VC-820

CMOS Crystal Oscillator

Features

- CMOS Output XO
- Output Frequencies from 32.768 kHz and 625 kHz to 133 MHz
- 3.3V, 2.5V, and 1.8V Operation
- Low Jitter Performance
- Output Disable Feature
- Operating Temperature Ranging from –55°C to +125°C
- Small Industry Standard Package, 3.2 mm × 2.5 mm × 1.2 mm VDFN
- Product is RoHS Compliant and Fully Compatible with Lead-free Assembly

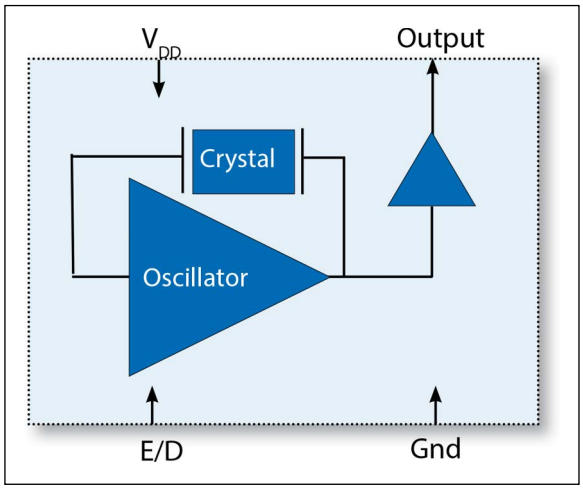
Applications

- SONET/SDH/DWDM
- Ethernet, GE, SynchE
- Storage Area Networking
- Fiber Channel
- Digital Video
- Broadband Access
- Base Stations, Picocells

General Description

Microchip's VC-820 Crystal Oscillator (XO) is a quartz stabilized square wave generator with a CMOS output. The VC-820 uses a fundamental or a third overtone crystal, oscillating in a fundamental tone, resulting in very low jitter performance, and a monolithic IC which improves reliability and reduces cost.

Block Diagram



1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings †

Storage Temperature (T_S) ..... –55°C to +125°C
Soldering Temp/Time (T_{LS}) ..... +260°C/30 seconds
ESD Rating, Human Body Model (Note 1) 1500V
ESD Rating, Charged Device Model (Note 1) 1000V

† Notice: Stresses in excess of the Absolute Maximum Ratings can permanently damage the device. Functional operation is not implied at these or any other conditions in excess of conditions represented in the operational sections of this data sheet. Exposure to Absolute Maximum Ratings for extended periods may adversely affect device reliability. Permanent damage is also possible if E/D is applied before V_{DD}

Note 1: Although ESD protection circuitry has been designed into the VC-820, proper precautions should be taken when handling and mounting. Microchip employs a Human Body Model (HBM) and a Charged Device Model (CDM) for ESD susceptibility testing and design protection evaluation. Human Body Model tested to MIL-STD-883, Method 3015 conditions. Charged Device Model tested to JESD22-C101 conditions.

ELECTRICAL CHARACTERISTICS, 3.3V OPTION

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Supply						
Voltage	V_{DD}	3.15	3.3	3.45	V	Note 1
Max. Supply Voltage	—	–0.5	—	5.0	V	—
Current (Note 2)	I_{DD}	—	—	6	mA	≤20.000 MHz
		—	—	7		20.000 MHz to 39.999 MHz
		—	—	8		40.000 MHz to 49.999 MHz
		—	—	9		50.000 MHz to 79.999 MHz
				10		80.000 MHz to 99.999 MHz
		—	—	40		100.000 MHz to 133.000 MHz
Current, Output Disabled	—	—	—	5	µA	—

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

ELECTRICAL CHARACTERISTICS, 3.3V OPTION (CONTINUED)

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Frequency						
Nominal Frequency	f_{NOM}	0.032768	—	133.000	MHz	Note 3
Stability (Note 4, Note 8)	—	—	—	±20	ppm	Ordering Option
		—	—	±25		
		—	—	±50		
		—	—	±100		
Outputs						
Output Logic Level High, < 40 MHz	V_{OH}	0.9 × V_{DD}	—	—	V	Note 2
Output Logic Level Low, < 40 MHz	V_{OL}	—	—	0.1 × V_{DD}		
Output Logic High Drive, < 40 MHz	I_{OH}	4	—	—	mA	
Output Logic Low Driver, < 40 MHz	I_{OL}	4	—	—		
Output Logic Level High, 40.00 MHz–99.99 MHz	V_{OH}	V_{DD} – 0.4	—	—	V	Note 2
Output Logic Level Low, 40.00 MHz–99.99 MHz	V_{OL}	—	—	0.4		
Output Logic High Drive, 40.00 MHz–99.99 MHz	I_{OH}	4	—	—	mA	
Output Logic Low Driver, 40.00 MHz–99.99 MHz	I_{OL}	4	—	—		
Output Logic Level High, 100.00 MHz–133.000 MHz	V_{OH}	V_{DD} – 0.4	—	—	V	Note 2
Output Logic Level Low, 100.00 MHz–133.000 MHz	V_{OL}	—	—	0.4		
Output Logic High Drive, 100.00 MHz–133.000 MHz	I_{OH}	4	—	—	mA	
Output Logic Low Driver, 100.00 MHz–133.000 MHz	I_{OL}	4	—	—		
Load	I_{OUT}	—	—	15	pF	—
Output Rise/Fall Time (Note 2)	t_R/t_F	—	—	4	ns	—
Duty Cycle	—	45	50	55	%	Note 2, Note 5

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

ELECTRICAL CHARACTERISTICS, 3.3V OPTION (CONTINUED)

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Period Jitter, RMS	Φ_J	—	2.4	—	ps	Note 6
Period Jitter, Peak-to-Peak		—	20.2	—		Note 6
Random Jitter		—	2.4	—		—
Deterministic Jitter		—	0	—		—
RMS Jitter, 12 kHz–20 MHz, 125 MHz		—	0.06	0.3		—
Enable/Disable						
Output Enable	V_{IH}	0.7 × V_{DD}	—	—	V	Note 7
Output Disable	V_{IL}	—	—	0.3 × V_{DD}	V	Note 7
Disable Time	t_D	—	—	150	ns	—
Start-Up Time	t_{SU}	—	—	5	ms	—
Operating Temperature	T_{OP}	–10	—	+70	°C	Ordering Option
		–40	—	+85		
		–40	—	+105		
		–40	—	+125		
		–55		+105		
		–55	—	+125		

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

ELECTRICAL CHARACTERISTICS, 2.5V OPTION

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Supply						
Voltage	V_{DD}	2.375	2.5	2.625	V	Note 1
Max. Supply Voltage	—	–0.5	—	5.0	V	—
Current (Note 2)	I_{DD}	—	—	4.5	mA	≤20.000 MHz
		—	—	5.5		20.000 MHz to 39.999 MHz
		—	—	7.0		40.000 MHz to 79.999 MHz
		—	—	7.5		80.000 MHz to 99.999 MHz
				30.0		100.000 MHz to 125.000 MHz
Current, Output Disabled	—	—	—	5	µA	—
Frequency						
Nominal Frequency	f_{NOM}	0.032768	—	125.000	MHz	Note 3
Stability (Note 4, Note 8)	—	—	—	±20	ppm	Ordering Option
		—	—	±25		
		—	—	±50		
		—	—	±100		
Outputs						
Output Logic Level High, < 40 MHz	V_{OH}	0.9 × V_{DD}	—	—	V	Note 2, Note 3
Output Logic Level Low, < 40 MHz	V_{OL}	—	—	0.1 × V_{DD}		
Output Logic High Drive, < 40 MHz	I_{OH}	4	—	—	mA	
Output Logic Low Driver, < 40 MHz	I_{OL}	4	—	—		

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

ELECTRICAL CHARACTERISTICS, 2.5V OPTION (CONTINUED)

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Output Logic Level High, 40.00 MHz–99.99 MHz	V_{OH}	V_{DD} – 0.4	—	—	V	Note 2
Output Logic Level Low, 40.00 MHz–99.99 MHz	V_{OL}	—	—	0.4		
Output Logic High Drive, 40.00 MHz–99.99 MHz	I_{OH}	4	—	—	mA	
Output Logic Low Driver, 40.00 MHz–99.99 MHz	I_{OL}	4	—	—		
Output Logic Level High, 100.00 MHz–133.000 MHz	V_{OH}	1.65	—	—	V	Note 2
Output Logic Level Low, 100.00 MHz–133.000 MHz	V_{OL}	—	—	0.4		
Output Logic High Drive, 100.00 MHz–133.000 MHz	I_{OH}	8	—	—	mA	
Output Logic Low Driver, 100.00 MHz–133.000 MHz	I_{OL}	8	—	—		
Load	I_{OUT}	—	—	15	pF	—
Output Rise/Fall Time	t_R/t_F	—	—	4	ns	Note 2
Duty Cycle	—	45	50	55	%	—
Period Jitter, RMS	Φ_J	—	2.4	—	ps	Note 6
Period Jitter, Peak-to-Peak		—	20.2	—		Note 6
Random Jitter		—	2.4	—		—
Deterministic Jitter		—	0	—		—
RMS Jitter, 12 kHz–20 MHz, 125 MHz		—	0.061	0.3		—
Enable/Disable						
Output Enable	V_{IH}	0.7 × V_{DD}	—	—	V	Note 7
Output Disable	V_{IL}	—	—	0.3 × V_{DD}	V	Note 7
Disable Time	t_D	—	—	150	ns	—
Start-Up Time	t_{SU}	—	—	5	ms	—

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

ELECTRICAL CHARACTERISTICS, 2.5V OPTION (CONTINUED)

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Operating Temperature	T_{OP}	–10	—	+70	°C	Ordering Option
		–40	—	+85		
		–40	—	+105		
		–40	—	+125		
		–55		+105		
		–55	—	+125		

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

ELECTRICAL CHARACTERISTICS, 1.8V OPTION

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Supply						
Voltage	V_{DD}	1.71	1.8	1.89	V	Note 1
Max. Supply Voltage	—	–0.5	—	3.6	V	—
Current (Note 2)	I_{DD}	—	—	2.5	mA	≤40.000 MHz
		—	—	3.5		40.000 MHz to 49.999 MHz
		—	—	6.5		50.000 MHz to 79.999 MHz
		—	—	7		80.000 MHz to 99.999 MHz
				20		100.000 MHz to 125.000 MHz
Current, Output Disabled	—	—	—	5	µA	—
Frequency						
Nominal Frequency	f_{NOM}	0.032768	—	125.000	MHz	Note 3
Stability (Note 4, Note 8)	—	—	—	±20	ppm	Ordering Option
		—	—	±25		
		—	—	±50		
		—	—	±100		
Outputs						
Output Logic Level High, < 40 MHz	V_{OH}	0.9 × V_{DD}	—	—	V	Note 2
Output Logic Level Low, < 40 MHz	V_{OL}	—	—	0.1 × V_{DD}		
Output Logic High Drive, < 40 MHz	I_{OH}	2.8	—	—	mA	
Output Logic Low Driver, < 40 MHz	I_{OL}	2.8	—	—		

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

ELECTRICAL CHARACTERISTICS, 1.8V OPTION (CONTINUED)

Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Output Logic Level High, 40.00 MHz–125.00 MHz	V_{OH}	V_{DD} – 0.4	—	—	V	Note 2
Output Logic Level Low, 40.00 MHz–125.00 MHz	V_{OL}	—	—	0.4		
Output Logic High Drive, 40.00 MHz–125.00 MHz	I_{OH}	4	—	—	mA	
Output Logic Low Driver, 40.00 MHz–125.00 MHz	I_{OL}	4	—	—		
Load	I_{OUT}	—	—	15	pF	—
Output Rise/Fall Time	t_R/t_F	—	—	5	ns	Note 2
Duty Cycle	—	45	50	55	%	Note 2, Note 5
Period Jitter, RMS	Φ_J	—	2.4	—	ps	Note 6
Period Jitter, Peak-to-Peak		—	20.2	—		Note 6
Random Jitter		—	2.4	—		—
Deterministic Jitter		—	0	—		—
RMS Jitter, 12 kHz–20 MHz, 125 MHz		—	0.4	0.9		—
Enable/Disable						
Output Enable	V_{IH}	0.7 × V_{DD}	—	—	V	Note 7
Output Disable	V_{IL}	—	—	0.3 × V_{DD}	V	Note 7
Disable Time	t_D	—	—	150	ns	—
Start-Up Time	t_{SU}	—	—	5	ms	—
Operating Temperature	T_{OP}	–10	—	+70	°C	Ordering Option
		–40	—	+85		
		–40	—	+105		
		–40	—	+125		
		–55		+105		
		–55	—	+125		

Note 1: The power supply should have bypass capacitors as close to the supply and to ground as possible, for example 0.1 uF and 0.01 uF.

2: Parameters are tested with the test circuit shown in Figure 1-1.

3: See Standard Frequencies and the Product Identification System section for more specific information.

4: Includes initial accuracy, operating temperature, supply voltage, shock and vibration (not under operation) and aging.

5: Duty Cycle is measured as On Time/Period, see Figure 1-2.

6: Broadband Period Jitter measured using Wavecrest SIA3300C, 90k samples.

7: The output is enabled if the Enable/Disable is left open.

8: Only ±50 ppm and ±100 ppm stability options are available for -40°C to +105°C, -40°C to +125°C, -55°C to +105°C, and -55°C to +125°C temperature range.

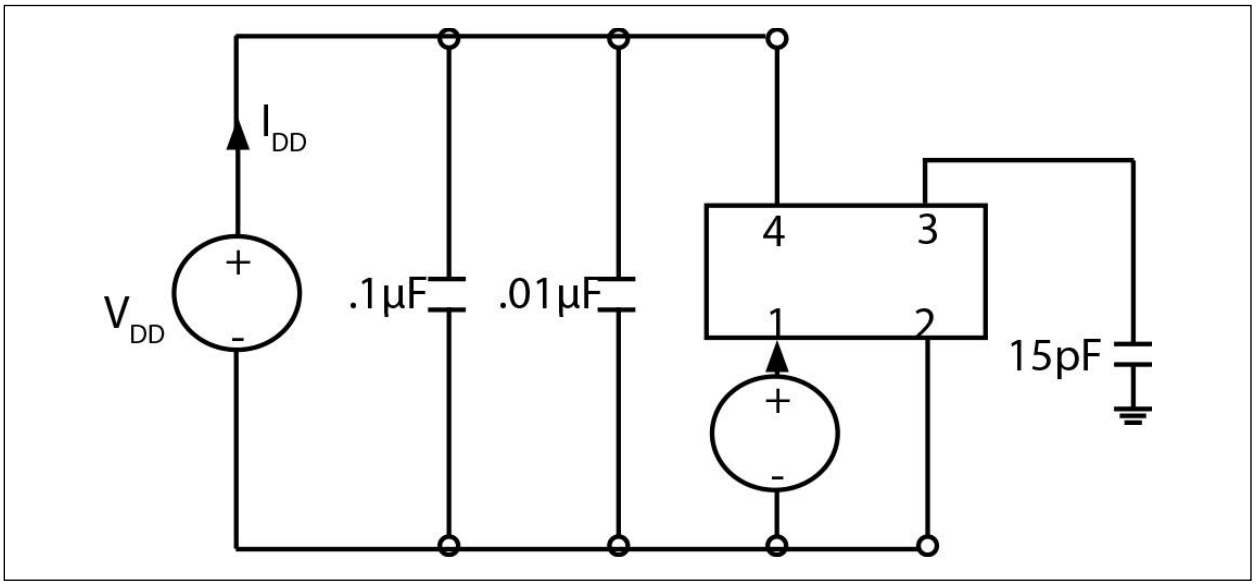


FIGURE 1-1: TEST CIRCUIT.

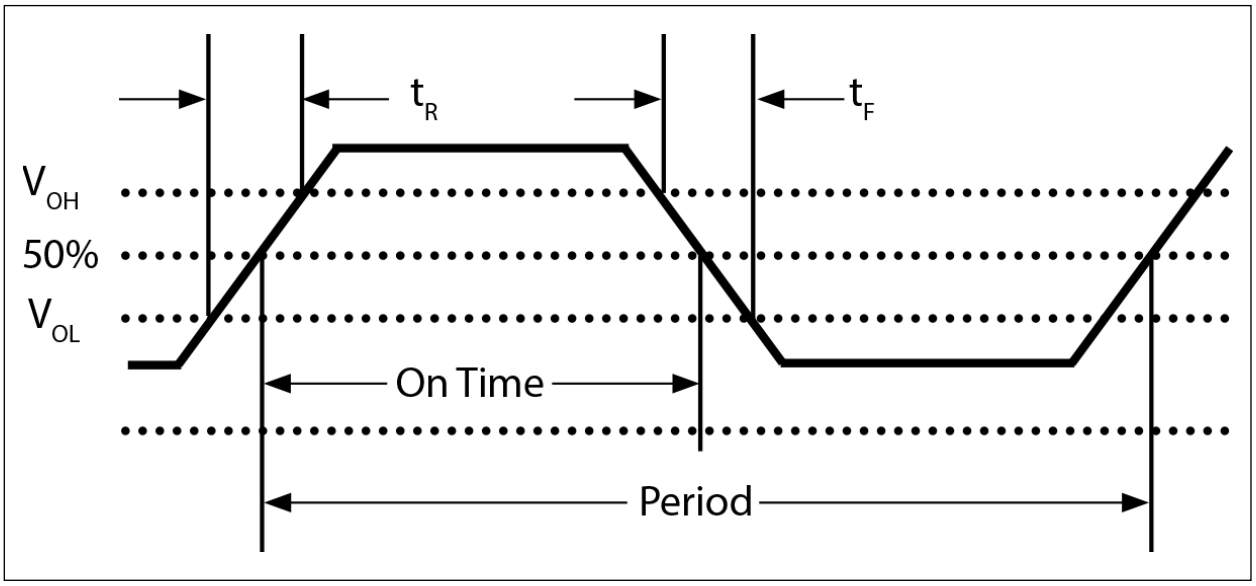


FIGURE 1-2: WAVEFORM.

2.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in Table 2-1.

TABLE 2-1: PIN FUNCTION TABLE

Pin Number	Pin Name	Description
1	E/D	Enable/Disable
2	GND	Case and Electrical Ground
3	Output	Output
4	V_{DD}	Power Supply Voltage

TABLE 2-2: ENABLE/DISABLE FUNCTION

E/D Pin	Output
High	Clock Output
Open	Clock Output
Low	High Impedance

3.0 RELIABILITY

Microchip qualification includes aging at various extreme temperatures, shock and vibration, temperature cycling, and IR reflow simulation. The VC-820 family is capable of meeting the following qualification tests.

TABLE 3-1: ENVIRONMENTAL COMPLIANCE

Parameter	Conditions
Mechanical Shock	MIL-STD-883, Method 2002
Mechanical Vibration	MIL-STD-883, Method 2007
Solderability	MIL-STD-883, Method 2003
Gross and Fine Leak	MIL-STD-883, Method 1014
Resistance to Solvents	MIL-STD-883, Method 2015
Moisture Sensitivity Level	MSL 1
Contact Pads	Gold (0.3 µm min. to 1.0 µm max.) over Nickel
Weight	27 mg

4.0 IR REFLOW

The VC-820 is qualified to meet the JEDEC standard for Pb-Free assembly. The temperatures and time intervals listed are based on the Pb-Free small body requirements. The VC-820 device is hermetically sealed, so an aqueous wash is not an issue.

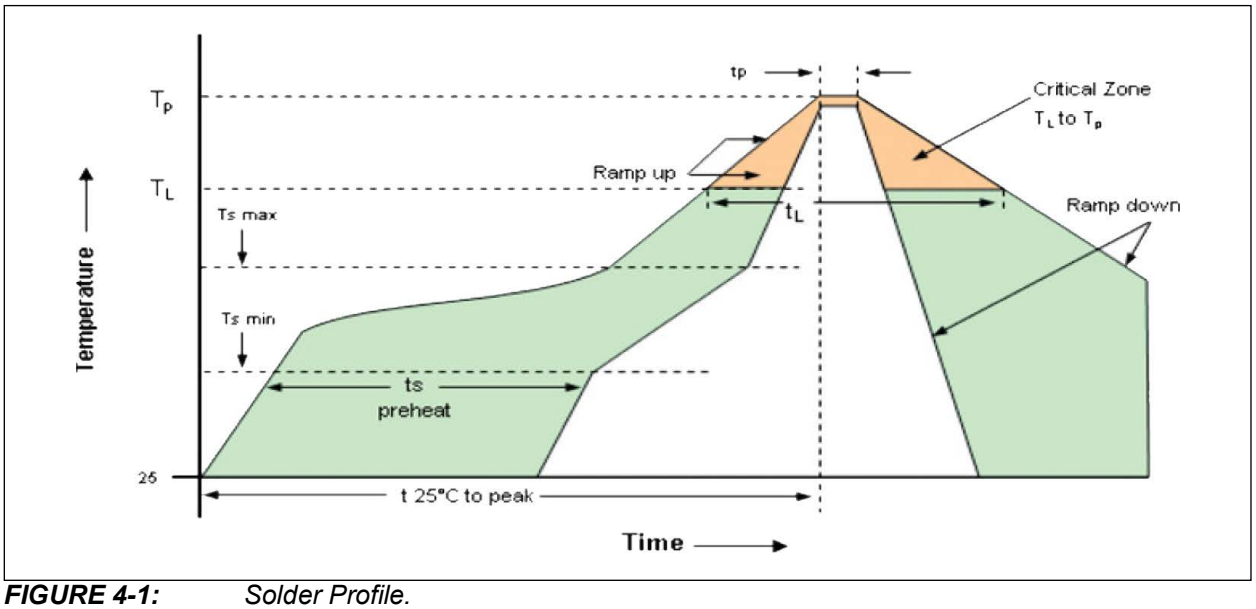


FIGURE 4-1: *Solder Profile.*

TABLE 4-1: REFLOW PROFILE

Parameter	Symbol	Value
Pre-Heat Time	t_S	60 sec. min., 260 sec. max.
$T_{S(MIN)}$	—	150°C
$T_{S(MAX)}$	—	200°C
Ramp Up	R_{UP}	3°C/sec max.
Time Above 217°C	t_L	60 sec. min., 150 sec. max.
Time to Peak Temperature	t_{AMB-P}	480 sec. max.
Time at 260°C	t_P	30 sec. max.
Ramp Down	R_{DN}	6°C/sec. max.

5.0 TAPE AND REEL

TABLE 5-1: TAPE AND REEL DIMENSIONS

Tape Dimensions (mm)						Reel Dimensions (mm)							
Dimension	W	F	Do	Po	P1	A	B	C	D	N	W1	W2	# per Reel
Tolerance	Typ.	Typ.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Min.	Typ.	Max.	
VC-820	8	3.5	1.5	4	4	175	2	13	21	60	10	14	3000

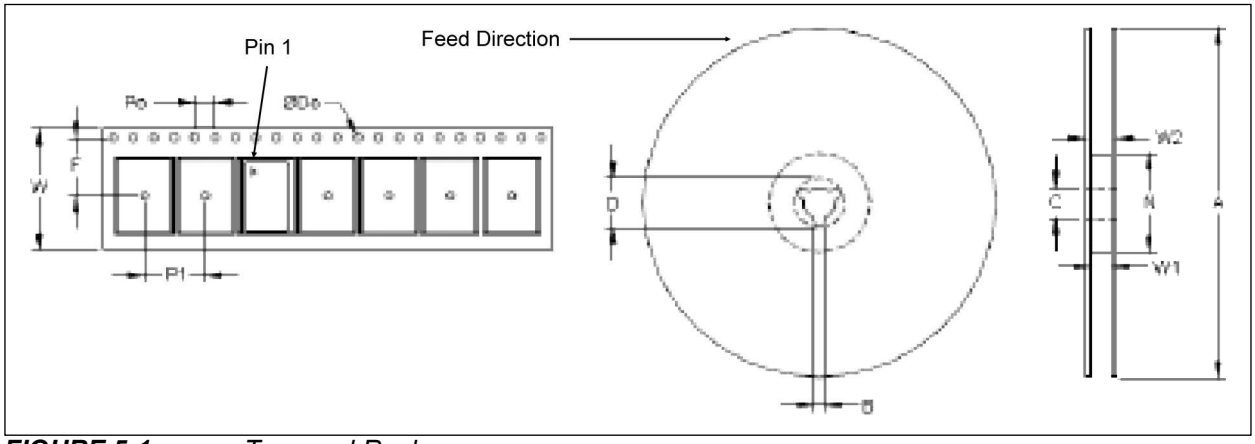


FIGURE 5-1: *Tape and Reel.*

Note: Pin 1 and feed direction are standard per EIA-481

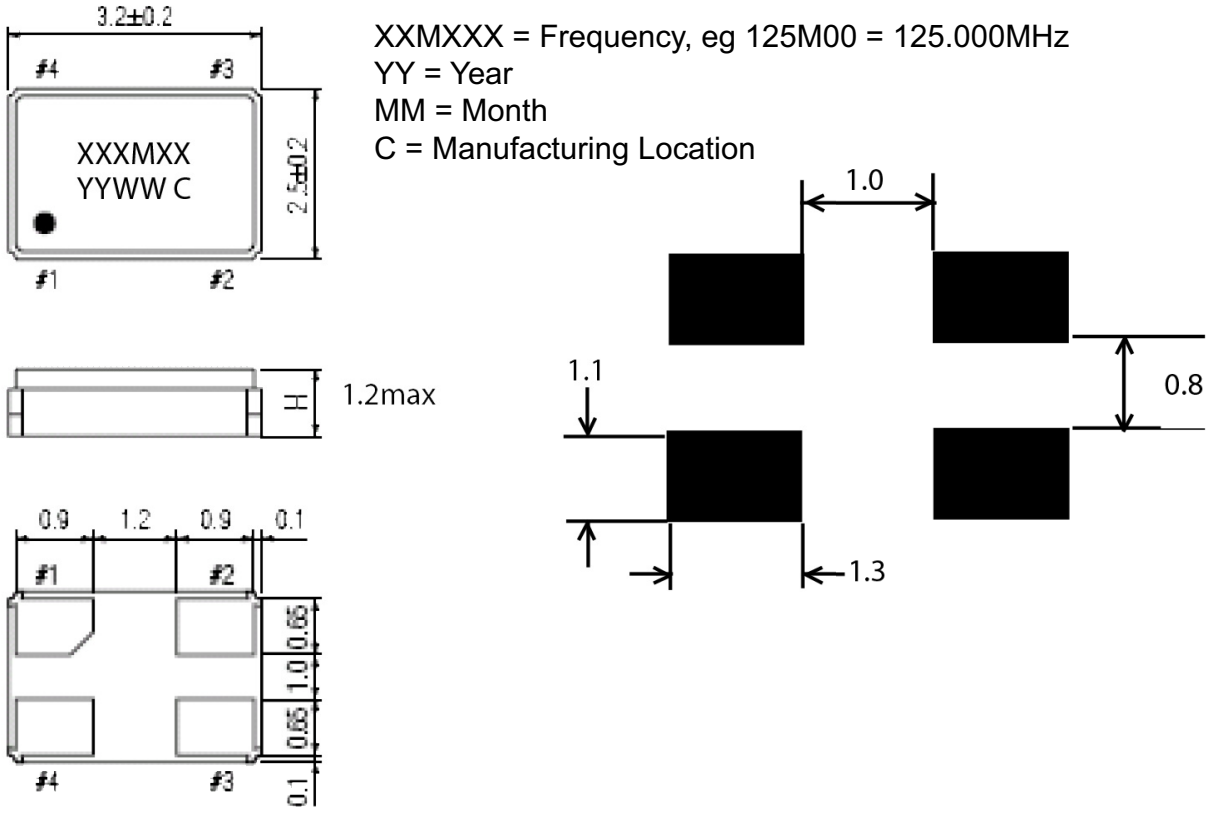
5.1 Standard Output Frequencies in MHz

- 0.032768
- 0.625000
- 2.000
- 4.000
- 8.000
- 10.000
- 10.700
- 14.31818
- 16.000
- 16.384
- 16.875
- 18.432
- 20.000
- 24.000
- 24.576
- 25.000
- 25.0125
- 26.000
- 27.000
- 28.63630
- 29.4912
- 30.000
- 31.250
- 31.700
- 32.000
- 33.000
- 33.333000
- 35.328
- 40.000
- 43.675771
- 48.000
- 50.000
- 62.500
- 64.000
- 66.666000
- 75.000
- 80.000
- 93.750
- 100.000
- 106.250
- 108.000
- 114.285
- 125.000
- 133.000

6.0 PACKAGING INFORMATION

4-Lead 3.2 mm × 2.5 mm × 1.2 mm VDFN [FEC] Package Outline and Recommended Land Pattern

Note: For the most current package drawings, please see the Microchip Packaging Specification located at http://www.microchip.com/packaging



Dimensions in mm

APPENDIX A: REVISION HISTORY

Revision A (April 2024)

- Converted Vectron document VC-820 to Microchip data sheet template DS20006895A.
- Minor grammatical text changes throughout.

Revision B (May 2026)

- Updated the frequency information in the Features list.
- Reformatted Table 4-1 for clarity.
- Updated Packaging Information drawing.
- Updated packaging values in the Product Identification System section.
- Minor stylistic text changes throughout.

NOTES:

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, contact your local Microchip representative or sales office.

XX-XXX	-X	X	X	-X	X	X	X	-xxXxxxxxxx	XX
Device	Power Supply	Output	Temperature Range	Stability	Enable/Disable	Load	Custom Options	Frequency	Packaging

Device:	VC-820	=	Crystal Oscillator as 3.2 mm × 2.5 mm × 1.2 mm ceramic VDFN
Power Supply:	E	=	3.3VDC
	H	=	2.5VDC
	J	=	1.8VDC
Output:	A	=	CMOS
Temp. Range:	W	=	–10°C to +70°C
	E	=	–40°C to +85°C
	F	=	–40°C to +105°C (±50 ppm and ±100 ppm only)
	7	=	–40°C to +125°C (±50 ppm and ±100 ppm only)
	B	=	–55°C to +105°C (±50 ppm and ±100 ppm only)
	C		–55°C to +125°C (±50 ppm and ±100 ppm only)
Stability:	E	=	±20 ppm
	F	=	±25 ppm
	K	=	±50 ppm
	S	=	±100 ppm
Enable/ Disable:	A	=	Enable High
Load:	A	=	15 pF
Custom Options:	N	=	Standard Option
Frequency:	xxMxxxxxxx	=	Frequency in MHz
	xxKxxxxxxx	=	Frequency in kHz
Packaging:	TR	=	3,000/Reel (standard Tape & Reel)
	<blank>	=	Cut Tape/Non-TR Quantities

Examples:

a) VC-820-EA7-KAAN-1M00000000TR

3.3VDC Power Supply, CMOS, –40°C to +125°C (±50 ppm and ±100 ppm only), ±50 ppm, Enable High, 15 pF Load, Standard Option, 1.0000 MHz Frequency, 3,000/Reel

b) VC-820-EAB-KAAN-10M0000000

3.3VDC Power Supply, CMOS, –55°C to +105°C (±50 ppm and ±100 ppm only), ±50 ppm, Enable High, 15 pF Load, Standard Option, 10.0000 MHz Frequency, Cut Tape

c) VC-820-EAW-SAAN-44M2368000

3.3VDC Power Supply, CMOS, –10°C to +70°C, ±100 ppm, Enable High, 15 pF Load, Standard Option, 44.2368 MHz Frequency, Cut Tape

d) VC-820-HAC-KAAN-125M0000000

2.5VDC Power Supply, CMOS, –55°C to +125°C (±50 ppm and ±100 ppm only), ±50 ppm, Enable High, 15 pF Load, Standard Option, 125.0000 MHz Frequency, Cut Tape

e) VC-820-JAE-FAAN-66M6660000TR

1.8VDC Power Supply, CMOS, –40°C to +85°C, ±25 ppm, Enable High, 15 pF Load, Standard Option, 66.6660 MHz Frequency, 3,000/Reel

Note 1: Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.

2: The frequency is 10 digits long including M, for MHz, or K, for kHz, and the prefix can be 1, 2 or 3 digits long.

NOTES:

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