
Low Power MEMS Oscillator

Features

- Any Frequency Between 3.5 kHz and 100 MHz
Accurate to 6 Decimal Places
- Low Power Consumption of 3.6 mA Typical
- CMOS-Compatible Output
- Industry-Standard Packages: 7.0 mm × 5.0 mm,
5.0 mm × 3.2 mm, 3.2 mm × 2.5 mm, 2.5 mm ×
2.0 mm, 2.0 mm × 1.6 mm, 1.6 mm × 1.2 mm

Applications

- Low Power/Portable Instrumentation
- Military Systems
- Medical Equipment
- Communication Systems

PERFORMANCE SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Output Frequency	f_{OUT}	3.5k	—	100M	Hz	—
Frequency Stability	f_{STAB}	-20	—	+20	ppm	Inclusive of initial tolerance at +25°C and variations over operating temperature, rated power supply voltage, and load.
		-25	—	+25		
		-50	—	+50		
Aging	f_{AGING}	-5	—	+5	ppm	1st year at +25°C
		-1	—	+1		After 1st year at +25°C
Operating Temperature Range	T_{OP}	-40	—	+125	°C	—
		-40	—	+105		
		-40	—	+85		
Supply Voltage	V_{DD}	1.71	1.8	1.98	V	—
		2.25	2.5	2.75		
		2.52	2.8	3.08		
		2.7	3.0	3.3		
		2.97	3.3	3.63		
Current Consumption	I_{DD}	—	4.0	—	mA	No load condition, $f = 27$ MHz, $V_{DD} = 2.0V, 2.8V, 3.0V, \text{ or } 3.3V$
		—	3.0	—		No load condition, $f = 27$ MHz, $V_{DD} = 1.8V$
Standby Current	I_{STD}	—	1.5	—	μA	$V_{DD} = 2.0V \text{ or } 3.3V$
		—	1	—		$V_{DD} = 1.8V$, Output is Weakly Pulled Down
Duty Cycle	DC	45	—	55	%	All supply voltage options
Rise Time	t_r	—	0.6	1.3	ns	20% to 80% $V_{DD} = 2.5V, 2.8V, 3.0V, \text{ or } 3.3V$; $C_L = 10$ pF
Fall Time	t_f	—	1.3	2.0	ns	20% to 80% $V_{DD} = 1.8V$; $C_L = 10$ pF
Output High Voltage	V_{OH}	80%	—	—	V_{DD}	$I_{OH} = 3$ mA
Output Low Voltage	V_{OL}	—	—	20%	V_{DD}	$I_{OL} = -3$ mA
Input High Voltage	V_{IH}	70%	—	—	V_{DD}	Input logic high
Input Low Voltage	V_{IL}	—	—	30%	V_{DD}	Input logic low
Input Pull-Up Impedance	Z_{IN}	—	300	—	kΩ	Pin 1, OE logic high or logic low, or ST logic high

M9061XX

PERFORMANCE SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Start-Up Time	t_{START}	—	—	1.5	ms	From 90% V_{DD} to valid clock output, $T = +25^{\circ}C$
Enable/Disable Time	t_{oe}	—	—	1	μs	Output disable time takes up to two periods of the output waveform + 200 ns
RMS Period Jitter	t_{JITT}	—	7	—	ps	$f = 27 \text{ MHz}, V_{DD} = 2.5V, 2.8V, 3.0V, \text{ or } 3.3V$
		—	8.5	—		$f = 27 \text{ MHz}, V_{DD} = 1.8V$
Cycle-to-Cycle Jitter	CC_{JITT}	—	35	60	ps	$f = 27 \text{ MHz}, V_{DD} = 2.0V, 2.8V, 3.0V, \text{ or } 3.3V$
		—	50	70		$f = 27 \text{ MHz}, V_{DD} = 1.8V$

ABSOLUTE MAXIMUM RATINGS

Parameter	Minimum	Maximum
Storage Temperature	$-65^{\circ}C$	$+150^{\circ}C$
V_{DD}	$-0.5V$	$+4V$
Electrostatic Discharge	—	2000V
Soldering Temperature (follow standard Pb-Free soldering guidelines)	—	$+260^{\circ}C$

ENVIRONMENTAL COMPLIANCE

Parameter	Condition/Test Method
Mechanical Shock	MIL-STD-883F, Method 2002
Mechanical Vibration	MIL-STD-883F, Method 2007
Temperature Cycle	JESD22, Method A104
Solderability	MIL-STD-883F, Method 2003
Moisture Sensitivity Level	MSL1 @ $260^{\circ}C$

1.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in [Table 1-1](#).

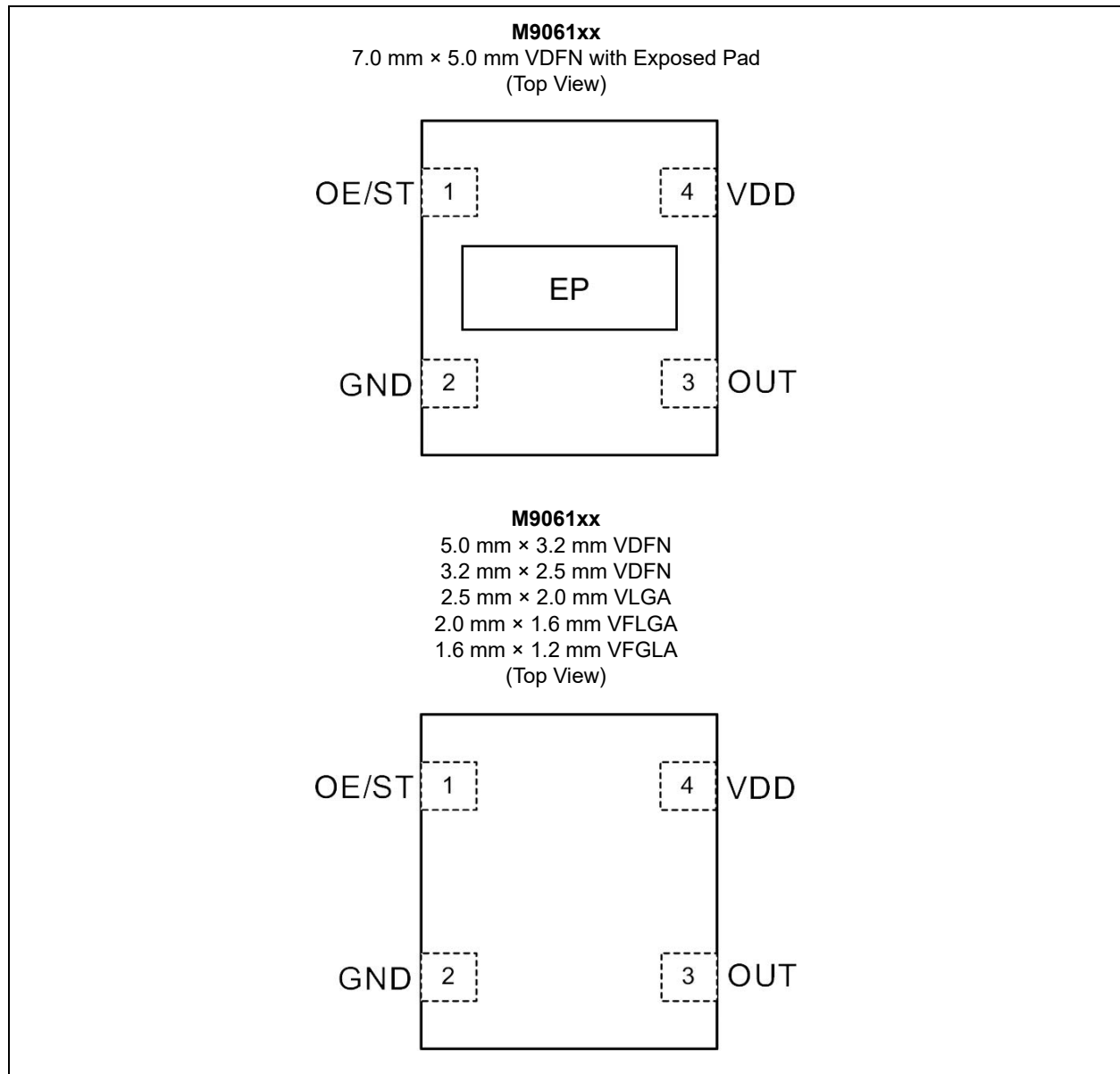
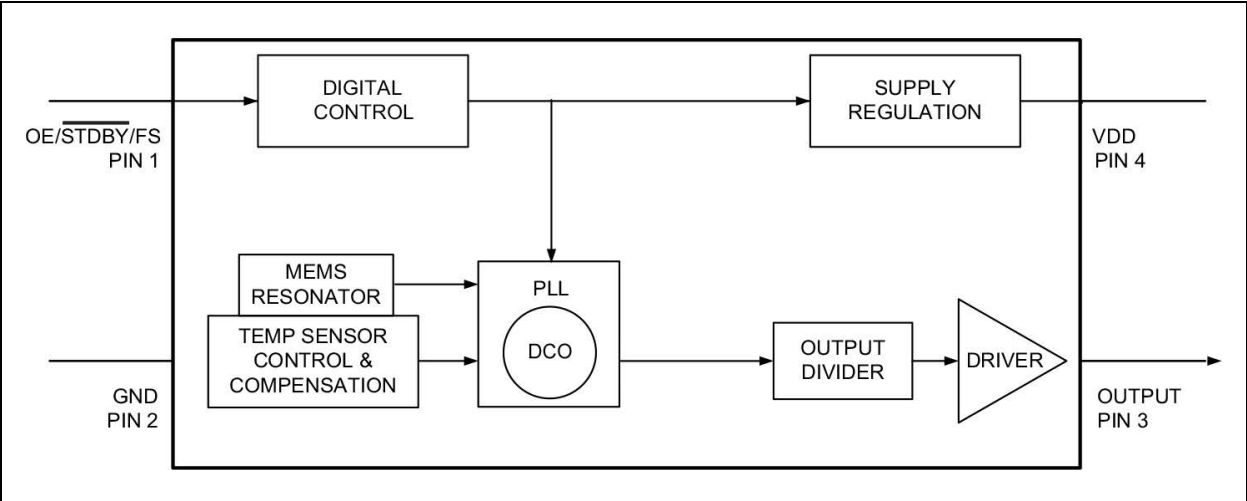


TABLE 1-1: PIN FUNCTION TABLE

Pin Number	Pin Name	Description
1	OE/ $\overline{\text{STBY}}$	Output Enable or Active-Low Standby. H or Open*: Specified frequency output. L: Output is high impedance. Only output driver is disabled.
		Standby. H or Open*: Specified frequency output. L: Output is low (weak pull down). Device goes to sleep mode. Supply current reduces to I_{STD} .
2	GND	Electrical ground power.
3	OUT	Oscillator output.
4	VDD	Power supply voltage.

M9061XX

2.0 FUNCTIONAL BLOCK DIAGRAM



3.0 RECOMMENDED REFLOW PROFILES FOR Pb-Free & Sn-Pb

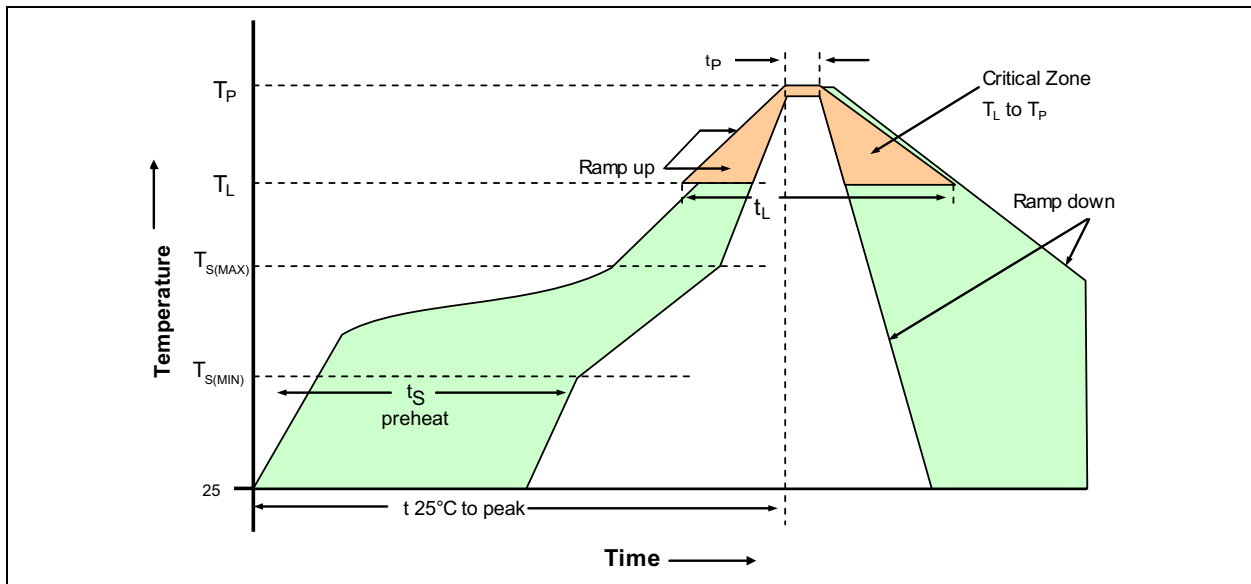


FIGURE 3-1: Reflow Profile.

TABLE 3-1: REFLOW PROFILE

Profile Feature	Symbol	Sn-Pb Assembly	Pb-Free Assembly
Average Ramp-Up Rate	T_L to T_P	3°C/second max.	3°C/second max.
Pre-Heat Minimum Temperature	$T_{S(MIN)}$	135°C	150°C
Pre-Heat Maximum Temperature	$T_{S(MAX)}$	155°C	200°C
Pre-Heat Time (from min. to max.)	t_S	60 to 90 seconds	60 to 180 seconds
$T_{S(MAX)}$ to T_L Ramp-Up Rate	—	3°C/second max.	3°C/second max.
Low Temperature of Critical Reflow Zone	T_L	183°C	217°C
Time Maintained Above T_L	—	40 to 60 seconds	60 to 150 seconds
Peak Temperature	T_P	230°C max.	260°C max.
Time from 25°C to Peak Temperature	—	4 minutes max.	8 minutes max.
Time within 5°C of Actual Peak Temperature	t_p	10 to 20 seconds max.	20 to 40 seconds max.
Ramp-Down Rate	—	6°C/second max.	6°C/second max.

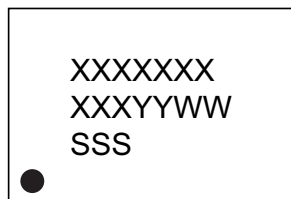
Note: All temperatures refer to the topside of the package, measured on the package body surface.

M9061XX

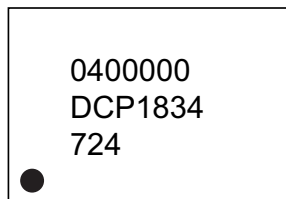
4.0 PACKAGING INFORMATION

4.1 Package Marking Information

4-Lead 7.0 mm × 5.0 mm VDFN*
4-Lead 5.0 mm × 3.2 mm VDFN*
4-Lead 3.2 mm × 2.5 mm VDFN*
4-Lead 2.5 mm × 2.0 mm VLGA*



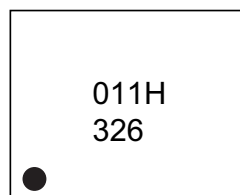
Example



4-Lead 2.0 × 1.6 mm VFLGA*
4-Lead 1.6 × 1.2 mm VFLGA*



Example

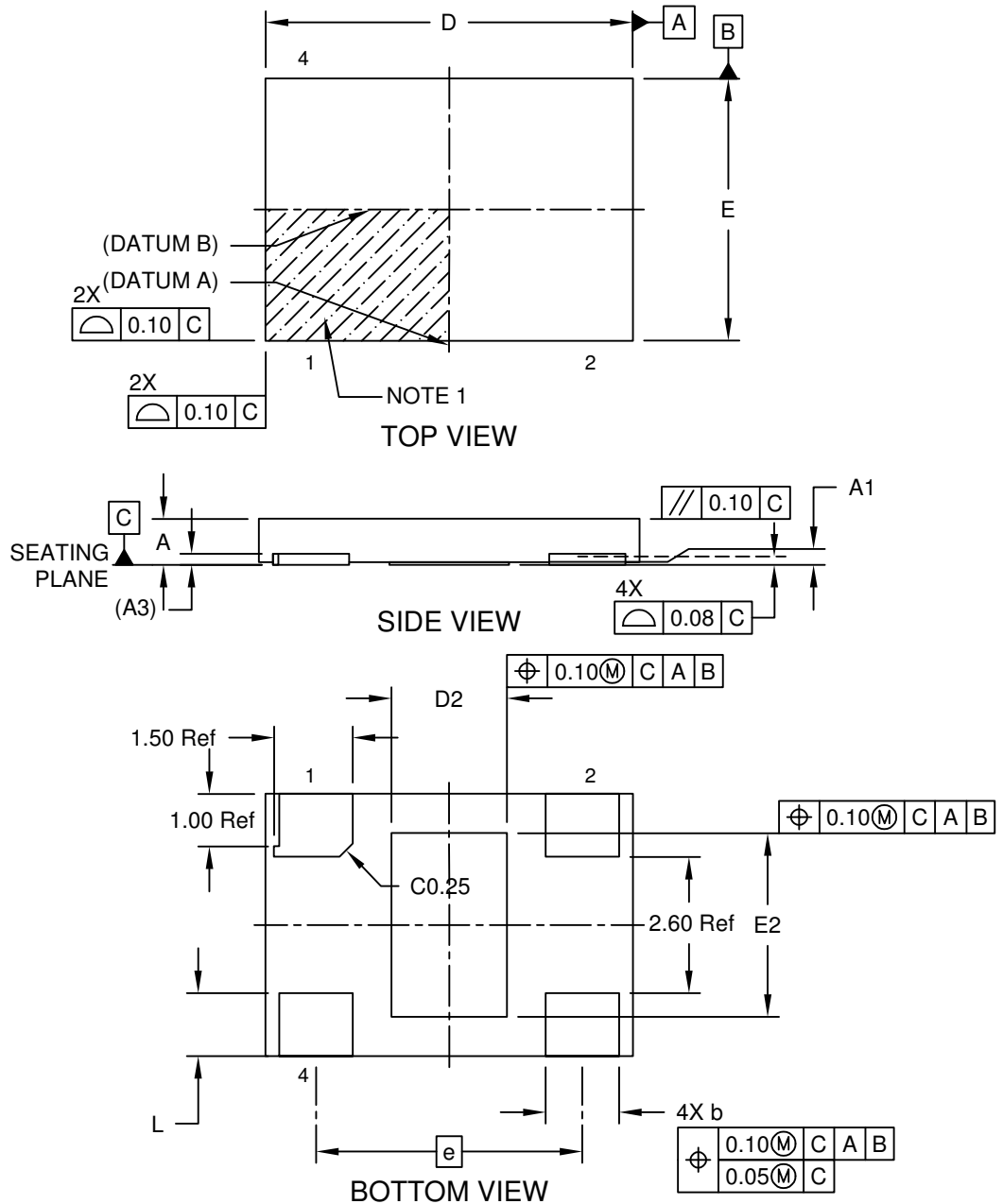


Legend:	XX...X	Product code or customer-specific information
	Y	Year code (last digit of calendar year)
	YY	Year code (last 2 digits of calendar year)
	WW	Week code (week of January 1 is week '01')
	SSS	Alphanumeric traceability code
	(e3)	Pb-free JEDEC® designator for Matte Tin (Sn)
	*	This package is Pb-free. The Pb-free JEDEC designator ((e3)) can be found on the outer packaging for this package.
	•, ▲, ▼	Pin one index is identified by a dot, delta up, or delta down (triangle mark).
Note:	In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or may not include the corporate logo.	
	Underbar (¯) and/or Overbar (˘) symbol may not be to scale.	

Note: If the full seven-character YYWWSSS code cannot fit on the package, the following truncated codes are used based on the available marking space:
6 Characters = YWWSSS; 5 Characters = WWSSS; 4 Characters = WSSS; 3 Characters = SSS;
2 Characters = SS; 1 Character = S.

4-Lead Very Thin Dual Flatpack, No-Lead Package (JZA) - 7.0 mm × 5.0 mm Body [VDFN] with 2.2 mm × 3.5 mm Exposed Pad

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

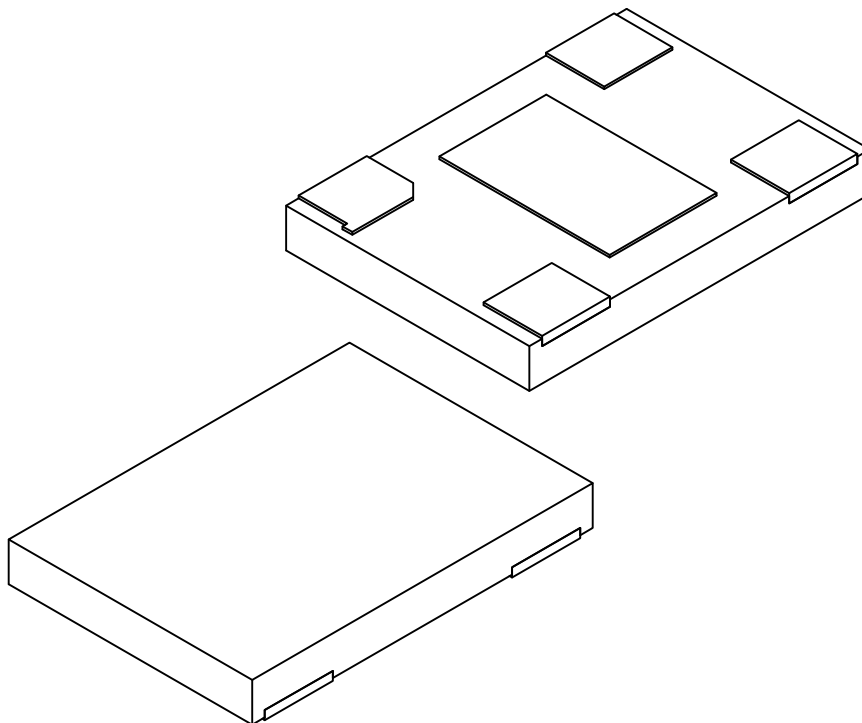


Microchip Technology Drawing C04-1025 Rev A Sheet 1 of 2

M9061XX

4-Lead Very Thin Dual Flatpack, No-Lead Package (JZA) - 7.0 mm × 5.0 mm Body [VDFN] with 2.2 mm × 3.5 mm Exposed Pad

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



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Number of Terminals	N	004		
Pitch	e	5.08 Ref		
Overall Height	A	0.80	0.85	0.90
Standoff	A1	0.00	-	0.05
Terminal Thickness	A3	0.203 Ref		
Overall Length	D	6.90	7.00	7.10
Exposed Pad Length	D2	2.10	2.20	2.30
Overall Width	E	4.90	5.00	5.10
Exposed Pad Width	E2	3.40	3.50	3.60
Terminal Width	b	1.35	1.40	1.45
Terminal Length	L	1.10	1.20	1.30

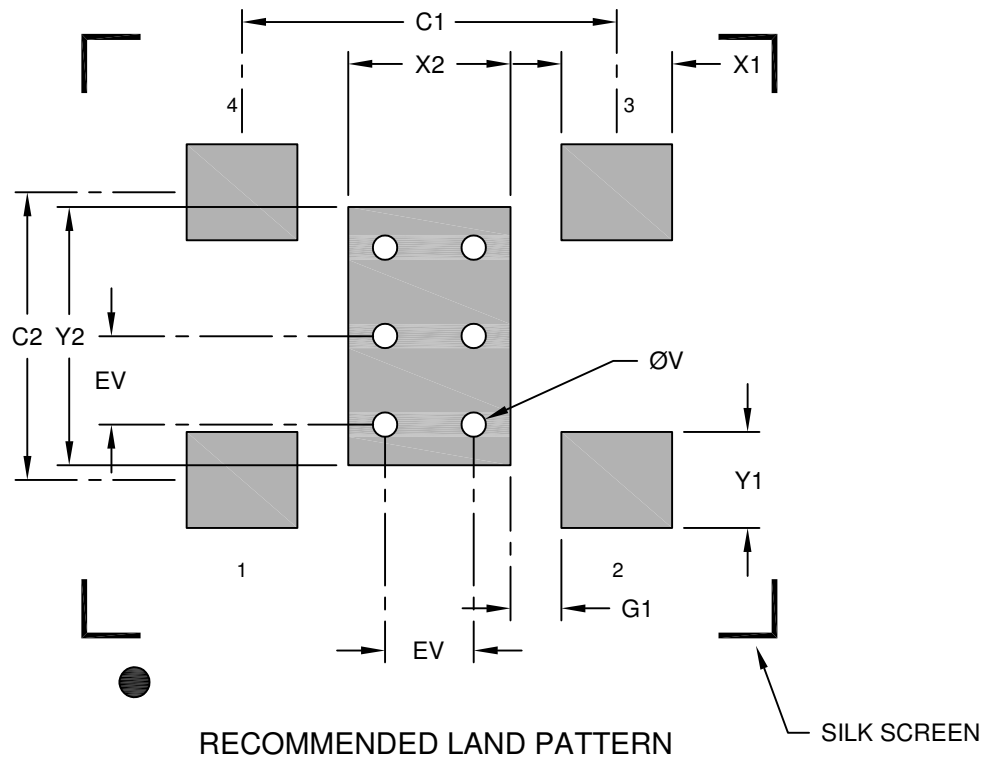
Notes:

1. Pin 1 visual index feature may vary, but must be located within the pin 1 area.
2. Package is saw singulated
3. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1025 Rev A Sheet 2 of 2

4-Lead Very Thin Dual Flatpack, No-Lead Package (JZA) - 7.0 mm × 5.0 mm Body [VDFN] with 2.2 mm × 3.5 mm Exposed Pad

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



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Optional Center Pad Width	X2			2.30
Optional Center Pad Length	Y2			3.60
Contact Pad Spacing	C1		5.08	
Contact Pad Spacing	C2		3.90	
Contact Pad Width (Xnn)	X1			1.50
Contact Pad Length (Xnn)	Y1			1.30
Contact Pad to Center Pad (Xnn)	G1	0.69		
Thermal Via Diameter	V		0.33	
Thermal Via Pitch	EV		1.20	

Notes:

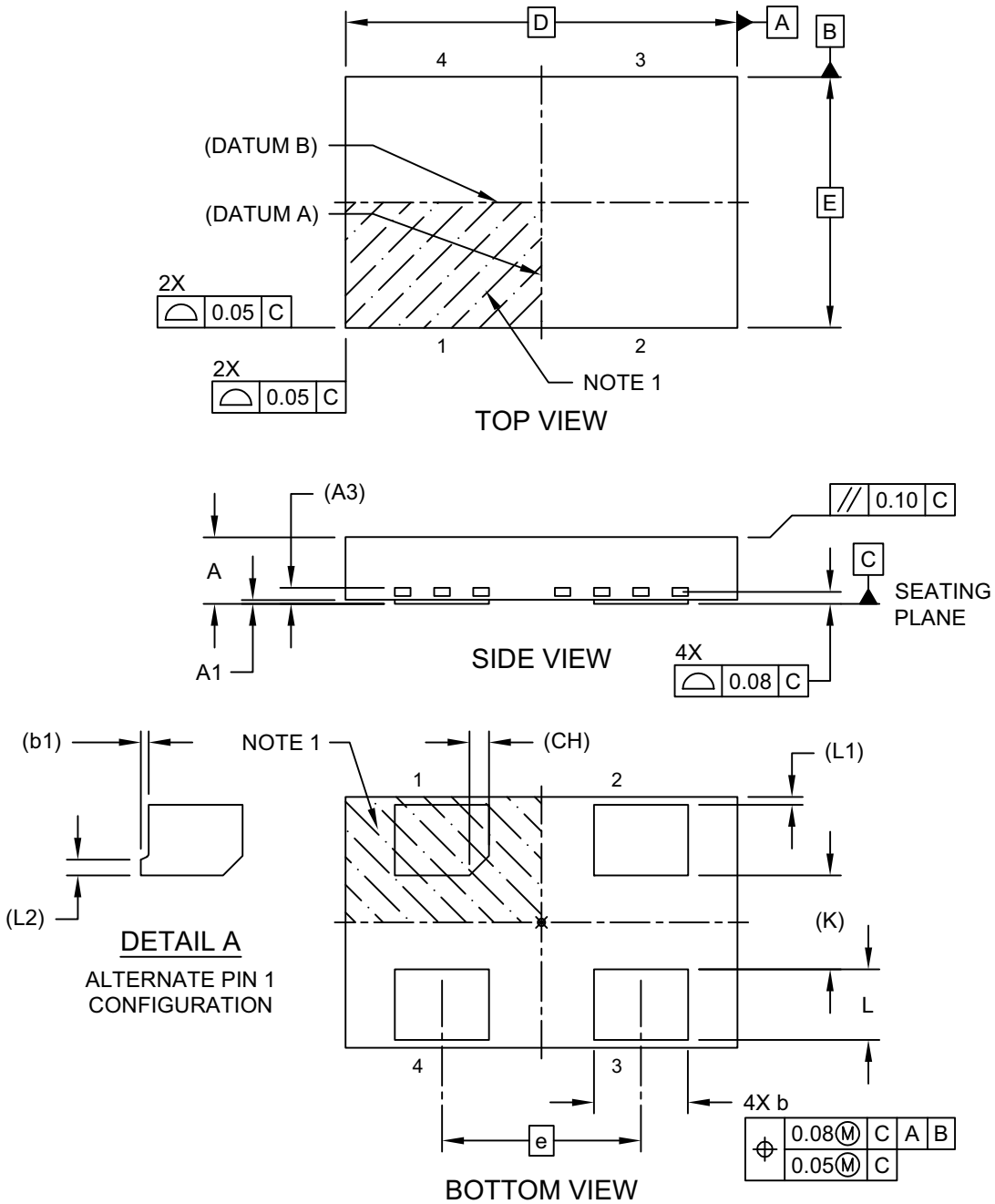
- Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
- For best soldering results, thermal vias, if used, should be filled or tented to avoid solder loss during reflow process

Microchip Technology Drawing C04-3025 Rev A

M9061XX

4-Lead Very Thin Plastic Dual Flat, No-Lead Package (H6A) - 5.0 mm × 3.2 mm Body [VDFN]

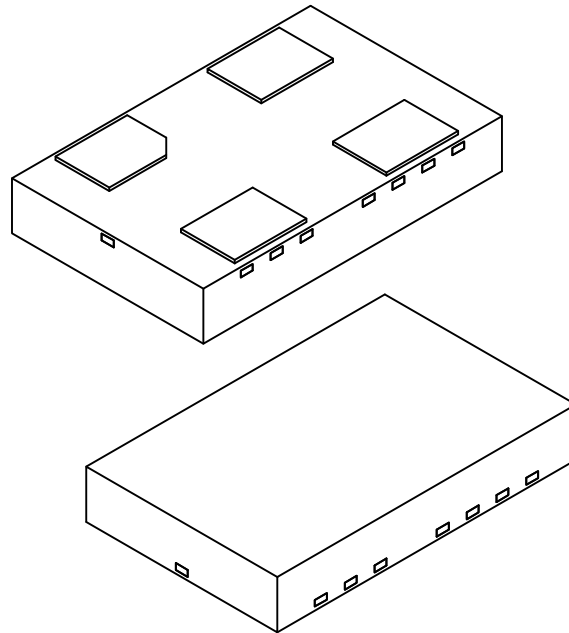
Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-1008 Rev A Sheet 1 of 2

4-Lead Very Thin Plastic Dual Flat, No-Lead Package (H6A) - 5.0 mm × 3.2 mm Body [VDFN]

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



Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N	4		
Pitch	e	2.54 BSC		
Overall Height	A	0.80	0.85	0.90
Standoff	A1	0.00	0.02	0.05
Terminal Thickness	A3	0.20 REF		
Overall Length	D	5.00 BSC		
Overall Width	E	3.20 BSC		
Terminal Width	b	1.15	1.20	1.25
Terminal 1 Tab	b1	0.10 REF		
Terminal Length	L	0.80	0.90	1.00
Terminal Pull Back	L1	0.10 REF		
Terminal 1 Tab	L2	0.20 REF		
Terminal 1 Chamfer	CH	0.25 REF		
Terminal Spacing	K	1.20 REF		

Notes:

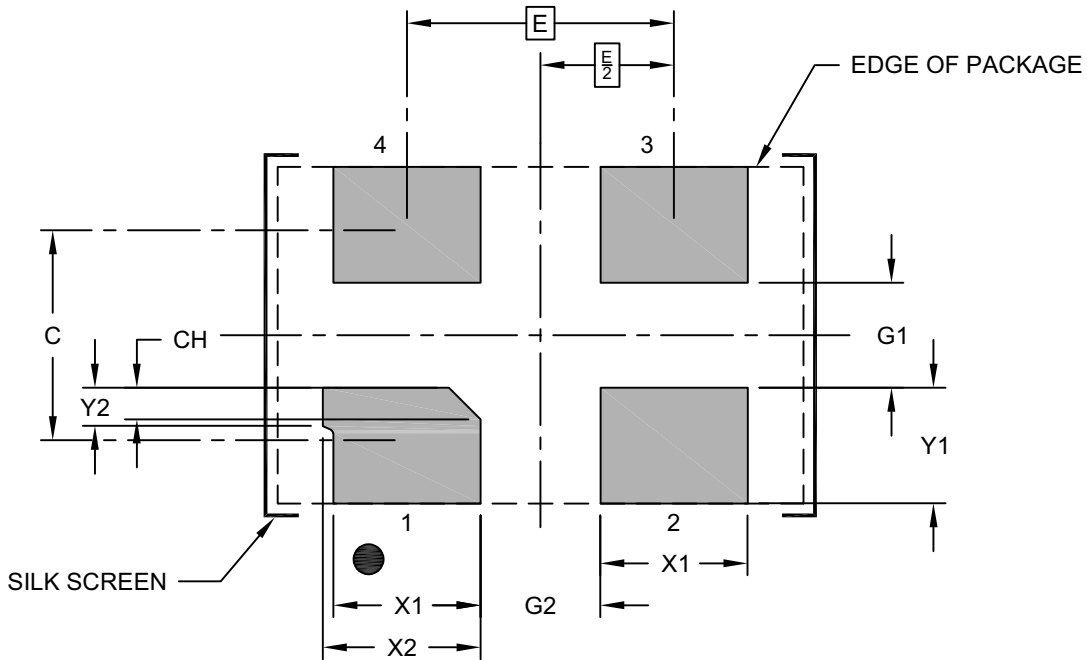
- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Package is saw singulated
- Dimensioning and tolerancing per ASME Y14.5M
 BSC: Basic Dimension. Theoretically exact value shown without tolerances.
 REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1008 Rev A Sheet 2 of 2

M9061XX

4-Lead Very Thin Plastic Dual Flat, No-Lead Package (H6A) - 5.0 mm × 3.2 mm Body [VDFN]

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



RECOMMENDED LAND PATTERN

Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Contact Pitch	E			
Contact Pad Spacing	C		2.00	
Contact Pad Width (X4)	X1			1.40
Contact Pad Width	X2			1.50
Contact Pad Length (X4)	Y1			1.10
Contact Pad Tab Length	Y2			0.36
Contact Pad to Center Pad (X2)	G1	1.00		
Contact Pad to Contact Pad (X2)	G2	1.14		
Terminal 1 Contact Pad Chamfer	CH		0.30	

Notes:

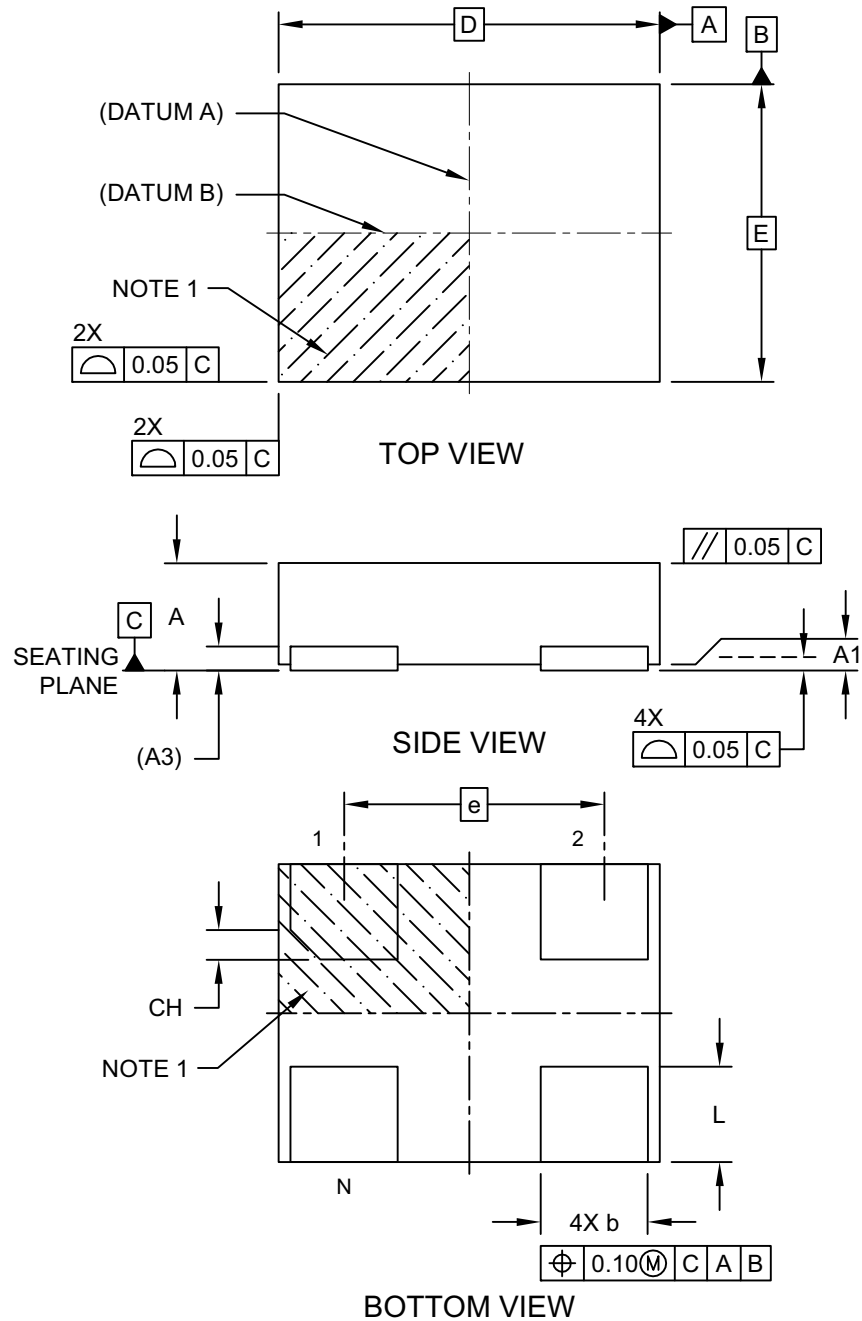
1. Dimensioning and tolerancing per ASME Y14.5M

BSC: Basic Dimension. Theoretically exact value shown without tolerances.

Microchip Technology Drawing C04-3008 Rev A

4-Lead Very Thin Plastic Dual Flatpack No-Lead (H4A) - 3.2 mm × 2.5 mm Body [VDFN]

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

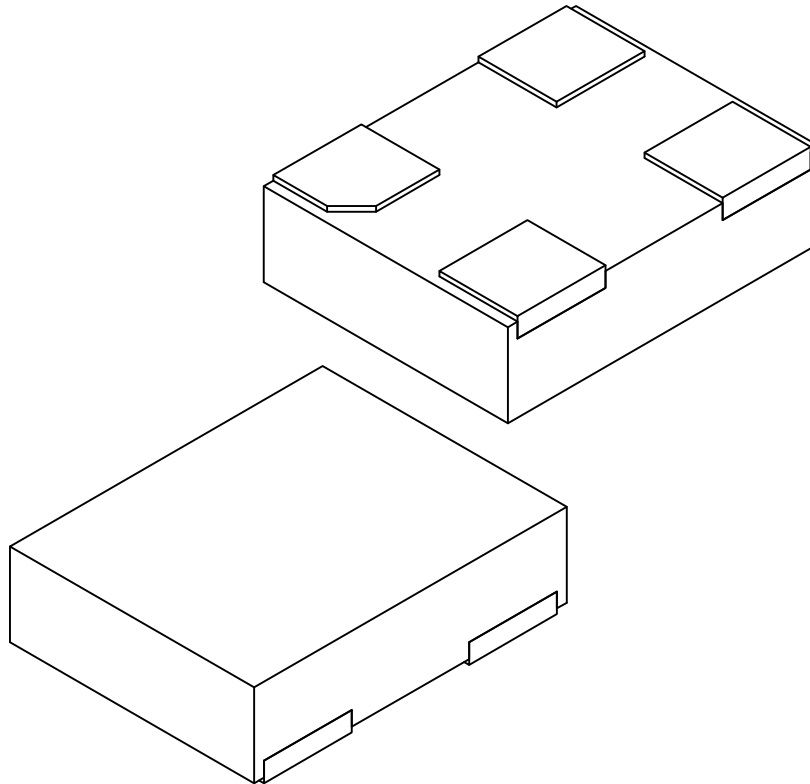


Microchip Technology Drawing C04-1006 Rev B Sheet 1 of 2

M9061XX

4-Lead Very Thin Plastic Dual Flatpack No-Lead (H4A) - 3.2 mm × 2.5 mm Body [VDFN]

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



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Number of Terminals	N	4		
Pitch	e	2.10 BSC		
Overall Height	A	0.80	0.85	0.90
Standoff	A1	0.00	0.02	0.05
Overall Length	D	3.20 BSC		
Overall Width	E	2.50 BSC		
Terminal Width	b	0.85	0.90	0.95
Terminal Length	L	0.70	0.80	0.90
Terminal 1 Index Chamfer	CH	0.25 REF		

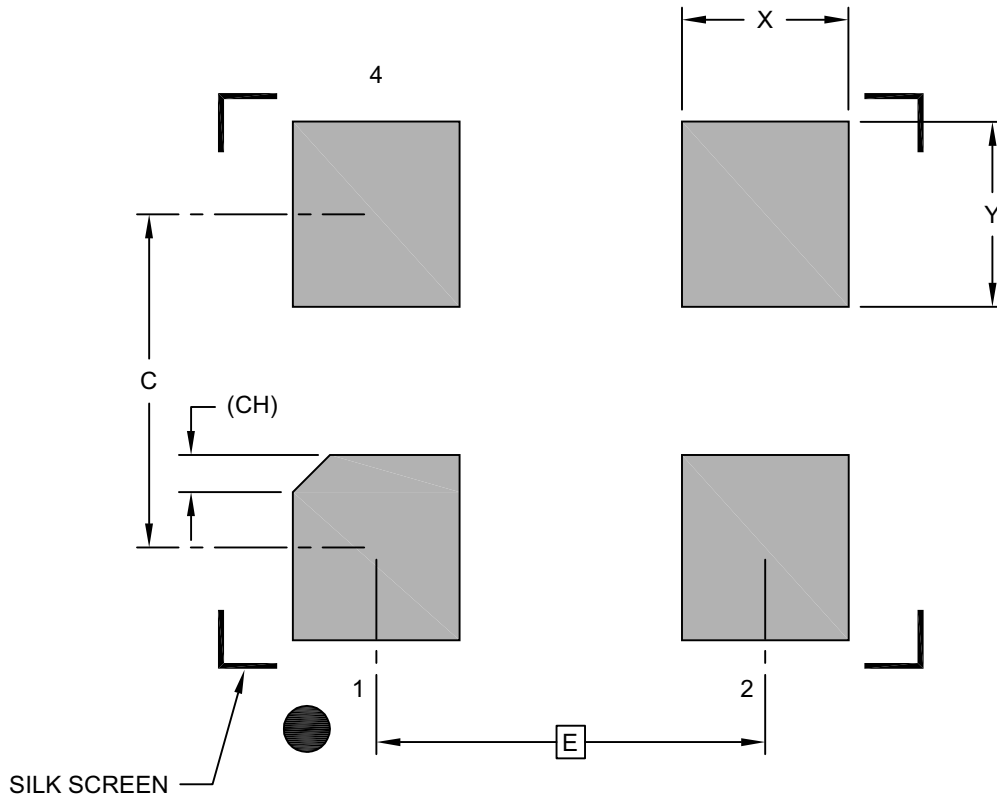
Notes:

1. Pin 1 visual index feature may vary, but must be located within the hatched area.
2. Package is saw singulated
3. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1006 Rev B Sheet 2 of 2

4-Lead Very Thin Plastic Dual Flatpack No-Lead (H4A) - 3.2 mm × 2.5 mm Body [VDFN]

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



RECOMMENDED LAND PATTERN

		MILLIMETERS		
Units				
Dimension Limits		MIN	NOM	MAX
Contact Pitch	E	2.10 BSC		
Contact Pad Spacing	C		1.80	
Contact Pad Width (Xnn)	X			0.90
Contact Pad Length (Xnn)	Y			1.00
Contact Pad Length (Xnn)	CH	0.20 REF		

Notes:

1. Dimensioning and tolerancing per ASME Y14.5M

BSC: Basic Dimension. Theoretically exact value shown without tolerances.

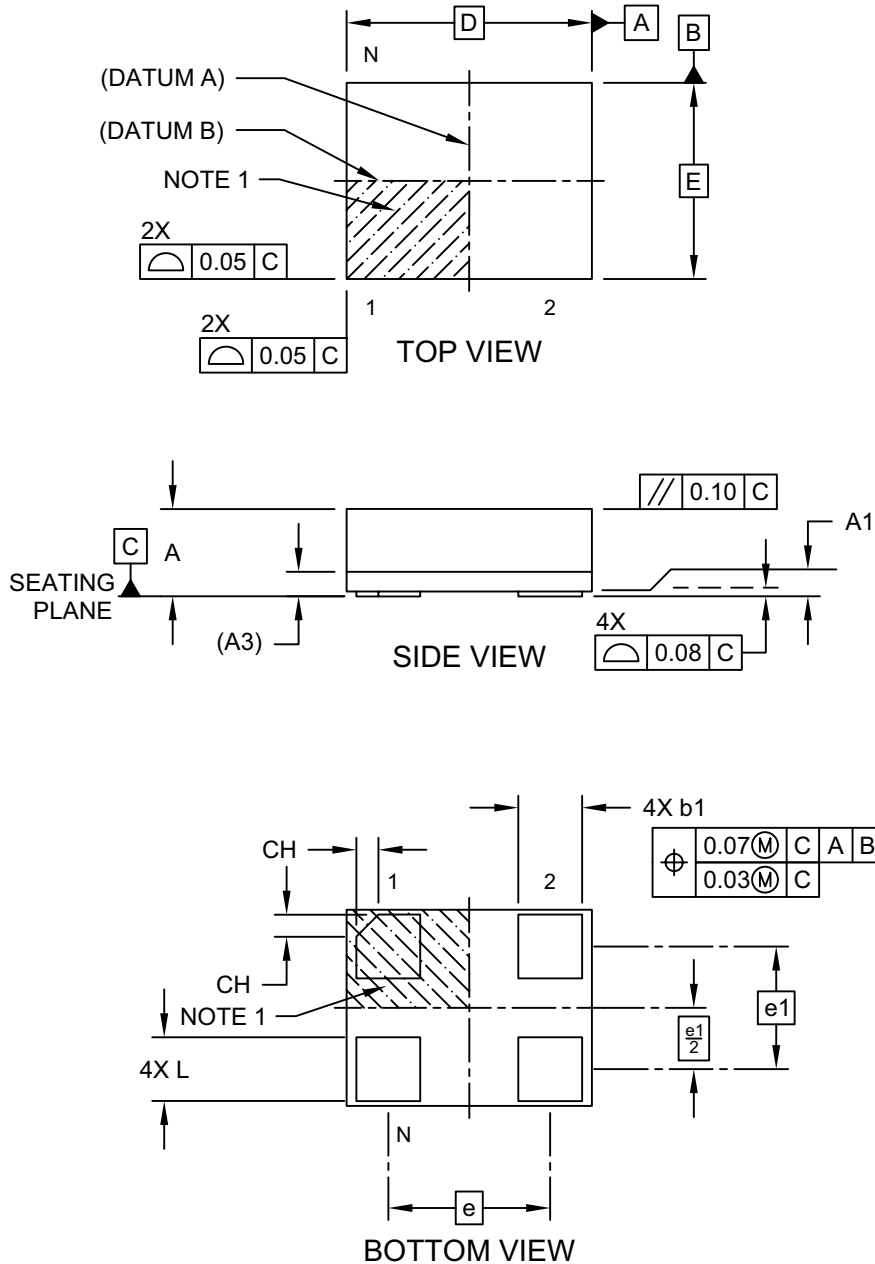
REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-3006 Rev B

M9061XX

4-Lead Very Thin Land Grid Array (AUA) - 2.5 mm × 2.0 mm Body [VLGA]

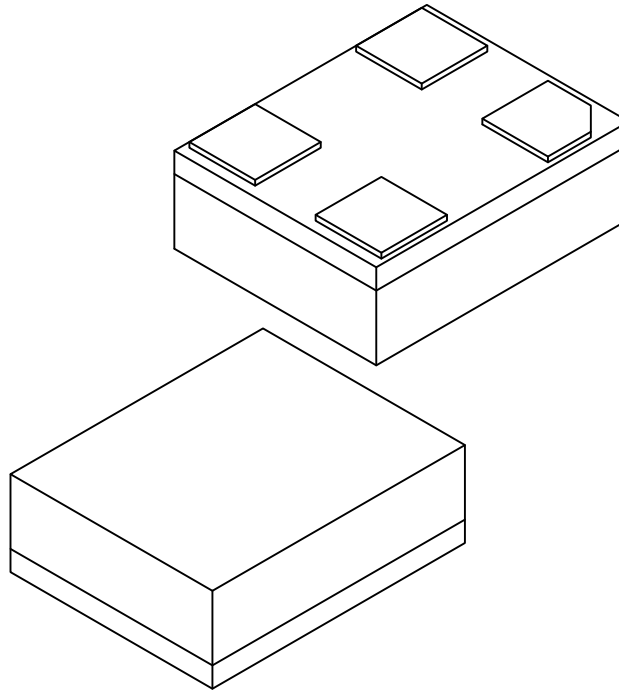
Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-1202B Sheet 1 of 2

4-Lead Very Thin Land Grid Array (AUA) - 2.5 mm × 2.0 mm Body [VLGA]

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



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Number of Terminals	N	4		
Terminal Pitch	e	1.65 BSC		
Terminal Pitch	e1	1.25 BSC		
Overall Height	A	0.79	0.84	0.89
Standoff	A1	0.00	0.02	0.05
Substrate Thickness (with Terminals)	A3	0.20 REF		
Overall Length	D	2.50 BSC		
Overall Width	E	2.00 BSC		
Terminal Width	b1	0.60	0.65	0.70
Terminal Length	L	0.60	0.65	0.70
Terminal 1 Index Chamfer	CH	-	0.225	-

Notes:

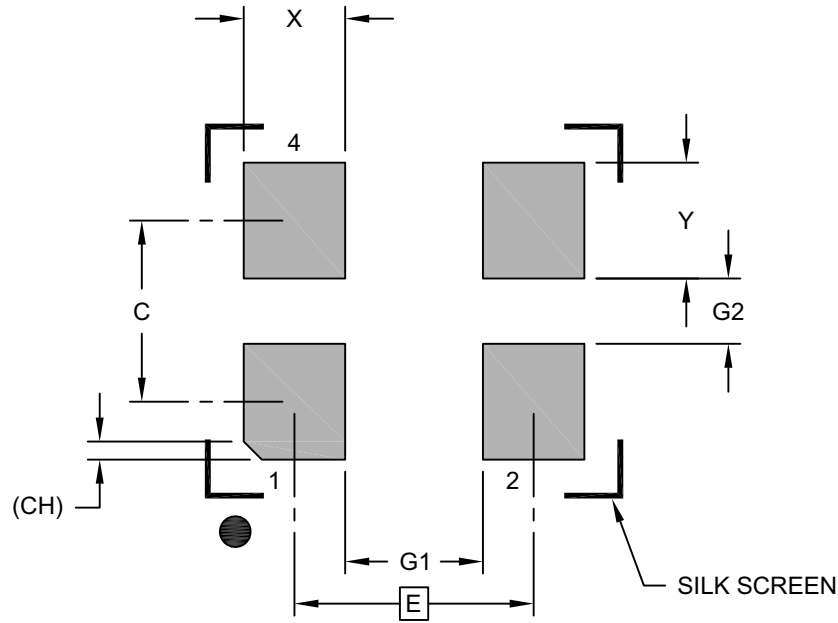
1. Pin 1 visual index feature may vary, but must be located within the hatched area.
2. Package is saw singulated
3. Dimensioning and tolerancing per ASME Y14.5M
 - BSC: Basic Dimension. Theoretically exact value shown without tolerances.
 - REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1202B Sheet 2 of 2

M9061XX

4-Lead Very Thin Land Grid Array (AUA) - 2.5 mm × 2.0 mm Body [VLGA]

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



RECOMMENDED LAND PATTERN

Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Contact Pitch	E	1.65 BSC		
Contact Spacing	C		1.25	
Contact Width (X4)	X			0.70
Contact Pad Length (X4)	Y			0.80
Space Between Contacts (X2)	G1	0.95		
Space Between Contacts (X2)	G2	0.45		
Contact 1 Index Chamfer	CH	0.13 X 45° REF		

Notes:

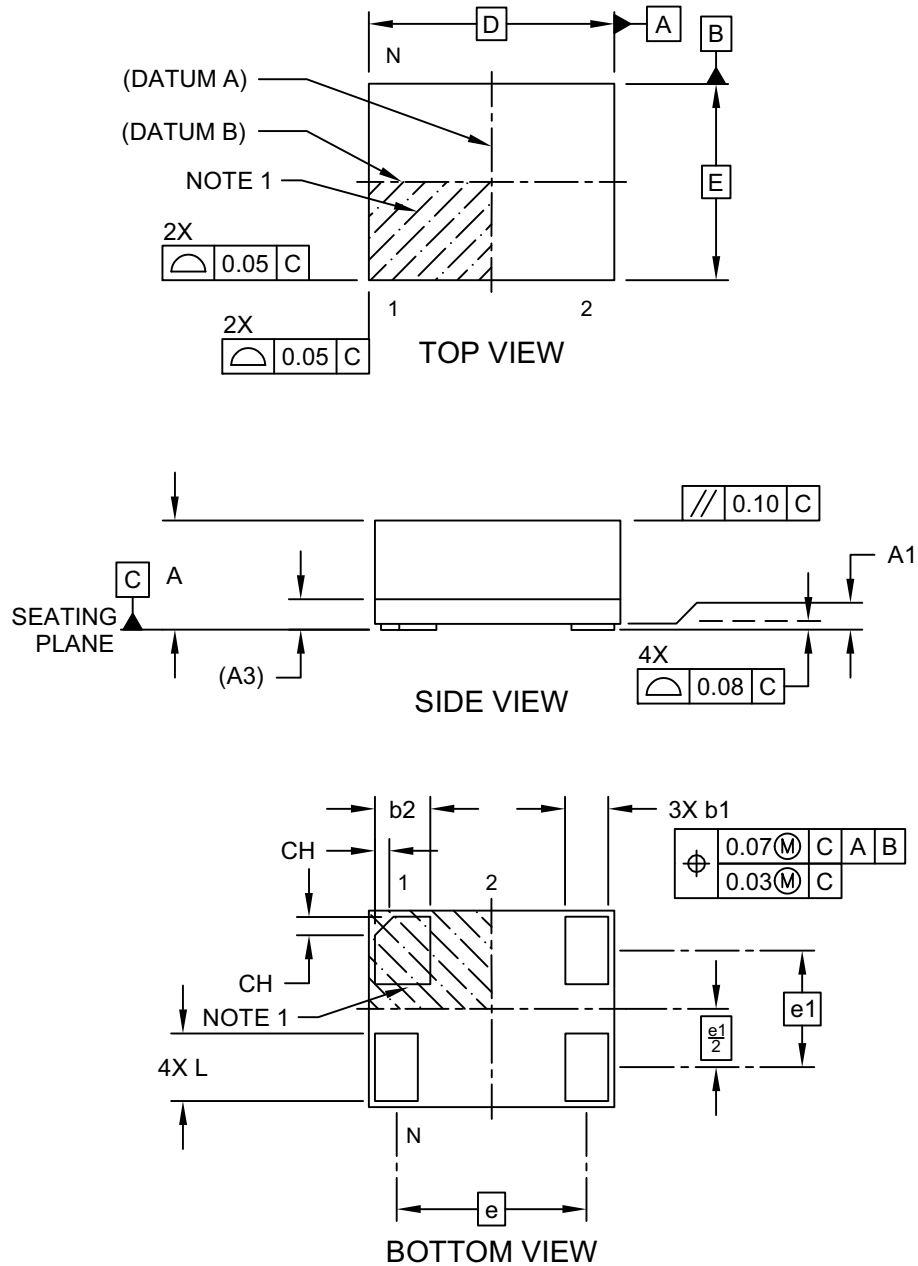
1. Dimensioning and tolerancing per ASME Y14.5M

BSC: Basic Dimension. Theoretically exact value shown without tolerances.

Microchip Technology Drawing C04-3202B

4-Lead Very Thin Fine Pitch Land Grid Array (ASA) - 2.0 mm × 1.6 mm Body [VFLGA]

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

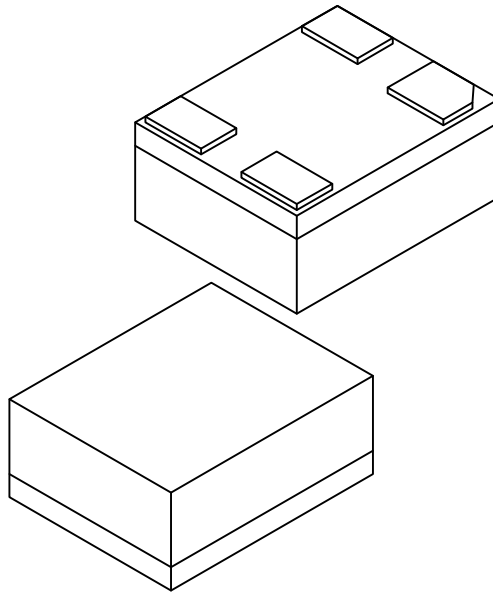


Microchip Technology Drawing C04-1200 Rev D Sheet 1 of 2

M9061XX

4-Lead Very Thin Fine Pitch Land Grid Array (ASA) - 2.0 mm × 1.6 mm Body [VFLGA]

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



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Number of Terminals	N	4		
Terminal Pitch	e	1.55 BSC		
Terminal Pitch	e1	0.95 BSC		
Overall Height	A	0.79	0.84	0.89
Standoff	A1	0.00	0.02	0.05
Substrate Thickness (with Terminals)	A3	0.20 REF		
Overall Length	D	2.00 BSC		
Overall Width	E	1.60 BSC		
Terminal Width	b1	0.30	0.35	0.40
Terminal Width	b2	0.40	0.45	0.50
Terminal Length	L	0.50	0.55	0.60
Terminal 1 Index Chamfer	CH	-	0.15	-

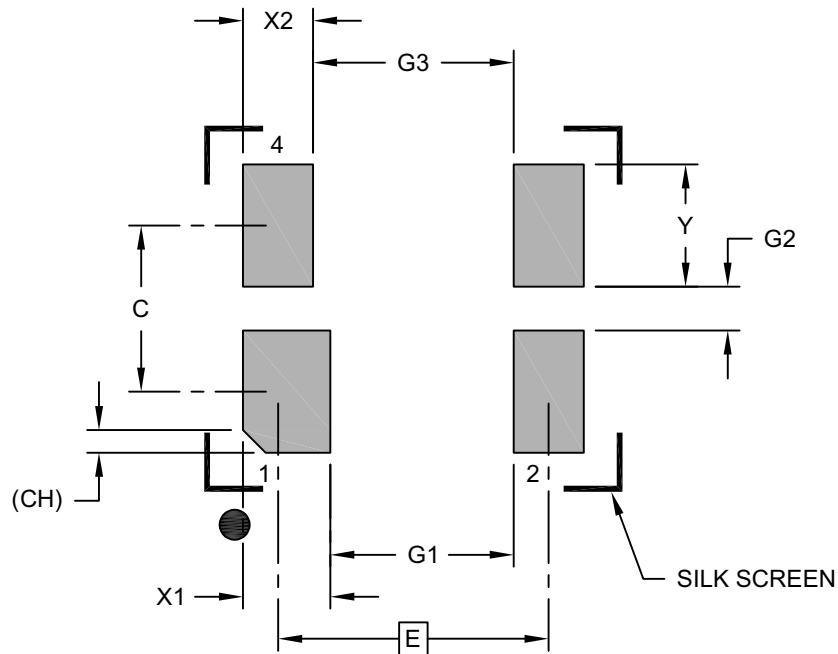
Notes:

1. Pin 1 visual index feature may vary, but must be located within the hatched area.
2. Package is saw singulated
3. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1200 Rev D Sheet 2 of 2

4-Lead Very Thin Fine Pitch Land Grid Array (ASA) - 2.0 mm × 1.6 mm Body [VFLGA]

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



RECOMMENDED LAND PATTERN

Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Contact Pitch	E	1.55 BSC		
Contact Spacing	C	0.95		
Contact Width	X1			0.50
Contact Width (X3)	X2			0.40
Contact Pad Length (X4)	Y			0.70
Space Between Contacts	G1	1.05		
Space Between Contacts (X2)	G2	0.25		
Space Between Contacts	G3	1.15		
Contact 1 Index Chamfer	CH	0.13 X 45° REF		

Notes:

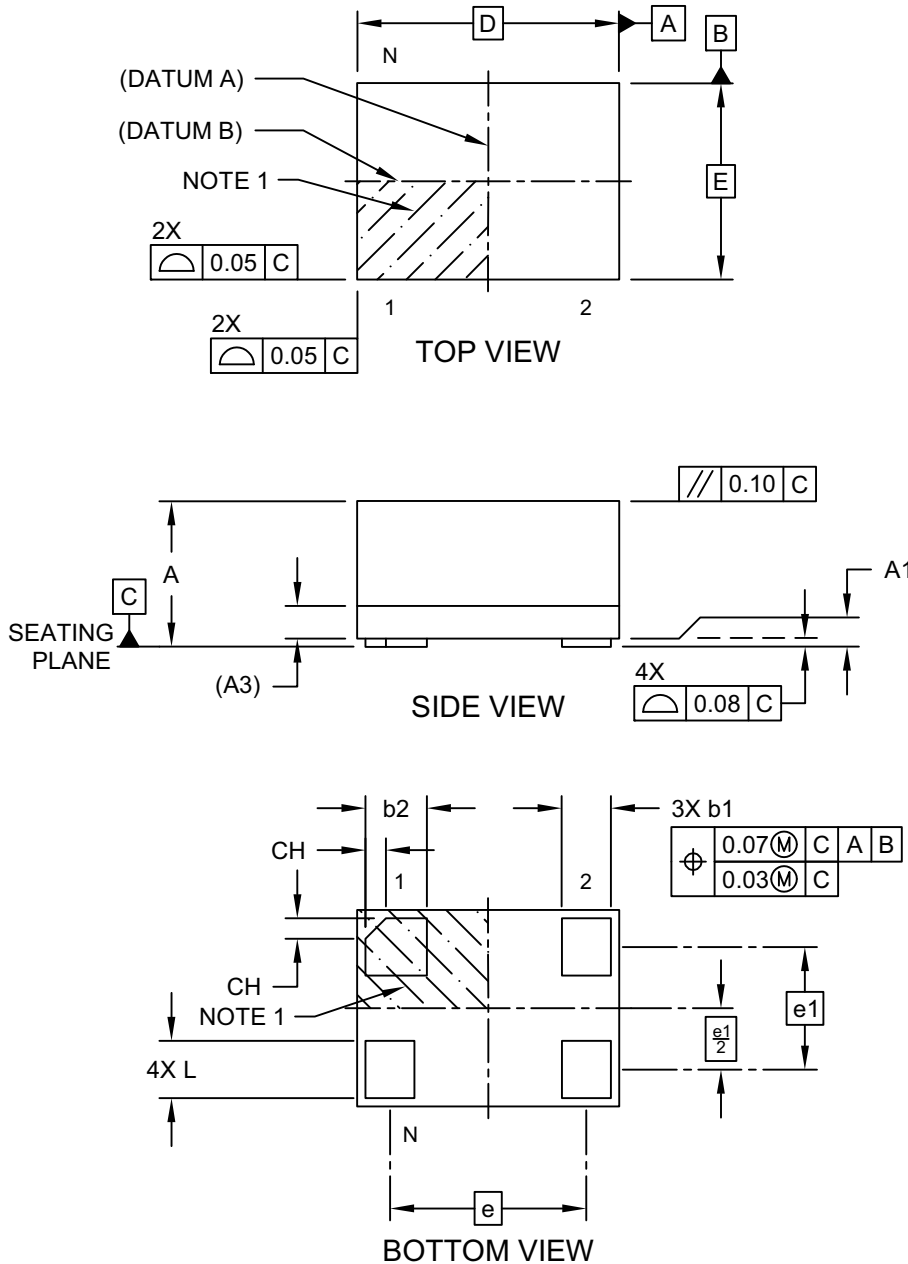
1. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
2. The value in parenthesis, next to the item description is a unit multiplier.

Microchip Technology Drawing C04-3200 Rev D

M9061XX

4-Lead Very Thin Fine Pitch Land Grid Array (ARA) - 1.6 mm × 1.2 mm Body [VFLGA]

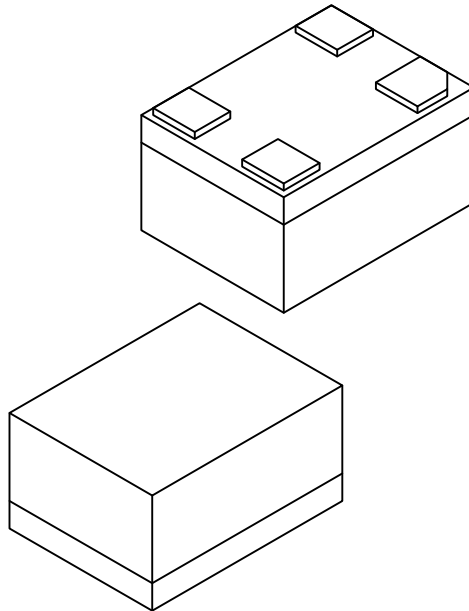
Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-1199B Sheet 1 of 2

4-Lead Very Thin Fine Pitch Land Grid Array (ARA) - 1.6 mm × 1.2 mm Body [VFLGA]

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



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Number of Terminals	N	4		
Terminal Pitch	e	1.20 BSC		
Terminal Pitch	e1	0.75 BSC		
Overall Height	A	0.79	0.84	0.89
Standoff	A1	0.00	0.02	0.05
Substrate Thickness (with Terminals)	A3	0.20 REF		
Overall Length	D	1.60 BSC		
Overall Width	E	1.20 BSC		
Terminal Width	b1	0.25	0.30	0.35
Terminal Width	b2	0.325	0.375	0.425
Terminal Length	L	0.30	0.35	0.40
Terminal 1 Index Chamfer	CH	-	0.125	-

Notes:

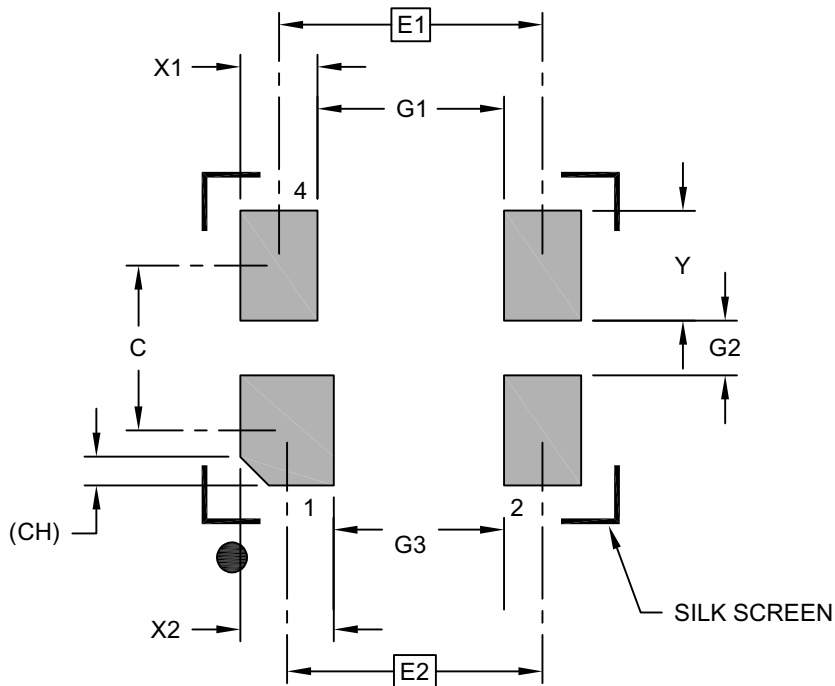
1. Pin 1 visual index feature may vary, but must be located within the hatched area.
2. Package is saw singulated
3. Dimensioning and tolerancing per ASME Y14.5M
 - BSC: Basic Dimension. Theoretically exact value shown without tolerances.
 - REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1199B Sheet 2 of 2

M9061XX

4-Lead Very Thin Fine Pitch Land Grid Array (ARA) - 1.6 mm × 1.2 mm Body [VFLGA]

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



RECOMMENDED LAND PATTERN

Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Contact Pitch	E1		1.20 BSC	
Contact Pitch	E2		1.16 BSC	
Contact Spacing	C		0.75	
Contact Width (X3)	X1			0.35
Contact Width	X2			0.43
Contact Pad Length (X4)	Y			0.50
Space Between Contacts	G1	0.85		
Space Between Contacts (X2)	G2	0.25		
Space Between Contacts	G3	0.77		
Contact 1 Index Chamfer	CH	0.13 X 45° REF		

Notes:

1. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
2. The value in parenthesis, next to the item description is a unit multiplier.

Microchip Technology Drawing C04-3199B

APPENDIX A: REVISION HISTORY

Revision A (March 2023)

- Initial release of M9061xx as Microchip data sheet DS20006771A.

M9061XX

NOTES:

PRODUCT IDENTIFICATION SYSTEM

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

<u>XXXXX</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>-xxx.xxxx</u> <u>-xxxKxxx</u>	<u>[X]</u> <u>[X XXXX]</u>	
Device	Feature Pin	Output Drive Strength	Package	Temperature Range	Stability	Revision	Frequency	Media Type	
Device:	M9061	=	Low Power MEMS Oscillator						Examples:
Feature Pin:	0	=	Enable/Disable						a) M906101AE2B-125.0000
	1	=	Standby						M9061xx, Enable/Disable Feature Pin, Standard Output Drive Strength, 4-Lead 1.6 mm × 1.2 mm VFLGA Package, -40°C to +125°C Temp. Range, ±20 ppm Stability, Revision B, 125.0000 MHz Frequency, Cut Tape/non-TR (100/Bag)
Output Drive Strength:	1	=	Standard						b) M906111CI1B-024.0000
	A	=	4-Lead 7.0 mm × 5.0 mm VDFN						M9061xx, Standby Feature Pin, Standard Output Drive Strength, 4-Lead 7.0 mm × 5.0 mm VDFN Package, -40°C to +105°C Temp. Range, ±25 ppm Stability, Revision B, 024.0000 MHz Frequency, Cut Tape/non-TR (50/Tube, 100-piece minimum order)
	B	=	4-Lead 5.0 mm × 3.2 mm VDFN						c) M906101CE2B-026.0000
	C	=	4-Lead 3.2 mm × 2.5 mm VDFN						M9061xx, Enable/Disable Feature Pin, Standard Output Drive Strength, 4-Lead 5.0 mm × 3.2 mm VDFN Package, -40°C to +85°C Temp. Range, ±50 ppm Stability, Revision B, 026.0000 MHz Frequency, Cut Tape/non-TR (72/Tube, 144-piece minimum order)
	J	=	4-Lead 2.5 mm × 2.0 mm VLGA						d) M906111JI1B-033.3333
	M	=	4-Lead 2.0 mm × 1.6 mm VFLGA						M9061xx, Standby Feature Pin, Standard Output Drive Strength, 4-Lead 3.2 mm × 2.5 mm VDFN Package, -20°C to +70°C Temp. Range, ±20 ppm Stability, Revision B, 033.3333 MHz Frequency, Cut Tape/non-TR (110/Tube)
	H	=	4-Lead 1.6 mm × 1.2 mm VFLGA						e) M906101ME2B-025.0000
Temperature Range:	A	=	-40°C to +125°C						M9061xx, Enable/Disable Feature Pin, Standard Output Drive Strength, 4-Lead 2.5 mm × 2.0 mm VLGA Package, -40°C to +125°C Temp. Range, ±25 ppm Stability, Revision B, 025.0000 MHz Frequency, Cut Tape/non-TR (100/Bag)
	L	=	-40°C to +105°C						f) M906111HI1B-100K000
	I	=	-40°C to +85°C						M9061xx, Standby Feature Pin, Standard Output Drive Strength, 4-Lead 2.0 mm × 1.6 mm VFLGA Package, -40°C to +105°C Temp. Range, ±20 ppm Stability, Revision B, 100.000 MHz Frequency, Cut Tape/non-TR (140/Tube)
	E	=	-20°C to +70°C						g) M906101AE2B-026.0000T
Stability:	1	=	±50 ppm						M9061xx, Enable/Disable Feature Pin, Standard Output Drive Strength, 4-Lead 1.6 mm × 1.2 mm VFLGA Package, -40°C to +125°C Temp. Range, ±20 ppm Stability, Revision B, 026.0000 MHz Frequency, Tape and Reel (1000/Reel)
	2	=	±25 ppm						h) M906111CI1B-050.0000T_SNPB
	3	=	±20 ppm						M9061xx, Enable/Disable Feature Pin, Standard Output Drive Strength, 4-Lead 1.6 mm × 1.2 mm VFLGA Package, -40°C to +125°C Temp. Range, ±20 ppm Stability, Revision B, 050.0000 MHz Frequency, Tin Lead Solder Dip (500/Reel)
Revision:	B	=	Revision B						
Frequency:	xxx.xxxx	=	User-Defined Frequency Between 001.0000 MHz and 100.0000 MHz						
	xxxKxxx	=	User-Defined Frequency Between 003.500 kHz and 999.999 kHz						
Media Type:	<blank>	=	Cut Tape/non-TR quantities						
	T	=	Tape and Reel						
	T_SNPB	=	Tin Lead (SnPb) Solder Dip						
Note	1:		The SnPb solder dip media type is not supported for Package H (4-Lead 1.6 mm × 1.2 mm VFLGA).						
	2:		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.						

M9061XX

TABLE 0-1: MINIMUM ORDER QUANTITY

Package or Media Type	Pieces	Notes
Package A	50 pieces per tube	100 piece minimum order
Package B	72 pieces per tube	144 piece minimum order
Package C	110 pieces per tube	—
Package M	140 pieces per tube	—
Package J	100 pieces per bag	—
Package H	100 pieces per bag	—
Tape and Reel	1000 pieces per reel	—
SnPb Solder Dip	500 pieces per reel	—

Note the following details of the code protection feature on Microchip products:

- Microchip products meet the specifications contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is secure when used in the intended manner, within operating specifications, and under normal conditions.
- Microchip values and aggressively protects its intellectual property rights. Attempts to breach the code protection features of Microchip product is strictly prohibited and may violate the Digital Millennium Copyright Act.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code protection does not mean that we are guaranteeing the product is "unbreakable" Code protection is constantly evolving. Microchip is committed to continuously improving the code protection features of our products.

This publication and the information herein may be used only with Microchip products, including to design, test, and integrate Microchip products with your application. Use of this information in any other manner violates these terms. Information regarding device applications is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. Contact your local Microchip sales office for additional support or, obtain additional support at <https://www.microchip.com/en-us/support/design-help/client-support-services>.

THIS INFORMATION IS PROVIDED BY MICROCHIP "AS IS". MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES RELATED TO ITS CONDITION, QUALITY, OR PERFORMANCE.

IN NO EVENT WILL MICROCHIP BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL LOSS, DAMAGE, COST, OR EXPENSE OF ANY KIND WHATSOEVER RELATED TO THE INFORMATION OR ITS USE, HOWEVER CAUSED, EVEN IF MICROCHIP HAS BEEN ADVISED OF THE POSSIBILITY OR THE DAMAGES ARE FORESEEABLE. TO THE FULLEST EXTENT ALLOWED BY LAW, MICROCHIP'S TOTAL LIABILITY ON ALL CLAIMS IN ANY WAY RELATED TO THE INFORMATION OR ITS USE WILL NOT EXCEED THE AMOUNT OF FEES, IF ANY, THAT YOU HAVE PAID DIRECTLY TO MICROCHIP FOR THE INFORMATION.

Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

For information regarding Microchip's Quality Management Systems, please visit www.microchip.com/quality.

Trademarks

The Microchip name and logo, the Microchip logo, Adaptec, AVR, AVR logo, AVR Freaks, BesTime, BitCloud, CryptoMemory, CryptoRF, dsPIC, flexPWR, HELDO, IGL00, JukeBlox, KeeLoq, Klear, LANCheck, LinkMD, maXStylus, maXTouch, MediaLB, megaAVR, Microsemi, Microsemi logo, MOST, MOST logo, MPLAB, OptoLyzer, PIC, picoPower, PICSTART, PIC32 logo, PolarFire, Prochip Designer, QTouch, SAM-BA, SenGenuity, SpyNIC, SST, SST Logo, SuperFlash, Symmetricom, SyncServer, Tachyon, TimeSource, tinyAVR, UNI/O, Vectron, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

AgileSwitch, APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, Flashtec, Hyper Speed Control, HyperLight Load, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, Quiet-Wire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePictra, TimeProvider, TrueTime, and ZL are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, Augmented Switching, BlueSky, BodyCom, Clockstudio, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, Espresso T1S, EtherGREEN, GridTime, IdealBridge, In-Circuit Serial Programming, ICSP, INICnet, Intelligent Paralleling, IntelliMOS, Inter-Chip Connectivity, JitterBlocker, Knob-on-Display, KoD, maxCrypto, maxView, memBrain, Mindi, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, PowerSmart, PureSilicon, QMatrix, REAL ICE, Ripple Blocker, RTAX, RTG4, SAM-ICE, Serial Quad I/O, simpleMAP, SimpliPHY, SmartBuffer, SmartHLS, SMART-I.S., storClad, SQI, SuperSwitcher, SuperSwitcher II, Switchtec, SynchroPHY, Total Endurance, Trusted Time, TSHARC, USBCheck, VariSense, VectorBlox, VeriPHY, ViewSpan, WiperLock, XpressConnect, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

The Adaptec logo, Frequency on Demand, Silicon Storage Technology, and Symmcom are registered trademarks of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2023, Microchip Technology Incorporated and its subsidiaries.

All Rights Reserved.

ISBN: 978-1-6683-2232-1



MICROCHIP

Worldwide Sales and Service

AMERICAS

Corporate Office
2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200
Fax: 480-792-7277
Technical Support:
[http://www.microchip.com/
support](http://www.microchip.com/support)
Web Address:
www.microchip.com

Atlanta

Duluth, GA
Tel: 678-957-9614
Fax: 678-957-1455

Austin, TX

Tel: 512-257-3370

Boston

Westborough, MA
Tel: 774-760-0087
Fax: 774-760-0088

Chicago

Itasca, IL
Tel: 630-285-0071
Fax: 630-285-0075

Dallas

Addison, TX
Tel: 972-818-7423
Fax: 972-818-2924

Detroit

Novi, MI
Tel: 248-848-4000

Houston, TX

Tel: 281-894-5983

Indianapolis

Noblesville, IN
Tel: 317-773-8323
Fax: 317-773-5453
Tel: 317-536-2380

Los Angeles

Mission Viejo, CA
Tel: 949-462-9523
Fax: 949-462-9608
Tel: 951-273-7800

Raleigh, NC

Tel: 919-844-7510

New York, NY

Tel: 631-435-6000

San Jose, CA

Tel: 408-735-9110
Tel: 408-436-4270

Canada - Toronto

Tel: 905-695-1980
Fax: 905-695-2078

ASIA/PACIFIC

Australia - Sydney
Tel: 61-2-9868-6733

China - Beijing
Tel: 86-10-8569-7000

China - Chengdu
Tel: 86-28-8665-5511

China - Chongqing
Tel: 86-23-8980-9588

China - Dongguan
Tel: 86-769-8702-988V/LGA0

China - Guangzhou
Tel: 86-20-8755-8029

China - Hangzhou
Tel: 86-571-8792-8115

China - Hong Kong SAR
Tel: 852-2943-5100

China - Nanjing
Tel: 86-25-8473-2460

China - Qingdao
Tel: 86-532-8502-7355

China - Shanghai
Tel: 86-21-3326-8000

China - Shenyang
Tel: 86-24-2334-2829

China - Shenzhen
Tel: 86-755-8864-2200

China - Suzhou
Tel: 86-186-6233-1526

China - Wuhan
Tel: 86-27-5980-5300

China - Xian
Tel: 86-29-8833-7252

China - Xiamen
Tel: 86-592-2388138

China - Zhuhai
Tel: 86-756-3210040

ASIA/PACIFIC

India - Bangalore
Tel: 91-80-3090-4444

India - New Delhi
Tel: 91-11-4160-8631

India - Pune
Tel: 91-20-4121-0141

Japan - Osaka
Tel: 81-6-6152-7160

Japan - Tokyo
Tel: 81-3-6880-3770

Korea - Daegu
Tel: 82-53-744-4301

Korea - Seoul
Tel: 82-2-554-7200

Malaysia - Kuala Lumpur
Tel: 60-3-7651-7906

Malaysia - Penang
Tel: 60-4-227-8870

Philippines - Manila
Tel: 63-2-634-9065

Singapore
Tel: 65-6334-8870

Taiwan - Hsin Chu
Tel: 886-3-577-8366

Taiwan - Kaohsiung
Tel: 886-7-213-7830

Taiwan - Taipei
Tel: 886-2-2508-8600

Thailand - Bangkok
Tel: 66-2-694-1351

Vietnam - Ho Chi Minh
Tel: 84-28-5448-2100

EUROPE

Austria - Wels
Tel: 43-7242-2244-39
Fax: 43-7242-2244-393

Denmark - Copenhagen
Tel: 45-4485-5910
Fax: 45-4485-2829

Finland - Espoo
Tel: 358-9-4520-820

France - Paris
Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

Germany - Garching
Tel: 49-8931-9700

Germany - Haan
Tel: 49-2129-3766400

Germany - Heilbronn
Tel: 49-7131-72400

Germany - Karlsruhe
Tel: 49-721-625370

Germany - Munich
Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Germany - Rosenheim
Tel: 49-8031-354-560

Israel - Ra'anana
Tel: 972-9-744-7705

Italy - Milan
Tel: 39-0331-742611
Fax: 39-0331-466781

Italy - Padova
Tel: 39-049-7625286

Netherlands - Drunen
Tel: 31-416-690399
Fax: 31-416-690340

Norway - Trondheim
Tel: 47-7288-4388

Poland - Warsaw
Tel: 48-22-3325737

Romania - Bucharest
Tel: 40-21-407-87-50

Spain - Madrid
Tel: 34-91-708-08-90
Fax: 34-91-708-08-91

Sweden - Gothenberg
Tel: 46-31-704-60-40

Sweden - Stockholm
Tel: 46-8-5090-4654

UK - Wokingham
Tel: 44-118-921-5800
Fax: 44-118-921-5820