APPLICATION NOTE

HUBER+SUHNER
Excellence in Connectivity Solutions

HUBER+SUHNER AG
RF Division
PMD
4049nuj
2018
www.hubersuhner.com

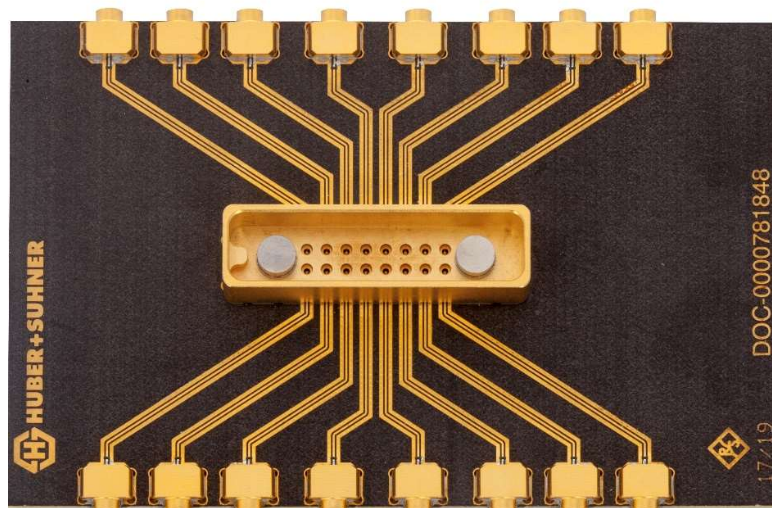
MXPM PCB Socket Assembly

Table of contents

1 **Introduction** 1
2 **Pattern** 2
3 **Footprint** 2
4 **Vias** 2
5 **Plating** 2
6 **Solder printing and solder stencil** 3
7 **Component placement** 3
8 **Soldering** 3

1 Introduction

MXPM is a high-performance RF connector system. HUBER+SUHNER has developed certain design features to facilitate the assembly of PCB sockets and offers engineering support for footprint optimisation. The assembly process specifications must be strictly observed to achieve the full rated electrical performance.



HUBER+SUHNER disclaims any liability resulting from incorrect installation and use, including any damages resulting from the use of tools and accessories other than the ones recommended herein.

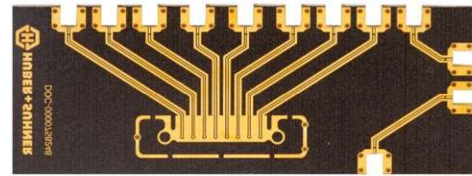
HUBER+SUHNER
Excellence in Connectivity Solutions

2 Pattern

MXPM PCB sockets feature a semi-SMT design to enable optimised electrical and mechanical performance. The guide pins improve mechanical stability and facilitate easy and correct component placement.

3 Footprint

Maintaining a suitable footprint for components on PCBs is very important for ensuring reliable production. For RF signals, matched impedance footprints are mandatory. Unfortunately, such footprints depend on the base material. The relative dielectric constant, layer thickness and, in the case of a strip line, the configuration of the complete PCB stack-up all play a role. Such footprints are typically customer specific and the design requires electro-magnetic 3D field simulation. For PCB production, it is essential to order impedance-controlled PCBs and choose a manufacturer with measurement capabilities and sufficient experience.



4 Vias

HUBER+SUHNER recommends the use of filled vias for the signal path that serves as a transmission into or through the layer stack-up (stripline or microstrip configuration on the opposite side).

5 Plating

Gold plating is excellent for soldering. Special care must be taken with thick gold layers, as gold will diffuse into solder and make it brittle at concentrations above 3%.
Silver plating of traces can reduce losses and improve signal integrity but requires an additional processing step during manufacturing.

HUBER+SUHNER disclaims any liability resulting from incorrect installation and use, including any damages resulting from the use of tools and accessories other than the ones recommended herein.

HUBER+SUHNER
Excellence in Connectivity Solutions

6 Solder printing and solder stencil

HUBER+SUHNER has developed and tested solder stencil for reliable manufacturing and RF performance. Correct printing requires a solder grain size that does not exceed the specified size. Type 3 is required in the case of MXPM. The guide pins are pin-in-paste compatible. Compared to SMT solder printing, pin-in-paste solder printing is not controlled by the stencil thickness but the printing parameters.

7 Component placement

MXPM PCB sockets are fully pick-and-place compatible. All PCB sockets in this family are supplied in tape and reel packaging. Where necessary, a Kapton film provides a flat area for a vacuum nozzle. The Kapton film is designed to remain on the socket while soldering.
For low-volume production, the sockets can be placed by hand. PCB socket types with guide pins are preferred for manual placement as the guide pins help position the socket on the PCB.
The sockets are qualified for Unlimited Floor Live (Level 1) in accordance with JSTD 020D ed. 2007.

8 Soldering

8.1 Reflow

Soldering of the socket requires industrial reflow equipment or at least a good rework station. A soldering iron or hot air pencils are not suitable. The sockets are qualified as Not Process Sensitive (W0 and R0) in accordance with J-STD 075 ed. 2008.

8.2 Pin-in-paste

For this technique, a solder deposit is placed in the via hole to solder the guide pins. Make sure that the guide pins do not protrude more than 1.5 mm out of the PCB. In principle, guide pins do not need to protrude from the PCB. However, if they do, the visual inspection must be adapted to omit the check for a meniscus and guide pins.

HUBER+SUHNER disclaims any liability resulting from incorrect installation and use, including any damages resulting from the use of tools and accessories other than the ones recommended herein.