HTM61XX

Military Temperature MEMS Oscillator

Features

- Any Frequency Between 3.5 kHz and 100 MHz Accurate to 6 Decimal Places
- Low Power Consumption of 4.5 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
- Operating Temperature to 125°C
- Capable of Surviving 50,000g Shock, with 70g Vibration Resistance

Applications

- Military Applications
- Environmentally Demanding Applications
- Ruggedized Equipment

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 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 or 3.3V
		—	1.0	—		V_{DD} = 1.8V, output is weakly pulled down
Duty Cycle	DC	45	—	55	%	All supply voltage options
Rise Time	t_r	—	0.6	1.2	ns	20% to 80% V_{DD} = 2.5V, 2.8V, 3.0V or 3.3V; C_L = 10 pF
Fall Time	t_f	—	1.2	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

HTM61XX

PERFORMANCE SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
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
Start-Up Time	t_{START}	—	—	1.5	ms	From 90% V_{DD} to valid clock output, T = +25°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 MHz, V_{DD} = 2.5V, 2.8V, 3.0V, or 3.3V
		—	8.5	—		f = 27 MHz, V_{DD} = 1.8V
Cycle-to-Cycle Jitter	CC_{JITT}	—	35	60	ps	f = 27 MHz, V_{DD} = 2.0V, 2.8V, 3.0V, or 3.3V
		—	50	70		f = 27 MHz, V_{DD} = 1.8V

ABSOLUTE MAXIMUM RATINGS

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

ENVIRONMENTAL COMPLIANCE

Parameter	Condition/Test Method
Mechanical Shock	MIL-STD-883F, Method 2002; (10,000g)
Mechanical Vibration	MIL-STD-883, Method 2007; Condition C 70g
Moisture Resistance	JESD22-A113; MSL-1 conditions (125°C 24 hours bake, 85%RH/85°C 168 hours, 3 Reflows 260°C)
Temperature Cycle	JESD22, Method A104
Solderability	MIL-STD-883F, Method 2003

1.0   PIN DESCRIPTIONS
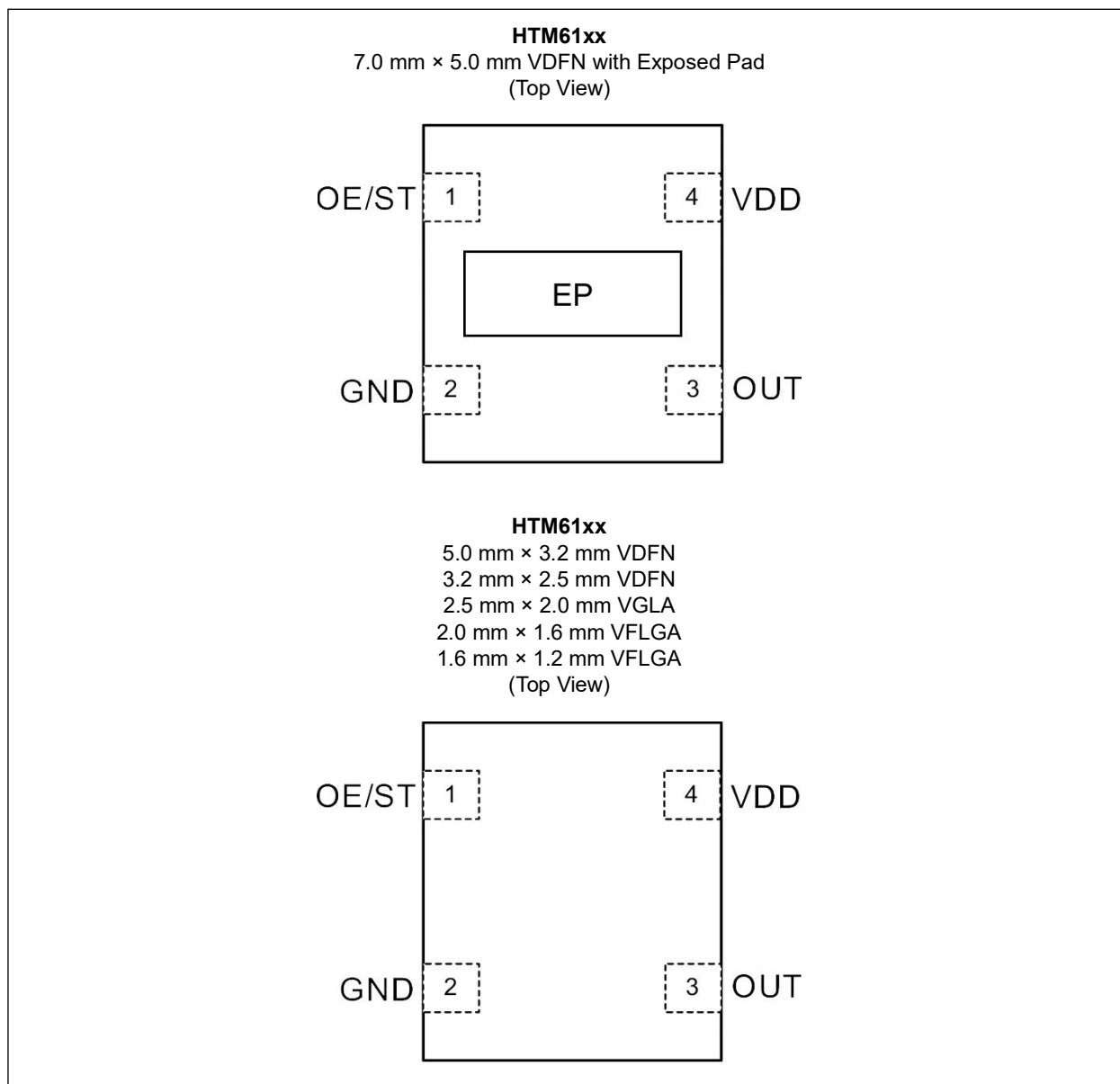
The descriptions of the pins are listed in Table 1-1.

HTM61xx
7.0 mm × 5.0 mm VDFN with Exposed Pad
(Top View)

OE/ST [1]   [4] VDD

EP

GND [2]   [3] OUT

HTM61xx
5.0 mm × 3.2 mm VDFN
3.2 mm × 2.5 mm VDFN
2.5 mm × 2.0 mm VGLA
2.0 mm × 1.6 mm VFLGA
1.6 mm × 1.2 mm VFLGA
(Top View)

OE/ST [1]   [4] VDD

GND [2]   [3] OUT

TABLE 1-1:   PIN FUNCTION TABLE

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

Note 1:   A pull-up resistor of <10 kΩ between OE/ST pin and V_{DD} pin is recommended in high noise environment.

2.0   FUNCTIONAL BLOCK DIAGRAM
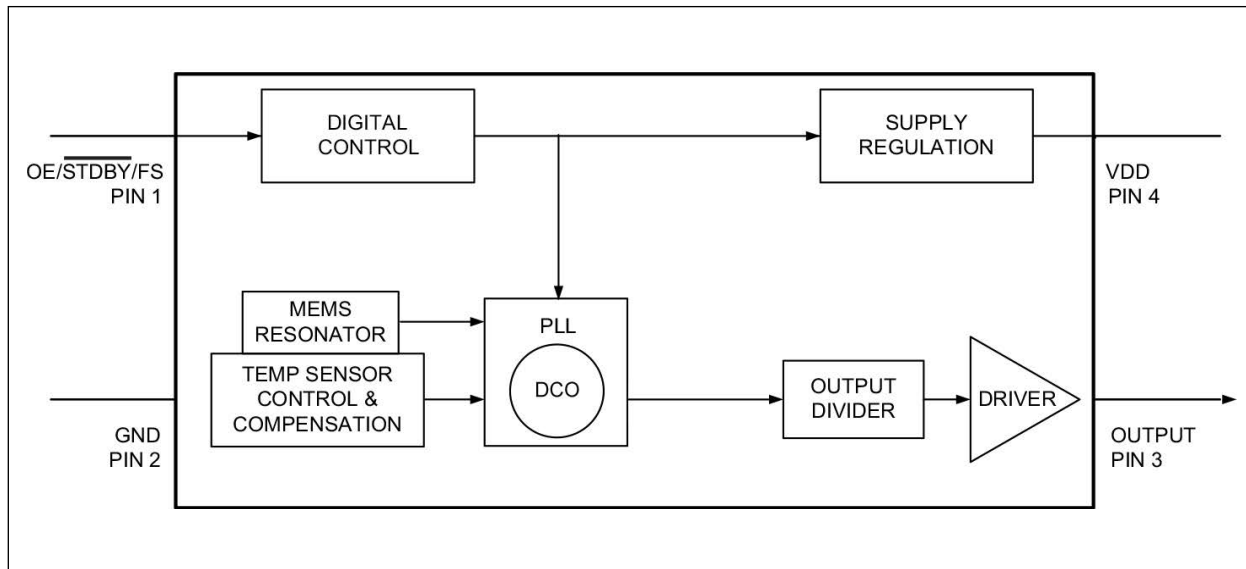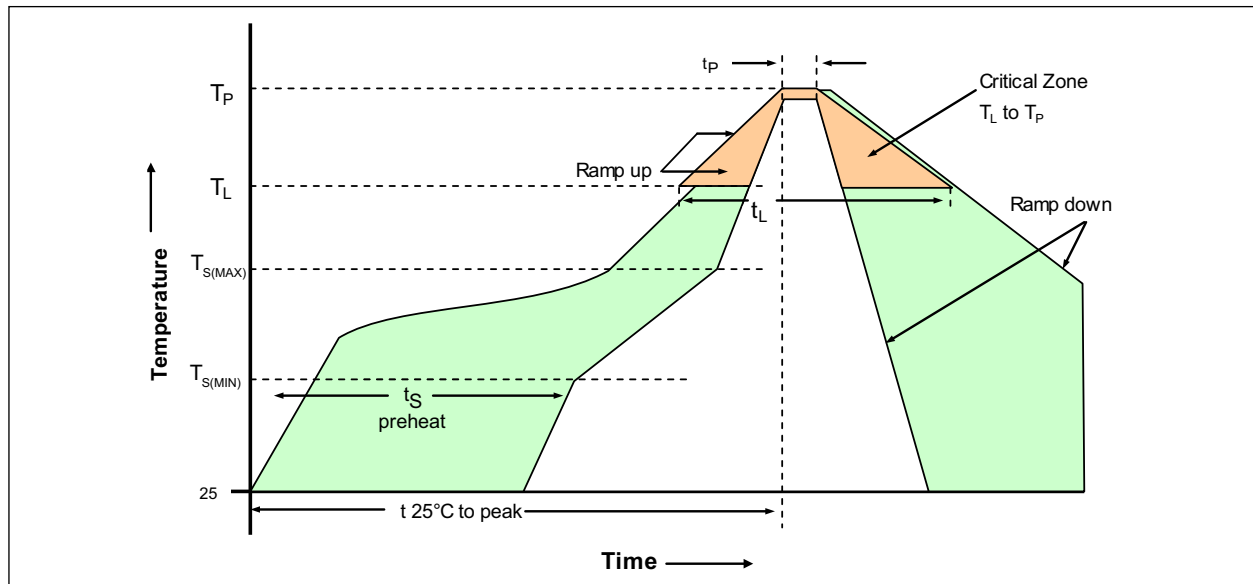
3.0 RECOMMENDED REFLOW PROFILES FOR Pb-Free & Sn-Pb

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.

HTM61XX

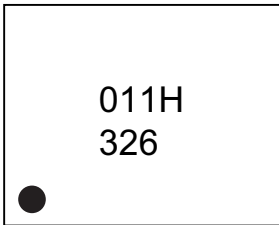## 4.0 PACKAGING INFORMATION

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*

```
XXXXXXX
XXXYYWW
SSS
●
```

Example

```
0400000
DCP1834
724
●
```
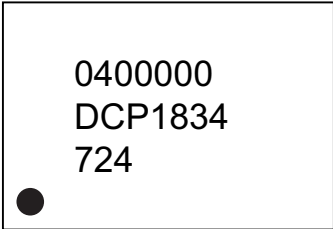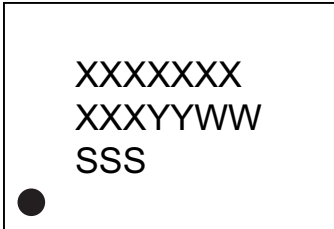
4-Lead 2.0 × 1.6 mm VFLGA*
4-Lead 1.6 × 1.2 mm VFLGA*

```
XXXX
SSS
●
```

Example

```
011H
326
●
```

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')
	NNN	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 YYWWNNN code cannot fit on the package, the following truncated codes are used based on the available marking space:
6 Characters = YWWNNN; 5 Characters = WWNNN; 4 Characters = WNNN; 3 Characters = NNN;
2 Characters = NN; 1 Character = N.

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
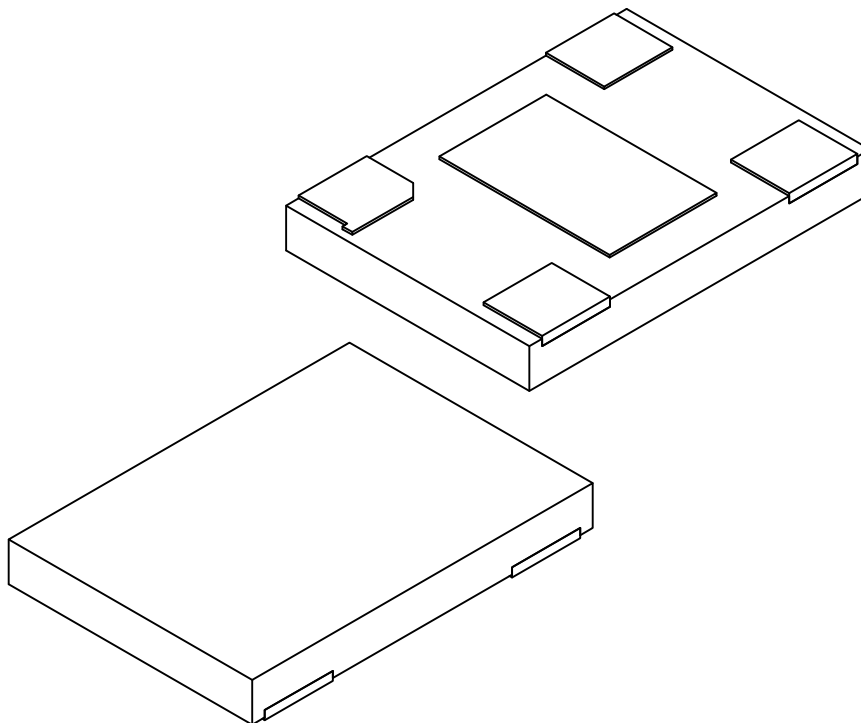

TOP VIEW

SIDE VIEW

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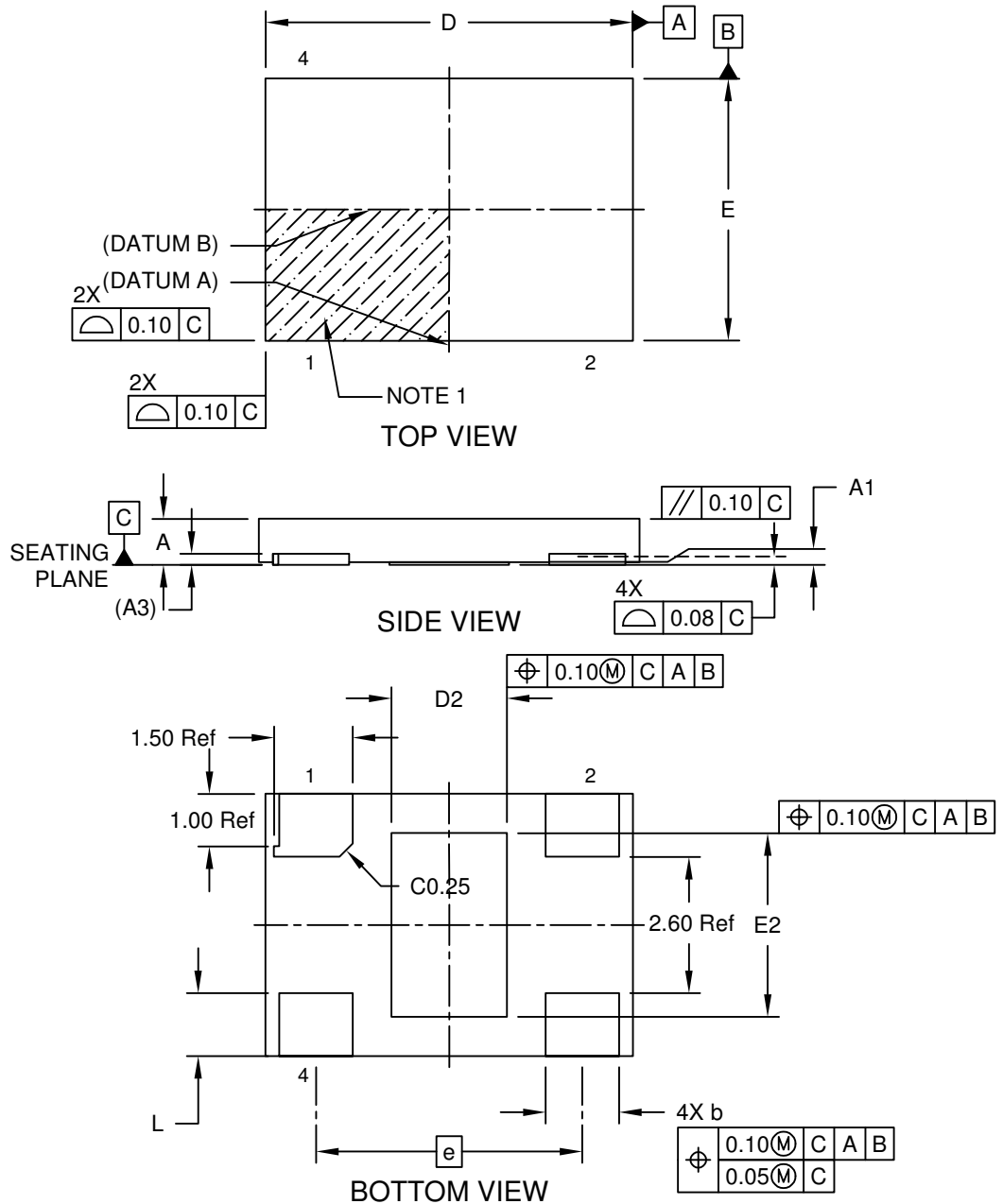
Microchip Technology Drawing C04-1025 Rev A Sheet 1 of 2

HTM61XX

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

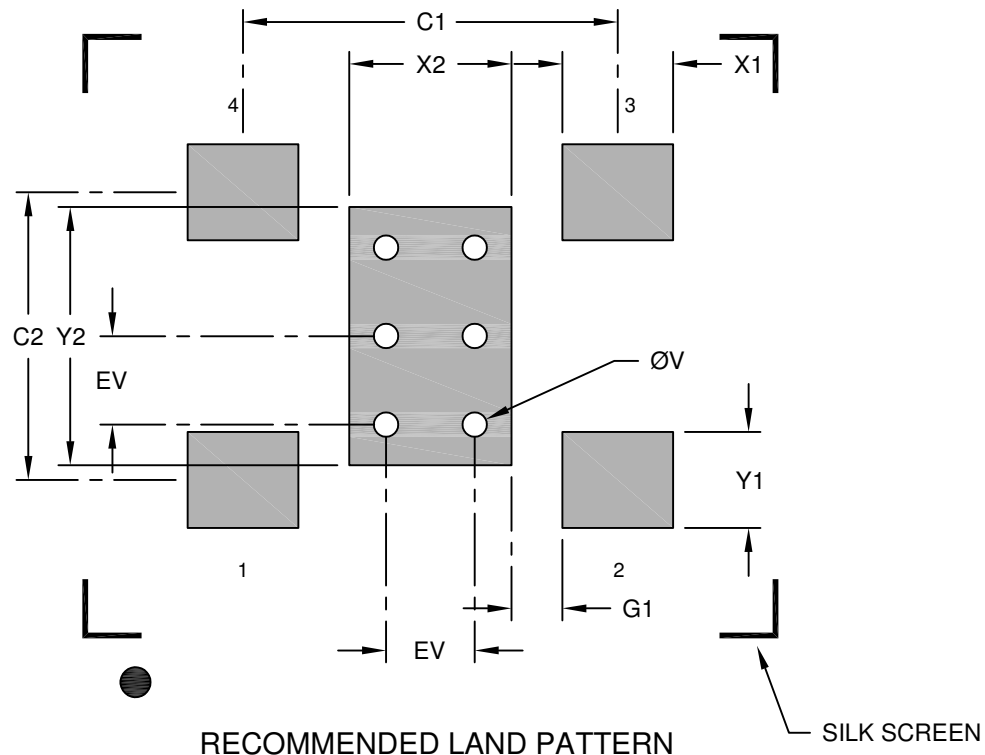| Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N		004	
Pitch	e		5.08 Ref	
Overall Height	A	0.80	0.85	0.90
Standoff	A1	0.00	-	0.05
Terminal Thickness	A3		0.203 Ref	
Overall Length	D	6.90	7.00	7.10
Exposed Pad Length	D2	2.10	2.20	2.30
Overall Width	E	4.90	5.00	5.10
Exposed Pad 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
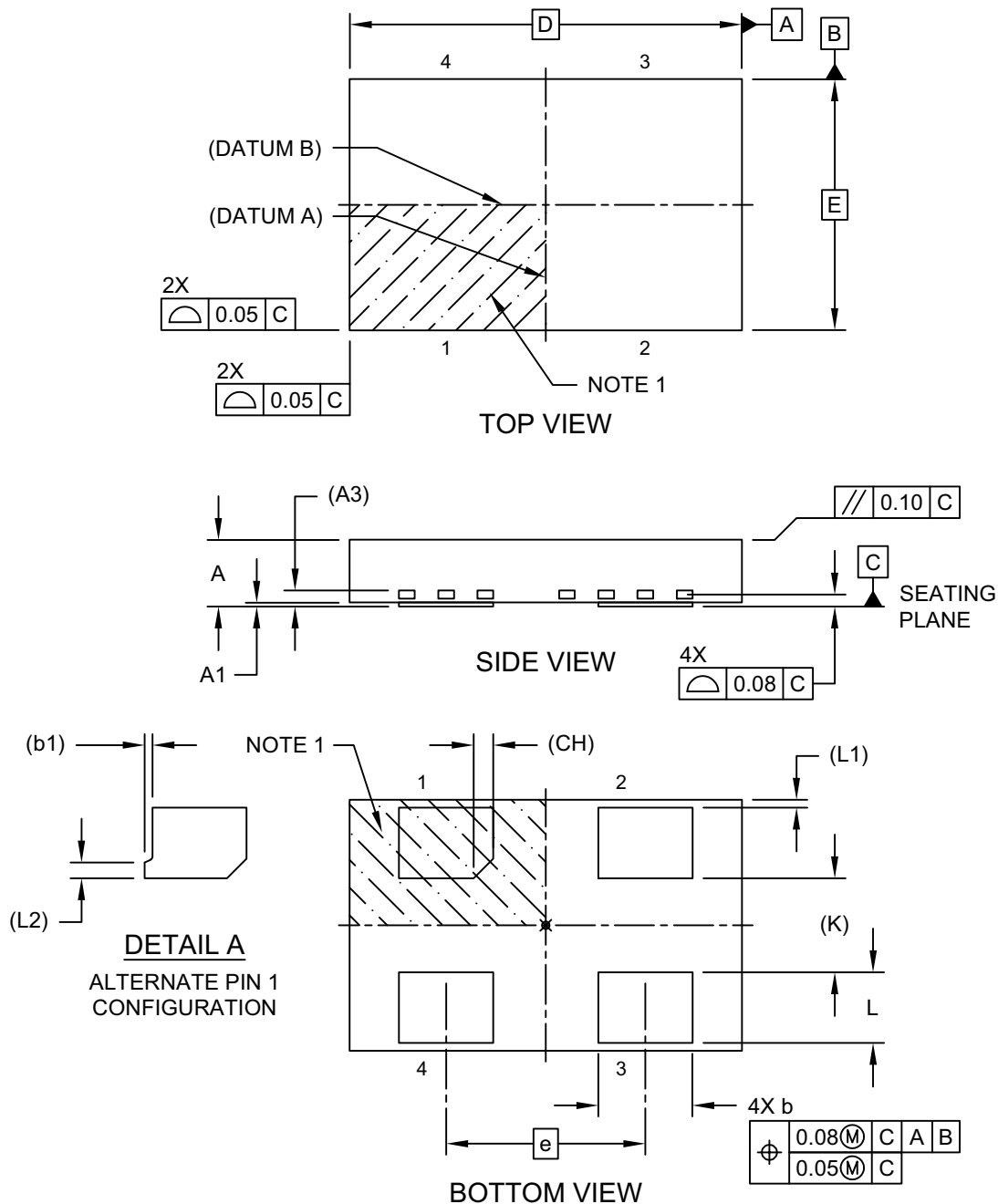3. Dimensioning and tolerancing per ASME Y14.5M
   BSC: Basic Dimension. Theoretically exact value shown without tolerances.
   REF: Reference Dimension, usually without tolerance, for information purposes only.

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

RECOMMENDED LAND PATTERN

	Units	MILLIMETERS		
Dimension Limits		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:

1. Dimensioning and tolerancing per ASME Y14.5M

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

2. 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

HTM61XX

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

TOP VIEW

SIDE VIEW

DETAIL A
ALTERNATE PIN 1
CONFIGURATION

BOTTOM VIEW

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
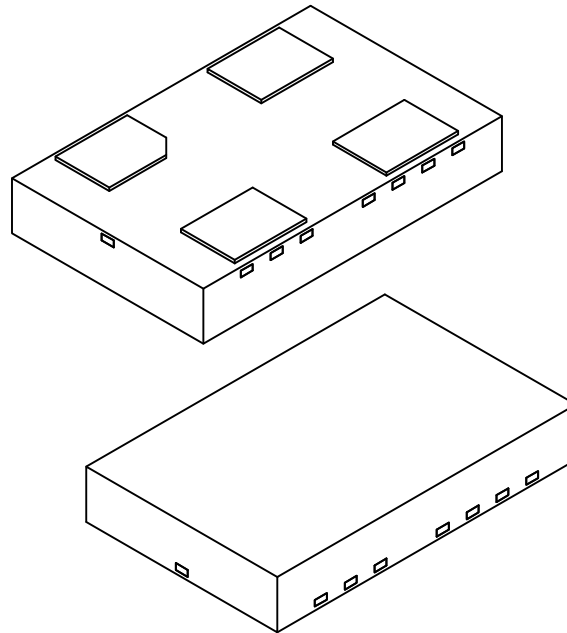
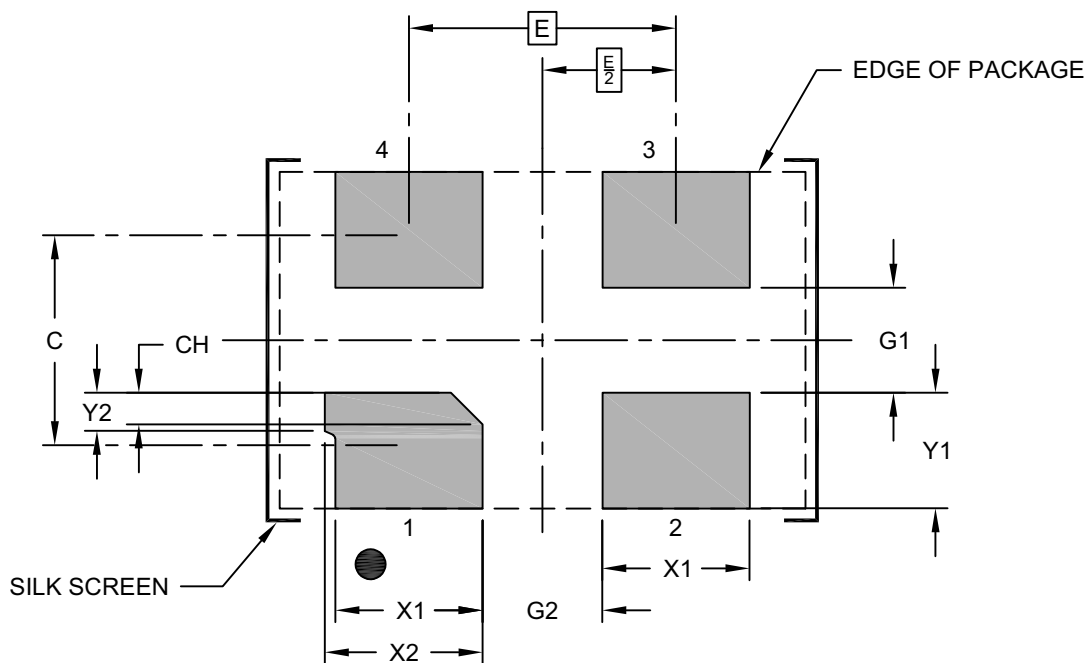|	Units	MILLIMETERS		
	Dimension Limits	MIN	NOM	MAX
Number of Terminals	N		4	
Pitch	e		2.54 BSC	
Overall Height	A	0.80	0.85	0.90
Standoff	A1	0.00	0.02	0.05
Terminal Thickness	A3		0.20 REF	
Overall Length	D		5.00 BSC	
Overall Width	E		3.20 BSC	
Terminal Width	b	1.15	1.20	1.25
Terminal 1 Tab	b1		0.10 REF	
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:

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 C04-1008 Rev A Sheet 2 of 2

HTM61XX

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

	Units	MILLIMETERS		
Dimension Limits		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

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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
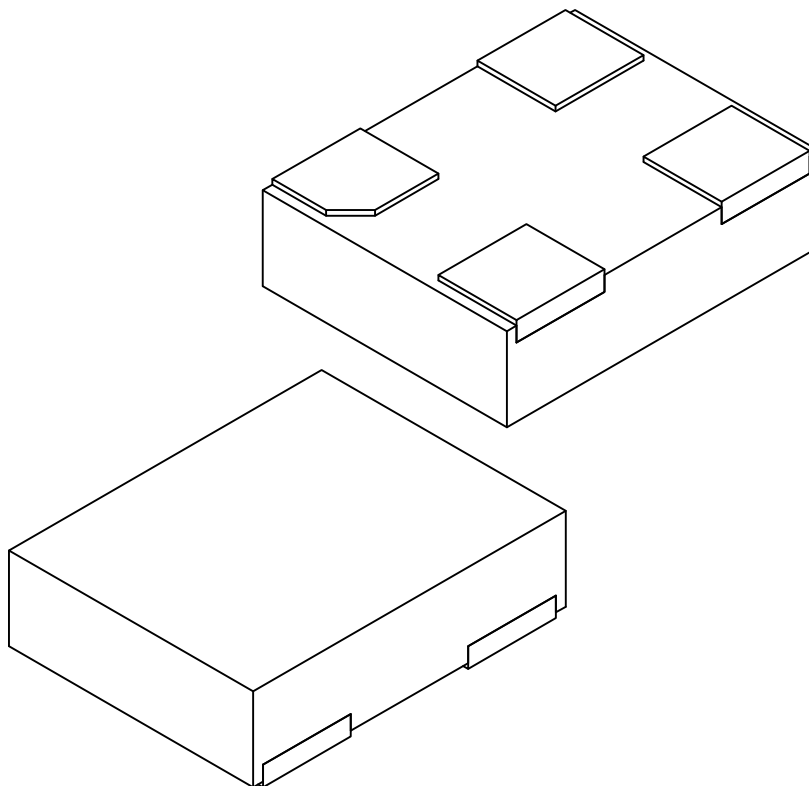

TOP VIEW

SIDE VIEW

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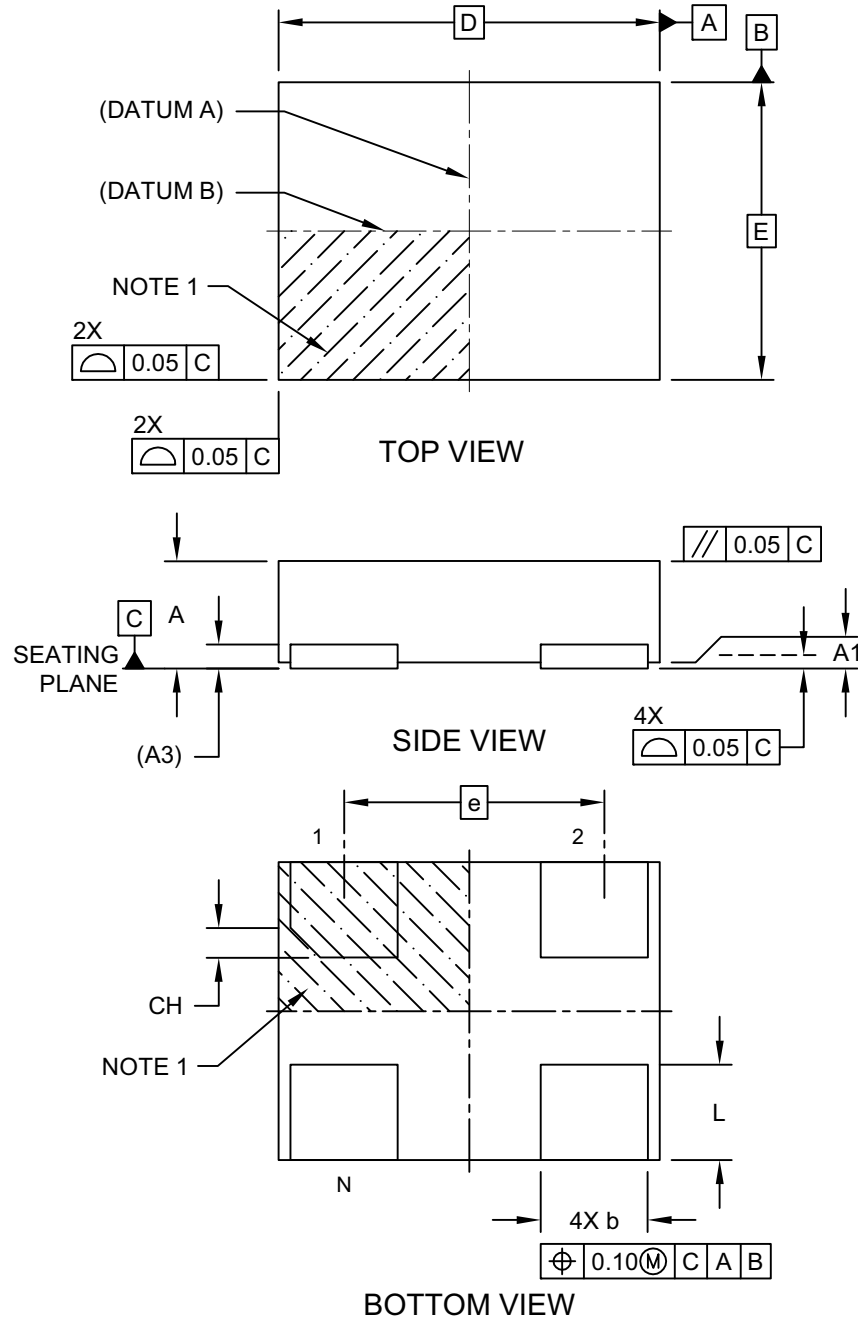
Microchip Technology Drawing C04-1006 Rev B Sheet 1 of 2

HTM61XX

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

Units		MILLIMETERS		
Dimension Limits		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
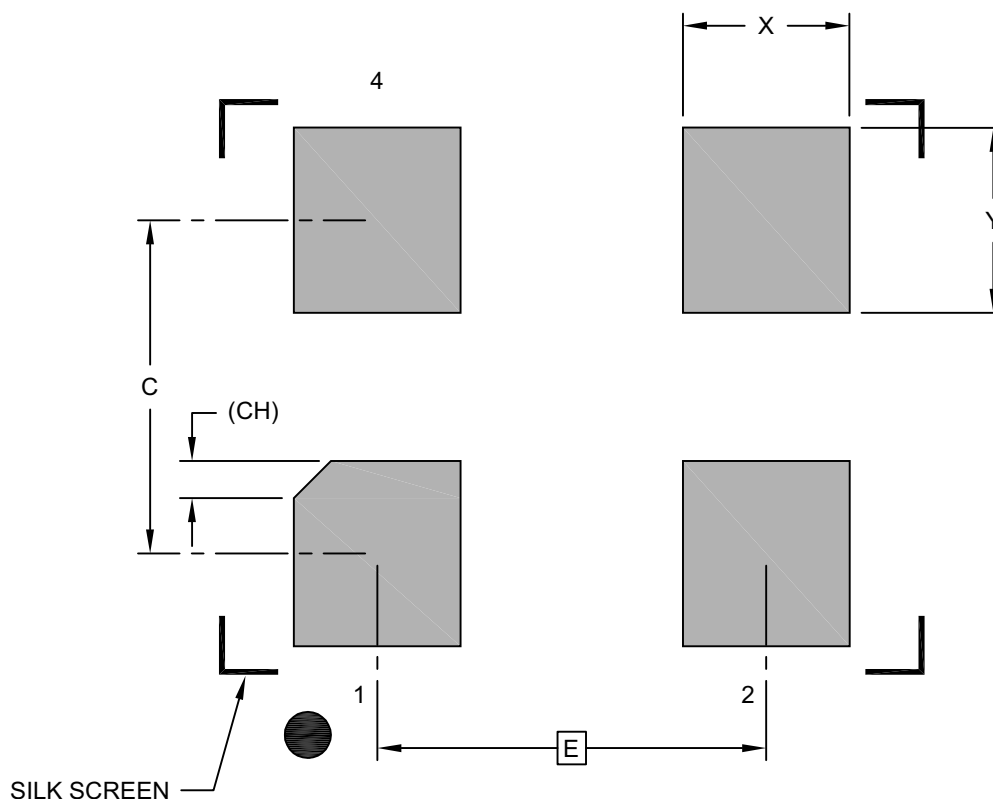
RECOMMENDED LAND PATTERN

Units		MILLIMETERS		
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

HTM61XX

**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

TOP VIEW

SIDE VIEW

BOTTOM VIEW
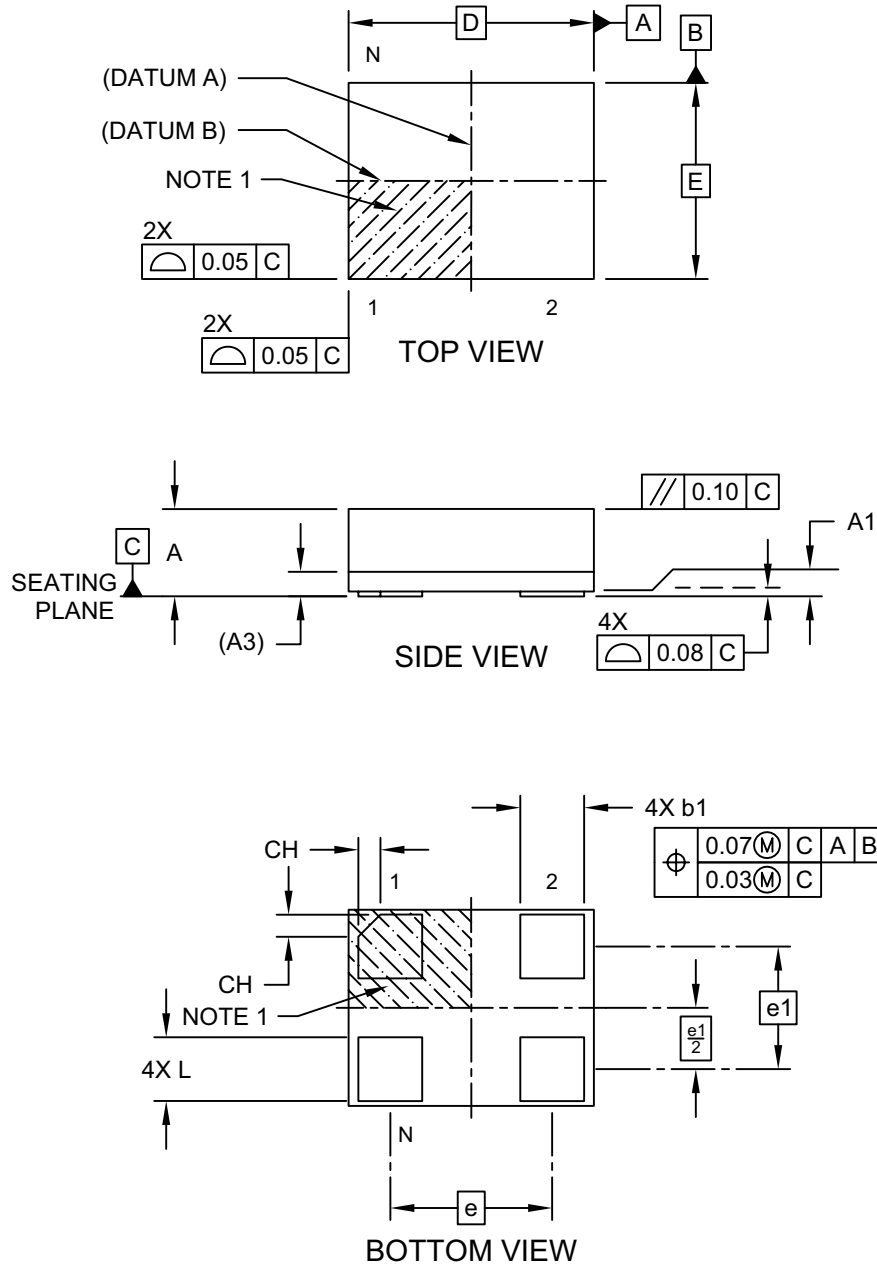
Microchip Technology Drawing C04-1202B Sheet 1 of 2

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
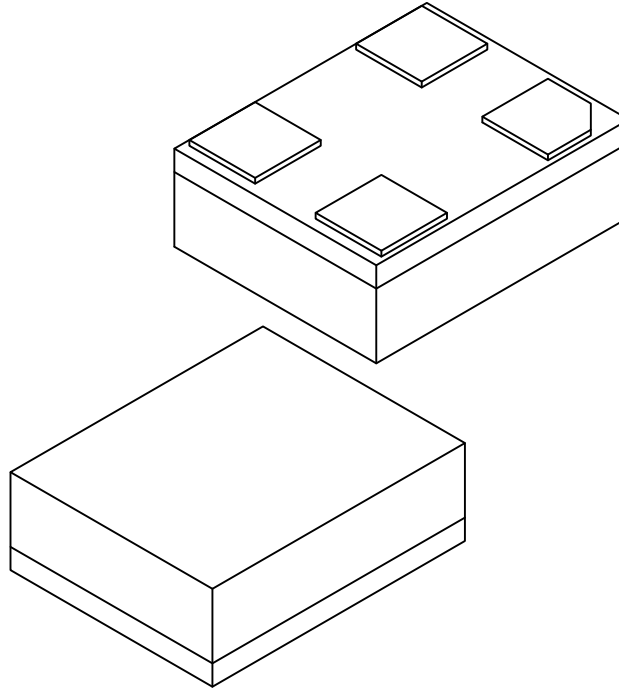
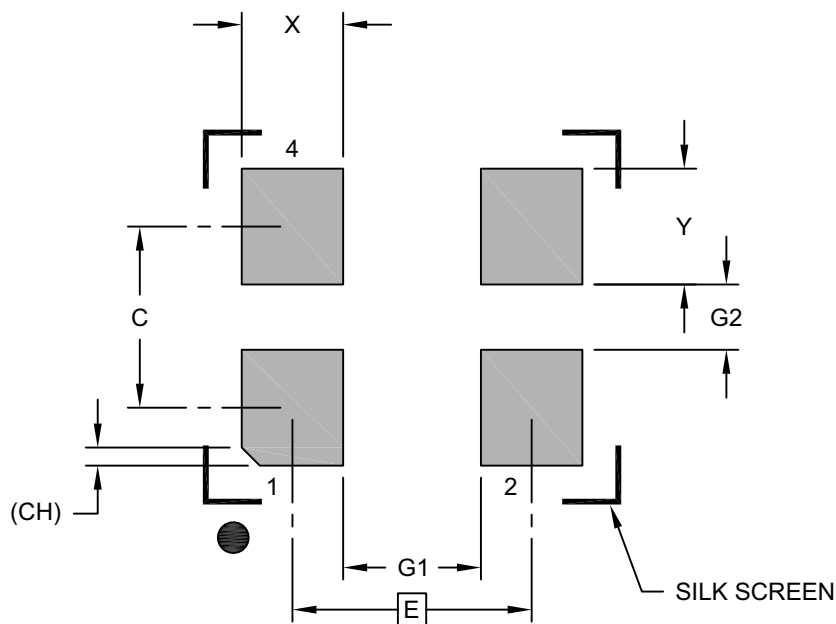|	Units	MILLIMETERS		
	Dimension Limits	MIN	NOM	MAX
Number of Terminals	N		4	
Terminal Pitch	e		1.65 BSC	
Terminal Pitch	e1		1.25 BSC	
Overall Height	A	0.79	0.84	0.89
Standoff	A1	0.00	0.02	0.05
Substrate Thickness (with Terminals)	A3		0.20 REF	
Overall Length	D		2.50 BSC	
Overall Width	E		2.00 BSC	
Terminal 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

HTM61XX

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

	Units	MILLIMETERS		
Dimension Limits		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
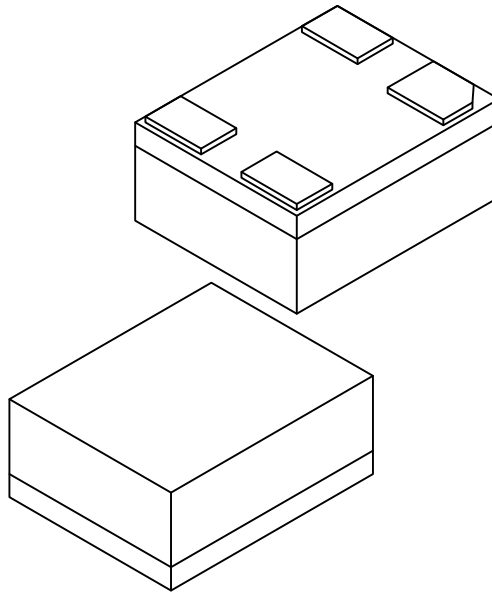

TOP VIEW

SIDE VIEW

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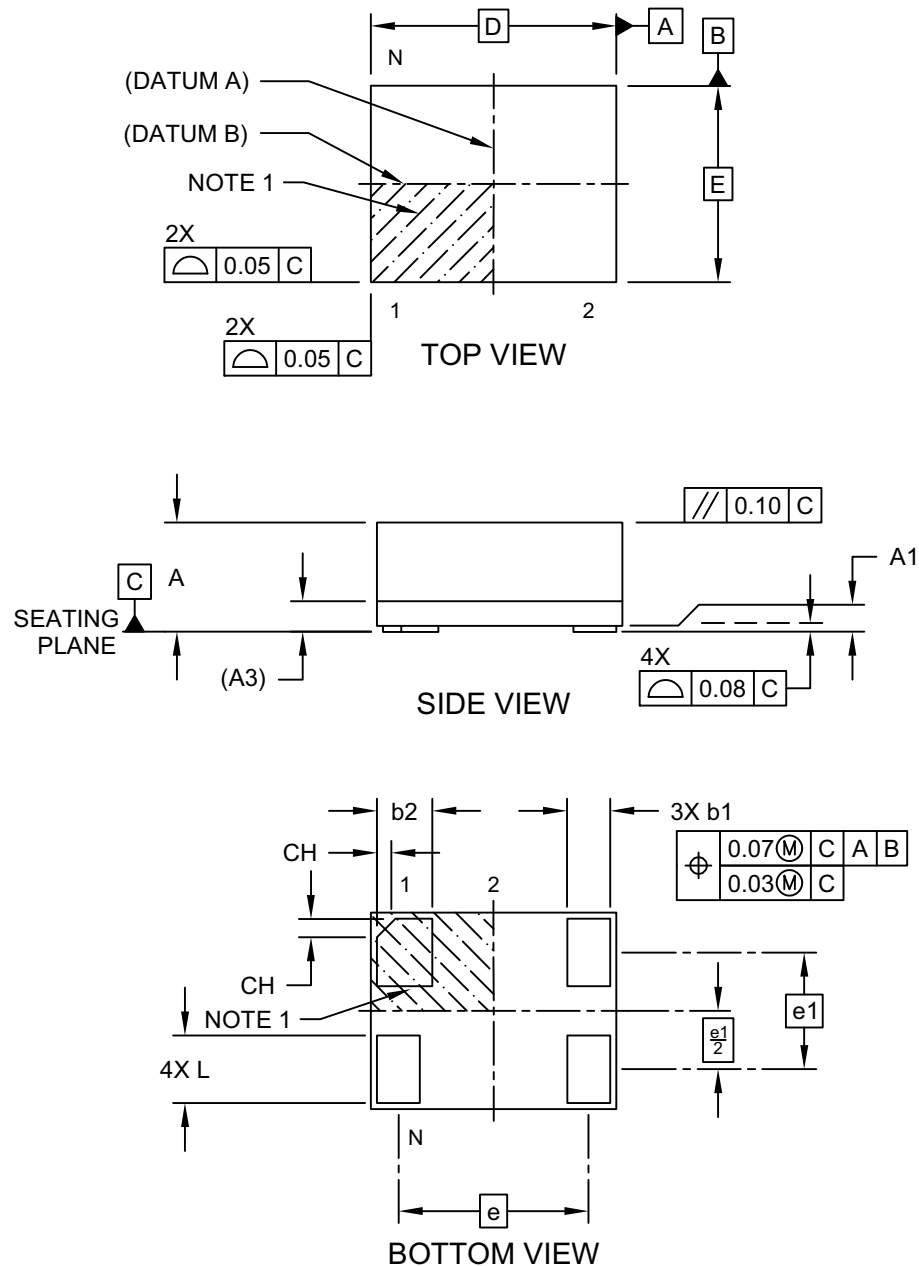
Microchip Technology Drawing C04-1200 Rev D Sheet 1 of 2

HTM61XX

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

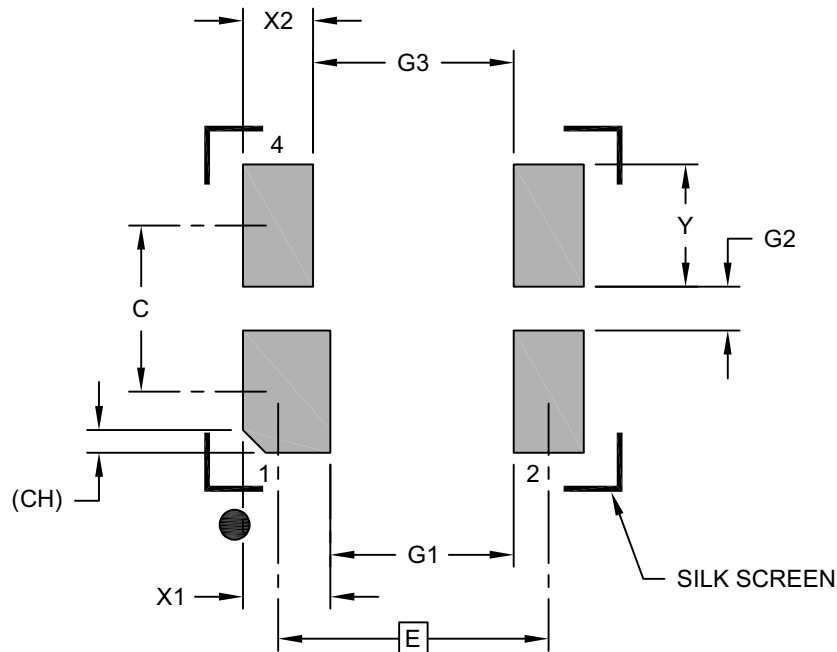|	Units		MILLIMETERS	
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N		4	
Terminal Pitch	e		1.55 BSC	
Terminal Pitch	e1		0.95 BSC	
Overall Height	A	0.79	0.84	0.89
Standoff	A1	0.00	0.02	0.05
Substrate Thickness (with Terminals)	A3		0.20 REF	
Overall Length	D		2.00 BSC	
Overall Width	E		1.60 BSC	
Terminal 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

	Units	MILLIMETERS		
Dimension Limits		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

HTM61XX

## 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

TOP VIEW

SIDE VIEW

BOTTOM VIEW
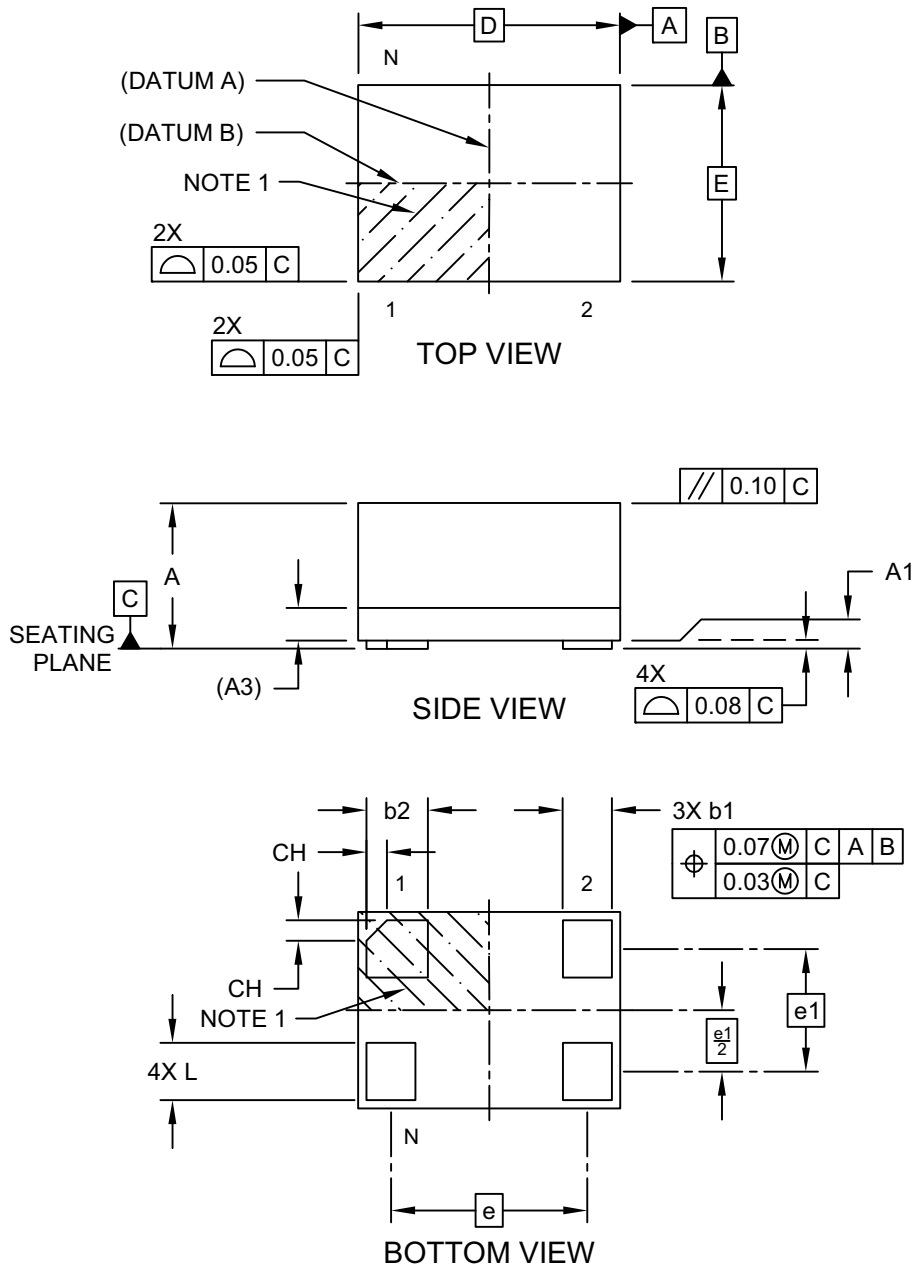
Microchip Technology Drawing C04-1199B Sheet 1 of 2

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
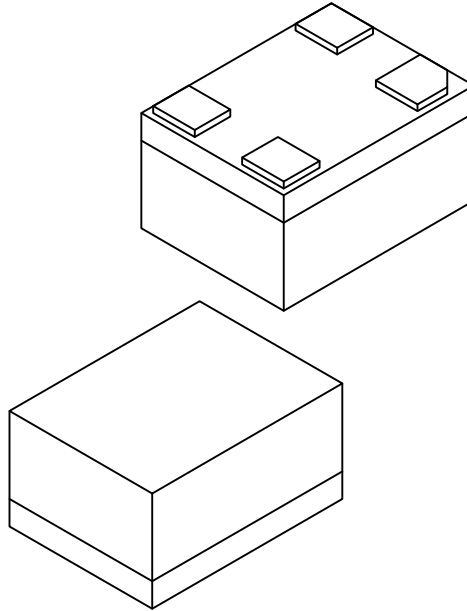
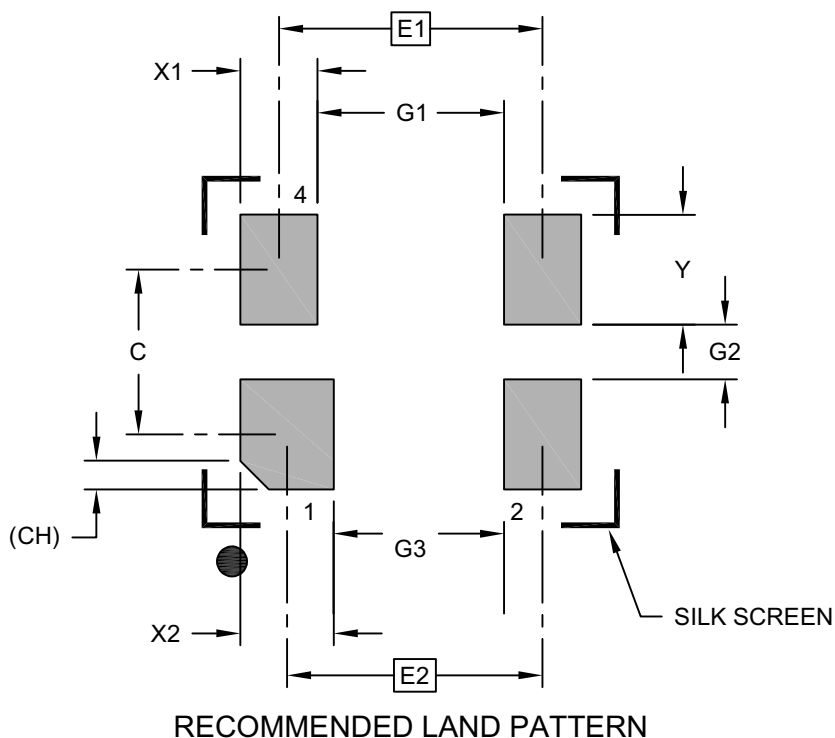|	Units		MILLIMETERS	
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N		4	
Terminal Pitch	e		1.20 BSC	
Terminal Pitch	e1		0.75 BSC	
Overall Height	A	0.79	0.84	0.89
Standoff	A1	0.00	0.02	0.05
Substrate Thickness (with Terminals)	A3		0.20 REF	
Overall Length	D		1.60 BSC	
Overall Width	E		1.20 BSC	
Terminal 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

HTM61XX

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 HTM61xx as Microchip data sheet DS20006766A.

Revision B (February 2025)

- Updated package quantities between option J and option M in the Product Identification System section and the Minimum Order Quantity table.

NOTES:

PRODUCT IDENTIFICATION SYSTEM

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

XXXXX	X	X	X	X	X	X	-xxx.xxxx / -xxxKxxx	[X] / [X_XXXX]
Device	Feature Pin	Output Drive Strength	Package	Temperature Range	Stability	Revision	Frequency	Media Type

Device:	HTM61	=	High Temperature Military Temperature MEMS Oscillator
Feature Pin:	0	=	Enable/Disable
	1	=	Standby
Output Drive Strength:	1	=	Standard
Package:	A	=	4-Lead 7.0 mm × 5.0 mm VDFN
	B	=	4-Lead 5.0 mm × 3.2 mm VDFN
	C	=	4-Lead 3.2 mm × 2.5 mm VDFN
	J	=	4-Lead 2.5 mm × 2.0 mm VLGA
	M	=	4-Lead 2.0 mm × 1.6 mm VFLGA
	H	=	4-Lead 1.6 mm × 1.2 mm VFLGA
Temperature Range:	A	=	−40°C to +125°C
	L	=	−40°C to +105°C
	I	=	−40°C to +85°C
	E	=	−20°C to +70°C
Stability:	1	=	±50 ppm
	2	=	±25 ppm
	3	=	±20 ppm
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

See the Minimum Order Quantity table for more information.

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.

Examples:

a) HTM6101HA3B-125.0000
HTM61xx, 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

b) HTM6111AL2B-024.0000
HTM61xx, 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

c) HTM6101BI1B-026.0000
HTM61xx, 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

d) HTM6111CE3B-033.3333
HTM61xx, 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

e) HTM6101JA2B-025.0000
HTM61xx, 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

f) HTM6111ML1B-016K000
HTM61xx, 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, 125.000 MHz Frequency, Cut Tape/non-TR

g) HTM6101HA3B-100.0000T
HTM61xx, 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, 100.0000 MHz Frequency, Tape and Reel

h) HTM6111CE3B-050.0000T_SNPB
HTM61xx, Enable/Disable Feature Pin, Standard Output Drive Strength, 4-Lead 3.2 mm × 2.5 mm VDFN Package, −40°C to +125°C Temp. Range, ±20 ppm Stability, Revision B, 050.0000 MHz Frequency, Tin Lead Solder Dip

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	110 piece minimum order
Package J	140 pieces per tube	140 piece minimum order
Package M	100 pieces per bag	100 piece minimum order
Package H	100 pieces per bag	100 piece minimum order
Tape and Reel	1000 pieces per reel	1000 piece minimum order
SnPb Solder Dip	500 pieces per reel	500 piece minimum order

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