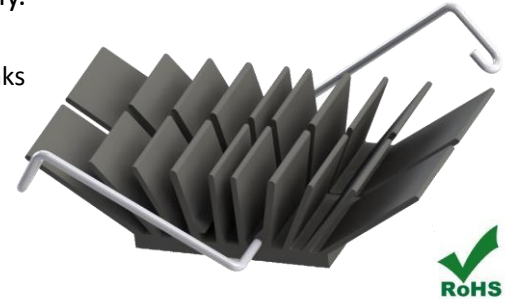


The Wakefield-Vette Wave Series Heat Sink Series are a superior choice for cooling BGA applications in which limited height/footprint while achieving maximum surface area. The Wave Series Heat Sinks include a unique clipping mechanism that allows for superior heat transfer while securing the heat sink to the BGA itself. The clipping mechanism allows for easy installation in high production assembly.

Features & Benefits

- Approximately 12% better thermal performance than traditional footprint heat sinks
- Height- A low profile design allows for more surface area in a height restricted application
- Clipping mechanism included with heat sink
- Surface Area- Fin array allows for more surface area for forced convection
- Easily customizable
- Easily compatible with major BGA device manufacturers components such as: Broadcom, Motorola, Freescale, TI, Intel, etc.



Material Specifications

- **Heat Sink:** Aluminum Alloy 6063-T5 with black anodized finish.
- **Spring Clip:** 304 Stainless Steel, 1.2mm [0.47"] DIA
- **RoHS Compliant**



WkV Part Number	Description	Attachment Method	Mechanical Dimensions (mm)						Thermal Resistance - Forced Conv. @ 200 LFM
			Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-23-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	40	12.5	6055.1	10.5	6.76
WAVE-23-165	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	46.5	16.5	7634.6	14.5	5.08
WAVE-26-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	26	26	52.9	12	8305.2	10	5.21
WAVE-29-127	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	29	29	61.4	12.7	11810.5	10.7	4.08
WAVE-32-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	32	32	50.2	12	10957.5	10	4.64
WAVE-34-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	34	34	70	21	21268.4	19	2.19
WAVE-35-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	62	12	15180.8	10	3.83
WAVE-35-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	63.3	12.5	15792.6	10.5	3.63
WAVE-35-15	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	58.1	15	15612.7	13	3.15
WAVE-35-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	74.6	21	21721.8	19	2.11
WAVE-366-175	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	36.6	36.6	63.6	17.5	18637.8	15.5	2.55
WAVE-40-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	66.9	12	17689.4	10	3.36
WAVE-40-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	68.3	12.5	18410.1	10.5	3.16
WAVE-425-117	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	42.5	42.5	67.4	11.7	21668.3	9.3	3.40
WAVE-45-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	45	45	72	12	22303.7	10	2.96

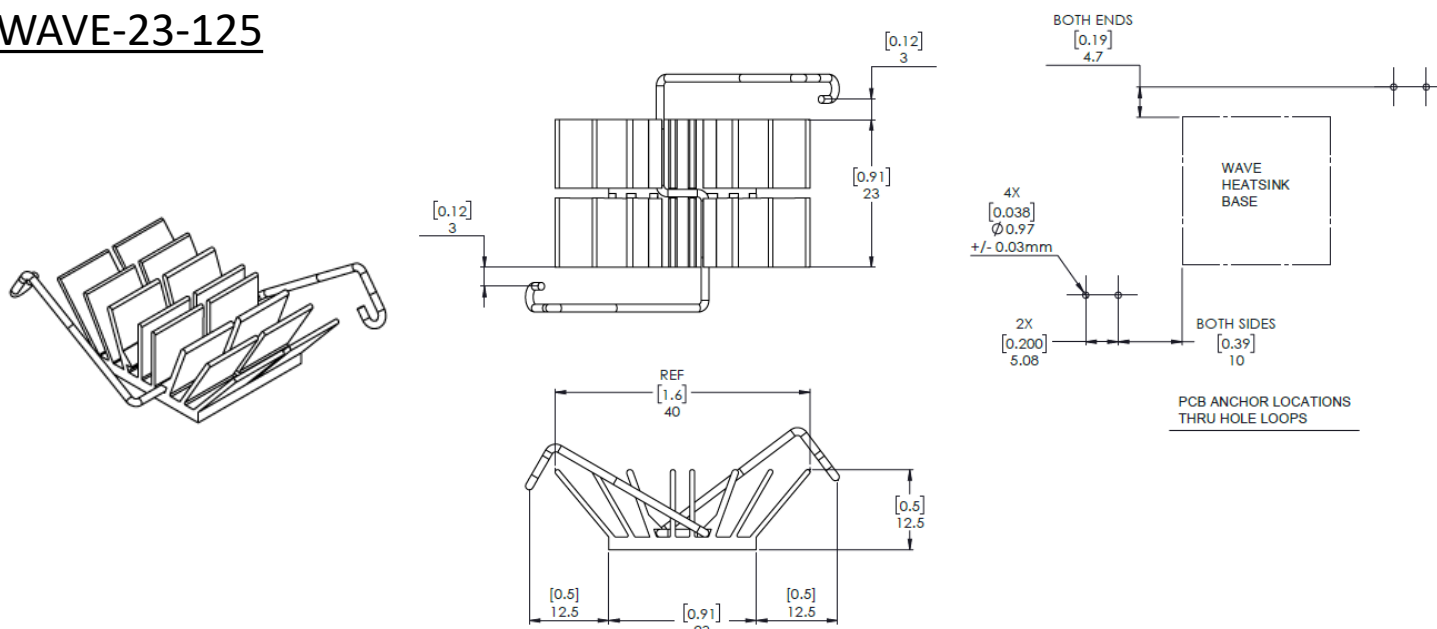


WAVE-ANC1	ANCHOR, PCB, 10MM TALL
WAVE-ANC2	ASSEMBLY, SOLDER ANCHOR

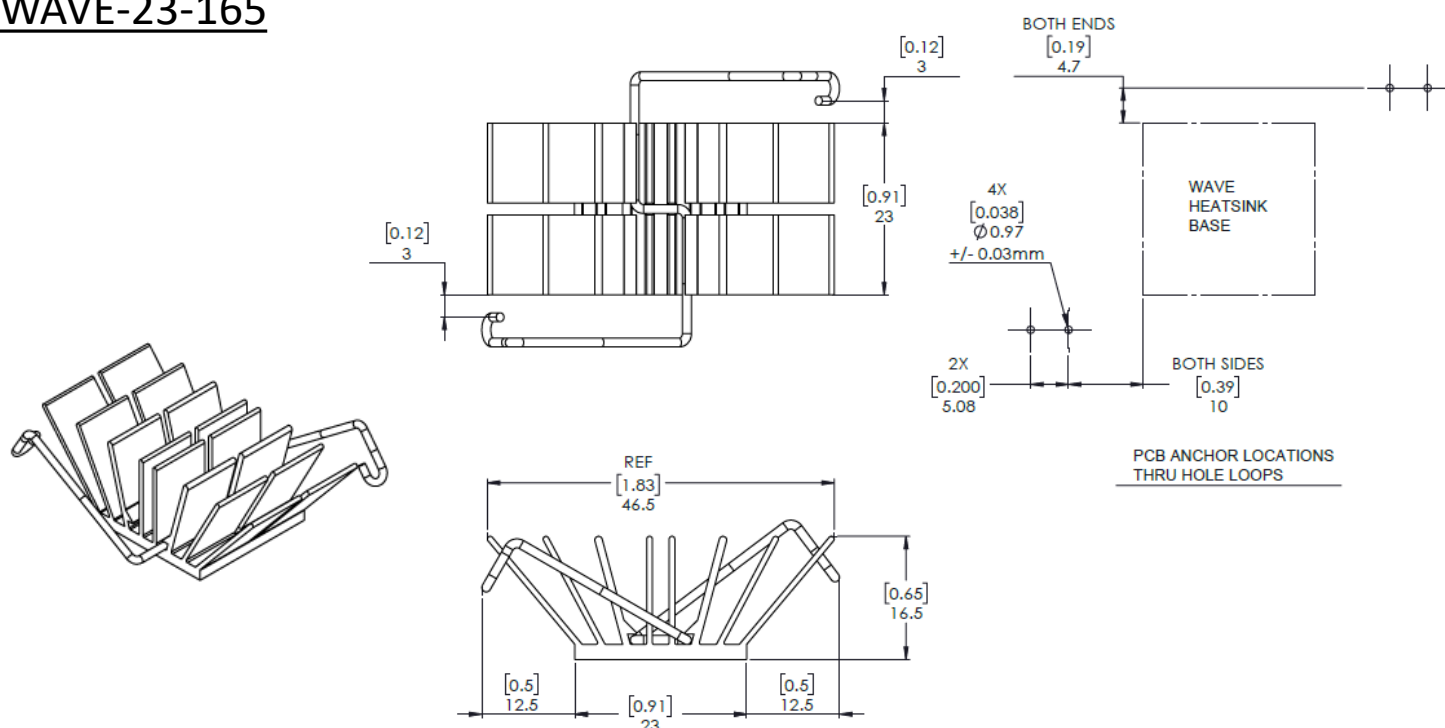
Wave 2x Series

WkV Part Number	Description	Attachment Method	Mechanical Dimensions (mm)						Thermal Resistance - Forced Conv. @ 200 LFM
			Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-23-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	40	12.5	6055.1	10.5	6.76
WAVE-23-165	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	46.5	16.5	7634.6	14.5	5.08
WAVE-26-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	26	26	52.9	12	8305.2	10	5.21
WAVE-29-127	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	29	29	61.4	12.7	11810.5	10.7	4.08

WAVE-23-125



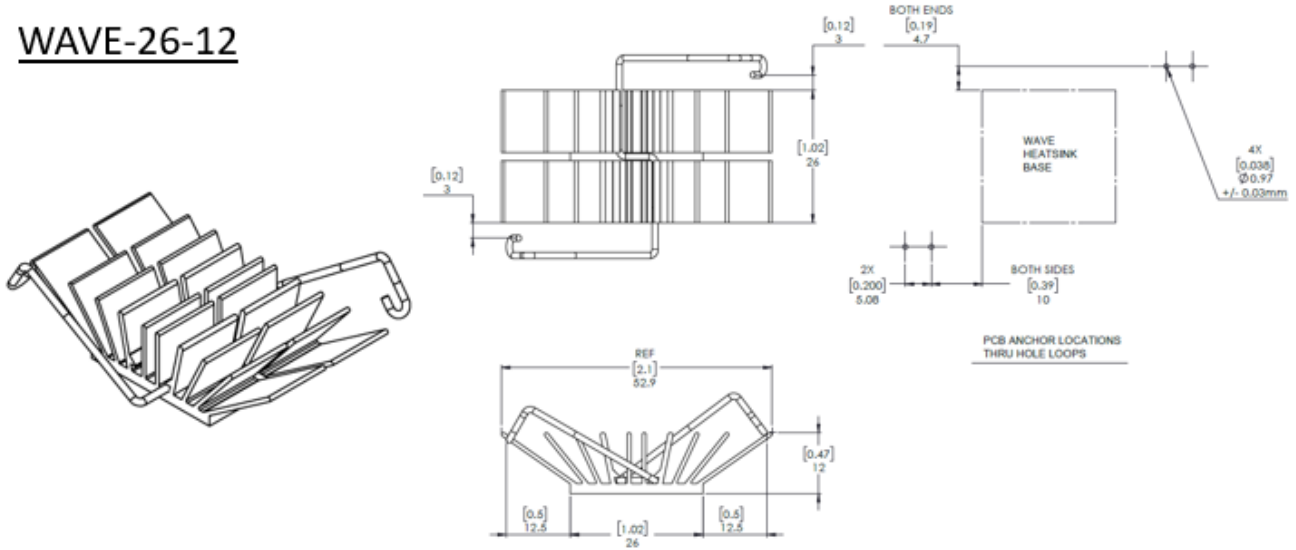
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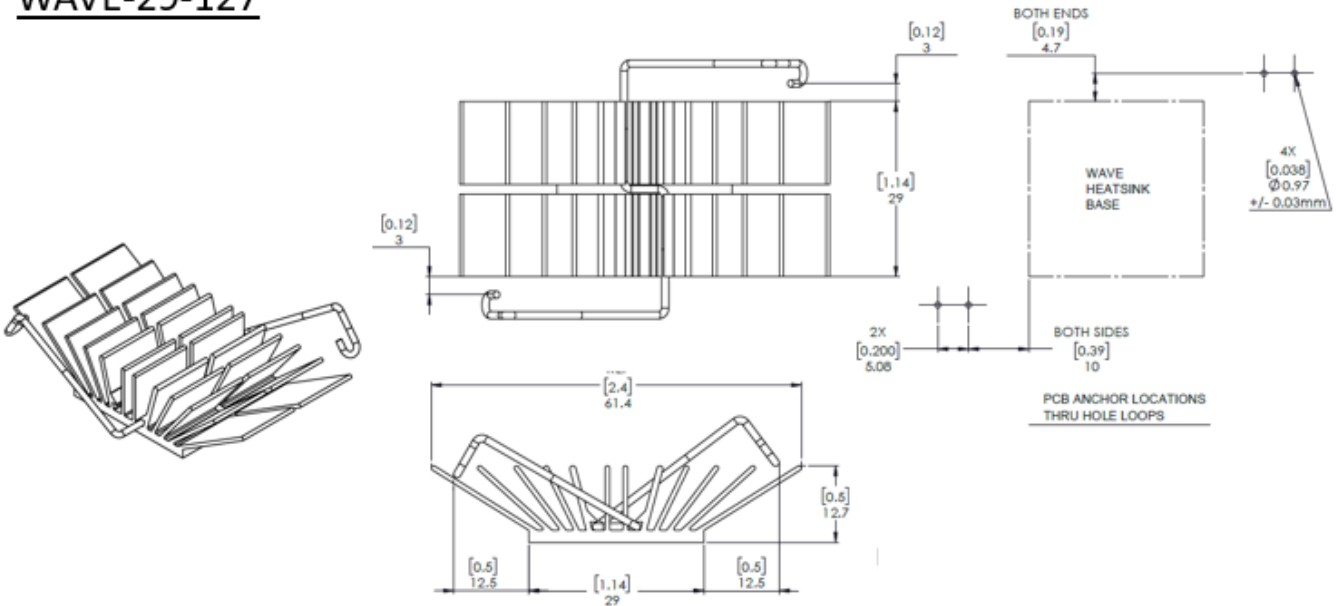
Wave 2x Series

			Mechanical Dimensions (mm)						
WkV Part Number	Description	Attachment Method	Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	Thermal Resistance - Forced Conv. @ 200 LFM
WAVE-23-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	40	12.5	6055.1	10.5	6.76
WAVE-23-165	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	46.5	16.5	7634.6	14.5	5.08
WAVE-26-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	26	26	52.9	12	8305.2	10	5.21
WAVE-29-127	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	29	29	61.4	12.7	11810.5	10.7	4.08

WAVE-26-12



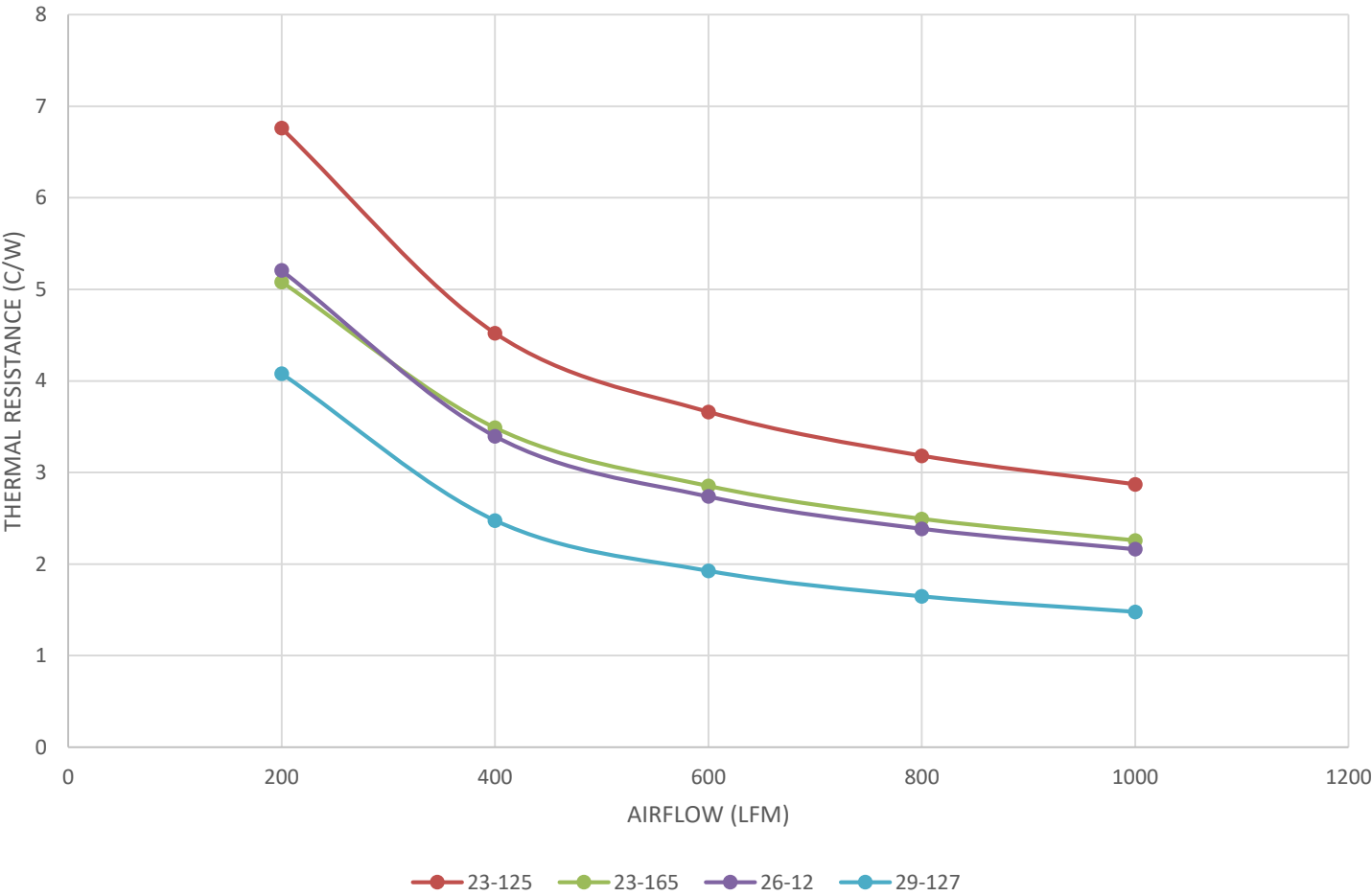
WAVE-29-127



Wave 2x Series

WkV Part Number	Description	Attachment Method	Mechanical Dimensions (mm)						Thermal Resistance - Forced Conv. @ 200 LFM
			Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-23-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	40	12.5	6055.1	10.5	6.76
WAVE-23-165	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	23	23	46.5	16.5	7634.6	14.5	5.08
WAVE-26-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	26	26	52.9	12	8305.2	10	5.21
WAVE-29-127	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	29	29	61.4	12.7	11810.5	10.7	4.08

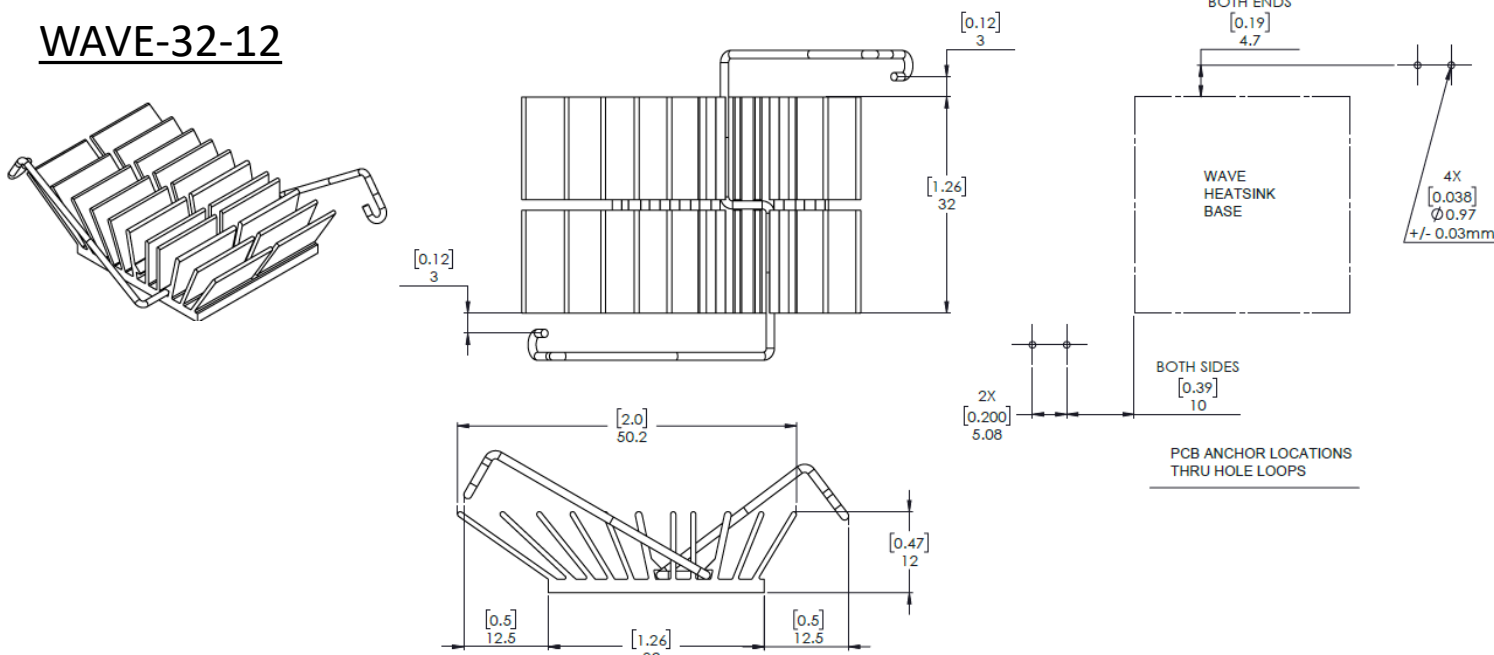
Wave 2X



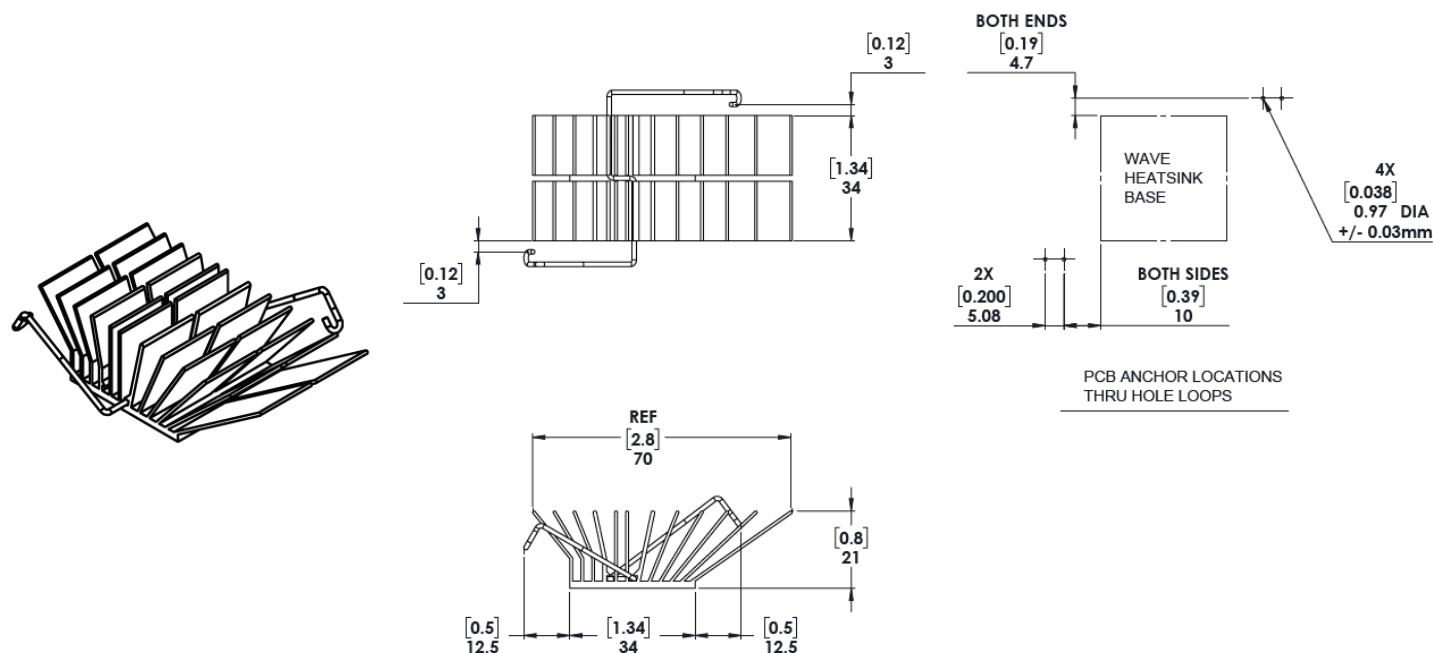
Wave 3x Series

WkV Part Number	Description	Attachment Method	Length	Width	Mechanical Dimensions (mm)				Thermal Resistance - Forced Conv. @ 200 LFM
					Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-32-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	32	32	50.2	12	10957.5	10	4.64
WAVE-34-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	34	34	70	21	21268.4	19	2.19
WAVE-35-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	62	12	15180.8	10	3.83
WAVE-35-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	63.3	12.5	15792.6	10.5	3.63
WAVE-35-15	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	58.1	15	15612.7	13	3.15
WAVE-35-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	74.6	21	21721.8	19	2.11
WAVE-366-175	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	36.6	36.6	63.6	17.5	18637.8	15.5	2.55

WAVE-32-12



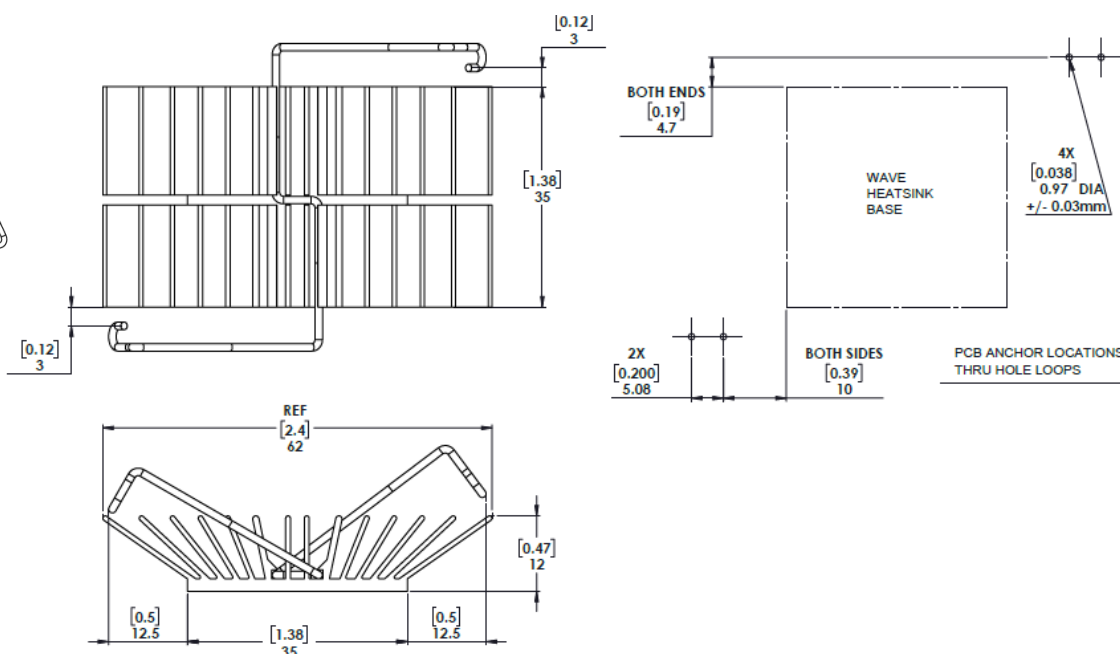
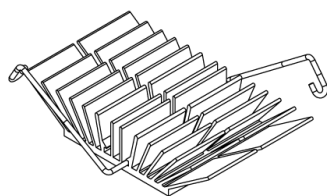
WAVE-34-21



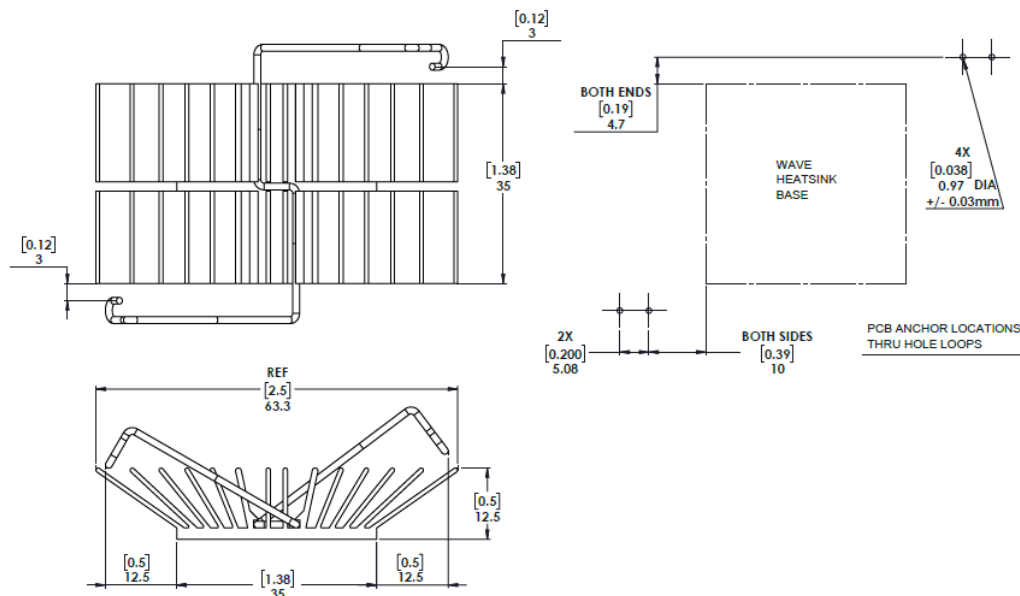
Wave 3x Series

WkV Part Number	Description	Attachment Method	Length	Width	Mechanical Dimensions (mm)				Thermal Resistance - Forced Conv. @ 200 LFM
					Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-32-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	32	32	50.2	12	10957.5	10	4.64
WAVE-34-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	34	34	70	21	21268.4	19	2.19
WAVE-35-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	62	12	15180.8	10	3.83
WAVE-35-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	63.3	12.5	15792.6	10.5	3.63
WAVE-35-15	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	58.1	15	15612.7	13	3.15
WAVE-35-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	74.6	21	21721.8	19	2.11
WAVE-366-175	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	36.6	36.6	63.6	17.5	18637.8	15.5	2.55

WAVE-35-12



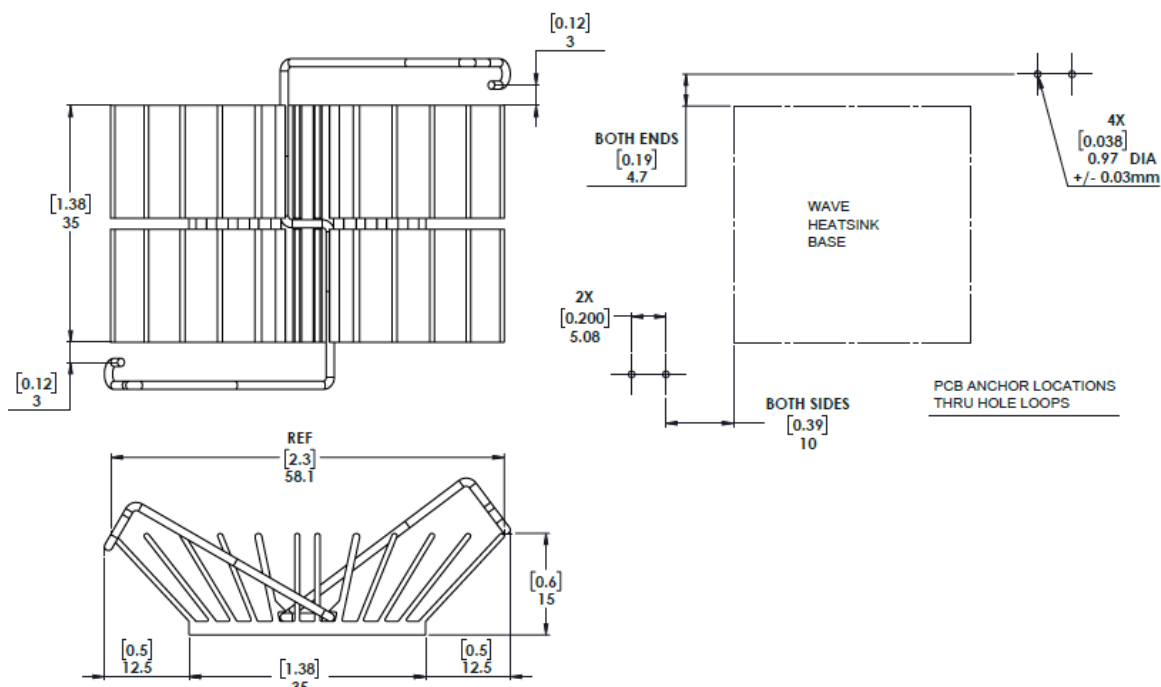
WAVE-35-125



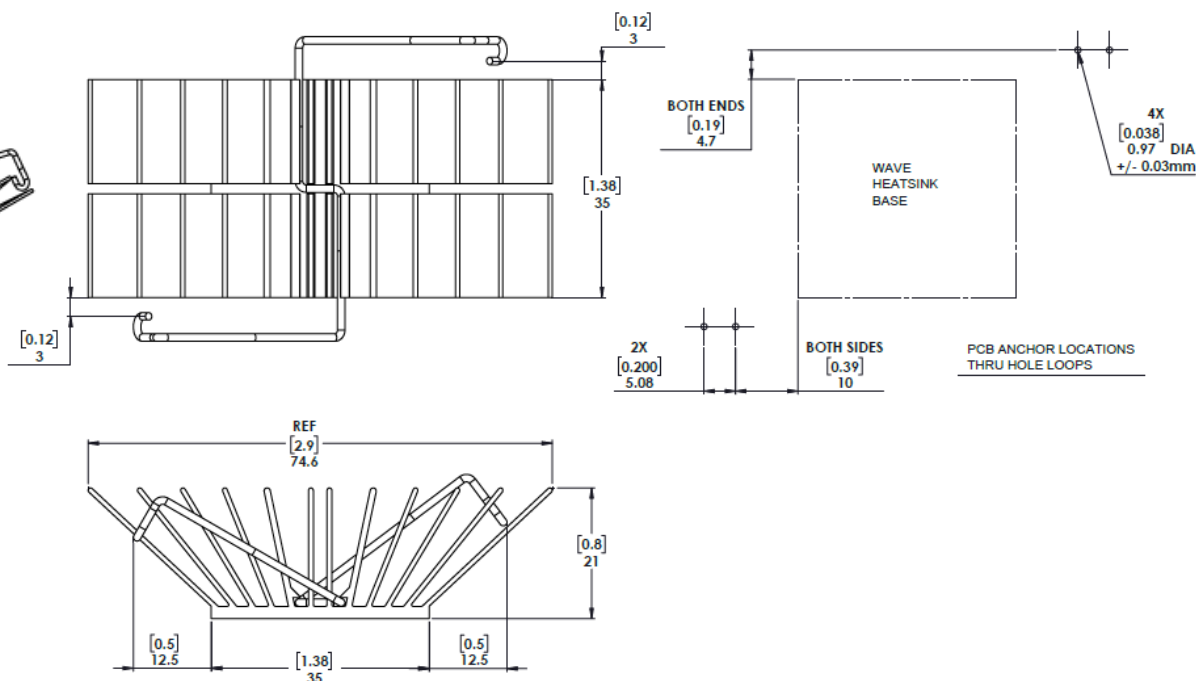
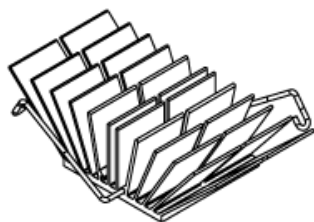
Wave 3x Series

WkV Part Number	Description	Attachment Method	Mechanical Dimensions (mm)						Thermal Resistance - Forced Conv. @ 200 LFM
			Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-32-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	32	32	50.2	12	10957.5	10	4.64
WAVE-34-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	34	34	70	21	21268.4	19	2.19
WAVE-35-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	62	12	15180.8	10	3.83
WAVE-35-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	63.3	12.5	15792.6	10.5	3.63
WAVE-35-15	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	58.1	15	15612.7	13	3.15
WAVE-35-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	74.6	21	21721.8	19	2.11
WAVE-366-175	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	36.6	36.6	63.6	17.5	18637.8	15.5	2.55

WAVE-35-15



WAVE-35-21

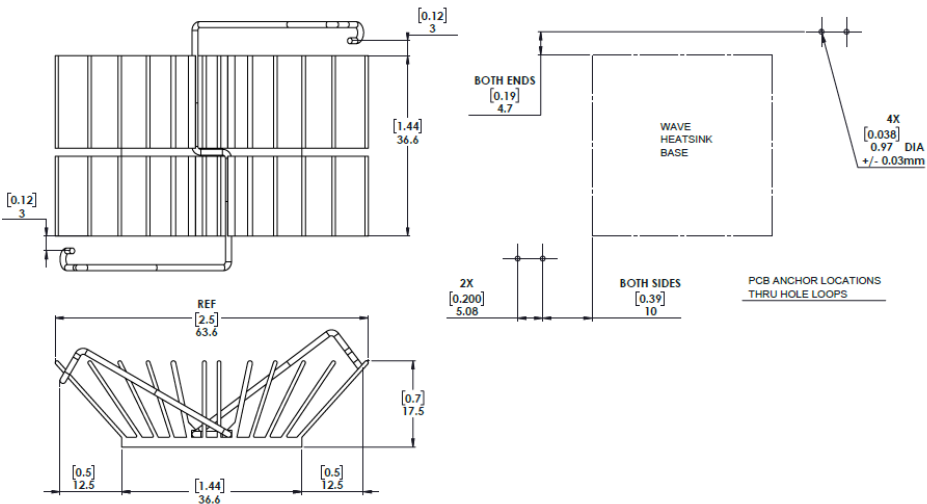




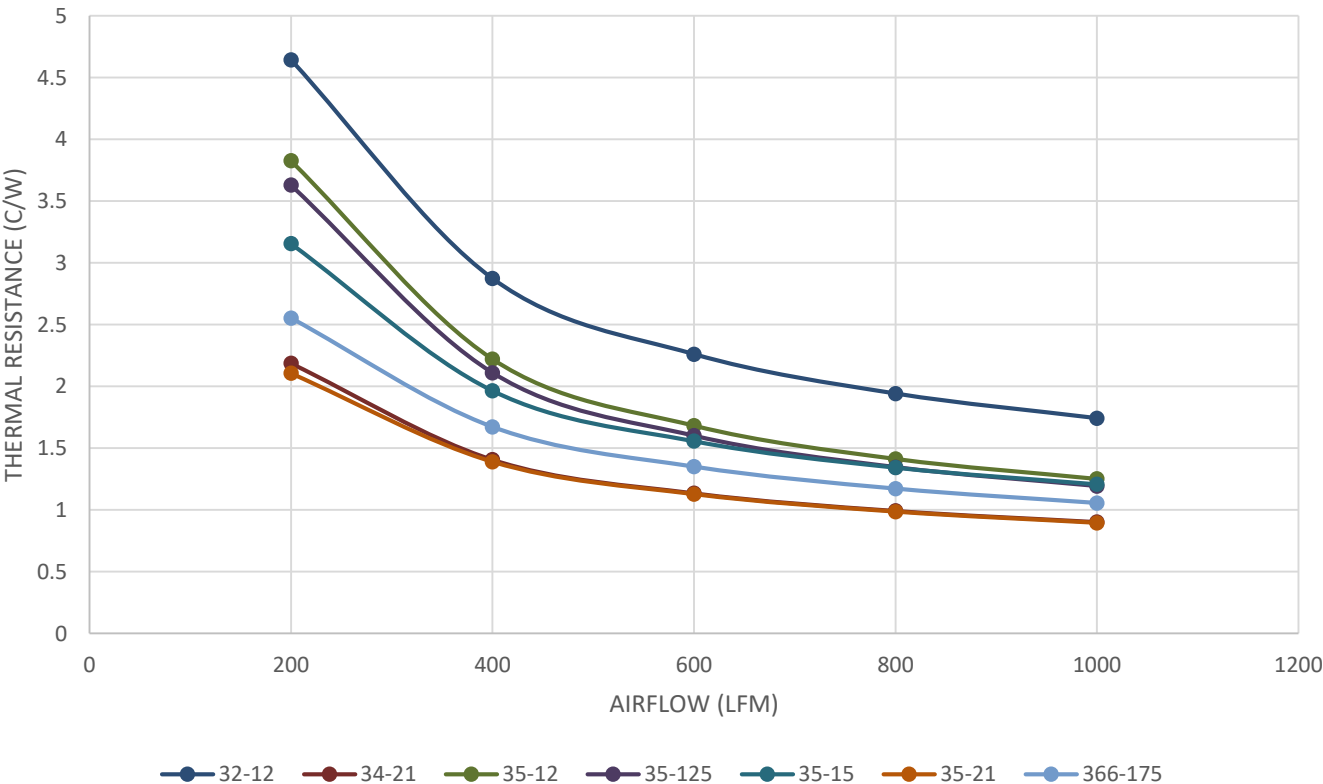
Wave 3x Series

WkV Part Number	Description	Attachment Method	Mechanical Dimensions (mm)						Thermal Resistance - Forced Conv. @ 200 LFM
			Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-32-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	32	32	50.2	12	10957.5	10	4.64
WAVE-34-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	34	34	70	21	21268.4	19	2.19
WAVE-35-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	62	12	15180.8	10	3.83
WAVE-35-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	63.3	12.5	15792.6	10.5	3.63
WAVE-35-15	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	58.1	15	15612.7	13	3.15
WAVE-35-21	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	35	35	74.6	21	21721.8	19	2.11
WAVE-366-175	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	36.6	36.6	63.6	17.5	18637.8	15.5	2.55

WAVE-366-175



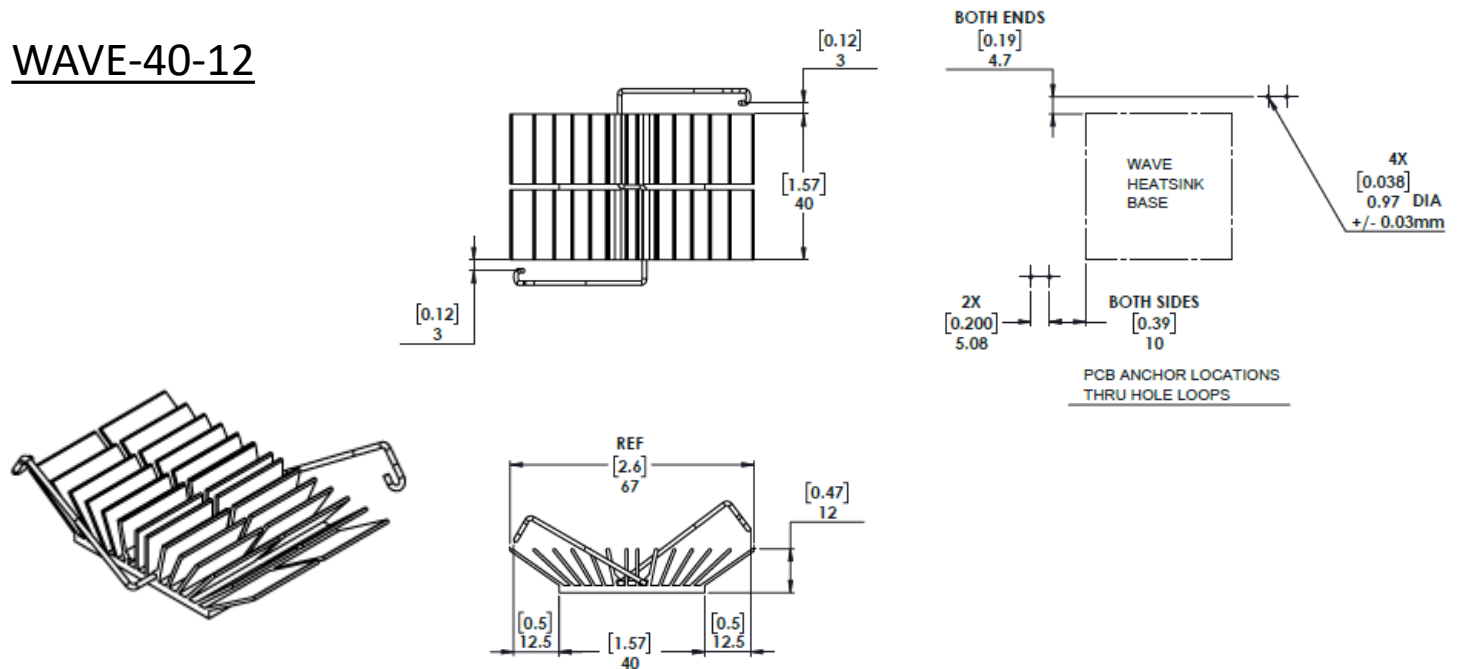
Wave 3X



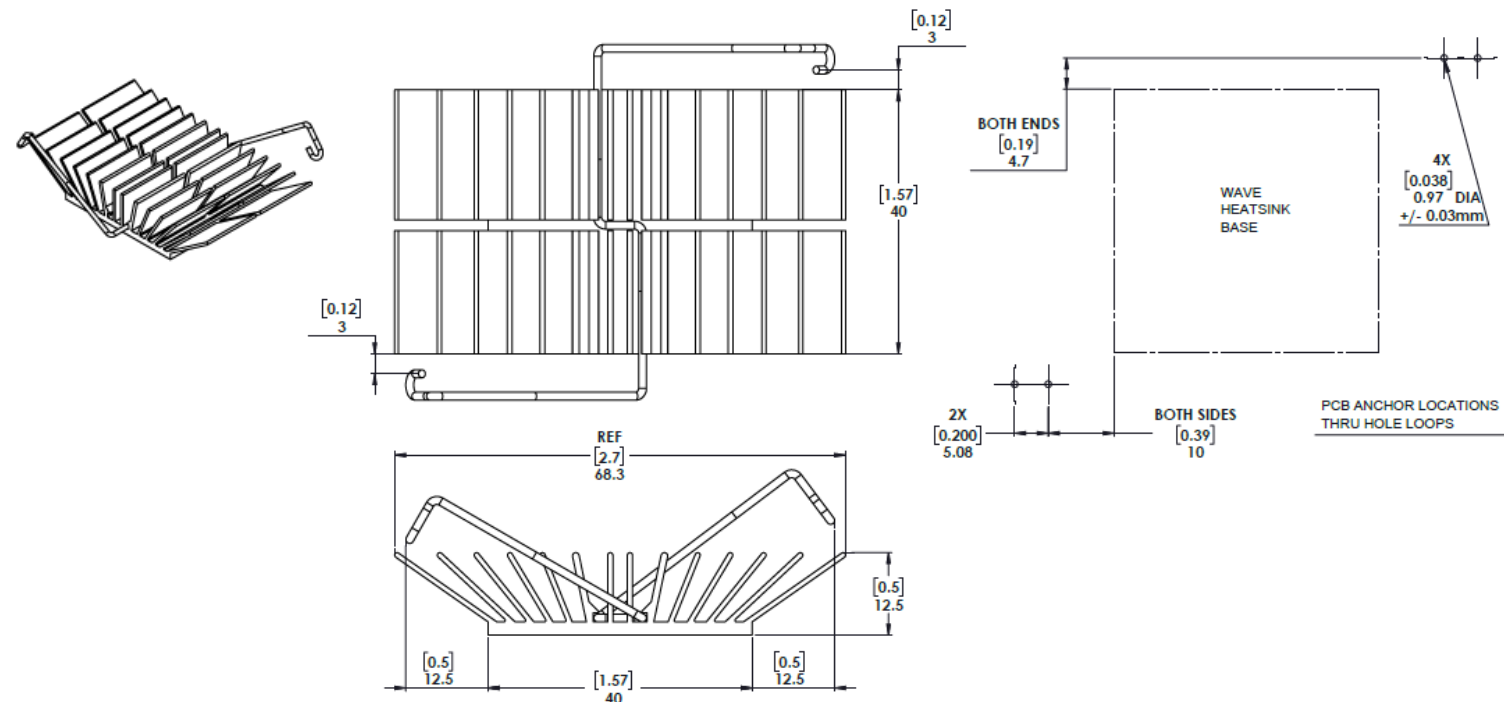
Wave 4x Series

WkV Part Number	Description	Attachment Method	Mechanical Dimensions (mm)						Thermal Resistance - Forced Conv. @ 200 LFM
			Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	
WAVE-40-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	66.9	12	17689.4	10	3.36
WAVE-40-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	68.3	12.5	18410.1	10.5	3.16
WAVE-425-117	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	42.5	42.5	67.4	11.7	21668.3	9.3	3.40
WAVE-45-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	45	45	72	12	22303.7	10	2.96

WAVE-40-12



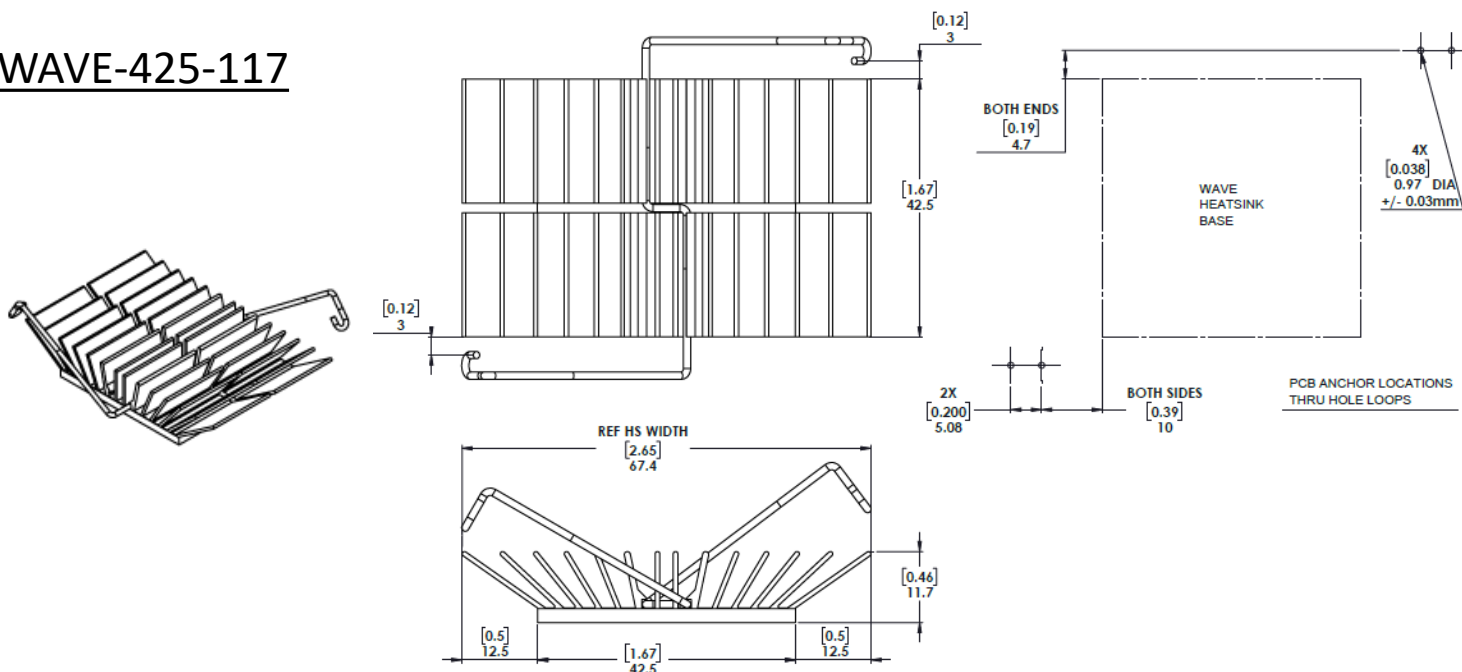
WAVE-40-125



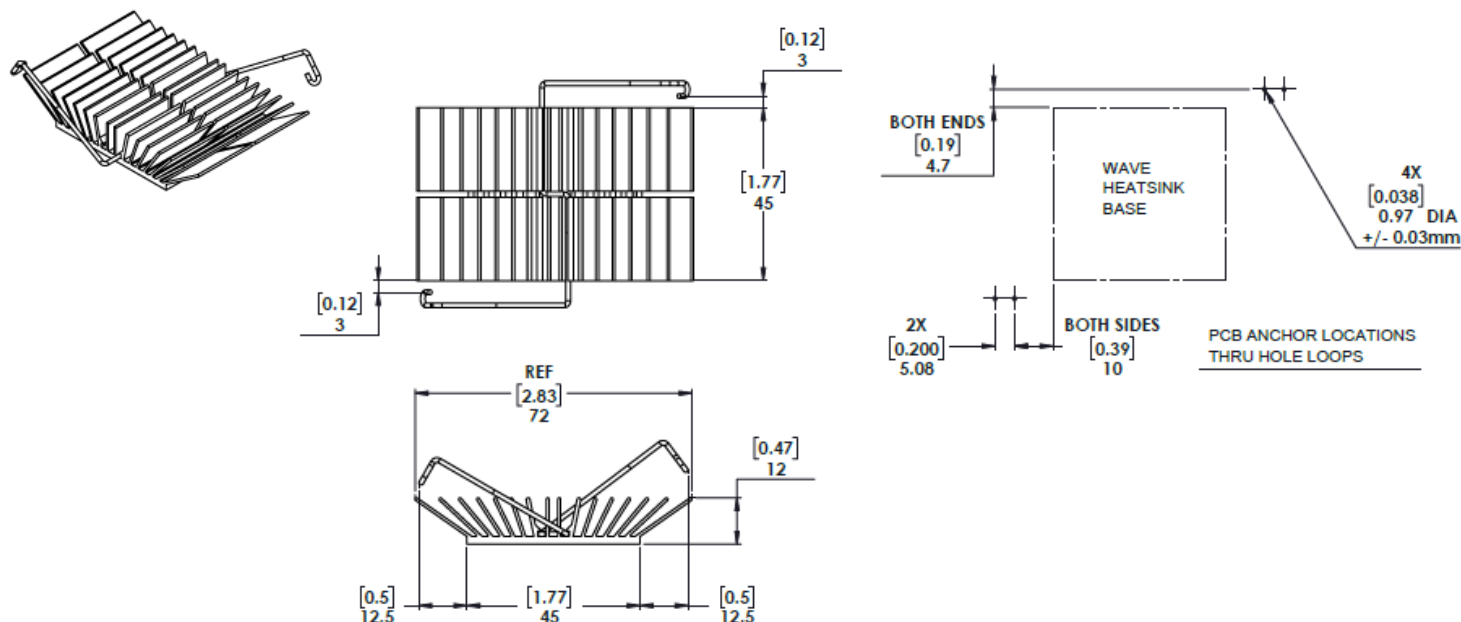
Wave 4x Series

			Mechanical Dimensions (mm)						
WkV Part Number	Description	Attachment Method	Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	Thermal Resistance - Forced Conv. @ 200 LFM
WAVE-40-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	66.9	12	17689.4	10	3.36
WAVE-40-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	68.3	12.5	18410.1	10.5	3.16
WAVE-425-117	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	42.5	42.5	67.4	11.7	21668.3	9.3	3.40
WAVE-45-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	45	45	72	12	22303.7	10	2.96

WAVE-425-117



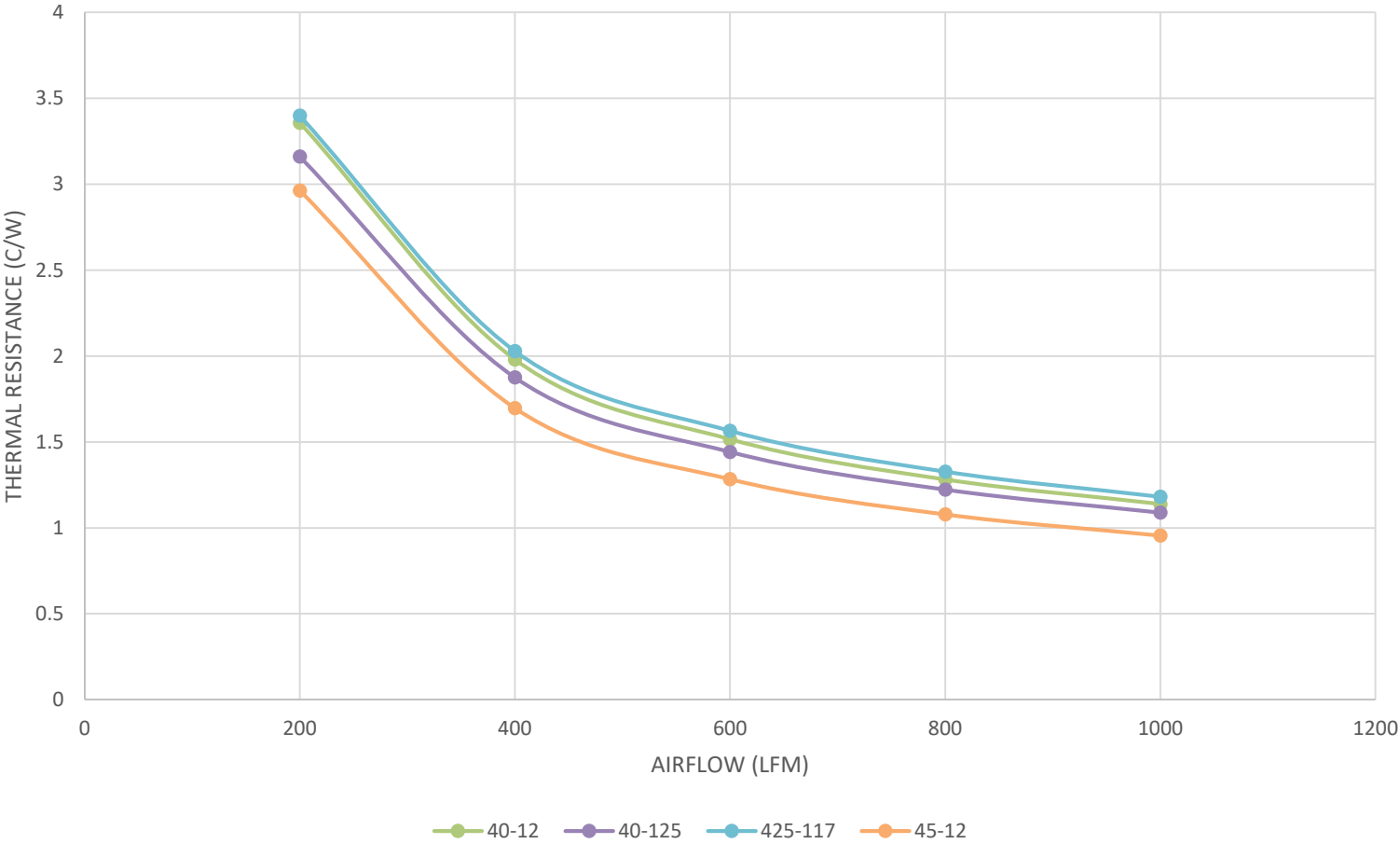
WAVE-45-12



Wave 4x Series

			Mechanical Dimensions (mm)							
WkV Part Number	Description	Attachment Method	Length	Width	Fin Width	Height	Surface Area (sq mm)	Height Off Base (Fin Height)	Thermal Resistance - Forced Conv. @ 200 LFM	
WAVE-40-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	66.9	12	17689.4	10	3.36	
WAVE-40-125	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	40	40	68.3	12.5	18410.1	10.5	3.16	
WAVE-425-117	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	42.5	42.5	67.4	11.7	21668.3	9.3	3.40	
WAVE-45-12	Wave Heat Sink BGA Chipset Aluminum Top Mount	Spring-Anchor	45	45	72	12	22303.7	10	2.96	

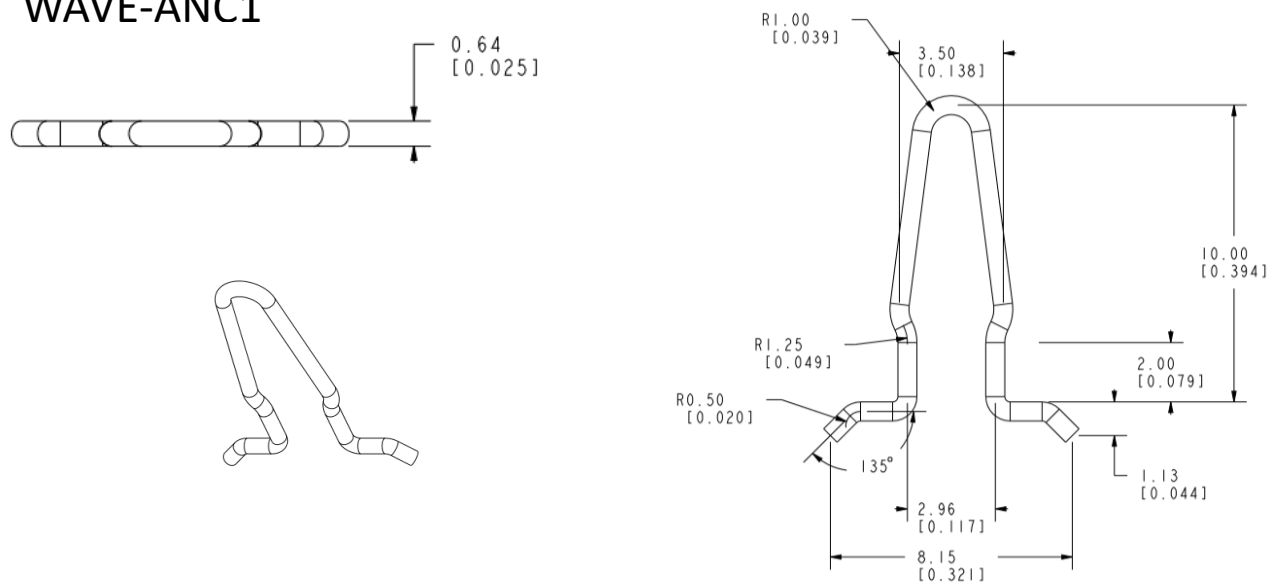
Wave 4X



Wave Series Anchors

WAVE-ANC1	ANCHOR, PCB, 10MM TALL
WAVE-ANC2	ASSEMBLY, SOLDER ANCHOR

WAVE-ANC1



WAVE-ANC2

