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Surface Mount BSOF3S3E
3.3V Stratum 3E LVCMOS OCXO

OCXO

CONNOR WINFIELD

2111 Comprehensive Drive
Aurora, Illinois 60505
Phone: 630-851-4722
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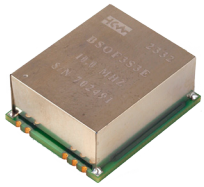
Description:

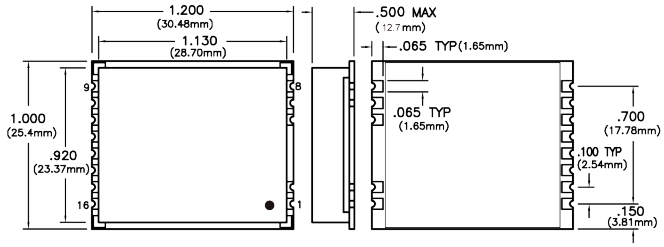
The Connor-Winfield BSOF3S3E is a 3.3V Surface Mount Oven Controlled Crystal Oscillator (OCXO) with an LVCMOS output. The BSOF3S3E is designed for Stratum 3E applications requiring low jitter and tight frequency stability.



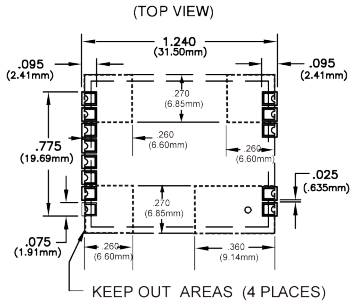
Features:

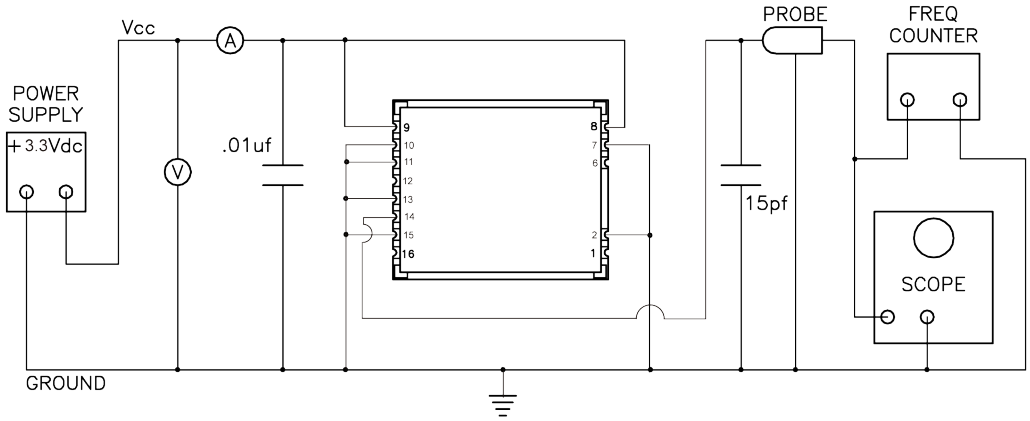
- Surface Mount Package
- Fixed Frequency OCXO
- Designed to meet Stratum 3E requirements
- Frequency Stability ±10ppb
- 3.3V Operation
- LVCMOS Output
- Tape and Reel Packaging
- RoHS Compliant / Lead Free

Package Outline



Suggested Pad Layout

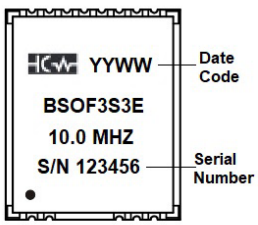




Pin / Function

Pin	Function
1	N/C
2	Ground
6	N/C
7	Ground
8	Vcc
9	Vcc
10	Ground
11	Ground
12	N/C
13	Ground
14	Output
15	Ground
16	N/C

Marking Configuration



Ordering Information

BSOF3S3E - 010.0M
OCXO SERIES — CENTER FREQUENCY

BSOF3S3E - 012.8M
OCXO SERIES — CENTER FREQUENCY

RoHS COMPLIANT

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Revision	02
Date	04 Sept 2024

Attention: System Designers please review Application Note AN2093: System Design Information and Printed Circuit Board Layout Guidelines for OCXO Oscillators. @ https://www.conwin.com/pdfs/AN2093.pdf

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Absolute Maximum Ratings

Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-40	-	85	°C	
Supply Voltage (Vcc)	-0.5	-	7	Vdc	

** Not all options available at Digi-Key

Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Center Frequency (Fo)	-	10.0	-	MHZ	
	-	12.8	-	MHz	1
Frequency Calibration	-2	-	2	ppm	2
Frequency Stability	-10	-	10	ppb	3
Aging: Daily	-1	-	1	ppb/day	4
Aging: First Year	-30	-	30	ppb	
Aging: Short Term (1Sec.)	-	5.00E-11	-	RMS	5
Aging: Long Term (20 Years)	-	-	300	ppb	
Operating Temperature Range	0	-	70	°C	
Supply Voltage (Vcc)	3.13	3.30	3.47	Vdc	
Frequency vs. Voltage Stability (±1%)	-0.5	-	0.5	ppb	6
Frequency vs. Load Stability (±20%)	-0.5	-	0.5	ppb	7
Power Consumption: Turn On	-	-	2.75	W	8
Power Consumption: Steady-State	-	-	1. 50	W	8
Start-Up Time			500	mS	9
Warm Up	-100	-	100	ppb	10
2G Tip-over	-	5	-	ppb/G	
TDEV at 300 seconds	-	-	5	nS	11
TDEV at 40 seconds	-	-	1	nS	11

LVCMOS Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
LOAD	-	-	18	pF	12
Voltage (High) (Voh)	Vcc-0.2V	-	-	Vdc	
(Low) (Vol)	-	-	0.2	Vdc	
Duty Cycle at 50% of Vcc	45	50	55	%	
Rise / Fall Time 10% to 90%	-	-	5	nS	
Spurious Output	-	-	-80	dBc	
Sub-Harmonics	-	-	-25	dBc	
SSB Phase Noise at 1Hz offset	-	-	-90	dBc/Hz	
SSB Phase Noise at 10Hz offset	-	-	-115	dBc/Hz	
SSB Phase Noise at 100Hz offset	-	-	-130	dBc/Hz	
SSB Phase Noise at 1KHz offset	-	-	-140	dBc/Hz	
SSB Phase Noise at 10KHz offset	-	-	-145	dBc/Hz	

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Restabilization Time

Off Time	Restabilization Time	Notes
< 1 Hour	< 2 Hours	13
< 6 Hours	< 12 Hours	13
< 24 Hours	< 48 Hours	13
1 to 16 Days	48 Hours + ¼ Off Time	13
> 16 Days	< 6 Days	13

Notes:

1) *Labels will include the calibration frequency at the time of ship.*
2) *Initial calibration @ 25°C*
3) *Overall frequency stability, 0 70°C.*
4) *After ten days of continuous operation.*
5) *Allen Variance: 1 second, 100 average.*
6) *Frequency vs. change in supply voltage.*
7) *Frequency vs. change in load.*
8) *Vcc = 3.3Vdc.*
9) *From Vcc=90% of final value. No more than 16 transitions at start-up before oscillator has started.*
10) *Measured @ 0°C, within 5 minutes, referenced one hour after turn-on.*
11) *At time of delivery.*
12) *LVCMOS load.*
13) *For a given off time, the time required to meet daily aging, short-term stability and TDEV requirements*

Package Characteristics

Package	Non-hermetic package consisting of an FR4 substrate with grounded metal cover.
Moisture Sensitivity Level	MSL-1

Environmental Characteristics

Shock	100G's, 6mS, halfsine per MIL-STD-202F, Method 213B, Test Condition C
Vibration	0.06" D.A. or 10G peak 10 to 500 Hz, per MIL-STD-202F, Method 204D, Test condition A.

Process Recommendations

Solder Reflow	The component solder used internal to this device has a melting point of 221°C. The peak temperature inside the device should be less than or equal to 220°C for a maximum of 10 seconds.
Wash	Ultrasonic cleaning is not recommended.

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