Dongbu HiTek

The Best Foundry Partner For Your Success

Contents

Dongbu Group Overview

- Established:1969
- Sales: US $20 billion
- Asset: US $37 billion (2010)
- No. of Employees: 35,000
- No. of Subsidiaries: 42
- Business Areas: 7 (See Below)

Steel · Metal · Chemical

Agriculture · Health · Distribution

IT · Electronics

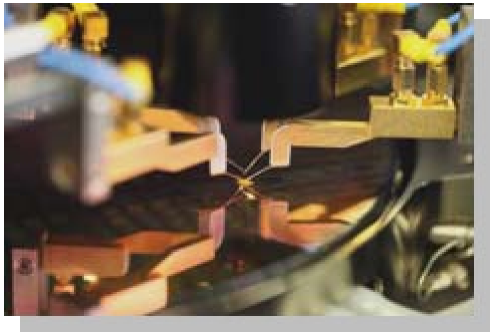
Construction · Energy · Real Estate Development

Logistics · Passenger Transport · Contents

Insurance · Securities · Banking

Corporate Social Responsibility

Company Overview



Established	**1997**
Sales	**US $ 593 million (2010)**
Asset	**US $ 1.3 billion (2010)**
No. of Employees	**2,510 (Jun. 2011)**
Business Areas	**System IC (Analog, Display, RF, etc)**
Tech. Node	**90nm ~ 0.35um**
Capacity	**94,000wfrs(200mm)/month**

History

1997	Established Dongbu Electronics
	Completed Fab1 Construction
	Entered into strategic alliance with Texas Instruments
2000	Completed Fab2 Construction
	Entered into strategic alliance with Toshiba
2004	Commenced CMOS foundry processing at the 0.13um node
2007	Sharpened focus on specialized foundry processing; renamed Dongbu HiTek
2008	Launched Industry’s first 0.18-micron BCDMOS process
2010	Became world’s no.1 company in Specialized foundry

Status in World Market

2010 Specialty Foundry Ranking

2010 Rank	Company	2010
1	Dongbu HiTek	$512M
2	TowerJazz	$509M
3	Vanguard	$505M

Souce : Gartner, Mar. 2011

Future leaders in Analog/Mixed-Signal Foundry

Who will succeed in analog/mixed-signal foundry market?

Company	Odds for success	Comments
TSMC	1-1	Strong IP, resources
IBM; Chartered; Samsung; UMC	2-1	Strong IP, resources
Dongbu; X-Fab	5-1	Good IP, customer base
Vanguard; SSMC	10-1	Backed by TSMC
HHNEC; NEC	15-1	Strong backing
AMI/ON Semi	20-1	Lost in the shuffle?
Austriamicrosystems	25-1	Helped by IBM
SMIC	30-1	Will it need bail out?
MagnaChip; Tower/Jazz	100-1	Spilling red ink
CSMC	150-1	Will new focus work?
Mosel-Vitelic	200-1	Moving into solar

Source : EE Times, 2008

2010 Foundry Ranking

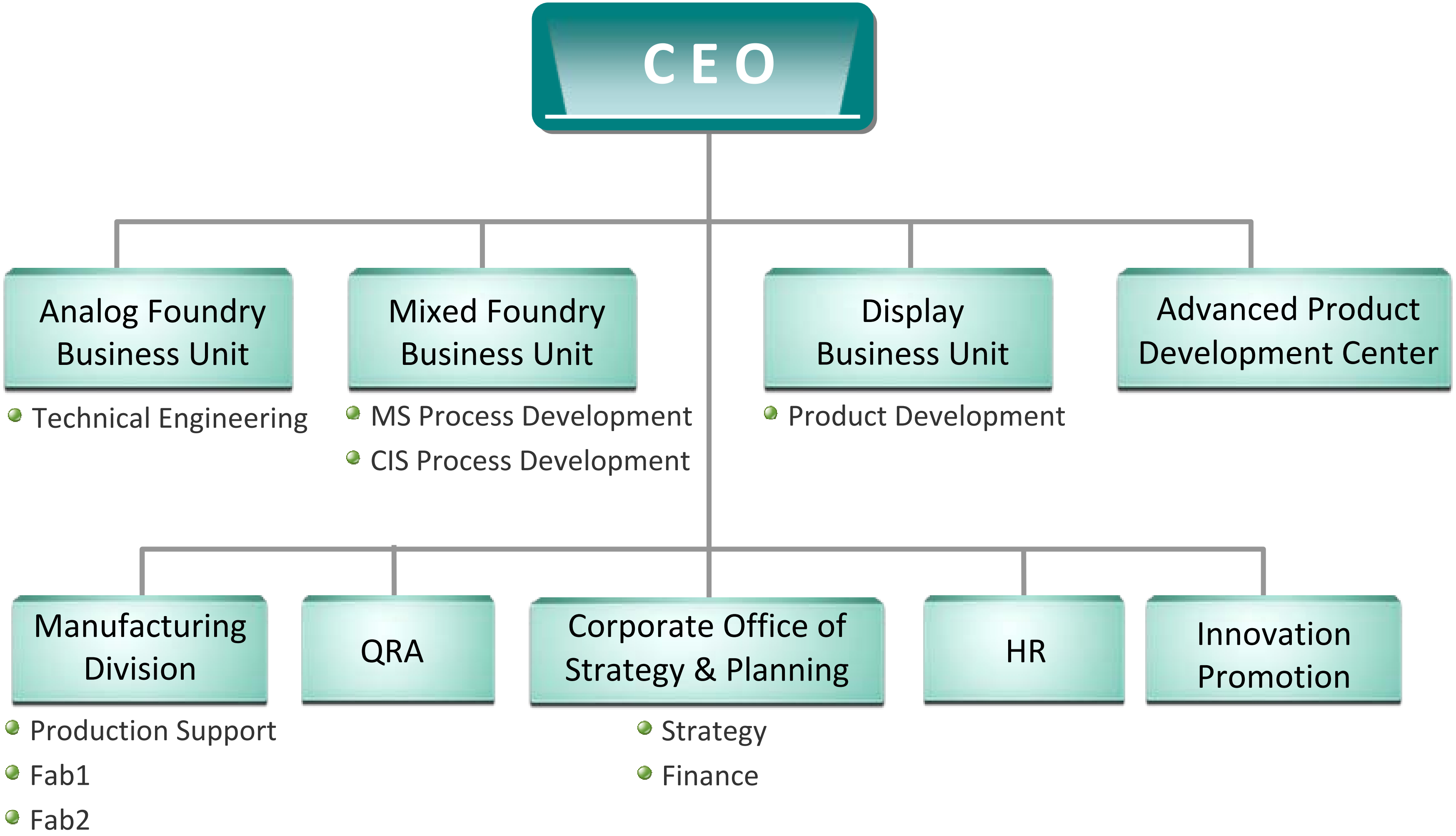
(Unit:$M)

2010 Rank	Company	2010	2009
1	TSMC	13,332	8,997
2	UMC	3,824	2,730
3	Globalfoundries	3,520	1,101
4	SMIC	1,554	1,070
5	Dongbu HiTek	512	378
6	TowerJazz	509	298
7	Vanguard	505	381
8	IBM	500	383
9	MagnaChip	410	265
10	Samsung *	390	290
-	Chartered	0	1,540

Source : Gartner, Mar. 2011

* Globalfoundries : Dec. 2009, Acquisition of Chartered

Organization Chart



CEO

Analog Foundry Business Unit
- Technical Engineering

Mixed Foundry Business Unit
- MS Process Development
- CIS Process Development

Display Business Unit
- Product Development

Advanced Product Development Center

Manufacturing Division
- Production Support
- Fab1
- Fab2

QRA

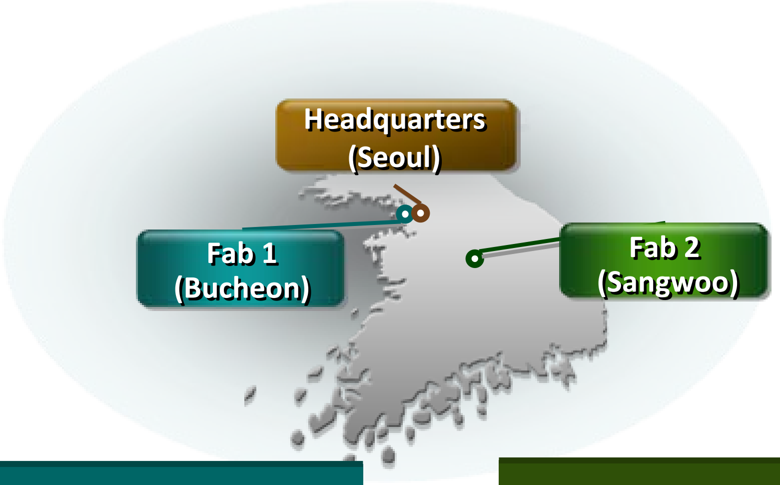
Corporate Office of Strategy & Planning
- Strategy
- Finance

HR

Innovation Promotion

Facilities

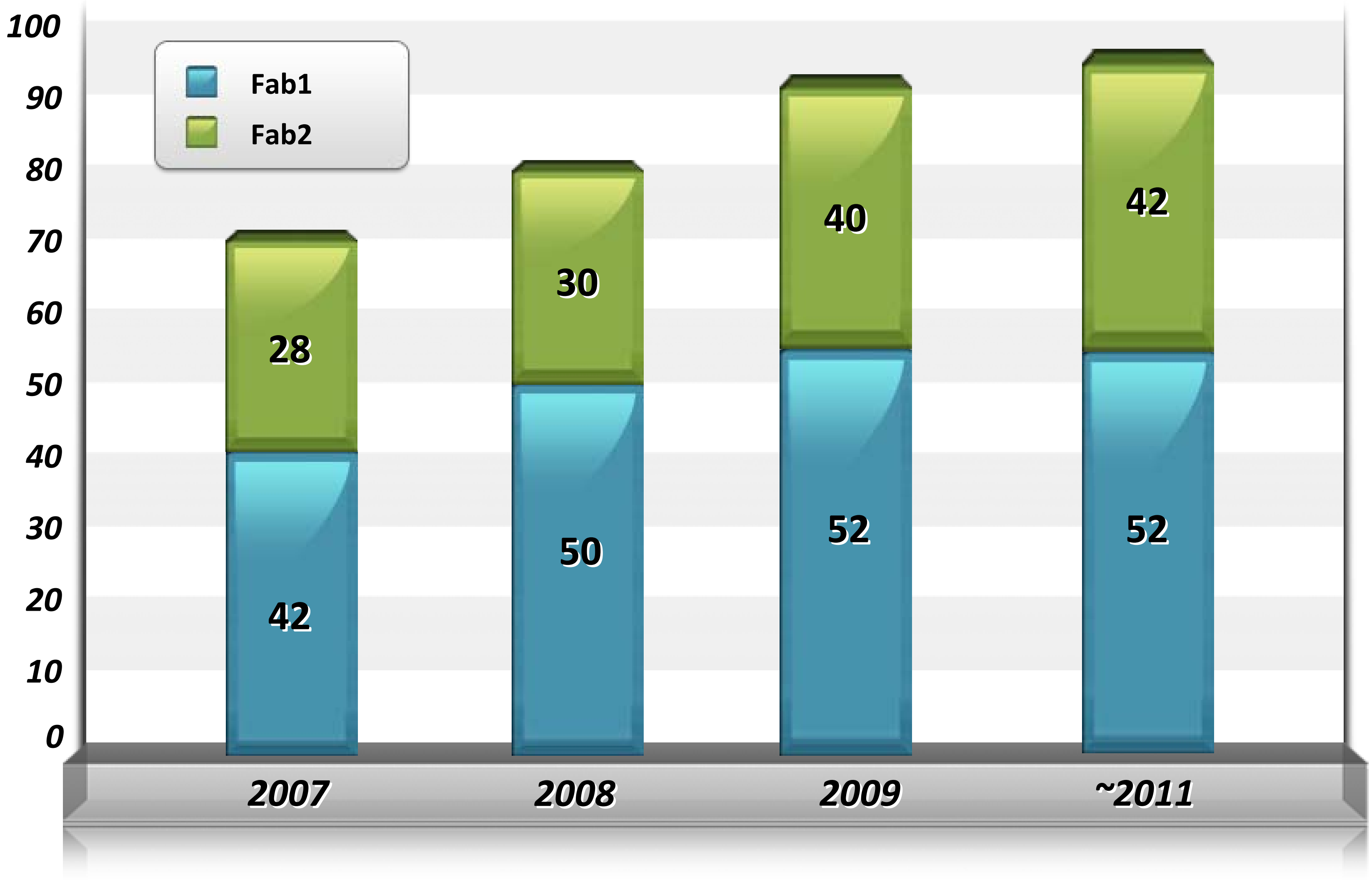
Headquarters	
Organization	Administration, Sales & Marketing
Location	Seoul, Korea



Fab 1	
Capacity	52,000 wafers/month
Tech Nodes	0.35, 0.25, 0.18, 0.15um
Main Technology	BCDMOS, Analog CMOS and HV CMOS, Logic
Wafer Size	200mm (8 inch)
Location	Bucheon, Gyunggi-do

Fab 2	
Capacity	42,000 wafers/month
Tech Nodes	0.25, 0.18, 0.13, 0.11, 0.09um
Main Technology	Mixed Signal, Flash, RF CMOS, CIS and HV CMOS, Logic
Wafer Size	200mm (8 inch)
Location	Eum Sung, Choong Chung Book-do

Capacity

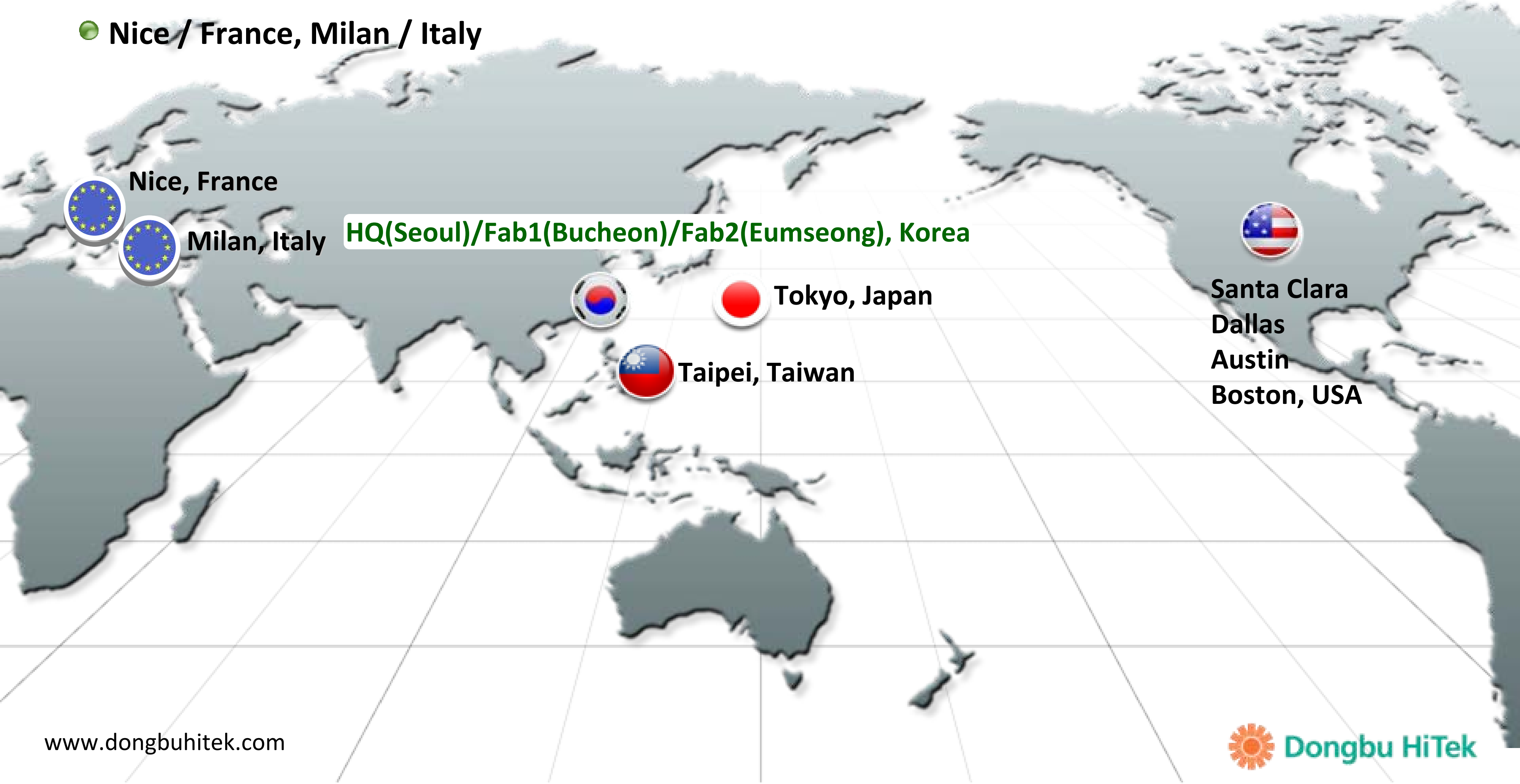


[Kwfs/Month]

Sales & R&D Networks

Sales & R&D Network

- Taipei / Taiwan
- Tokyo / Japan
- Santa Clara, Dallas, Austin, Boston / USA
- Nice / France, Milan / Italy



Technology Expertise

- **High Voltage Analog**
  - CMOS (< 50V)
  - BCD
  - > 700V
- **Sensor**
  - Camera
  - Medical
  - Industrial
- **Mixed Signal**
  - Specialty Logic
  - e-NVM
  - RF
  - High Performance Mixed

Portfolio - 3C + 1I (Computer, Communication, Consumer, Industrial)

Analog IC

PMIC
Audio Amp
LCD Panel Power IC
Motor Controller
LED Driver IC
Converter

Texas Instruments SONY SHARP SAMSUNG SAMSUNG ELECTRO-MECHANICS
LG intersil FAIRCHILD LS Industrial Systems IDT
ENPIRION Sanken SANKEN ELECTRIC CO., LTD ANALOG DEVICES BROADCOM BYD

Image Sensor

Mobile Phone
Digital Camera
Camcorder
Videoconferencing
Security
Automotive / Medical

vatech SETi nextchip SILICONFILE

Display IC

LCD TV
LCD Monitor
AMOLED
Mobile Phone
PDA
Digital Photo Frame

LG Display SAMSUNG ELECTRONICS SONY SHARP
Silicon Works LG Electronics

RF/Flash/Logic

Mobile Phone
MP3 Player
Laptop PC
Set-top Box
Network Server
Wireless LAN
Bluetooth
Home Appliances

MEDIATEK FCI BROADCOM MICREL
SUNPLUS Sanken SANKEN ELECTRIC CO., LTD radio pulse business

Technology Roadmap – BCDMOS

🔵 : Available 🟠 :Planned

Process	Available Technology	2011	2012
Low Voltage BCDMOS	🔵 0.35um 3.3V CMOS 24V LDMOS 🔵 0.18um 1.8V,5V CMOS 30V LDMOS	🟠 0.18um 1.8V / 5V CMOS 20V Iso Drain LDMOS	🟠 0.18um 1.8V / 3.3V CMOS 30V LDMOS
Medium -High Voltage BCDMOS	🔵 0.35um 3.3V CMOS 60V LDMOS 🔵 0.35um 5V CMOS 60V LDMOS 🔵 0.35um 3.3V / 5V CMOS 85V LDMOS 🔵 0.35um 3.3V / 5V CMOS 60V LDMOS 🔵 0.18um 1.8V / 5V CMOS 60V LDMOS	🔵 0.18um 1.8V / 5V CMOS 60V LDMOS	🟠 0.18um 1.8V / 5V CMOS 85V LDMOS
Ultra-High Voltage BCDMOS		🟠 0.35um 5V / 20V CMOS 700V LDMOS Non-Epi	🟠 0.35um 5V / 20V CMOS 700V LDMOS Epi
Analog CMOS	🔵 0.60um 5V CMOS 🔵 0.35um 3.3V CMOS 🔵 0.35um 5V CMOS 🔵 0.18um 1.8V / 5V CMOS iso-CMOS	🔵 0.18um 1.8V / 5V CMOS High Performance	🟠 0.13um 1.5V / 5V CMOS iso-CMOS

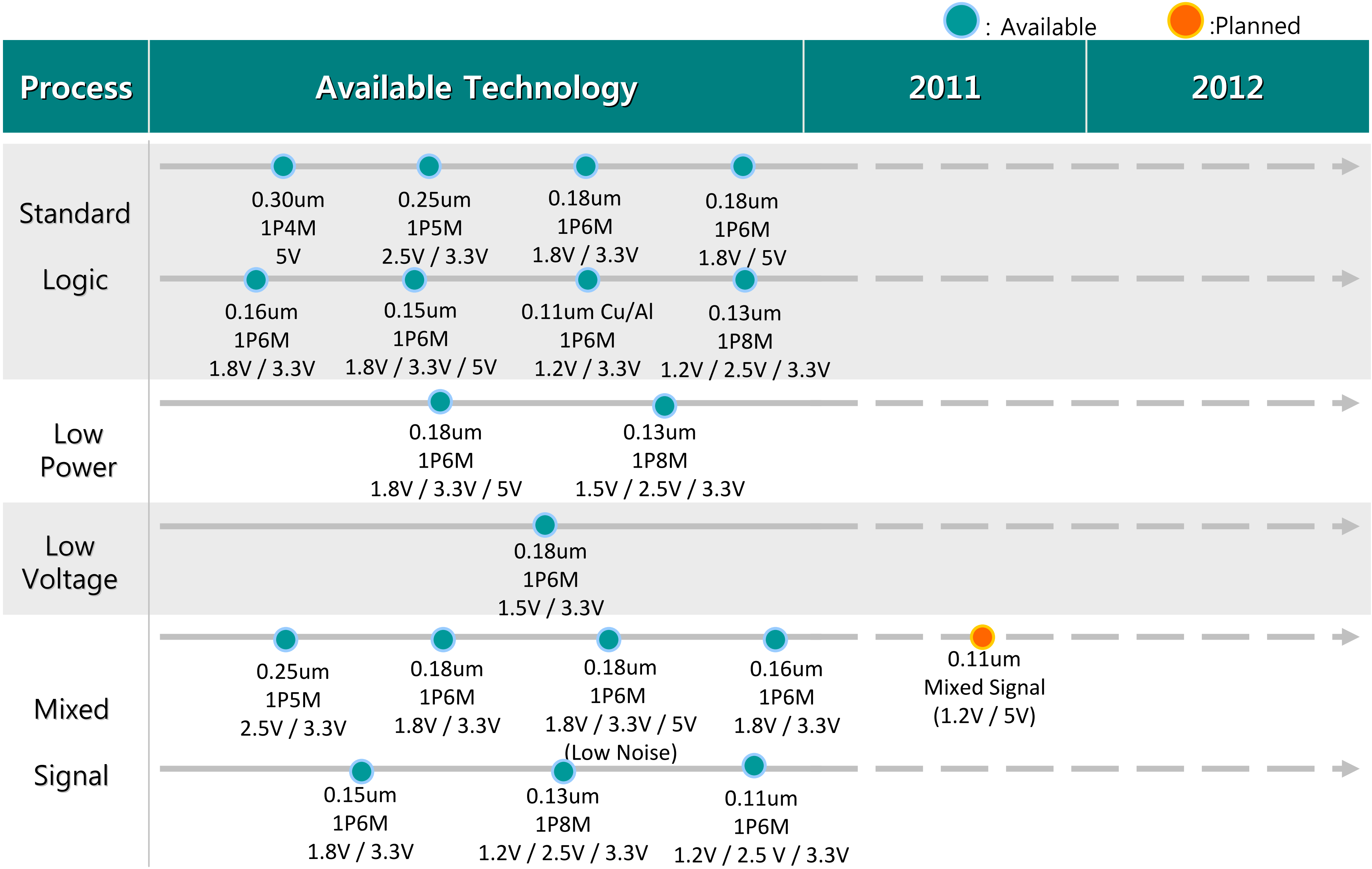
Technology Roadmap – Mixed -Signal

● : Available ● :Planned

Process	Available Technology	2011	2012
RF	0.13um 1P8M 1.2V / 2.5V / 3.3V 0.13um LP Cu, 1P8M 1.5V / 2.5V / 3.3V	0.11um Hybrid (AL +Cu UTM)	
CIS	0.18um 2.8um Pixel CIF, VGA, 1.3M 0.13um 2.2um Pixel VGA, 1.3M, 2M 0.11um 1.75um Pixel 1.3M, 2M	0.11um 1.4um Pixel 3M, 5M	
sFlash	0.18um 2P3M 3.3V 0.13um 2P3M 3.3V 0.13um 2P3M 1.8V 90nm 2P3M 3.3V 90nm 2P3M 1.8V		
eFlash	0.13um (N-Type Cell, 1K Cycles) 2P6M 1.5V / 3.3V	0.18um eFlash LP 2P6M 1.8V / 5V	
LDI	0.35um 5V / 45V 0.30um 3.3V / 13.5V 0.18um 3.3V / 13.5V / 18V 0.11um 1.2V / 30V 0.13um 1.5V / 20V 0.16um 1.8V / 9 V 13.5V / 18V	0.11um 1.2V / 30V with SDTRAM	

Technology Roadmap - Logic

🔵 : Available 🟠 :Planned



Process	Available Technology	2011	2012
Standard Logic	0.30um 1P4M 5V 0.25um 1P5M 2.5V / 3.3V 0.18um 1P6M 1.8V / 3.3V 0.18um 1P6M 1.8V / 5V 0.16um 1P6M 1.8V / 3.3V 0.15um 1P6M 1.8V / 3.3V / 5V 0.11um Cu/Al 1P6M 1.2V / 3.3V 0.13um 1P8M 1.2V / 2.5V / 3.3V		
Low Power	0.18um 1P6M 1.8V / 3.3V / 5V 0.13um 1P8M 1.5V / 2.5V / 3.3V		
Low Voltage	0.18um 1P6M 1.5V / 3.3V		
Mixed Signal	0.25um 1P5M 2.5V / 3.3V 0.18um 1P6M 1.8V / 3.3V 0.18um 1P6M 1.8V / 3.3V / 5V (Low Noise) 0.16um 1P6M 1.8V / 3.3V 0.15um 1P6M 1.8V / 3.3V 0.13um 1P8M 1.2V / 2.5V / 3.3V 0.11um 1P6M 1.2V / 2.5 V / 3.3V	0.11um Mixed Signal (1.2V / 5V)	

Customer Support - IP, Library, PDK

Intellectual Property

- Virage Logic
- Kilopass
- ARM
- Analog Chips
- Synopsys
- Chipidea

Design Libraries

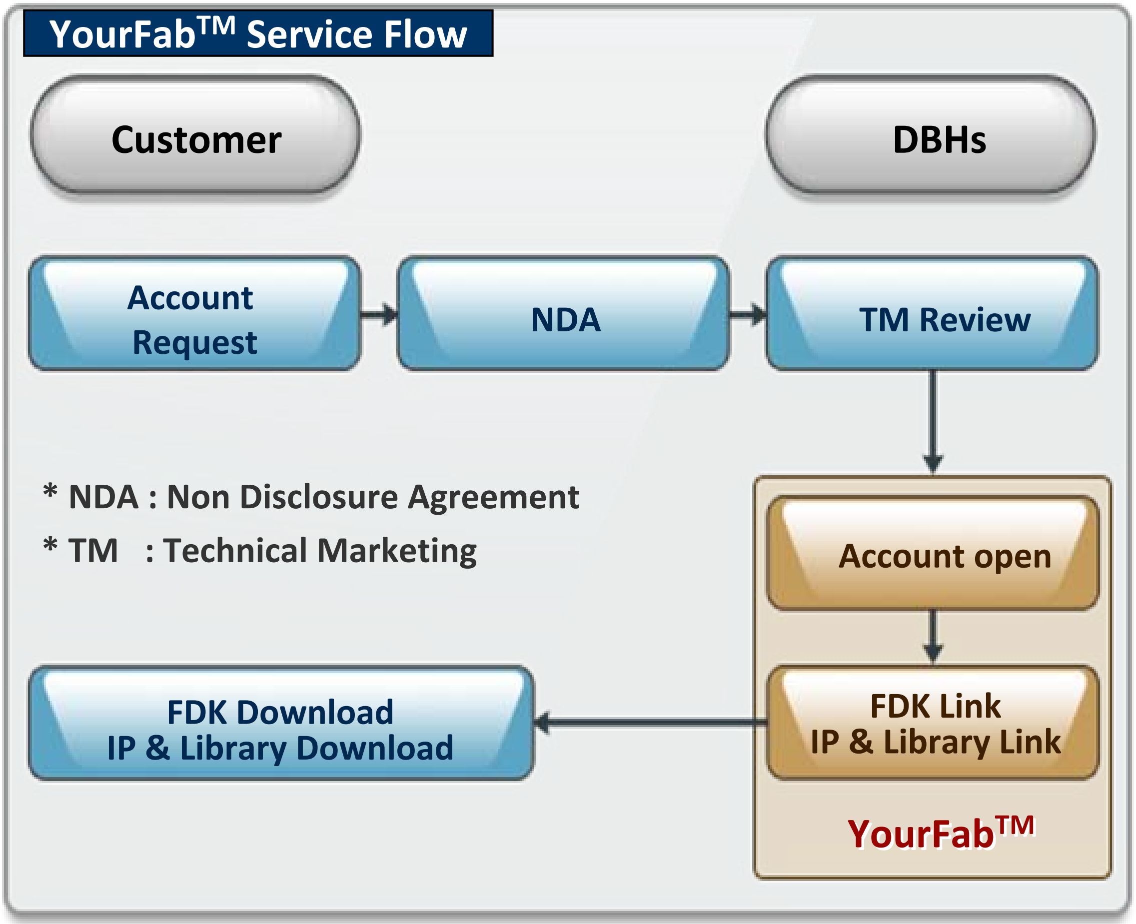
- Virage Logic
- ARM
- Synopsys
- eSilicon

Dongbu HiTek

Process Design Kit

- Mentor
- Cadence
- Spring Soft
- Tanner

Customer Support – YourFab™ Service



YourFab™ Service Flow

* NDA : Non Disclosure Agreement

* TM : Technical Marketing

Initialized Page

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Customer Support – ShuttleChip™ Service

MPW Schedule

Process	Tech	Fab	1Q			2Q			3Q			4Q		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High Voltage (AN180&BD180)	0.18um	Fab1	12	23		06	25		08	24		12	22	
High Voltage (BD350)	0.35um	Fab1	26		09	20		08	20		15	26		07
Mixed-Signal	0.11um	Fab2	26			20			20			26		
	0.15 ~ 0.18um	Fab2					25			24			22	
	0.15 ~ 0.18um	Fab1		09			11			10			08	
e-Flash	0.13um	Fab2			23					10				
	0.15 ~ 0.18um	Fab2							06					21

Customer Support – Certifications


ISO 14001


OHSAS18001


QS9000


ISO9001


ISO/TS16949


ISO27001

Quality Certification

- ISO/TS 16949, ISO 9001

ESH Certification

- PSM, ISO14001, OHSAS 18001

Security Certification

- ISO27001

ROHS Activity

- All products manufactured by Dongbu HiTek are in compliance with the RoHS directive. Products by Dongbu Hitek do not contain Lead, Mercury, Cadmium, Hexavalent Chromium, PBB and PBDE.

YOUNG Dongbu!

- **Y** Yes , we can do
- **O** On Time Delivery/Development
- **U** Unlimited Challenge
- **N** No Loss , More Profit
- **G** Great People/Technology

Dongbu HiTek

Thank You

Dongbu HiTek