

Reflow Soldering of the MEMS Microphone

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BACKGROUND

This application note provides guidance and suggestions for assembling the MEMS microphone package. Parameter and profile details are presented followed by device footprints, suggested stencil patterns, and PCB land layout patterns for the ADMP401 and ADMP421 devices.

PACKAGE INFORMATION

The MEMS microphone package is a bottom-ported, omnidirectional MEMS microphone.

PRINTING PARAMETERS

The printing parameters are

- Print pressure = 3 kg
- Print speed = 30 mm/sec
- Squeegee type = metal
- Squeegee angle = 60°

STENCIL PARAMETERS

The stencil parameters are

- Stencil type = laser cut
- Stencil thickness = 3 mils (~75 µm)

SUGGESTED SOLDER PASTE

Indium8.9 (Type 4—alloy composition—96.5Sn/3.0Ag/0.5Cu (SAC305)) is the suggested solder paste.

This paste is an air reflow, no-clean solder paste specifically formulated to accommodate the higher processing temperatures required by the Sn/Ag/Cu, Sn/Ag, and other alloy systems favored by the electronics industry to replace conventional Pb-bearing solders.

Caution: The MEMS microphone package has an opening at the bottom and is extremely sensitive to solder flux.

PLACEMENT FORCE

The suggested placement force is 500 grams.

REFLOW PROFILE

The reflow profile is

- Reflow peak temperature = 240°C
- Time above liquidus = 50 sec
- Belt speed = 70 mm/sec

REWORK

The rework process of the MEMS microphone should be carried out using a rework station. A 6 mm × 6 mm square nozzle is recommended for removal of the microphone from the substrate. Additional solder paste should be applied to pad sites using a manually operated dispensing system, such as a syringe with a small gauge tip.

Use a surface-mount placement machine to place the replacement component and reflow it on the rework station.

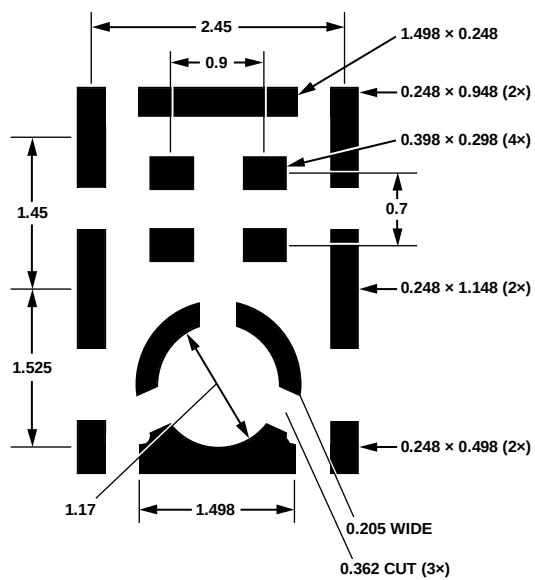
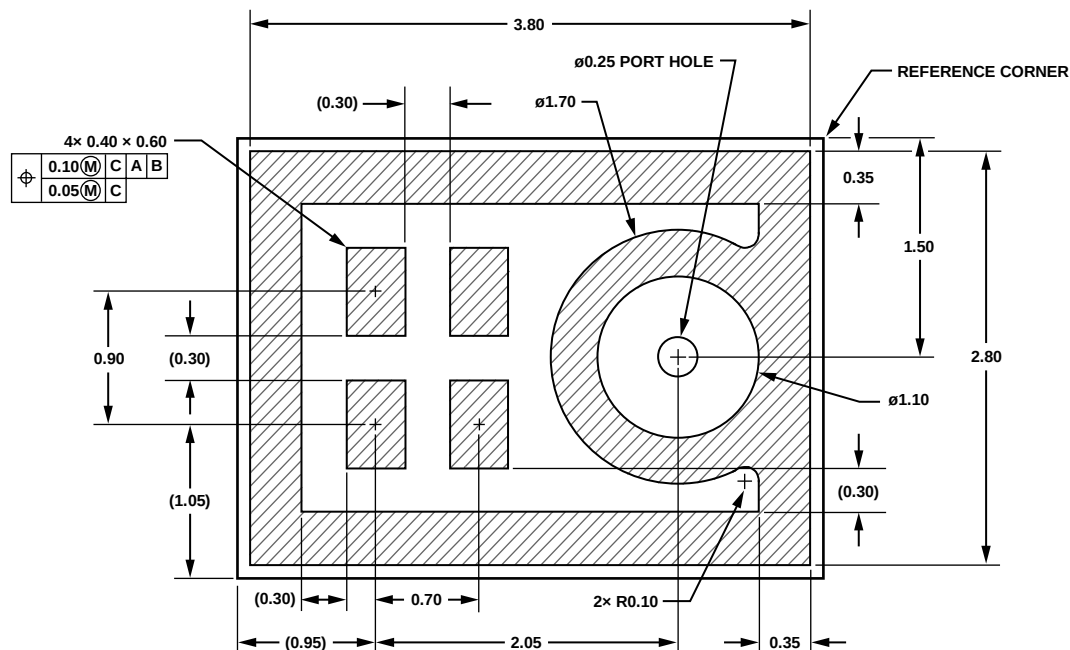
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Figure 3. ADMP401 PCB Land Pattern Layout

ADMP421



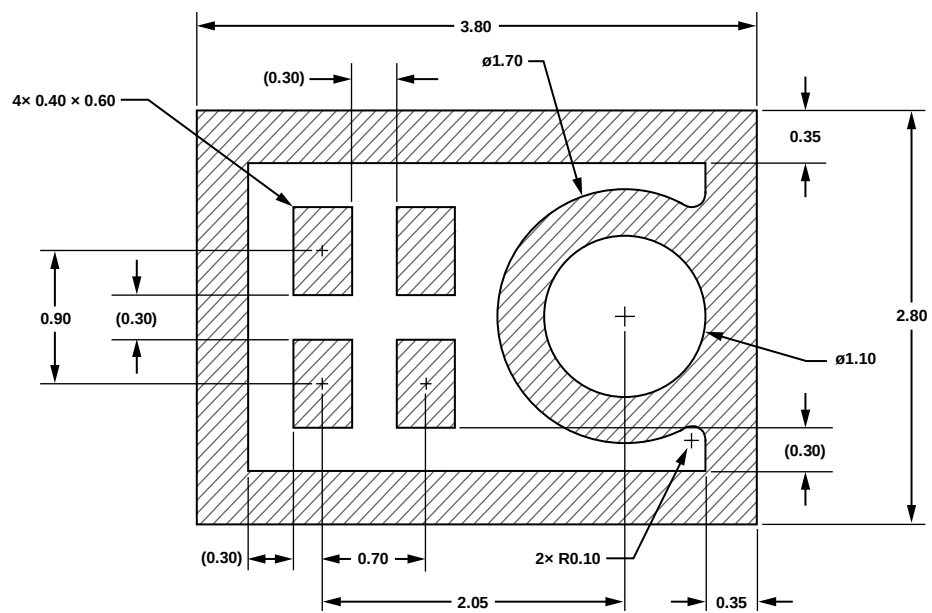


Figure 6. ADMP421 PCB Land Pattern Layout

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