



Winter chill followed by spring blooms



Walt Custer and Jon Custer-Topai

The “much hoped for” end-of-2013 recovery has indeed occurred, although its impact has varied regionally. A combination of real growth and normal seasonality pushed global electronic equipment sales to a record high in November (*Chart 1*). For November 2013 world electronic equipment revenues rose 4.8% compared to November 2012 and were up 8.6% sequentially from October 2013.

Pre-Christmas seasonal growth ended in November so December 2013 through early 2014 revenues will likely plunge compared to their November high. Semiconductor shipments (*Chart 2*) were already beginning to plateau in October and November world printed board sales (*Chart 3*) had already passed their seasonal high.

Looking forward, the SIA’s latest global semiconductor shipment forecast (*Chart 4*) predicts 4% world chip growth in 2014 vs. 2013. And the SEMI trade organization’s

Most prognosticators see 2014 as a better year than 2013.

December forecast predicts a 23% increase in semiconductor equipment sales in 2014 (*Chart 5*).

Most prognosticators see 2014 as a better year than 2013. *Chart 6* summarizes Henderson Ventures’ December 2013 forecast of electronic equipment production growth by year by region.

The 2014 outlook is currently quite promising—but remember that the forecasts a year ago for 2013 were also quite optimistic.

Keep watching the numbers! Expect a winter seasonal downturn followed by decent spring growth.

End markets

World

- Global electronics market is forecasted to grow at a 5% CAGR from US\$1.36 trillion in 2012 to \$1.74 trillion in 2017.—IC Insights
- Global consumer electronics market is forecasted to reach US\$1.6 trillion by 2018 primarily supported by analog & digital TV, tablet, digital cameras & camcorder, personal computers and video/audio equipment.—ReportsnReports
- Telecommunication electronics application sector is expected to grow at a 12.8% CAGR to US\$847.6 billion by 2018.
- Computing electronics application sector is expected to grow at a 10 % CAGR to US\$436.7 billion by 2018.
- Medical electronics market is expected to reach US\$372.4 billion by 2018 primarily supported by monitoring & surgical systems, imaging systems, diagnostics and medical therapeutics.
- Industrial electronics market is set to expand to US\$321 billion by 2018 primarily supported by semiconductor capital equipment, test and measuring instruments, automation systems and process control instrumentation.
- Aerospace and defense market is expected to reach US\$248.2 billion by 2018 primarily supported by engineering / aeronautics (body), in-flight entertainment, avionics and engine application sectors.
- China based white-box tablet shipments increased 40.4% y/y to 25 million units in 3Q13. Shipments increased 60-80% y/y to 80-90 million tablets in 2013 and are expected to increase 25% y/y to 100 million units in 2014.—Digitimes Research
- Chinese company smartphone sales declined 8.8% sequentially to 78.2 million units in 3Q13.—Digitimes Research
- India PC market grew 7.9% to nearly 3.2 million units in 3Q13.—Gartner
- India appliance market grew 24% in fiscal 2012 (which ended March 31) to

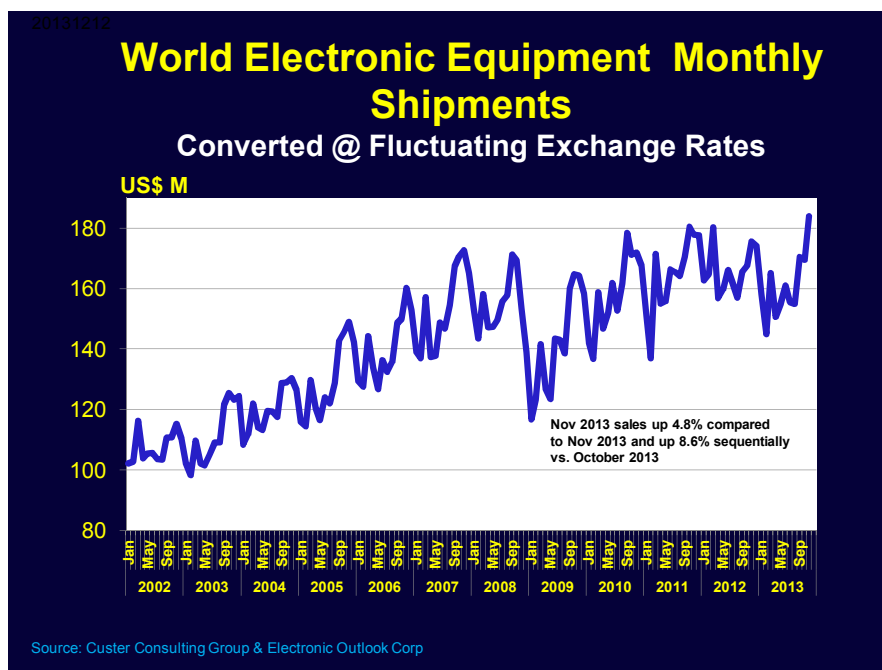


Chart 1.

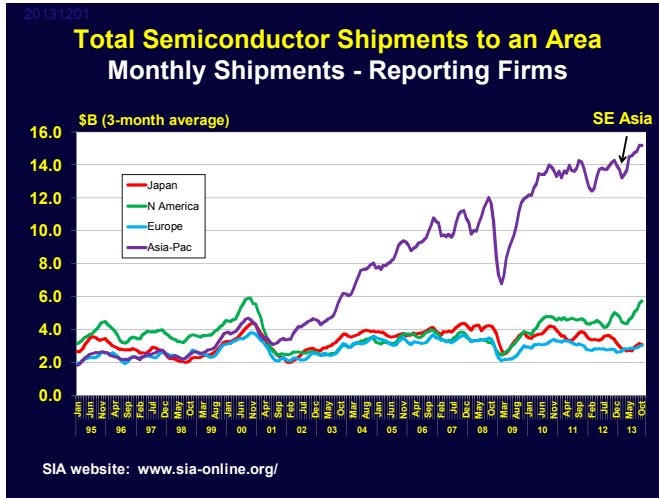


Chart 2.

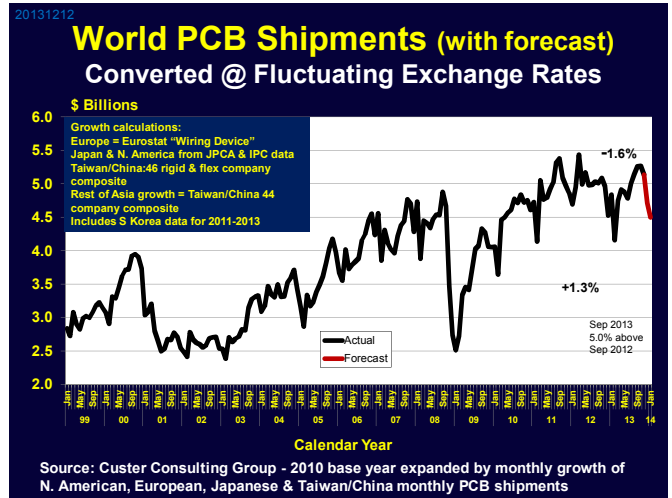


Chart 3.

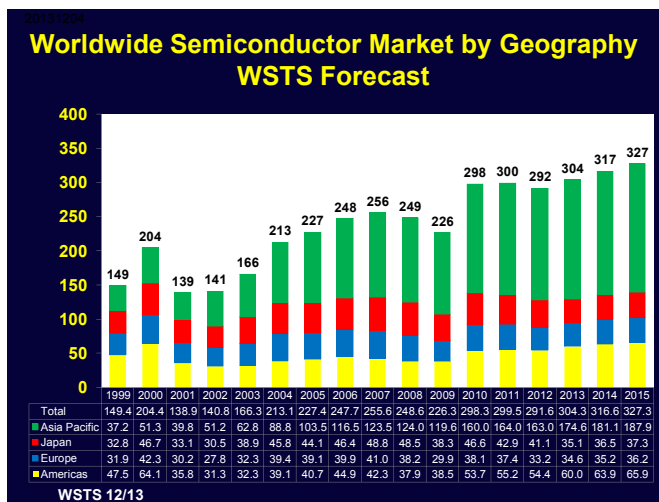


Chart 4.

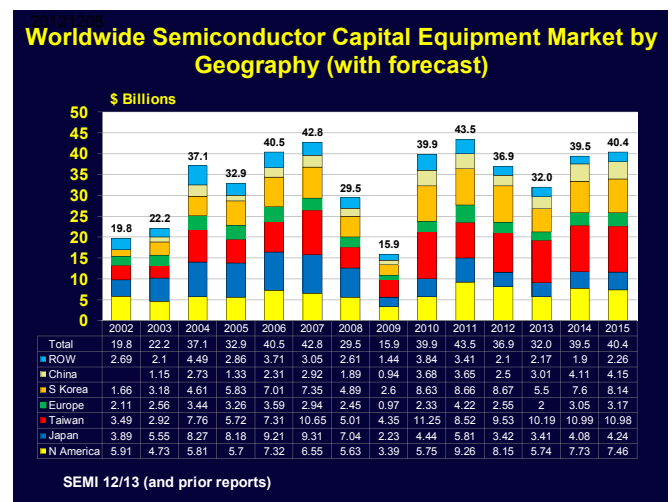


Chart 5.

about 1.77 trillion rupees (\$31.22 billion).—Nikkei

Mobile communications

- Smartphones sales rose nearly 46% y/y to 250.2 million units in 3Q13, while overall mobile phone sales were up less than 6% to 455.6 million units.—Gartner
- Smartphones shipments grew 39.3% y/y to over 1.0 billion units in 2013, while ASPs declined more than 12%.—IDC
- Smartphones shipments are expected to increase 30% y/y to 1.24 billion in 2014.—Digitimes Research.
- Personal computing systems (desktop PCs, notebooks, tablets, and Internet/cloud portables) will grow an average of 10.6% y/y from 522 million systems in 2013 to 770 million systems in 2020.—IC Insights

Computers & peripherals

- PC shipments fell 10.1% y/y to 314.2 million units in 2013.—IDC
- Notebook PC touch screen reached 11% penetration or nearly 19.8 million units in 2013.—NPD DisplaySearch

- Tablet shipments are expected to grow 22% y/y from 221 million units in 2013 to 271 million units in 2014.—IDC
- Server shipments expanded 1.9% y/y to 2.5 million units, while revenue decreased 2.1% to \$12.6 billion in 3Q13.—Gartner

Consumer electronics

- Personal and entry-level storage market shipments grew 2.9% y/y to 18.6 million units in 3Q13.—IDC
- Disk storage systems market sales decreased 5.6% y/y to \$7.4 billion in 3Q13; total disk storage systems capacity shipped expanded 16.1% y/y to nearly 8.4 exabytes.—IDC
- Hardcopy peripheral shipments grew 2.6% y/y to 28.1 million units in 3Q13.—IDC

Other

- Automobile driver monitoring systems are expected to reach 64.8 million units by 2020.—ABI Research
- Automobile shipments with factory-installed safety and security telematics to grow at a 34.5% CAGR from 11.5 million in 2013 to 50.8 million in

- 2018.—ABI Research
- Automobile electronics market will grow at a 7.3% CAGR between 2012 to 2020 from US\$191.3 billion in 2013 to US\$314.4 billion by 2020.—Research and Markets
- Carrier router and switch market (IP edge and core routers and carrier Ethernet switches) grew 7% y/y to \$3.6 billion in 3Q13.—Infonetics Research
- Enterprise video conferencing equipment revenue declined 9.7% y/y to \$576 million in 3Q13.—IDC
- Ethernet switch market (Layer 2/3) increased 6.5% y/y to US\$5.66 billion in 3Q13.—IDC
- Microwave equipment market fell 7% y/y to \$1.16 billion in 3Q13.—Infonetics Research
- Smart connected device market (combined shipments of PCs, tablets, and smartphones) increased 12% y/y to almost 55 million units in 3Q13.—IDC
- Smart household appliance market is projected to grow from \$600 million in 2012 to \$35 billion by 2020.—Pike Research

Electronic Equipment Production Growth

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Constant \$ Growth Rates Converted @ Constant Exchange Rates

	2011	2012	2013	2014	2015
World	3.7	1.0	-2.3	4.8	6.4
USA	1.5	-0.9	-2.5	3.3	5.3
W. Europe	1.9	-3.4	-5.2	1.9	4.3
Japan	-13.7	-2.6	-9.2	2.3	4.0
Four Tigers	7.8	-1.2	1.6	4.4	5.6
China	10.2	2.6	-1.8	6.2	8.0

Henderson Ventures 12/2013
www.hendersonventures.com

Chart 6.

- Smart thermostat shipments to grow at 43% CAGR from 1.3 million units in 2013 to 8 million units in 2018.—ABI Research
- Large-sized LCD panel production used for televisions, monitors, notebooks and tablets reached 34.1 million SM. in 4Q13.—IHS
- Touch panel industry shipments are expected to grow at 12.5% CAGR from 1.52 billion units (US\$31.4 billion in revenues) in 2013 to 2.52 billion (US\$43.7 billion) in 2017.—IEK
- Wearable device (wireless and smart-watches, activity trackers, wearable GPS, heart rate monitors and smart-glasses) market shipments are estimated to reach 191 million units valued at US\$20.6 billion by 2018.—IEK

EMS, ODM & related assembly activity

Taiwan ODMs shipped estimated 111-127 million tablets in 2013.—Digitimes

ACD promoted Tim Tsui to Director of Manufacturing Operations.

Altrics added new production site in Braga, Portugal.

Altronics Manufacturing is expanding its manufacturing space by 50%.

Benchmark Electronics B.V. added two Universal Instruments FuzionXC2-37™ platforms to its Almelo facility in the Netherlands.

Chemigraphic invested in JUKI's new ISM system.

Cirtronics added a Takaya 9411CE flying probe test system.

Compal Electronics merged with subsidiary Compal Communications.

Computrol

- promoted James Spencer to Engineering Manager.
- purchased third KISS 103 selective solder system from ACE Production for its facility in Meridian, Idaho.

Creation Technologies obtained FDA registration at its electronics manufacturing facility in Milwaukee, Wisconsin.

Deswell appointed Edward So Kin Chung, CEO.

Dethon EMS added a DEK Horizon 03iX print platform.

Ducommun received multiyear PCBA contract from Parker Aerospace for Airbus A350 fuel management system.

Fideltronik is building a 9,600 M2 facility in Sucha Beskidzka, Poland.

Flextronics

- acquired Riwisa.
- introduced Lab IX accelerator program that provides support to early-stage, disruptive technology companies.
- Israel cut 50 workers.

Foxconn

- is considering shifting the company's high-end manufacturing to the United States.—Chairman
- plans to invest in a machine-tool automation manufacturing plant and R&D facility for robotics in Pennsylvania.
- subsidiary Eson was listed on Taiwan Stock Exchange.

Incap streamlined operations to three factories: Tumkur in India, Kuressaare in Estonia and Vaasa in Finland.

INEMI named Grace O'Malley, VP of

Operations.

Jabil Circuit

- Hungary terminated 673 jobs.
- received exclusive manufacturing services agreement for 390,000 micro-CHP Flow boilers from Flowgroup.
- purchased SGI's primary manufacturing facility in Chippewa Falls, Wisconsin.

Kimball International appointed Kimberly Ryan to its Board of Directors.

Kontron closed its Kaufbeuren, Eching, Roding and Ulm locations.

Libra Industries

- added two Hanel Rotomat inventory carousels and upgraded its storage software.
- appointed Thomas Dykeman to VP of Sales and Business Development.

Marsden Smith Limited was sold out of administration.

Michigan Manufacturing International opened 39,000 SF HQ in Stevensville, Maryland.

Micromax plans to start assembling phones in India by 1Q14.

Neways Electronics Production GmbH in Kassel, Germany terminated production activities.

OnCore Manufacturing launched OnCore Interconnect business.

Plexus is spending \$3 million to triple the size of its ISO 7, Class 10,000 compliant, cleanroom facility and upgrade specialized manufacturing equipment at its Boise Microelectronics Center of Excellence in Nampa, Idaho.

Raytheon plans to hire more than 150 new workers for its defense electronics manufacturing plant in Forest, Mississippi once it completes its 20,000 SF expansion.

Saline Lectronics purchased Cogiscan's Track, Trace and Control system.

Samsung Electronics entered JV with Venezuela's government to assemble devices and home appliances in country.

SMT Developments acquired additional building for new clean room facility and pick and place equipment.

Specialized Coating Services appointed Plasma Systems' co-founder, Ed Branco as its new CTO.

Spectrum Assembly added Hesse and Knipps Wire Bondjet 820 unit, Century Series Nordson Asymtek dispensing system for epoxy and a Metcal APR5000 soldering system.

Steve Williams started new consulting company: www.stevewilliamsconsulting.com.

Tabemax invested in an EKRA X3 screen printer, KOLB PSB400 automatic cleaning system, reflow oven and an ERSA

HOTFLOW 3/14e; plans to add new SMT line in 1Q14.

TeligentEMS purchased an Ersu ECOSELECT 1 selective soldering machine.

PCB fabrication

World PCB Market is forecast to grow from \$59.8 billion in 2013 to \$62.1 billion in 2014 and \$64.2 billion in 2015. South Korea is expected to have surpassed Taiwan as second-largest manufacturing hub for PCBs in 2013.—Dr. Hayao Nakahara

Taiwan-based makers' PCB production value (in Taiwan and China) increased 5.7% y/y to US\$4.65 billion in 3Q13.—IEK **ACB** acquired a Laser DI system, Ledia 5 from Ucamco.

AT&S and **Nanium** developed method to embed eWLB packages on top of PCB substrates.

Brander purchased a Multistation EVO drilling machine at productronica.

Canadian Circuits added an Oxford CMI 900 X-Ray fluorescence coating thickness measurement system.

Chin-Poon Industrial expects its new automobile board plant to be completed by the end of 2014.

Endicott Interconnect Technologies emerged from bankruptcy and was renamed i3 Electronics Inc., led by president, Robert Nead.

EPFL made flexible electronic circuit board using elastomeric foams.

Gorilla Circuits added a POWERFLOW N2 full nitrogen tunnel wave solder machine and VERSAFLOW 3/66 selective soldering machine.

Ibiden spent \$400 million to add equipment to plant # 2 in Penang.

Mitsubishi Materials developed direct bonded aluminum substrate with thick Cu for hybrid electric vehicle inverters.

National Technology

- added ATG Flying Probe testers, Hakuto MACH 630 UP laminators and an Excellon Century 2000 drill in Rolling Meadows, Illinois.
- Installed a Chemcut SES Etching equipment, TMP Vacuum Press, an IS Pumiflex pumice scrubber, OLEC 8kw Exposure unit and MacDermid Conv. Oxide line in Gandhinagar, India.

Panasonic will discontinue circuit board production in central Japan and north of Tokyo between March 2014 and March 2015 and end circuit board production at its plants in Vietnam by March 2015 and its ALIVH board production at both of its plants in Taiwan in early 2014.

SEMCO plans to build a new HDI plant in Vietnam.

The 2014 outlook is currently quite promising—but remember that the forecasts a year ago for 2013 were also quite optimistic.

Keep watching the numbers! Expect a winter seasonal downturn followed by decent spring growth.

Unimicron is investing \$500 million to build a new package substrate manufacturing plant in Taiwan.

Virtuose Circuits acquired Marsden Smith for £50,000.

Würth Elektronik launched WEdirekt online shop for HDI microvia PCBs.

Materials & process equipment

Acryl film demand for LCDs is forecast to reach almost 200 million SM (18% market share of PVA protection film market) in 2017, or close to six times 2012 total.—IHS

Global tin market deficit is expected to deepen in 2014 to 12,400 tons from 7,400 tons in 2013 due to increased demand from a recovering electronics sector.—ITRI

Japan's production of electronics materials declined 29% y/y to 11.86 billion yen in August.—JEITA

3M scientist, Dr. Andy Ouderkirk was named 2013 R&D Magazine Innovator of the Year.

ASM Materials factory workers in Shenzhen received 20% pay increase after 22-day strike.

ASM Pacific Technology acquired DEK.

Atotech

- developed Cupracid AC conformal plating process designed for vertical conveyerized line/ plating and sparger electrolyte agitation.
- introduced direct Palladium surface finish process, PallaBond.

Camtek is developing a commercial grade 3D printer for PCB market.

Cartesian raised more than \$115,000 on Kickstarter to fund 3D silver circuit board printer capable of printing on any material. **CheckSum & Everett Charles Technologies**

unveiled its 12KN test system with integrated TILT® fixturing technology.

Daxin Materials developed copper-etching solution for ultra HD panels.

DKN Research commercialized ultra-thin microwave absorption film, Nikram.

Dow Chemical is contemplating dropping “Chemical” from its name as part of its migration away from low-margin commodity chemicals.

DuPont

- Microcircuit Materials expanded its suite of low silver, conductive ink materials specifically tailored for MTS, RFID, and wearable electronic applications.

- Teijin Films developed ‘Clean-on-Demand’ PET polyester film for R2R production of flexible electronics.

ECD named Kimberly Solonka, Sales Manager; Wojtek Antoniak, European Business Manager and Craig Johnson, SensorWATCH™ Product Manager.

Enthone introduced comprehensive supplier quality engineering audit to enable immediate identification of PCBs coated with company's patented ENTEK® organic solderability preservatives.

EvolviSMT launched a used SMT equipment business.

Intertronics introduced DYMAX dual-cure 9482 conformal coating.

Juki Automation Systems appointed Bill Astle, Eastern Regional Sales Manager and Latin America Sales Manager.

LPKF moved its production facilities ten kilometers from Erlangen to Fürth, Germany.

LTX-Credence acquired Multitest and Everett Charles Technologies from Dover Corporation.

Oerlikon Balzers opened a coating center in the Philippines.

Panasonic Factory Solutions Company of America introduced redesigned website—www.panasonicfa.com.

Picodeon developed ColdAb® ultra-short pulsed laser deposition technology for use in the application of gold and platinum thin films.

San Fu Chemical was listed on Taiwan Stock Exchange at an initial price of NT\$29 (US\$0.98) per share.

Teradyne named Mark Jagiela, CEO.

VJ Electronix appointed Ren Yang, Sales Manager for China.

Semiconductors & Other Components

Semiconductor revenue grew 5.2% y/y to \$315.4 billion in 2013.—Gartner

Continued on page 40

International Diary

12-14 February 2014

SEMICON Korea

Seoul, Korea

semiconkorea.org

18-20 March 2014

productronica China

Shanghai, China

e-p-china.com

25-27 March 2014

IPC APEX Expo

Las Vegas, Nevada, USA

ipcapexexpo.com

26-27 March 2014

Smart Systems Integration

Vienna, Austria

smartsystemsintegration.com

2-4 April 2014

NEPCON Korea

Seoul, Korea

www.smtpcb.org

8-10 April 2014

NEW (National Electronics Week)

Birmingham, UK

nationalelectronicsweek.co.uk

15-17 April 2014

Expo Electronica

Moscow, Russia

expoelectronica.primexpo.com

23-25 April 2014

NEPCON China

Shanghai, China

nepconchina.com

6-8 May 2014

SMT/Hybrid/Packaging

Nuremberg, Germany

smt-exhibition.com

4-6 June 2014

JPCA Show

Tokyo, Japan

jpcashow.com

5-6 June 2014

Semicon Russia

Moscow, Russia

semiconrussia.org

10-12 June 2014

NEPCON Malaysia

Penang, Malaysia

nepcon.com.my

Winter chill followed by spring blooms—Continued from page 19

Semiconductor sales are expected to expand 4.1% y/y from \$304.3 billion in 2013 to \$316.6 billion in 2014 and an additional 3.4% y/y to \$327.3 billion in 2015.—WSTS

Processor shipments increased 24% y/y to 1.50 billion units in 2013.—IHS

World fab equipment (including new, used and in-house manufactured) spending declined 9% to 2.5 billion in 2013.—SEMI

World new semiconductor manufacturing equipment sales are expected to grow from \$32.0 billion in 2013 to \$39.5 billion in 2014.—SEMI

China MEMS increased 19% y/y to US\$2.46 billion in 2013.—IHS

European semiconductor distribution market sales grew 1.8% y/y to 1.46 billion Euros in 3Q13.—DMASS

German component distribution market sales grew by 3.2% to €716m in 3Q13.—FBDi

North America-based semiconductor equipment manufacturers posted \$1.12 billion in orders worldwide in October 2013 (3-month average basis) and a book-to-bill ratio of 1.05.—SEMI

OEMs in the Americas region accounted

for 36.3% of global spending on industrial semiconductors in 2012.—IHS

Russia microelectronics component market reached \$2.5 billion in 2012, representing 0.5% of global market.—Frost & Sullivan

Automotive sensor market worldwide is forecast to grow at 8.2% CAGR from US\$16.2 billion in 2012 to US\$17.4 billion in 2013, US\$18.8 billion in 2014 and US\$30.3 billion by 2020.—Research and Markets

Connector industry expanded 2.7% to \$48,889 million in 2013.—Bishop & Associates

Home appliance semiconductor market growth expected to have doubled in 2013 (compared to 2012) to US\$2.6 billion.—IHS

Smart device application processor market grew 43% y/y to 1.32 billion units in 2013.—Digitimes Research

LED lighting product shipments increased 68% y/y to 1.32 billion units in 2013.—TrendForce

Solid state lighting market is forecast to grow at 18.7% CAGR from 2013 to \$56.79 Billion by 2018.—MarketsandMarkets

Worldwide DRAM market rose 9% q/q to

US\$9.3 billion in 3Q13.—TrendForce
Worldwide NAND flash output value is forecast to rise 13% y/y to US\$28 billion in 2014.—DRAMeXchange

Walt Custer is an independent consultant who monitors and offers a daily news service and market reports on the PCB and assembly automation and semiconductor industries. He can be contacted at walt@custerconsulting.com or visit www.custerconsulting.com.

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