Features

- HCMOS Output
- Stabilities to ±20 PPM
- Temperature Ranges as wide as -40°C to +125°C
- Supply Voltages: 1.0V; 1.5V; 1.8V; 2.5V; 3.3V; Variable (1.6V ~ 3.63V; 2.25V ~ 3.63V)

1.0V ELECTRICAL CHARACTERISTICS	
PARAMETERS	**MAX (Unless otherwise noted)**
Frequency Range (F_O)	1.8~ 50.0 MHz
Temperature Range Storage (T_{STG})	 -55°C ~ +125°C
Supply Voltage (V_{DD})	1.0V±5%
Input Current (I_{DD}) 1.8 ~ 32.1 MHz >32.1 ~ 50.0 MHz	 2.5 mA 3.5 mA
Standby Current	100µA
Output Symmetry (50% V_{DD})	40 % ~ 60 %
Rise/Fall Time (20%/80% V_{DD} Levels) (T_R/T_F)	5 nS
Output Voltage (V_{OL}) (V_{OH})	20 % V_{DD} 80 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time [1]	50 µS
Output Enable Time [1]	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN [1]	Active
'1' Level $V_{IH} \geq 70\%V_{DD}$	Active
'0' Level $V_{IL} \leq 30\%V_{DD}$	High Z

Available Options by Stability & Operating Temp for 1.0V		
Frequency Stability[2]	**Operating Temperature (°C)**	**Frequency Range (MHz)**
±100PPM	-10 ~ +70	1.8 ~ 50.0
±100PPM	-40 ~ +85	1.8 ~ 50.0
±50PPM	-10 ~ +70	1.8 ~ 50.0
±50PPM	-40 ~ +85	1.8 ~ 50.0
±25PPM	-10 ~ +70	1.8 ~ 50.0
±25PPM	-40 ~ +85	1.8 ~ 50.0
±20PPM	-10 ~ +70	1.8 ~ 50.0

[1] An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open

[2] Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, shock, Vibration, reflow, and one-year aging.

[3] Inclusive of 25°C tolerance and operating temperature range.

1.5V ELECTRICAL CHARACTERISTICS	
PARAMETERS	**MAX (Unless otherwise noted)**
Frequency Range (F_O)	1.25 ~ 50.0 MHz
Temperature Range Storage (T_{STG})	 -55°C ~ +125°C
Supply Voltage (V_{DD})	1.5V±5%
Input Current (I_{DD}) 1.25 ~ 10.0 MHz >10.0 ~ 20.0 MHz >20.0 ~ 30.0 MHz >30.0 ~ 40.0 MHz >40.0 ~ 50.0 MHz	 2.5 mA 3.5 mA 4.0 mA 4.5 mA 6.0 mA
Standby Current	100µA
Output Symmetry (50% V_{DD})	45 % ~ 55 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	10 nS
Output Voltage (V_{OL}) (V_{OH})	10 % V_{DD} 90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time [1]	50 µS
Output Enable Time [1]	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN [1]	Active
'1' Level $V_{IH} \geq 70\%V_{DD}$	Active
'0' Level $V_{IL} \leq 30\%V_{DD}$	High Z

Available Options by Stability & Operating Temp for 1.5V		
Frequency Stability[2]	**Operating Temperature (°C)**	**Frequency Range (MHz)**
±100PPM	-20 ~ +70	1.25 ~ 50.0
±100PPM	-40 ~ +85	1.25 ~ 50.0
±50PPM	-20 ~ +70	1.25 ~ 50.0
±50PPM	-40 ~ +85	1.25 ~ 50.0
±25PPM	-20 ~ +70	1.25 ~ 50.0
±25PPM[3]	-40 ~ +85	1.25 ~ 50.0

[1] An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open
[2] Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, shock, Vibration, reflow, and one-year aging.
[3] Inclusive of 25°C tolerance and operating temperature range.

1.8V ELECTRICAL CHARACTERISTICS	
PARAMETERS	**MAX (Unless otherwise noted)**
Frequency Range (F_O)	1.25 ~ 133.0MHz
Temperature Range Storage (T_{STG})	 -55°C ~ +125°C
Supply Voltage (V_{DD})	1.8V±5%
Input Current (I_{DD}) 1.25 ~ 10.0 MHz >10.0 ~ 20.0 MHz >20.0 ~ 30.0 MHz >30.0 ~ 40.0 MHz >40.0 ~ 60.0 MHz >60.0 ~ 100.0 MHz >100.0 ~ 133.0 MHz	 2.5 mA 3.5 mA 4.0 mA 4.5 mA 6.0 mA 10.0 mA 20.0 mA
Standby Current	10µA
Output Symmetry (50% V_{DD}) 1.25 ~ 50.0 MHz >50.0 MHz	 45 % ~ 55 % 40 % ~ 60 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	10 nS
Output Voltage (V_{OL}) (V_{OH})	10 % V_{DD} 90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time [1]	10µA
Output Enable Time [1]	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN [1]	Active
'1' Level $V_{IH} \geq 70\%V_{DD}$	Active
'0' Level $V_{IL} \leq 30\%V_{DD}$	High Z

Available Options by Stability & Operating Temp for 1.8V		
Frequency Stability[2]	**Operating Temperature (°C)**	**Frequency Range (MHz)**
±100PPM	-10 ~ +70	1.25 ~ 133.0
±100PPM	-40 ~ +85	1.25 ~ 133.0
±50PPM	-10 ~ +70	1.25 ~ 133.0
±50PPM	-40 ~ +85	1.25 ~ 133.0
±25PPM	-10 ~ +70	1.25 ~ 133.0
±25PPM[3]	-40 ~ +85	1.25 ~ 133.0

[1] An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open

[2] Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, shock, Vibration, reflow, and one-year aging.

[3] Inclusive of 25°C tolerance and operating temperature range.

2.5V ELECTRICAL CHARACTERISTICS	
PARAMETERS	**MAX (Unless otherwise noted)**
Frequency Range (F_O)	1.25 ~ 170.0 MHz
Temperature Range Storage (T_{STG})	 -55°C ~ +125°C
Supply Voltage (V_{DD})	2.5V±5%
Input Current (I_{DD}) 1.25 ~ 19.999999 MHz 20.0 ~ 39.999999 MHz 40.0 ~ 50.0 MHz >50.0MHz ~ 170MHz	 5 mA 9 mA 11 mA 30 mA
Standby Current	10µA
Output Symmetry (50% V_{DD}) 1.25 ~ 50.0 MHz >50.0 MHz	 45 % ~ 55 % 40 % ~ 60 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	10 nS
Output Voltage (V_{OL}) (V_{OH})	10 % V_{DD} 90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time [1]	200 µS
Output Enable Time [1]	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN [1]	Active
'1' Level $V_{IH} \geq 80\%V_{DD}$	Active
'0' Level $V_{IL} \leq 20\%V_{DD}$	High Z

Available Options by Stability & Operating Temp for 1.5V		
Frequency Stability[2]	**Operating Temperature (°C)**	**Frequency Range (MHz)**
±100PPM	-20 ~ +70	1.25 ~ 170.0
±100PPM	-40 ~ +85	1.25 ~ 170.0
±50PPM	-20 ~ +70	1.25 ~ 170.0
±50PPM	-40 ~ +85	1.25 ~ 170.0
±25PPM	-20 ~ +70	1.25 ~ 170.0
±25PPM[3]	-40 ~ +85	1.25 ~ 170.0

[1] An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open
[2] Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, shock, Vibration, reflow, and one-year aging.
[3] Inclusive of 25°C tolerance and operating temperature range.

3.3V ELECTRICAL CHARACTERISTICS	
PARAMETERS	**MAX (Unless otherwise noted)**
Frequency Range (F_O)	1.00 ~ 170.0 MHz
Temperature Range Storage (T_{STG})	 -55°C ~ +125°C
Supply Voltage (V_{DD})	3.3V±5%
Input Current (I_{DD}) 1.00 ~ 19.999999 MHz 20.0 ~ 39.999999 MHz 40.0 ~ 50.0 MHz >50.0 ~ 170MHz	 7 mA 13 mA 19 mA 40 mA
Standby Current (-20 to 70˚C; -40 to 85˚C) (-40 to +105˚C)	10µA 20µA
Output Symmetry (50% V_{DD}) 1.00 ~ 50.0 MHz >50.0 MHz	 45 % ~ 55 % 40 % ~ 60 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	10 nS
Output Voltage (V_{OL}) (V_{OH})	10 % V_{DD} 90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	10 mS
Output Disable Time [1]	200 µS
Output Enable Time [1]	10 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN [1]	Active
'1' Level $V_{IH} \geq 80\%V_{DD}$	Active
'0' Level $V_{IL} \leq 20\%V_{DD}$	High Z

Available Options by Stability & Operating Temp for 3.3V		
Frequency Stability[2]	**Operating Temperature (°C)**	**Frequency Range (MHz)**
±100PPM	-20 ~ +70	1.00 ~ 170.0
±100PPM	-40 ~ +85	1.00 ~ 170.0
±100PPM	-40 ~ +105	2 ~ 50.0
±50PPM	-20 ~ +70	1.00 ~ 170.0
±50PPM	-40 ~ +85	1.00 ~ 170.0
±50PPM	-40 ~ +105	2 ~ 50.0
±25PPM	-20 ~ +70	1.00 ~ 170.0
±25PPM[3]	-40 ~ +85	1.00 ~ 170.0

[1] An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open
[2] Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, shock, Vibration, reflow, and one-year aging.
[3] Inclusive of 25°C tolerance and operating temperature range.

VARIABLE VOLTAGE ELECTRICAL CHARACTERISTICS	
PARAMETERS	**MAX (Unless otherwise noted)**
Frequency Range (F_O)	0.75 ~ 156.25 MHz
Temperature Range Storage (T_{STG})	 -55°C ~ +125°C
Supply Voltage (V_{DD}) 0.75 ~ 135.0 MHz >135.0 ~ 156.25 MHz	 1.6V ~ 3.63V 2.25V ~ 3.63V
Input Current (I_{DD}) 0.75 ~ 19.999 MHz 20.0 ~ 39.999 MHz 40.0 ~ 59.999 MHz 60.0 ~ 84.999 MHz 85.0 ~ 135.0 MHz >135.0 ~ 156.250 MHz	 4 mA 6 mA 10 mA 15 mA 30 mA 40 mA
Standby Current T_{OPR}= -40 ~ +85°C T_{OPR}= -40 ~ +105°C / -40 ~ +125°C	 10 µA 20 µA
Output Symmetry (50% V_{DD}) 0.75 ~ 84.999 MHz 85.0 ~ 156.25 MHz	 45 % ~ 55 % 40 % ~ 60 %
Rise/Fall Time (10%/90% V_{DD} Levels) (T_R/T_F)	6 nS
Output Voltage (V_{OL}) (V_{OH})	10 % V_{DD} 90 % V_{DD} Min
Output Load (HCMOS)	15 pF
Start-up Time (T_S)	5 mS
Output Disable Time [1]	200nS
Output Enable Time [1]	5 mS

ENABLE / DISABLE FUNCTION	
Pin1	Output (pin 3)
OPEN [1]	Active
'1' Level $V_{IH} \geq 70\%V_{DD}$	Active
'0' Level $V_{IL} \leq 30\%V_{DD}$	High Z

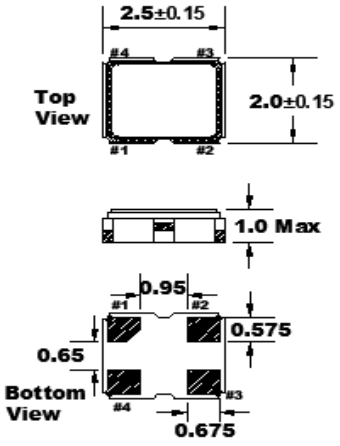
Available Options by Stability & Operating Temp For Variable Voltage		
Frequency Stability[2]	**Operating Temperature (°C)**	**Frequency Range (MHz)**
±100PPM	-20 ~ +70	0.75 ~ 156.25
±100PPM	-40 ~ +85	0.75 ~ 156.25
±100PPM	-40 ~ +105	1.25 ~ 135.0
±100PPM	-40 ~ +125	1.25 ~ 135.0
±50PPM	-20 ~ +70	0.75 ~ 156.25
±50PPM	-40 ~ +85	0.75 ~ 156.25
±50PPM	-40 ~ +105	1.25 ~ 135.0
±50PPM	-40 ~ +125	1.25 ~ 135.0
±25PPM	-20 ~ +70	0.75 ~ 156.25
±25PPM[3]	-40 ~ +85	0.75 ~ 156.25
±25PPM[3]	-20 ~ +70	0.75 ~ 156.25

[1] An internal pull-up resistor from pin 1 to pin 4 allows active output if pin 1 is left open

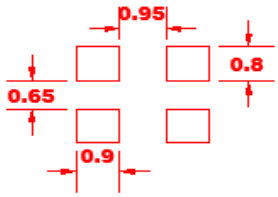
[2] Inclusive of 25°C tolerance, operating temperature range, input voltage change, load change, shock, Vibration, reflow, and one-year aging.

[3] Inclusive of 25°C tolerance and operating temperature range.

DIMENSIONS / MECHANICAL SPECIFICATIONS



Recommended Solder Pad Layout



All dimensions are in millimeters.

Pin Connections

#1 E/D	#3 Output
#2 GND	#4 V_{DD}

Note:
1, A 0.01µF capacitor should be placed between V_{DD} (Pin 4) and G_{ND} (Pin2) to minimize power supply line noise.
2, Dimensional drawing is for reference to critical specifications defined by size measurements. Certain non-critical visual attributes, such as side castellation's, etc. may vary.

STANDARD SPECIFICATIONS	
PARAMETERS	**MAX (Unless otherwise noted)**
Maximum Soldering Temp / Time	260°C / 10 Seconds x 2
Moisture Sensitivity Level (MSL)	N/A
Termination Finish	Au (0.3~1µm) over Ni (1.27~8.89µm)
Seal Method	Seam
Lead (Pb) Free	Yes
RoHS Compliant	Yes, no exemptions
REACH Compliant (latest version)	Yes

TAPE SPECIFICATIONS (mm)							REEL SPECIFICATIONS (mm)						
A	B	C	D	E	F	REEL QTY	G	H	I	J	K	L	M
ø1.55	4.0	4.0	3.5	8.0	1.15	**-T3 = 3,000** -T2 = 2,000 -T1 = 1,000	2.0	Ø13	Ø21	Ø60	Ø180	9.0	2.0

Available Options & Part Identification*

Sample PN: FO2HSBBM25.0-T3

F	O2HS	B	B	M	25.0	-T3
Fox	**Model Number**	**Voltage** M = 1.0V±5% I = 1.5V±5% K = 1.8V±5% H = 2.5V±5% **B = 3.3V±5%** V = 1.6V to 3.63V W = 2.25V to 3.63V	**Stability** A = ±100 PPM **B = ±50 PPM** D = ±25 PPM E = ±20 PPM	**Operating Temperature** E = -10 to +70˚c F = -20 to +70˚C **M = -40 to +85˚C** P = -40 to +105˚C I = -40 to +125˚C	**Frequency (MHz)**	**Values Added Options** Blank = Bulk T1 = 1,000 pcs T2 = 2,000 pcs **T3 = 3,000 pcs**

* Not all frequencies in the frequency range, or every combination of stability, temp range, and voltage available. See stabilities and op temps for each V_{DD}.

Reliability Test Conditions
Please contact Abracon Quality Assurance department