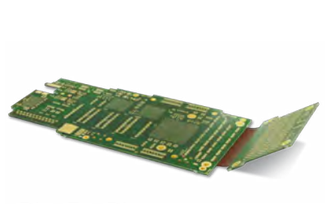
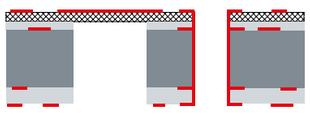
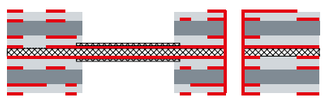
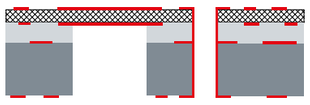
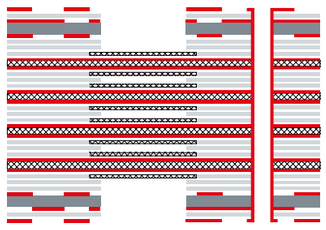
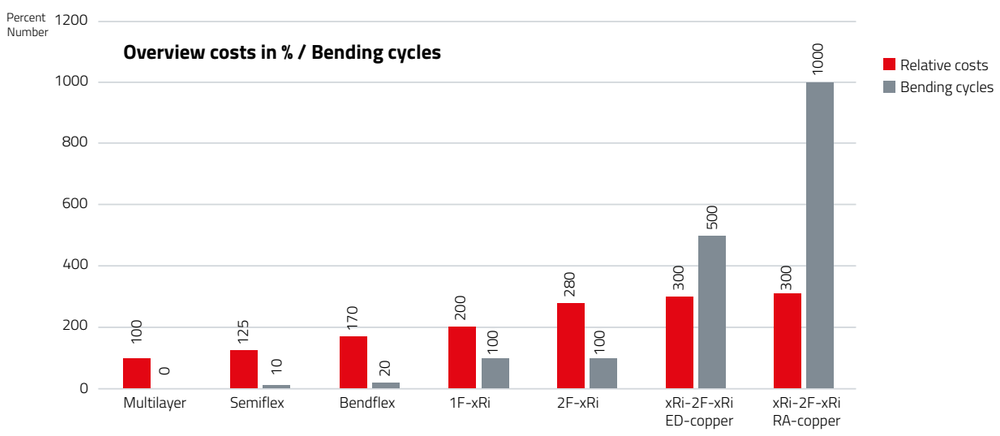
FLEX SOLUTIONS VOLUME

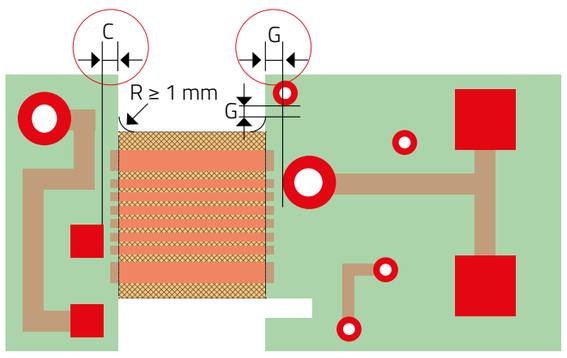
Technology variants

RIGID.flex outside	RIGID.flex inside	SEMI.flex / BEND.flex
		
1F-3Ri	3Ri-2F-3Ri	1Ri-3Ri
		
2F-2Ri	3Ri-8F-3Ri	2Ri-4Ri
		

Flexibility and costs – An estimation



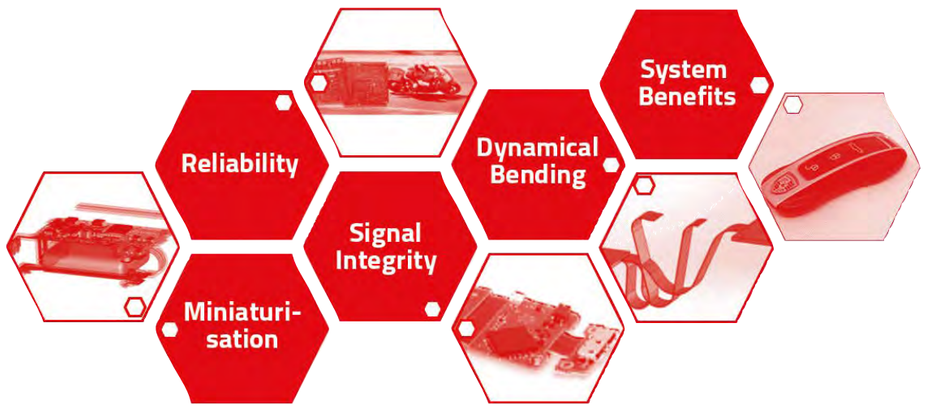
Layout / routing in the bending area



! REGARD DISTANCES OF DRILL HOLES AND SMD PADS TO FLEX-RIGID TRANSITION, SEE WÜRTH ELEKTRONIK DESIGN RULES.

- No vias in flexible area with flex-rigid
- Use teardrops
- Round routing in flexible area
- Preserve NFP (Non Functional Pads) on flexible layers to avoid reliability risk

Advantages of RIGID.flex



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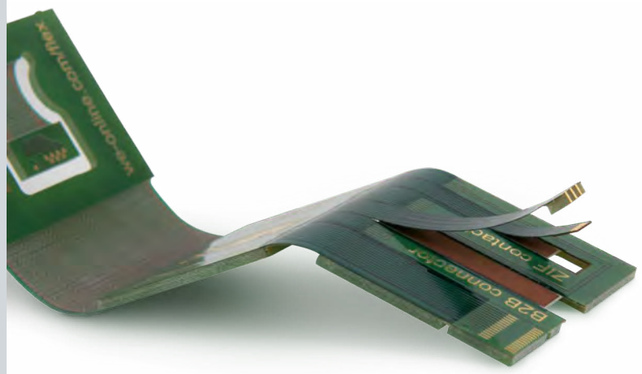
Design bending radii based on flex thickness

bending radius [mm]	1	2	3	4	5	6	7	
Flex area 1-layer				Thickness x 10				IPC-2223: Use A Flex-to-install
Flex area 2-layers				Thickness x 10				
Flex area 4-layers				Thickness x 20				
SEMI.flex								
BEND.flex								

Calculation of flex length

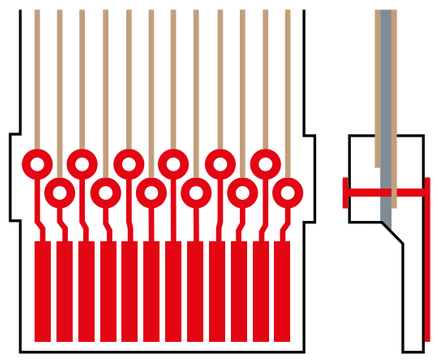
$L \geq A + \pi \cdot R + 2\,(T - R)$	$L \geq A + R\,(\pi - 2)$	$L \geq A + T + R\,(\pi - 2)$	$L \geq B + C + T + R\,(\frac{1}{2} \cdot \pi - 2)$
Geometric conditions:			
$A + 2T \geq 2R$	$A \geq 2R$	$A + T \geq 2R$	$B + C + T \geq 2R$

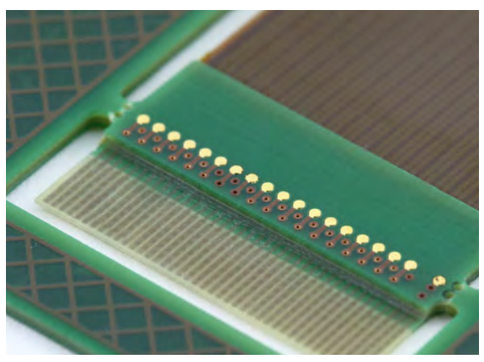
Lift-off option



- No PTH in the lift-off area
- no copper design allowed on the layer adjacent to the lifted flex area
- Specification in drawing, i.e. “lift-off area, not laminated“

ZIF contacts on outer layer by using vias





! PLEASE RESPECT THE BASIC DESIGN GUIDE OF WÜRTH ELEKTRONIK FOR DESIGN PARAMETERS REGARDING STRUCTURES, VIA SIZES AND SOLDERMASK.

Here you will find more information about the stack-ups:
www.we-online.com/flex-stackups

HOTLINE TO OUR „FLEXPERTS“

Tel: +49 7940 946-FLEX (3539)
flex@we-online.com

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