As part of a series of interviews with leading industry players, TFR recently spoke to Marc Rocchi, CEO of OMMIC in Paris. The company is finding success in a difficult marketplace.

OMMIC life in GaAs yet!

Optimised for medium volumes of III-V-based ICs, OMMIC has recently scored several major orders for its new 10 Gb/s TIA chips, the CGY2112 and CGY2116.

Marc was not alone in being pleasantly surprised at the success of these components. “As your readers will know, once a popular chip type for GaAs, nearly all TIAs are now based on SiGe. We have, however, come up with chips which have again some key advantages over those, so there is life in GaAs yet you might say”.

OMMIC is based in Limeil-Brevannes, France: “We were formed in 2000 from the former Philips Microwave Limeil (PML) so as to emphasise our presence in telecom ICs for fibre optics, satellite, defence and wireless applications.

“We have a fab based on 3-inch production but we are currently upgrading it to medium volume 6-inch, so we can produce larger multifunctional chips based in particular on the 0.18µm ED PHEMT process, like unique single chip core chip for smart antennas. At the present time we can process pHEMT, mHEMT and HBT.

“We are successfully bringing on board Alcatel’s 180GHz InP HBT and that process is now open for prototyping.

The OMMIC CGY2160 chip which is a very wide band amplifier (1-45GHz); the x-band core chip function includes integrated serial to parallel data conversion. Photo courtesy of OMMIC.
“That is not to say we have de-emphasised HEMTs, because we are soon to offer high indium content InGaAs mHEMTs, not only for low noise but also for power on GaAs and InP substrates. Our processes are all described as ‘space evaluated’ and many products have been successfully used in European space programmes”.

OMMIC has what it calls ‘complementary silicon offerings’. One of it’s specialities is high-end devices, such as TIAs and LNAs. “Even though this is a very competitive marketplace, we reckon we can meet or exceed systems specifications via features such as sensitivity, noise figure, linearity and power.

“In fact we have a roadmap to develop high bit data rate fibre optic ICs with ft up to 400GHz. We are safer here because SiGe is less competition to III-Vs when it comes to real system specifications.”

Last year at the ECOC conference, OMMIC launched a 10 Gb/s TIA, the CGY2112, which has high sensitivity - typically -21dBm, with a PIN photodiode having better than 2.5 mA pp of overload capability. The CGY2112 uses a single +5V supply and only 70mA of current.

“All devices are 100 % tested on wafer and are fabricated using our unique dual-mode PHEMT 0.18 µm MMIC process.”

Another highlight is the development of a 70nm low noise HEMT process for space and control applications.

“The development of a 150GHz ED process is also coming along well, and we intend to open it for prototyping by the end of the year. The move to 6 inch has been slower than expected, but we will catch up now that we have customers ready to buy our new core chip products.

“We have a new highly integrated chip for smart antennas with good added value for the end user. Similarly the CGY2112 is a high linearity high sensitivity 10Gb/s TIA, very popular for very short haul in buildings. One customer even reported that his customer specified the chip. In SiGe you can have saturated o/p, but the new emphasis is on linearity - it used to be on sensitivity - and our III-V TIAs can do both.”

With the European GaAs MMIC roster now down to three, OMMIC must have seen some changes. “Not really, we are happy in our chosen area and finding success both within Europe and looking East. In particular we are winning contracts with new companies in India and China.”

Looking around the corner, GaN is in the headlines again with a number of announcements reaffirming commitment to this technology in microwave. “It is clear that the shortcomings of LDMOS ICs are just too much for the base station systems needed for 3G. Even GaAs cannot offer the power, sensitivity and efficiency that are going to be required. I foresee a transitional jump from LDMOS to GaN in due course.

“There are technical refinements needed, especially in terms of reliability, but it is a matter of time before this material is tamed for microelectronics as well as optoelectronics.”