APPLICATION NOTE

Shielded and Unshielded Devices Layout Implementation

Introduction
We have introduced a number of shielded devices that provide immunity to proximity with shields and superior radiated harmonic performance.

This Application Note provides layout comparisons between shielded and unshielded parts and a recommendation on how to create a layout that ensures manufacturability.

Unshielded and Shielded Devices Compatibility
The solder mask shown in Figure 1 extends 250 μm outside the package on each side. This is recommended for unshielded devices.

If a shielded device with the same package size as the unshielded one is placed in the application designed for an unshielded device, the side walls of the shield make contact with the solder fillets and create shorts.

Skyworks Green™ products are compliant with all applicable legislation and are halogen-free.

For additional information, refer to Skyworks Definition of Green™, document number SQ04–0074.

Figure 1. Unshielded Device Solder Mask
**Shielded Devices Solder Mask**

In order to prevent shorts, the solder mask of the shielded devices is pulled in. There is a 100 μm gap between the package outline and the solder mask opening. Refer to Figure 2.

![Figure 2. Shielded Device Solder Mask](image)

**Shielded and Unshielded Devices Pin Overlap**

Shielded (green) and unshielded (red) devices bottom view is shown in Figure 3. Due to insufficient overlap between the pins of the shielded and unshielded parts and proximity with the device outline, common layout is not possible because it results in reduced solder coverage or shorts.

![Figure 3. Shielded and Unshielded Devices Bottom View](image)
Conclusions and Recommendation

- Shielded devices with the same package size as unshielded devices cannot be used in existing applications designed for unshielded devices unless there is a layout change.
- Common shielded/unshielded device layout is not possible.
- When designing applications that use shielded or unshielded devices, the corresponding data sheets for the devices must be followed.