

Practical THR recommendations

The volume of paste and hence the degree of filling of the solder paste in the paste printing method is critical for optimum soldering results in the SMT process.

We recommend determining the quantity of solder paste as follows:

Volume of paste (or rather, degree of filling):

for solder joint filling and solder joint form within the tolerances to IPC-A610

Male conn. (open and closed): Male conn. (solder flange LF):	2 to 8 poles –	9 to 24 poles 2 to 24 poles
Recommended finished hole I.D. *1) :	$d_i = 1.4^{+0.1}$ mm	$d_i = 1.5^{+0.1}$ mm
	Paste volume V_p [mm ³] / filling level f_p [%] after stencil print	
Minimum solder joint shape Optimum solder joint shape	2.4 mm ³ / 70 % 2.9 mm ³ / 90 %	3.1 mm ³ / 85 % 3.5 mm ³ / 100 %

Valid with the following parameters for all SL-SMT variations:

Male connector:

Pin length	= L	[mm]	= $1.5^{+0.3}$
Min. height of space without paste	= h_L	[mm]	= min. 0.3
Pin diameter	= d	[mm]	= 1.2

PCB:

Thickness	= H	[mm]	= 1.6
Placement hole			= metallised
Placement hole I.D.	= d_i	[mm]	= see table ¹⁾
Placement hole O.D.	= d_A	[mm]	= 2.3
Positioning tolerance to IEC 326-3			= very fine

Stencil:

Thickness	= D_s	[μ m]	= 120 – 180
Stencil hole diameter	= d_s	[mm]	= $2.1^{+0.2}$

Solder paste:

Solder paste particle size	[μ m]	= 20 - 40 = Type 3
Evaporation volume of solder paste	[%]	= approx. 50

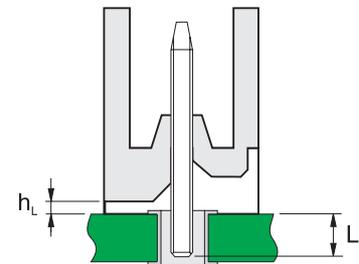
Process:

Stencil print method		= squeegee print, single
Filling level in placement hole	= f_p	[%] = see table
Method for automatic assembly		= pick&place
Temperature profile		= to EN 61760-1

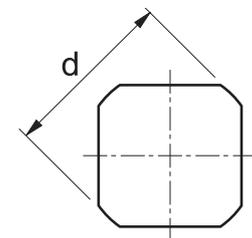
¹⁾ Tolerances for components, PCBs and automatic machines must be taken into account: recommendation for 9 poles or more, or for variations with solder flange LF: $d_i = 1.5^{+0.1}$ mm

²⁾ Stencil hole diameter approx. 10% smaller than placement hole O.D. d_A

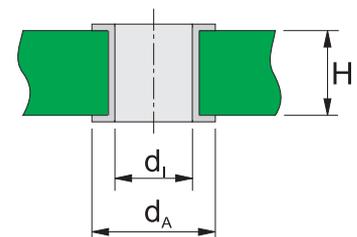
Calculation aids for S2L-SMT 3.5 and LSF-SMT or different parameters on request and also at www.smt-technology.com



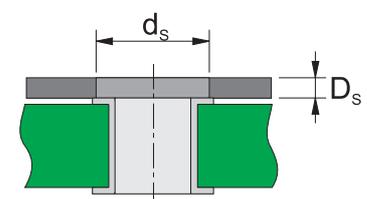
Male connector parameters



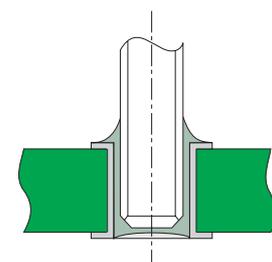
Pin cross-section



PCB parameters



Stencil parameters



Optimum solder joint form