

## GLOBALFOUNDRIES v. TSMC et al

### Fact Sheet

#### **Plaintiffs (2):**

- GLOBALFOUNDRIES US Inc. (U.S. cases)
- GLOBALFOUNDRIES Dresden Module One Limited Liability Company & Co. KG (German cases)

#### **Defendants (20):**

- Foundry: Taiwan Semiconductor Manufacturing Company Ltd. (TSMC)
- Fabless chip designers: Apple, Broadcom, Mediatek, nVidia, Qualcomm, Xilinx
- Electronic component distributors: Avnet/EBV, Digi-key, Mouser
- Consumer product: Arista, ASUS, BLU, Cisco, Google, HiSense, Lenovo, Motorola, TCL, OnePlus

#### **GF Patents in the cases (16):**

The technologies at issue relate to the advanced semiconductor devices and methods of manufacturing those devices.

See table on next page for details.

#### **Accused Infringing Technologies (5):**

- TSMC 7nm, 10nm, 12nm, 16nm , 28nm

#### **Courts/Tribunals (5) and Complaints (25)**

- U.S. International Trade Commission (“ITC”) – 2 complaints (i.e. lawsuits)
- U.S. District Court for the District of Delaware – 6 complaints
- U.S. District Court for the Western District of Texas – 13 complaints
- Regional Court of Mannheim (“Landgericht Mannheim”) – 2 complaints
- Regional Court of Düsseldorf (“Landgericht Düsseldorf”) – 2 complaints

see pp. 3-4 for details

**GF Patents in the cases**

Patent No.	Title	Inventors
US 8,823,178	Bit Cell With Double Patterned Metal Layer Structures	Juhan Kim, Mahbub Rashed
US 8,581,348	Semiconductor device with transistor local interconnects	Mahbub Rashed, Steven Soss, Jongwook Kye, Irene Y. Lin, James Benjamin Gullette, Chinh Nguyen, Jeff Kim, Marc Tarabbia, Yuansheng Ma, Yunfei Deng, Rod Augur, Seung-Hyun Rhee, Scott Johnson, Subramani Kengeri, Suresh Venkatesan
US 9,355,910	Semiconductor device with transistor local interconnects	Mahbub Rashed, Irene Y. Lin, Steven Soss, Jeff Kim, Chinh Nguyen, Marc Tarabbia, Scott Johnson, Subramani Kengeri, Suresh Venkatesan
US 7,425,497	Introduction of metal impurity to change workfunction of conductive electrodes	Michael P. Chudzik, Bruce B. Doris, Supratik Guha, Rajarao Jammy, Vijay Narayanan, Vamsi K. Paruchuri, Yun Y. Wang, Keith Kwong Hon Wong
US 8,598,633	Semiconductor device having contact layer providing electrical connections	Marc Tarabbia, James B. Gullette, Mahbub Rashed, David S. Doman, Irene Y. Lin, Ingolf Lorenz, Larry Ho, Chinh Nguyen, Jeff Kim, Jongwook Kye, Yuansheng Ma, Yunfei Deng, Rod Augur, Seung-Hyun Rhee, Jason E. Stephens, Scott Johnson, Subramani Kengeri, Suresh Venkatesan
US 6,518,167	Method of forming a metal or metal nitride interface layer between silicon nitride and copper	Lu You, Matthew S. Buynoski, Paul R. Besser, Jeremias D. Romero, Pin-Chin, Connie Wang, Minh Q. Tran
US 8,039,966	Structures of and methods and tools for forming in-situ metallic/dielectric caps for interconnects	Chih-Chao Yang, Chao-Kun Hu
US 7,750,418	Introduction of metal impurity to change workfunction of conductive electrodes	Michael P. Chudzik, Bruce B. Doris, Supratik Guha, Rajarao Jammy, Vijay Narayanan, Vamsi K. Paruchuri, Yun Y. Wang, Keith Kwong Hon Wong
US 8,936,986	Methods of forming finfet devices with a shared gate structure	Andy C. Wei, Dae Geun Yang
US 8,912,603	Semiconductor device with stressed fin sections	Scott Luning, Frank Scott Johnson
US 7,378,357	Multiple dielectric FinFET structure and method	William F. Clark, Jr., Edward J. Nowak
US 9,105,643	Bit cell with double patterned metal layer structures	Juhan Kim, Mahbub Rashed
US 9,082,877	Complementary metal oxide semiconductor (CMOS) device having gate structures connected by a metal gate conductor	Yue Liang, Dureseti Chidambarao, Brian J. Greene, William K. Henson, Unoh Kwon, Shreesh Narasimha, and Xiaojun Yu
DE 102011002769	Hybrid contact structure with low aspect ratio contacts in a semiconductor device	Kai Froberg, Ralf Richter
DE 102011004320	Complementary transistors comprising high-k metal gate electrode structures and epitaxially formed semiconductor materials in the drain and source areas	Gunda Beernink, Markus Lenski
DE 102012219375	Semiconductor device with transistor local interconnects	Mahbub Rashed, Irene Y. Lin, Steven Soss, Jeff Kim, Chinh Nguyen, Marc Tarabbia, Scott Johnson, Subramani Kengeri, Suresh Venkatesan

## Complete List of Complaints to be Filed Monday August 26

### ITC #1

- Complaint against TSMC, Mediatek, Qualcomm, Xilinx, Avent, Digi-key, Mouser, TCL, HiSense, Google, Motorola, BLU, OnePlus asserting '603 Luning, '418 Chudzik, and '986 Wei primarily directed to 7nm and 16nm

### ITC #2

- Complaint against TSMC, Apple, Broadcom, nVidia, Cisco, Arista, Lenovo, ASUS asserting '178 Kim, '643 Kim, '357 Clark, and '877 Liang directed to 7nm, 10nm, 12nm, 16nm, 28nm

### Western District of Texas (13)

Asserting the same patents asserted in the ITC

- Complaint against TSMC, MediaTek, Hisense on '603 Luning, '418 Chudzik, and '986 Wei primarily directed to 16nm
- Complaint against TSMC, Qualcomm, OnePlus on '603 Luning primarily directed to 7nm
- Complaint against Avnet on '603 Luning, '418 Chudzik, and '986 Wei primarily directed to 16nm
- Complaint against Google on '603 Luning and '986 Wei primarily directed to 16nm
- Complaint against TSMC, and Apple, '178 Kim, '643 Kim, '357 Clark, and '877 Liang, primarily directed to 7nm, 10nm, 16nm
- Complaint against TSMC, Broadcom, and Arista, '178 Kim, '643 Kim, '357 Clark, and '877 Liang, primarily directed to 16nm
- Complaint against TSMC, NVIDIA, and Lenovo, '178 Kim, '643 Kim, '357 Clark, and '877 Liang, primarily directed to 12nm
- Complaint against TSMC, NVIDIA, and Asus, '178 Kim, '643 Kim, '357 Clark, and '877 Liang, primarily directed to 16nm
- Complaint against TSMC and Cisco, '178 Kim, '643 Kim, '357 Clark, and '877 Liang, primarily directed to 16nm

Asserting different patents than those patents asserted in the ITC

- Complaint against TSMC, MediaTek, Hisense on '348 Rashed, '910 Rashed, '497 Chudzik, '633 Tarabbia, '167 You, '966 Yang, primarily directed to 16nm
- Complaint against TSMC, Qualcomm, OnePlus on '910 Rashed, primarily directed to 7nm
- Complaint against Avnet on '348 Rashed, '910 Rashed, '497 Chudzik, '633 Tarabbia, '167 You, '966 Yang, primarily directed to 16nm
- Complaint against Google on '348 Rashed, '910 Rashed, '633 Tarabbia, '167 You, '966 Yang, primarily directed to 16nm

### District of Delaware (6)

Asserting the same patents asserted in the ITC

- Complaint against Xilinx, Mouser on '603 Luning, '418 Chudzik, and '986 Wei primarily directed to 16nm
- Complaint against TCL on '418 Chudzik primarily directed to 28nm
- Complaint against Motorola on '603 Luning primarily directed to 7nm

Asserting different patents than those patents asserted in the ITC

- Complaint against Xilinx, Mouser on '348 Rashed, '910 Rashed, '497 Chudzik, '633 Tarabbia, '167 You, '966 Yang, '491 Pham primarily directed to 16nm
- Complaint against TCL on '497 Chudzik primarily directed to 28nm
- Complaint against Motorola on '910 Rashed, primarily directed to 7nm

**Dusseldorf (2):**

- Complaint against Apple Inc. on the 3 German patents
- Complaint against Qualcomm Inc. on the 3 German patents

**Mannheim (2):**

- Complaint against Apple Retail Germany BV & Co KG (runs the Apple stores in Germany) on the 3 German patents
- Complaint against EBV Electronics GmbH & Co KG (Avnet subsidiary) on 2 German patents