

**MTT-12**

Interconnects, Packaging and Manufacturing



## Student Contest:                      Packaged X-Band Filter

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Technical committee MTT-12 (Interconnects, Packaging, and Manufacturing) in cooperation with MTT-8 (Microwave Filters, Multiplexers and Passive Components) is pleased to announce a contest on packaging. The objective is to design and fabricate an X-band filter with optimum packaging and interconnects, using a predefined package provided by StratEdge.

This contest is open to all IEEE MTT student members enrolled at a university as a student or PhD student. Contest participants are required to present a piece of hardware at the 2008 International Microwave Symposium in Atlanta where all packaged filters will be characterized by an MTT-12 and MTT-8 team. Contest participants will be judged on criteria listed below by members of MTT-12 and MTT-8 technical committees and three winners will be determined. Winners will receive prizes of \$600 (1<sup>st</sup> prize), \$300 (2<sup>nd</sup>) and \$100 (3<sup>rd</sup>) and the authors will be asked to submit an article on their work to the IEEE MTT Microwave Magazine. To qualify for this contest, it is necessary to submit a proposal describing the intended solution, at least 2 months prior to the IMS 2008. The package will then be shipped to the participant.

### Specifications and Requirements

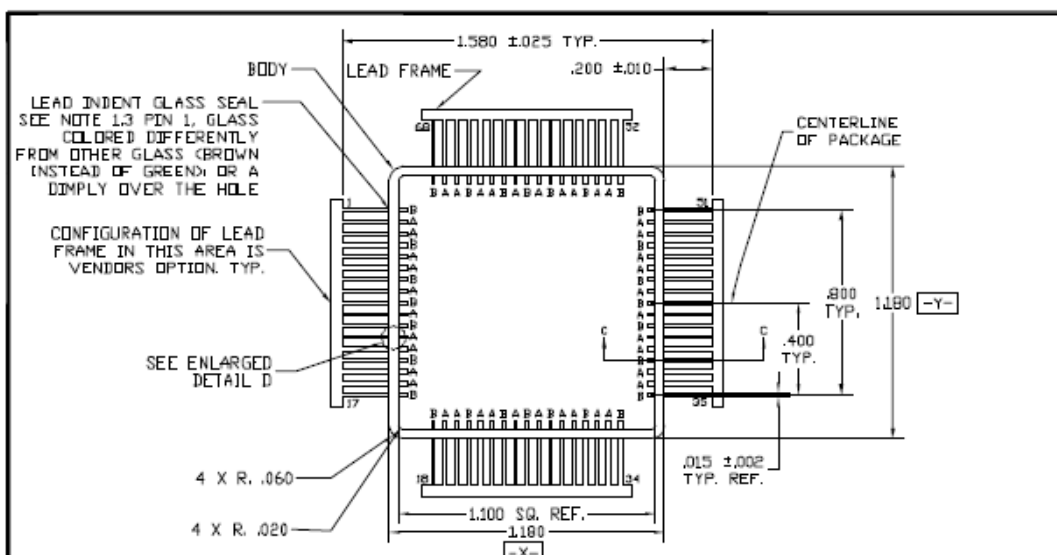
- The filter must be of band-pass type for X band, with pass band and stop band defined (pass band: 7145 – 7235 MHz, insertion loss < 5dB, return loss > 15dB; stop band: 8400 – 8500 MHz, attenuation > 45dB).
- Filter must be planar and mounted in a shielded package (StratEdge FP118118-1) with SMA connectors
- The package will be provided by StratEdge and shipped to the contest participants after they have submitted the proposal describing their intended solution. A data sheet of the package FP118118-1 is attached. Note that the package needs to be mounted on a plate and complemented by lines and SMA connectors. It comes without a lid so shielding has to be added by a suitable piece of metal or metal tape.

### Criteria

- Figure of merit and criteria for judgement are
  - lowest insertion loss in the pass band and
  - highest isolation in stop band.
- In the event of a tie, the filter volume will be the tie-breaker and the decision of the MTT-12 and MTT-8 committees is final and cannot be challenged.

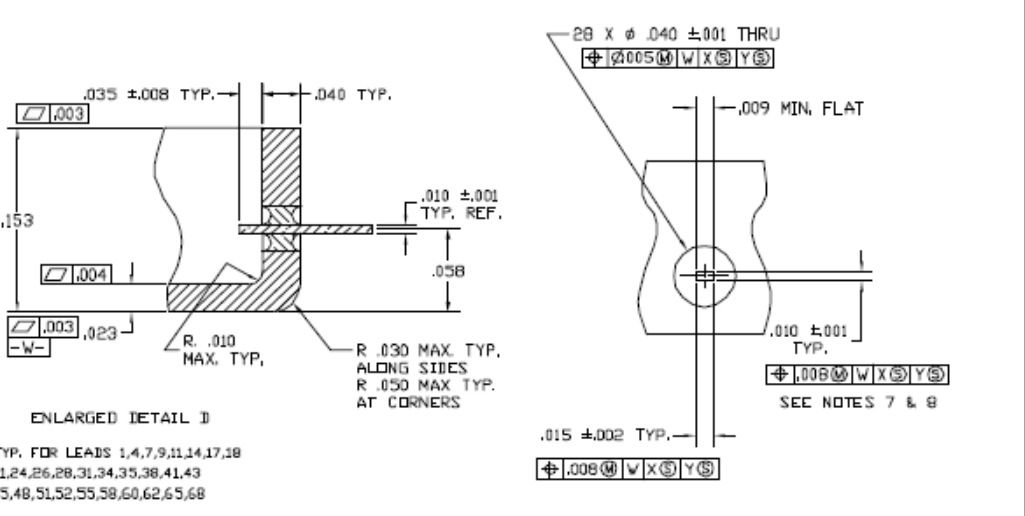
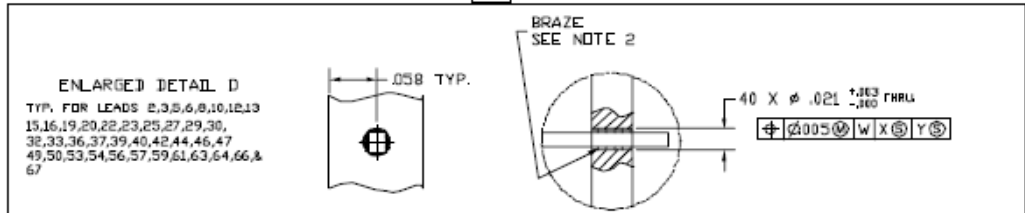
### How to participate

- Email a proposal describing the intended solution, at least 2 months prior to the IMS 2008, to [w.heinrich@ieee.org](mailto:w.heinrich@ieee.org), along with documents verifying IEEE MTT student membership and enrollment at a university as a student or PhD student. If all requirements are met you will receive a confirmation of participation and the package will be shipped to you by StratEdge.
- Bring your piece of hardware to the International Microwave Symposium in Atlanta for characterization. Exact date and location of this event will be announced later.



ECN	REV.	DESCRIPTION	DATE	APP'D
141	-	INITIAL RELEASE	5-5-99	

- NOTES
1. MATERIALS FOR THE COMPONENTS OF THIS PART SHALL BE AS FOLLOWS:
    - 1.1 BODY MATERIAL SHALL BE IRON-NICKLE-COBALT, ASTM-F15 OR EQUIVALENT.
    - 1.2 LEAD FRAME MATERIAL SHALL BE IRON-NICKLE-COBALT, ASTM-F15 OR EQUIVALENT.
    - 1.3 GLASS SEAL MATERIAL SHALL BE 7052 CORNING OR EQUIVALENT. THE COLOR SHALL BE GREEN EXCEPT LEAD 1 GLASS SEAL COLOR SHALL BE BROWN.
  2. BRAZE LEADS DENOTED A TO THE BODY USING A SUITABLE BRAZE MATERIAL.
  3. ELECTROLYTIC NICKLE PLATE METAL SURFACES TO A THICKNESS OF 50 TO 300 MICRONS, FOLLOWED BY 50 MICRONS MINIMUM OF GOLD ON LEADS AND 25 MICRONS MINIMUM OF GOLD ON OTHER SURFACES. THE GOLD SHALL BE 99.9 PERCENT PURE BY WEIGHT.
  - 3.1 PLATING SHALL BE UNIFORM IN APPEARANCE AND QUALITY AND SHALL BE FREE OF PLATING VOIDS, NICKS, SCRATCHES, STAINS, AND FOREIGN MATERIAL LARGER THAN 0.001 INCH.
  4. THERE SHALL BE NO BURRS PERMITTED GREATER THAN 0.001 INCH.
  5. HERMETICITY: THE PACKAGE SHALL HAVE A HELIUM LEAK RATE OF LESS THAN  $1 \times 10^{-8}$  STD cc PER SECOND AT ONE ATMOSPHERE DIFFERENTIAL PER MIL-STD-883 METHOD 1014.
  6. LEAD DESIGNATION ARE AS FOLLOWS:
    - A DENOTES GROUND LEAD
    - B DENOTES DENOTES LEADS THAT FEED THRU GLASS SEAL.
  7. POSITIONAL TOLERANCE OF LEADS APPLIES WITHIN THE CROSSHATCHED REGIONS OF ENLARGED DETAIL F.
  8. FOR LEADS WHICH FEED THRU GLASS SEAL THERE SHALL BE 0.004 INCH MINIMUM OF GLASS BETWEEN THE LEAD AND BODY WALL.



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**STRATEGE** 6335 Ferris Square, Suite C  
 San Diego, CA 92121  
 (866)424-4962

TITLE: METAL FLATPACK

MATERIAL: SEE NOTES	SCALE: N/A	DRAWN BY: ASD
WHERE USED: 141	DATE: 5-5-99	APP'D: DCT
GEN. TOL: ±.005	DWG. NO: FP118L18-1	REV: -