Global and China GaAs-based Device Industry Report, 2011-2012

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Abstracts

Distinct from traditional silicon semiconductor, gallium arsenide (GaAs) is a compound of the elements gallium and arsenic. It is an III-V semiconductor and is mainly used in handset RF front end like power amplifier (PA). In the 4G era, handset RF front end becomes more sophisticated. The RF front end of 4G devices costs around USD9-11, twice of that of 3G system and 6 times of that of 2G system. The handset RF system mainly consists of transceiver, PA, filter and antenna switch. The market size of handset RF approximated USD3.8 billion and is expected to hit USD5 billion in 2016.

Taking 4G iPad for example, it applies as many as 19 RF front-end components, including 7 PAs, 1 transceiver and 2 antenna switch modules (ASM). Of those devices, 3 PAs are provided by AVAGO and correspond to three LTE frequency bands; 2 PAs are supplied by Skyworks and correspond to two 3G frequency bands; 1 PA is offered by TriQuint, which contains three separate PA dies and corresponds to four 2G frequency bands; the rest 1 PA is in the ASM supplied by Japan-based Murata; the two ASMs are provided by Murata. Additionally, 4G iPad is integrated with 802.11/Bluetooth/FM supported by Broadcom BCM4330, and its SIP IC contains GaAs pHEMT PA provided by Skyworks.

Murata is the largest MLCC manufacturer, the largest communication module (including Bluetooth module and WLAN module) producer, the second largest SAW filter manufacturer and the largest antenna switch producer in the world. On March 1, 2012, Murata completed the acquisition on PA Division of Renesas and marched into PA market, which empowers the company to possess the most complete product line in the handset RF market.

Kopin, VPEC and IQE are the world’s top three GaAs Epilayer manufacturers, together

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accounting for over 60% market share. Kopin and VPEC adopt MOCVD process and IQE applies MBE method. Headquartered in the U.S., AXT, the only publicly traded GaAs substrate company, was acquired by a Chinese company in Dalian as early as in 2003, with manufacturing base located in Beijing.

Win Semiconductor is the largest GaAs foundry with AVAGO as its main customer. AWSC’s major client is Skyworks that has its own GaAs fab and outsources its production in the case of insufficient capacity. Anadigics is the smallest GaAs IDM and its revenue fell by 29% in 2011.

RFMD, once the world’s largest PA manufacturer, relies heavily on big customers. In FY2008, Nokia contributed to 59% of RFMD’s revenue, and Motorola 14%. In the era of 3G and smart phone, Nokia’s business drops sharply, so RFMD shows slow transition and sees declining performance, with revenue slipping 17% or so in 2011.

Skyworks is in its heyday. It is supported by its main customers, the global top 10 mobile phone vendors, and boasts the most reasonable customer distribution and first-class technology. AVAGO is a rising star and provides services for 3G and 4G devices. Its acquisition of Infineon’s BAW Division in 2008 makes AVAGO market share in BAW filter area register as high as 65%, and BAW filter enjoys the highest price among the handset RF front end components. AVAGO and Skyworks may rival each other in the coming years.

SEDI is a subsidiary of Sumitomo Electric Industries which acts as a manufacturer possessing the complete industry chain ranging from the upstream substrate to the downstream IC. The products of SEDI target at the PA of base station.

RDA, a Chinese mainland manufacturer, booms by virtue of unbranded phone fabrication, with revenue growing 51.3% in 2011. The company ranks No. 1 in the market of unbranded cell phone PA, Bluetooth, FM turner and DVB-S tuner, and occupies more than 50% of FM turner and DVB-S tuner market share.

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SELECTED CHARTS

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