

Specification	dimension	Fig. Ref.	Rigid flex Standard selective coverlay	Rigid flex Special; Others	Remarks WITH OTHER CONSTRUCTIONS THAN SELECTIVE COVERLAY LEAD FREE ASSEMBLY CAN BE CRITICAL!								
Materials & stack up													
Material			Polyimide / FR4	*	See additional specifications								
Base Cu Thickness Inner Layer	µm	A	35	*									
Base Cu Thickness Foils Outer	µm	B	18, 35	*									
Min board thickness	mm	D		*									
Max board thickness	mm	D		*	Depends on type (see presentation "flexible solutions).								
Min inner layer thickness	µm	C	200	*									
Max inner layer thickness	µm	C	710	*									
ML thickness tolerance	%		10	*	On the calculated thickness								
Min Prepreg thickness	µm	X	80	*	Blind via's aspect ratio								
Max. Layer Count	number		8 - 2 flex layers	*									
Build-up ML			Selective coverlayer	*	see presentation "flexible solutions								
Panel sizes	mm		610 x 455 / 305 x455										
Board Size	mm		575 x 429										
	mm		265 x 425										
Max Bow and Twist	%		0,75% / 1,5 %	*	* All others on request								
Min. Line & Space Inner Layer					According to IPC class 2	Capability refers to customer design width values!!!							
@ Final Cu thickness 18 µm	µm	E/F	100	75*	* Dep. on density and board size/ type	15µm	width compensation leads to production artwork width of	85µm	line width				
@ Final Cu thickness 35 µm	µm	E/F	125	100*	* Dep. on density and board size/ type	30µm	width compensation leads to production artwork width of	95 µm	line width				
@ Final Cu thickness 70 µm	µm	E/F	175	150*	* Dep. on density and board size/ type	50µm	width compensation leads to production artwork width of	125µm	line width				
Min. Line & Space Outer Layer					According to IPC class 2								
@ Final Cu thickness 30 µm	µm	G/H, O/P		80*	* Dep. on density and board size/ type								
@ Final Cu thickness 35 µm	µm	G/H, O/P	125	100*	* Dep. on density and board size/ type								
@ Final Cu thickness 50 µm	µm	G/H, O/P	150	125*	* Dep. on density and board size/ type								
@ Final Cu thickness 85 µm	µm	G/H, O/P		200*	* Dep. on density and board size/ type								
Holes Non Plated													
Min drilled Hole	µm	K, S	200	150	Related to Aspect Ratio and Hole type								
Hole location tolerance	+/- µm		100		Hole to hole, first drilling								
Max Reference Hole	mm		6,00		For min position tolerance								
Hole tolerance	+/- µm		20										
Hole Depth tolerance	+/- µm	W	30		Drilled Blind Via								
Min Hole to Pattern @ 100 µm													
Isolation distance	µm	I	275		Differs from rigid!!								
Min Hole to Pattern	µm		200		For tenting over @ first drilling.								
Holes Plated													
Aspect Ratio	number	J/K, Q/R	8*		For drill size ≥ 0.20 mm								
Hole tolerance	+/- µm		100										
Min Blind Micro Via Drilled	µm		150										
Aspect Ratio Micro Blind Via drilled	number	V	1.00	1,20	Drilled								
Min µVia Size Laser	µm												
Aspect Ratio Micro Via Laser	number												
Min Hole to Pattern @ 100 µm													
Isolation distance	µm	I	350										
Min plating thickness	µm		Class 2	Others	According to IPC-6013								
Filled and Cu Plated Via's													
Through hole													
Blind Micro Via Drilled													
Blind Micro Via Laser													
Filled via													
Landsize Inner Layers													
@ Final Cu thickness 18 - 35 µm					Finish to Drill, for 0 annular ring								
Min Landsize ML>4	µm	M	Drill Size + 350										
Landsize Outer Layers					Finish to Drill, for 0 annular ring								
Min Landsize													
@ Final Cu thickness >35 - 50 µm	µm	L	Drill Size + 275	Drill Size + 225	Finish to Drill, for 0 annular ring								
Min Landsize													
@ Final Cu thickness >50 - 85 µm	µm	L	Drill Size + 300	Drill Size + 250	Finish to Drill, for 0 annular ring								
Soldermask					According to IPC-840								
General					W.Peters GL2467 NB-Matt								
Solder Mask Registration	+/- µm		50										
Solder Mask Via Closed	µm		200 / 250 / 300		< 250=100% 300 = 95% closed								
Solder Mask Via Open min	µm		300		and / or A.R. < 6,4 and class 2 plating								
Solder Mask SMD Clearance	µm		Land Size + 100										
Solder Mask Dam Min	µm		80										
Legend Print					White, yellow, black								
Legend Line Width	µm		125										
Legend to Soldermask	µm		200										
Barcode					only white								
Surface finish					ENIG STRONGLY ADVISED; any other on request								
HASL PbSn Thickness	µm		1 - 30										
HASL Sn Thickness	µm		1 - 30										
Chem. NiAu Thickness	µm		3 - 6 / 0.05 - 0.12		STANDARD (MacDermid Planar)								
Imm Sn Thickness	µm		>1,0										
Imm Ag Thickness	µm		0.2 - 0.4										
OSP Thickness	µm		0.2 - 0.5										
Galvanic NiAu Thickness	µm		4.0 / 1.0		Other thicknesses on customer request								
Carbon finish (key contacts)					NOTE; blind via's and micro-via's may not be coated! I.e. contact purposes								
General													
Thickness	µm												
Min Spacing	µm												
Min Width	µm												
Location tolerance	%												
Min overhang	µm												
Peel able mask													
General					W.Peters SD2955 - lead free version								
Min Thickness	µm		250										
Min Width	µm												
Max coverable Hole Size	mm		2.0										
Via plug													
General					SD2361, for vacuum closed via's								
Max overhang land	µm												
Max Height with open soldermask	µm		50		Open Via								
Max Height closed soldermask	µm		100		Covered Via with soldermask								

Specification	dimension	Fig. Ref.	Rigid flex	Rigid flex	Remarks								
Routing, Scoring and Beveling (not on transition zone!)													
Routing Tolerance	+/- µm		200		other on request								
Routing to Hole Tolerance	+/- µm		200										
Min Routing clearance to pattern	µm		300		for UL check file								
Min Scoring clearance to pattern	µm		400		dependent on panel thickness								
Max Scoring tolerance													
Max board thickness scoring	mm		2,2										
Beveling (Chamfering) tolerance	%												
Electrical testing													
Max Testing area	mm		400 x 600										
Min Pitch	µm		500	0									
Max number Test Points / sq inch	number		200		Top or Bottom								
Test voltage (volt) parallel	volt		100	Other	10 mOhm - 50 Ohm								
Test voltage (volt) probe	volt		40	Other	10 mOhm - 10 Ohm								
Impedance Tolerance	%		10	8									
UL Flammability													
Flammability rating of used materials			V-0		no UL marking permitted on rigid flex E 335592 Category ZP XK2 (Flexible material constructions)								
Flex type 1 and type 2													
OTHERS													
Adhesive			3M 467 MP		On large area's air bubbles can not be avoided!								