DIN Signal male connector - THR

General information

Design	IEC 60603-2	types: B, 2B, 3B, C, 2C, 3C, M male
No. of contacts	max. 96	
Contact spacing	2,54mm	
Test voltage	1000V	
Contact resistance	max. 15mOhm	
Insulation resistance	min. 10^{12}Ohm	
Working current	2A at 20°C (only signal contacts, see derating diagram)	
Temperature range	-55°C ... +125°C max. 15s at 240°C for reflow soldering	
Termination technology	SMC with solder pins	
Clearance & creepage distance	min. 1,2mm each	
Insertion and withdrawal force	16-pole max. 15N 30-pole max. 30N 48-pole max. 45N	20-pole max. 20N 32-pole max. 30N 64-pole max. 60N 96-pole max. 90N
Mating cycles	acc. to performance level, see table below	
UL file	E102079	
RoHS - compliant	Yes	
Leadfree	Yes	
Hot plugging	No	

Insulator material

Material	PCT (thermoplastics, glass fiber reinforcement 30%)
Colour	natural coloured, colour deviations and speckles permitted
UL classification	UL 94-V0
Material group acc. IEC 60664-1	II (400 ≤ CTI < 600)
NFF classification	I3, F3

Contact material

Contact material	Copper alloy
Plating termination zone	Sn over Ni
Plating contact zone	acc. to performance level, see table below

performance level	mating cycles acc. to IEC 60603-2	mating cycles complementary acc. to IEC 60603-2	plating contact zone
1	*500*		*Au over PdNi over Ni*
2	*400*		*Au over PdNi over Ni*
3	*50*		*Au over PdNi over Ni*
NM30 (S4)		500	min. 0,76µm (30µinch) noble metal (alloy) over Ni
Au1	500		Au over Ni
Au2	400		Au over Ni
Au30		500	min. 0,76µm (30µinch) Au over Ni
Au50		500	min. 1,27µm (50µinch) Au over Ni
Au70		500	min. 1,60µm (70µinch) Au over Ni
Au90		500	min. 2,00µm (90µinch) Au over Ni

Standard plating options highlighted in *italic*, other plating options are available on request.

Soldering instructions

THR (Through Hole Reflow) connectors are designed to be used in a reflow oven together with other SMD (Surface Mount Device) components. In this process, called as well „Pin in Hole Intrusive Reflow", the connectors are inserted into plated through holes in a comparable way to conventional component mounting. All other components can be assembled on the pcb surface.

The length of the connector contacts should be such that they protrude by no more than 1.5 millimetres after insertion to the pcb. Each contact collects solder on its tip as it penetrates the solder paste in the hole. So if the contact is too long, this solder would no longer be able to reflow back into the plated through hole by capillary action during the soldering process, therefore the quality of the soldered connection would suffer as a result.

Quantity of solder paste

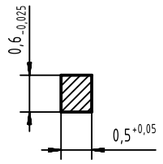
Before the components are assembled, solder paste must be applied to all the solder pads (for connecting surface-mount components) and the plated through holes.
To ensure that the plated through holes are completely filled, significantly more solder paste must be applied than traditional solder pads on the pcb surface. There are numerous calculation methods available which are complicated to apply. The following rule of thumb has proved valuable in practice:

VPaste = 2(VH – VP)
in which:
VPaste = Required volume of solder paste
VH = Volume of the plated through hole
VP = Volume of the connector termination in the hole

Comment: the multiplier "2" compensates for solder paste shrinkage during soldering. For this purpose, it was assumed that 50 % of the paste consists of the actual solder, the other 50 % being soldering aids.

Cross section of solder pins

A= 0,29mm² - 0,33mm²

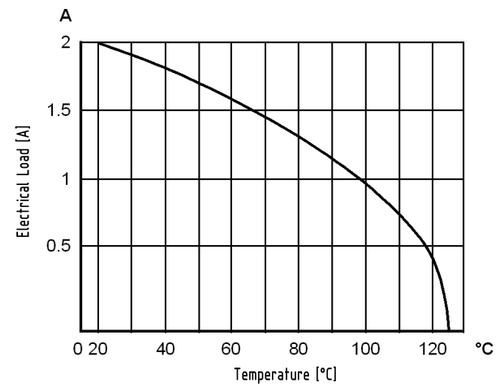


Derating diagram acc. to IEC 60512-5 (Current carrying capacity)

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity curve is valid for continuous, non interrupted current loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60512-5



All Dimensions in mm
Original Size DIN A3

Scale 1:1

Free size tol.

Ref.

Sub.

Department EC PD - DE

HARTING Electronics GmbH
D-32339 Espelkamp

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A3

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