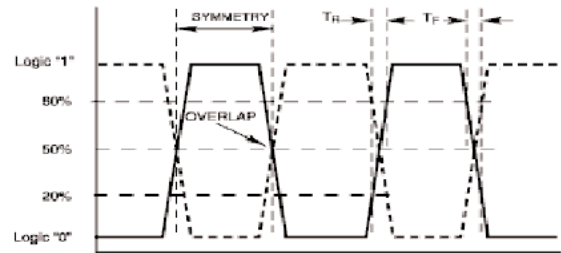
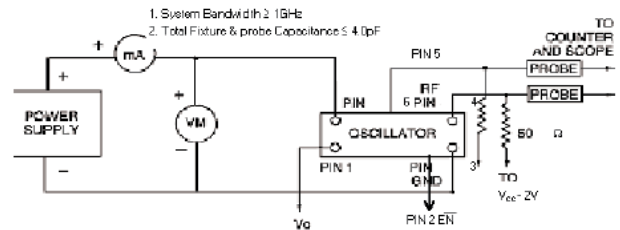
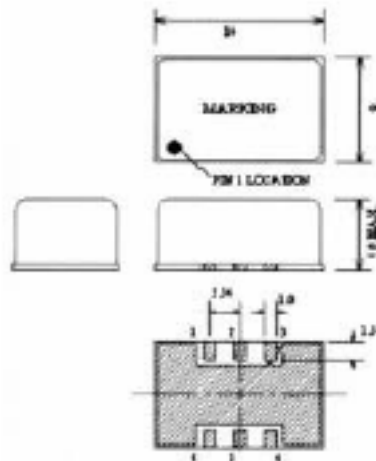
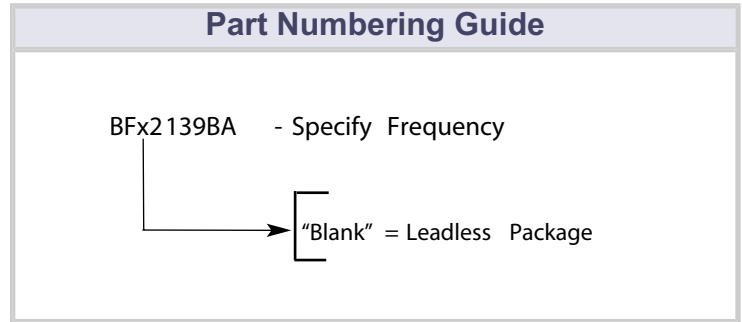
RoHS Compliant

Electrical Specifications

Model	BF2139BA	
Frequency Range (MHz)	19.44 to 250	
Input Current (mA)	< 60	
Frequency Control Function*		
Deviation (ppm) Minimum	± 75	
Linearity (%)	< 10	
Modulation Bandwidth (±3dB)	> 20KHz	
Nominal Control Voltage (V)	1.65	
Control Voltage Range (V)	0.3 to 3.0	
Transfer Function	Positive	
Input Impedance	> 50KΩ @ 10KHz	
Frequency Stability (ppm)		
Overall	Inclusive of Calibration, Temperature, Voltage, Load and 1 Yr. Aging	
0°C to +70°C	±40	
10 Year Aging (Max.) (ppm)	±10	
Temperature Range (°C)		
Operating	-40°C to +85°C	
Storage	-40°C to +125°C	
Supply Voltage (V)	+3.3V ±5%	
Symmetry (%)	45/55 (See Below)	
Jitter (10KHz to 10MHz)	< 1ps RMS	
Load	50i to V _{CC} -2 (or Thevenin equivalent 120i//82i)	
Sub-harmonics & Spurious Modes (dB)	< -30	
Start Up Time (ms)	10ms to first Square Wave	
Typical SSB Phase Noise (dBC/Hz) Offset from Carrier	100Hz	-60
	1KHz	-90
	10KHz	-120
	100KHz	-138
	1MHz	-138

*For Custom Deviation Range, Vc Range, etc. - Consult Factory

PIN	Function
1	Voltage Control
2	N/C
3	V _{SS} / Ground
4	Output
5	Output
6	+V _{CC}



Output Specification	LVPECL					
Parameter	Symbol	Units	Test Cond.	Min.	Typ.	Max.
Ground Reference	V _{SS}	Volts	Reference		0	
Power Supply	V _{CC}	Volts	Reference	3.135	3.3	3.465
"0" Level	V _{OL}	Volts	50 into V _{CC} -2	V _{CC} -1.95		V _{CC} -1.55
"1" Level	V _{OH}	Volts	50 into V _{CC} -2	V _{CC} -1.1		V _{CC} -0.88
Rise Time	T _R	ns	50 into, 20% to 80%			450
Fall Time	T _F	ns	50 into, 80% to 20%			450
Overlap	T _{OL}	ps	50%			
Symmetry	S	%	V _{CC} -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 ⁻⁸ 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

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