

RIGID CORNER BOARD-LEVEL SHIELD

The rigid corner board-level shield incorporates a corner design that optimizes component rigidity for increased part and printed circuit board (PCB) firmness. As PCB designers are increasingly using thinner substrates, a rigid frame reinforces the assembly, thereby improving overall ruggedness and performance. The shield has improved solder joint reliability and resistance to solder joint fracture, especially in drop testing performance with thin PCBs. Several standard Laird Technologies EMI style parts including single-piece, two-piece, and multi-compartmental board-level shields use this new rigid corner design, along with availability in custom sizes as well.

The rigid corner shield is stronger and more robust than traditional formed shields, which results in coplanarity improvement of the solder castellations. The shield can tolerate more deflection (i.e., more handling) without plastic deformation. Elimination of drawn flange reduces the space needed on the PCB for shielding trace width by potentially ~0.3 mm, allowing for the shield to be more closely placed on the PCB. Elimination of draft allows for more undershield space and improved component clearance.

The partially drawn corner is located near the top portion the shield, resulting in improved torsional rigidity with no drawn lip and no draft. For parts over 2 mm, the corner is both drawn and formed with an interlocking multi-radius corner, which provides superior EMI shielding effectiveness. The interlocking corner can be meshed and closed in during the forming and drawing process for additional improved rigidity for parts taller than 2 mm. For parts under 2 mm, the entire corner is drawn without an interlocking corner.

FEATURES

- Corner openings are reduced, improving shielding performance
- Partially drawn corner located near the top portion of the corner combined with 90° straight forming of wall sections for improved torsional rigidity.
- U.S. Patent No. 7,488,902

MARKETS

- Computing
- Telecommunications
- Data Transfer and Information Technology
- Automotive
- Consumer Electronics
- Aerospace / Defense
- Medical
- Portability
- Industrial & Instrumentation
- Public Utilities

BENEFITS

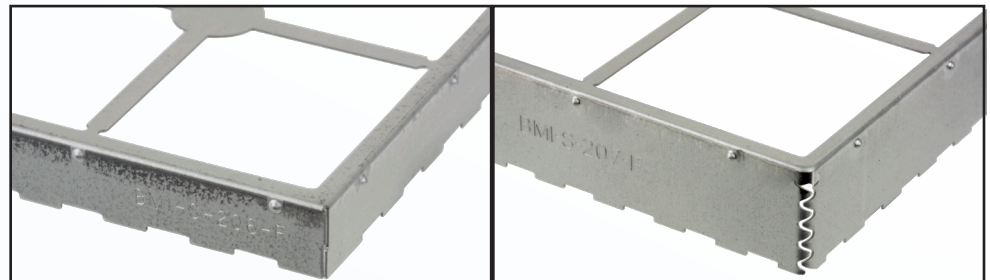
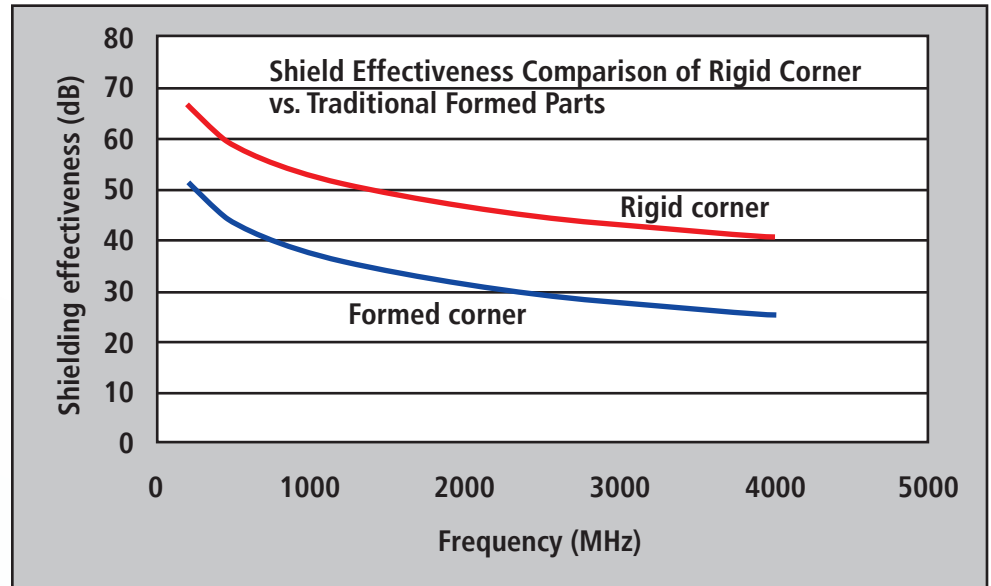
- Shield can tolerate more deflection (handling) without plastic deformation
- Shield provides increased stiffness to the PCB
- Tooling costs are not impacted
- Elimination of draft allows for more undershield space and component clearance

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$SE_{dB} \approx 100 - 20 \log(wfMH) + 20 \log[1 + \ln(w/h)] + 30 (t/w) \mid w < \lambda/2$
 where w is length of slot and $w > h$ and $w \gg t$; λ is wavelength in meter; fMH is frequency in MHz.

The longest dimension of the aperture limits or dominates the BLS shielding effectiveness.