Skyworks rolls BiFETs into 4G and tiny amps

The RF chip manufacturer says highly integrated switches give it a big advantage in a wide range of products launched for LTE and WCDMA standards in handsets.

by Andy Extance in Barcelona

Skyworks Solutions is claiming GaAs industry leadership in tackling the twin challenges posed by the latest high data rate transmission standard, LTE, and shrinking cellphones.

The company has unveiled two product lines at the Mobile World Congress (MWC) in Barcelona, Spain, that both use GaAs integration to give the company an advantage.

Skyworks' general manager of front-end solutions, Greg Waters, explained that the company's InGaP devices gave it a particularly clear benefit in these areas.

BiFET technologies, which combine two different types of transistor monolithically, are particularly useful in today's phones, where signals must be switched to cover many different radio bands.

“If you do any switching internal to a PA, BiFET allows you to do it in an integrated form that's very low-cost,” Waters told compoundsemiconductor.net.

The products launched at MWC that are likely to see most immediate application are the five 3 mm x 3 mm wideband CDMA PAs that the company says are the smallest in the marketplace. Waters points out that PAs of these dimensions are most commonly used in handsets based on reference designs from US semiconductor firm Qualcomm, and that
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this underlines the strength of the relationship between the two.

As well as the small size, combining an HBT and a FET in the BiFET used in the PAs can provide the cellphones that use them with a welcome boost to talk time. That’s because the tiny package contains two transistors performing the role of PA, which are selectively used at different distances from a network base station.

“If you’re happily talking away at lower power mode it only uses one of them, your battery life’s extended, life is good,” explained Waters.

“If you’re at longer range and you blast away power it switches in a second stage and that switch is BiFET. It’s a poster child example of when you get a real benefit from a BiFET technology.”

Evolution

The other key products rolling out from the Woburn, Massachusetts, headquartered company are targeted at LTE – the ongoing long term evolution of the 3G wideband CDMA standard. Here, the BiFET helps handle the 4G protocol's demands for more accurate waveform reproduction in as cheap and small a module as possible.

The four front-end and two PA modules together cover 13 frequency bands, partly enabled by BiFETs. The company also exploits its experience in producing multi-chip modules, plus silicon control die, to manage supporting all the different bands.

These are not Skyworks' first LTE products – the company has been shipping GaAs chips for this application for a year. Consequently, Waters suggests that his company now has a strong early lead in phones being developed for this sector.

“Everything from a PA to a module has been provided for LTE, and I think as you look at the early movers in that, almost exclusively they're using Skyworks products,” claimed Waters.

“If you pop most of either the prototypes or the early units shipping right now, you’re likely to find a Skyworks logo under it.”

About the author

Andy Extance is news editor for compoundsemiconductor.net.
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