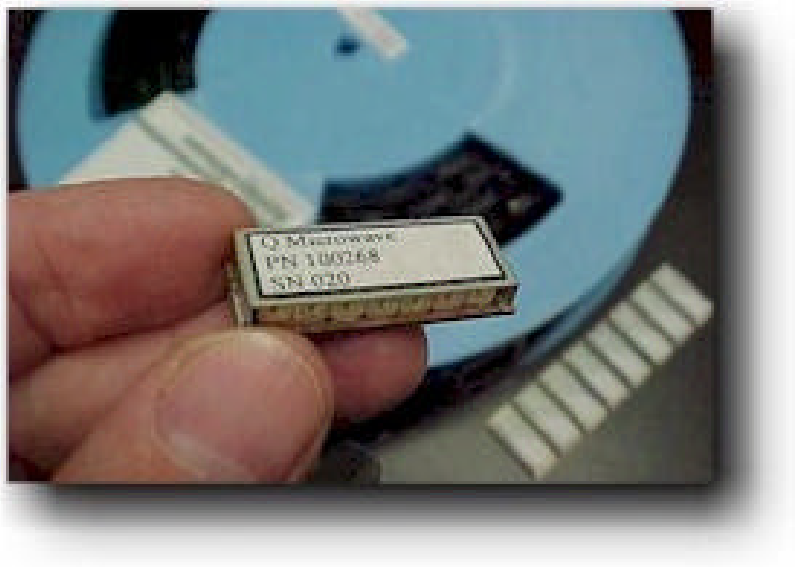
Q Microwave

THE FAST FILTER COMPANY

Surface Mount Packaging Information

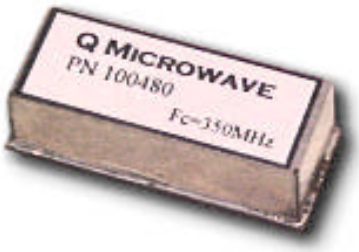


SURFACE MOUNT FILTERS

- *Fast Prototyping*
- *High-Temperature Construction*
- *Low-Cost Production*
- *LC, Cavity & Ceramic Resonator Filters*

Q Microwave

SMT Configuration



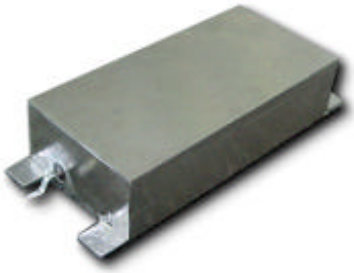
SMT packaging achieves the most popular surface mount solution based upon ease of installation and small size.

- Construction – The filter is built on a soft substrate and covered with an EMI shield. The input, output, and ground contacts are provided on the under side of the package. High temperature solder is used in its construction in order to improve yield during installation.
- Mounting - This packaging approach requires your substrate layout to accept the input/output pad configuration for the filter. These layout requirements can be provided in advance of your purchase. Installation is typically achieved with common Sn63 solder reflow processes. Installation guidelines and solder reflow profiles and provided in the following pages.
- Applications—Typically used for applications below 6 GHz. Performance is heavily dependent upon the quality of the ground as determined by the circuit layout and quality of attachment. Rejection performance is typically limited to 50 dBc. Tape-and-reel packaging is available.

Leaded Configuration

Leaded packaging provides a surface mountable design while allowing the use larger metal packages that may be required for hermetic devices or filters with machined packages.

- Construction – The filter is typically built within an aluminum or brass housing with RF feedthrus at the input/output. The filter is EMI sealed and can be hermetically sealed if necessary.
- Mounting – Given the relative mass of the package, mounting is typically achieved with mechanical fasteners. The base of the housing provides ground and the input and output pins are pre-formed to make contact with your substrate's circuit.
- Applications – The input/out configuration is normally used for lumped-element (or LC) and cavity/combline filters at frequencies up to 20 GHz.



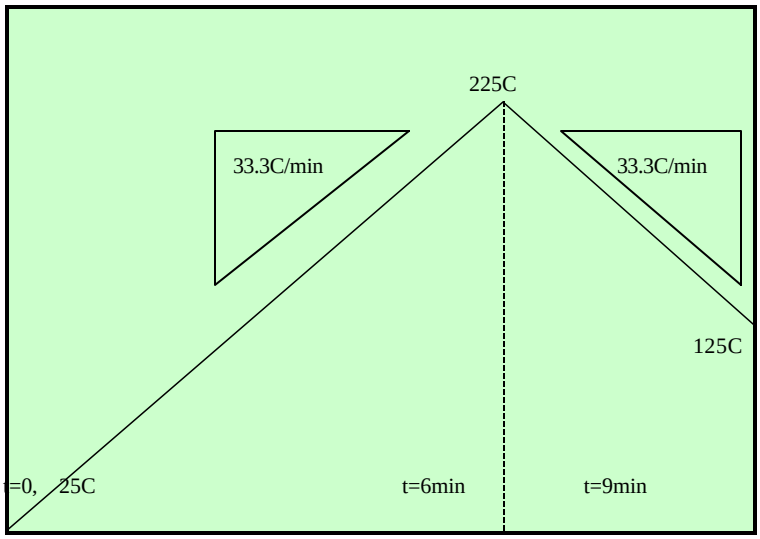
Microstrip Configuration

Microstrip is typically used to achieve higher performance transitions at higher frequencies.

- Construction – The filter is typically built within a kovar housing with silver ribbon launches at the input/output. The filter is EMI sealed and non-hermetic.
- Mounting – The package should be attached with conductive epoxy or solder reflowed into your assembly. The input/output is typically provided with silver-ribbon leads for you to solder the appropriate substrate traces.
- Applications – This packaging is normally used on high performance, high frequency (up to 20 GHz), or space constrained applications calling for lumped-element (or LC) filtering.

Design & Installation Notes for SMT Packaging

- Board Module Design Considerations:
  - Grounding—Providing good grounding is fundamental to achieving the expected performance of Q Microwave's filters. Methods to achieve the necessary grounding include:
    - Placement of abundant via holes over the entire the filter mounting pad.
    - Use of mounting processes that provide a uniform and solid electrical contact.
  - Layout Considerations— Designs should address techniques that improve isolation and minor RF leakage including:
    - Separation of board traces.
    - Maximization of grounding.
    - Use of shielding.
    - Strategic placement of components.
    - Use of substrate material with low loss or a low dissipative factor.
  - Impedance Matching – When higher performance is required, filters can be impedance matched to your circuit. Consult the factory for details.
- Mounting Considerations - This information is provided as a guideline and recommendation for the installation of Q Microwave filters constructed with Sn96 solder. Attachment must be achieved with a process that provides reliable electrical contact from the device's footprint to the substrate or board. This process must not allow the filter's internal temperature to exceed 220C.
  - Soldering Iron – When applying solder with a soldering iron, insure that the assembly's temperature does not exceed 220C. Temperature can be minimized by reducing the soldering iron temperature, minimizing the time the iron is applied, and through the use of heat sinks applied at other points on the assembly at the time of soldering. Typically, leads can be soldered using a soldering iron without causing damage to the assembly if the iron is applied continuously for no greater than 30 seconds.
  - Solder Reflow Process – Use of solder reflow processes can be utilized following the reflow profile. It is critical that the filter's internal temperature not be permitted to exceed 220C. This profile provides adequate margin to this critical temperature while permitting reflow attachment of the device with Sn62 or Sn63 solder (or other low-temperature solder variants).



Q Microwave

SM-C Series SMT Packaging

Standard Packages:

- SM-C-600x500x170-95x95
- SM-C-600x500x200-95x95
- SM-C-800x500x170-95x95
- SM-C-800x500x200-95x95
- SM-C-800x500x250-95x95
- SM-C-1100x500x200-95x95
- SM-C-1100x500x250-95x95
- SM-C-1100x500x300-95x95
- SM-C-1250x500x200-95x95
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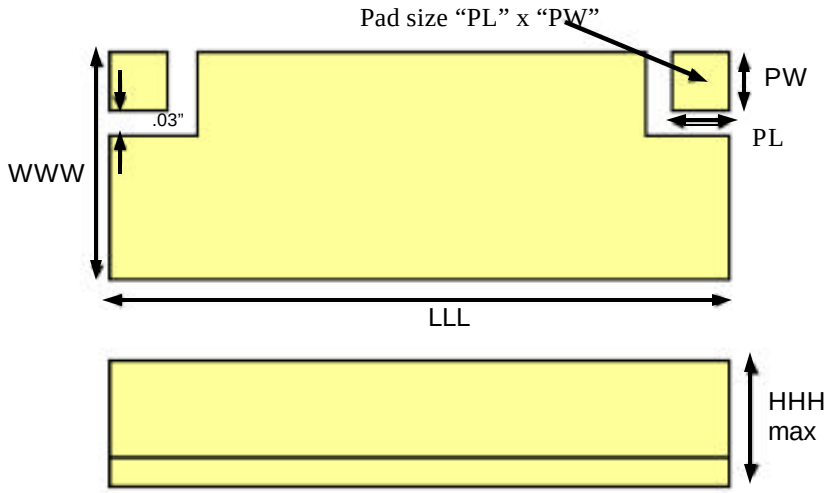
- SM-C-1250x500x300-95x95
- SM-C-1500x500x300-95x95

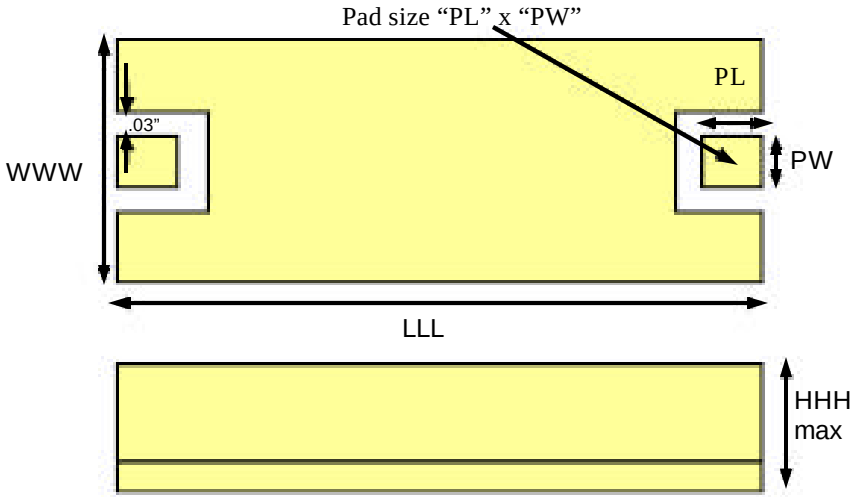


(Numbering Convention: SM-C-LLLxWWWxHHH-PLxPW defines an SM-C series package with length .LLL", width .WWW", max height .HHH" and pad size .0PL"x.0PW")

SM-S Series SMT Packaging

Standard Packages:

- SM-S-1500x350x300-100x90
- SM-S-1250x350x300-100x90
- SM-S-1250x500x400-95x95
- SM-S-1000x350x300-110x95
- SM-S-750x350x300-110x95



(Numbering Convention: SM-S-LLLxWWWxHHH-PLxPW defines an SM-S series package with length .LLL", width .WWW", max height .HHH" and pad size .0PL"x.0PW".)