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A New Way to Defrost Food

This novel "smart" solution overcomes the drawbacks associated with traditional methods of defrosting.

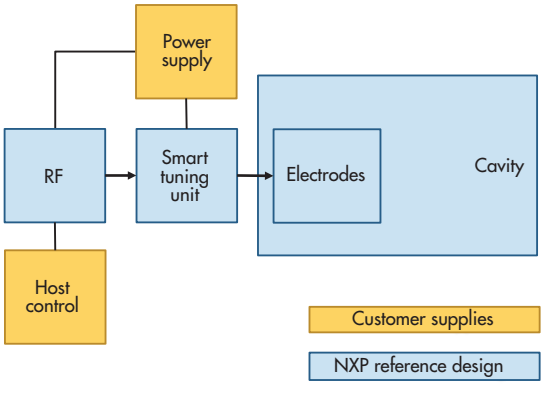
It's time to defrost food from the freezer. Often, you'll leave it on the counter or in the sink to let it thaw at room temperature. But that usually takes a decent amount of time. Or if there's a need for speed, you'll resort to using the microwave oven, or other similar methods (conventional oven). But using a microwave oven has its drawbacks, as it can result in food with hot and cold spots.

Now there's another option. NXP Semiconductors (www.nxp.com) believes it has developed a more effective solution for defrosting food—an automated frozen-food defrosting and thawing reference design. Known as the smart defrost solution, it is intended for consumer and commercial applications. In its own words, NXP says it can "enable healthier frozen-food options for consumers without sacrificing convenience." *Figure 1* shows the RF module that is incorporated into the reference design.

1. Shown is the RF module that is at the heart of the defrosting solution.

The smart defrost solution is based on NXP's LDMOS (laterally diffused metal oxide semiconductor) technology. "What we've done is taken our solid-state RF power devices and built a solution to create warming energy for food," says Dan Viza, director of RF heating business at NXP.

Figure 2 shows a simplified block diagram of the smart defrost solution. The RF module generates the energy used to raise food temperature. The smart tuning unit (STU) can intelligently adjust operation for properties of the food within the defrost chamber. Electrodes then deliver energy into the defrost cavity, which is a shielded, enclosed space for defrosting frozen food. The customer supplies the power supply and host control functionality.



2. This block diagram illustrates the functionality of NXP's smart defrost solution.

NXP asserts that the smart defrost solution offers several benefits. For one, it defrosts food in minutes as opposed to hours. A wide range of RF power levels is available. The defrost solution can also penetrate food without developing hot or cold spots, retaining moisture and food quality. Another benefit is automatic single button operation that can intelligently stop at the targeted temperature.

The company also believes that its new defrost solution can reduce the amount of wasted food. Essentially, with this solution, more food can be frozen and saved to be eaten later rather than just simply being thrown away.

The smart defrost solution could have multiple implementations. It can be used as a standalone appliance. Alternatively, it may become integrated into appliances from consumer original equipment manufacturers (OEMs). "We have strong engagement with consumer OEMs and we believe our solution will be integrated into appliances within the next 12 to 24 months," says Viza.