



# Fairchild Semiconductor International, Inc.

April 2012

Investor Presentation

Solutions for Your Success™

# Notes on Forward Looking Statements and Non-GAAP Measures

- Comments in this presentation other than statements of historical fact may constitute forward looking statements and are based on Fairchild's management's estimates and projections and are subject to various risks and uncertainties
- These risks and uncertainties are described in the Company's periodic reports and other filings with the Securities and Exchange Commission (see the Risk Factors section) and are available at <http://sec.gov> and [investor.fairchildsemi.com](http://investor.fairchildsemi.com)
- Actual results may differ materially from those projected in the forward looking statements
- Some data in this presentation may include non-GAAP measures that we believe provide useful information about the operating performance of our businesses that should be considered by investors in conjunction with GAAP measures that we also provide. You can find a reconciliation of non-GAAP to comparable GAAP measures at the Investor Relations section of our web site at <http://investor.fairchildsemi.com>

**Recent additions to our website at <http://investor.fairchildsemi.com>**

Updated Financials (through current quarter with segment revenue/gross margin breakouts)

- Quarterly Fact Sheet with current quarter highlights
- This investor presentation

# Fairchild Overview

Solutions for Your Success™

# Fairchild Semiconductor

## 2011 Revenue \$1.6B

Mobile, Computing,  
Consumer &  
Communications Group  
(MCCC)  
(41% of 2011 Revenue)

Mobile Power  
Switches & Interface  
Signal Conditioning  
LV MOSFETs  
Logic

*Comprehensive offering of low  
voltage solutions (<200V)*

Power Conversion, Industrial  
& Automotive Group  
(PCIA)  
(50% of 2011 Revenue)

Power Conversion  
HV MOSFET & IGBT  
SPM  
Automotive  
Opto

*Comprehensive offering of high  
voltage solutions (>200V)*

Standard Products  
Group  
(SPG)  
(9% of 2011 Revenue)

Standard discrete & analog

*Essential functions for key  
customers*

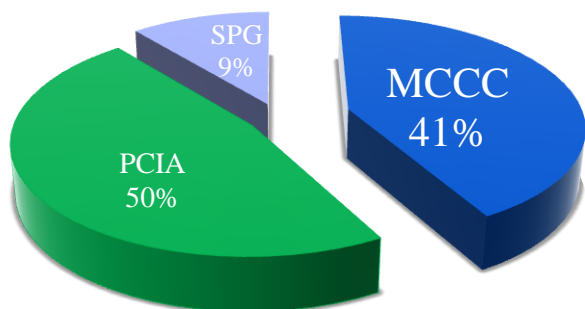
# Markets That Drive Our Business

- Wireless Convergence and Energy Efficiency mega-trends
- Power silicon content grows faster than end market sales – premium paid for efficiency
- Segment structure increases our apps knowledge and ability to sell solutions
- Large customers dominate these markets and align well with Fairchild's strengths in SCM, global presence and wide product breadth



# Mobile, Computing, Consumer & Communications (MCCC) Group Overview

## Sales - 2011



## What Drives Our Business?



- Focus on leadership power efficiency in DC:DC applications
- Solutions with increasingly small form factors
- Portfolio of products to service OEM's & ODM's needs

- Smartphone user experience and energy efficiency driving IC growth
- OEM competition driving differentiation and IC opportunity
- Increasing OEM requirement for broad based IP suppliers
- Quality of supply critical differentiator
- Three of four of the world's largest SC consumers are now handset OEMs
- Strong Market Growth with 28% SAM CAGR

\*Q2 iSuppli Mobile Std Linear+logic+MOSFET 2010-2013 CAGR



Content in most of the Smart Phones at each OEM



Content in many handset reference designs

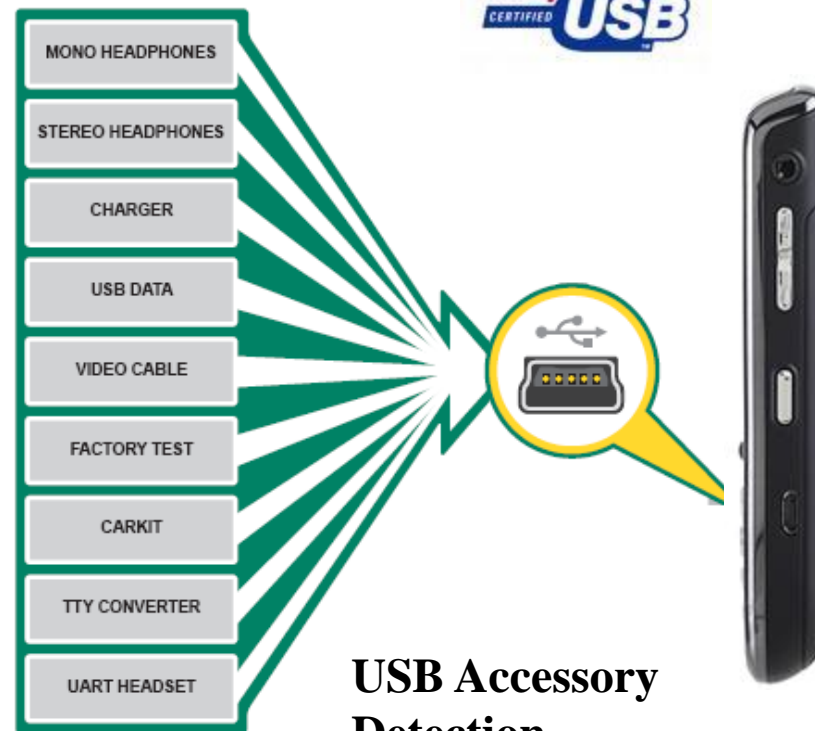
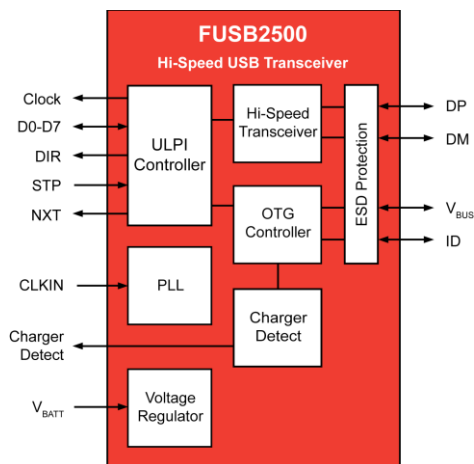




## Maximizing USB port functionality in mobile electronics

- Solutions for the full USB signal path
  - USB Switches
  - Multimedia Switches
  - Accessory Detection
  - Transceivers
- Enable USB port sharing for data, audio, video, and charging
- Reduce external components
- Power savings with low power modes
- Ultra-small packaging

**USB Transceivers**  
Maximizes design flexibility and assures USB compliance.



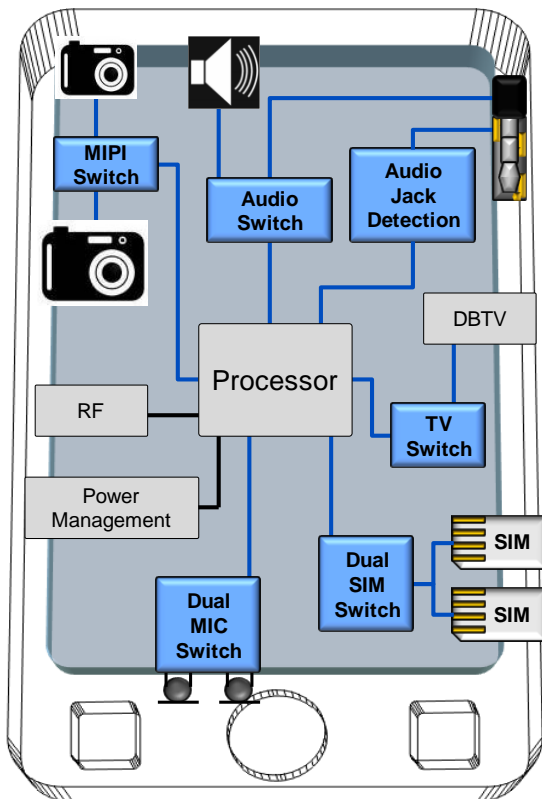
## USB Accessory Detection

Detect an accessory type for automatic application routing.

## MIPI /

### Camera:

•Route & isolate MIPI interface to dual cameras or displays while maintaining signal integrity



### Dual Microphone:

•Switch & isolate between two microphones for noise cancellation

### Dual SIM:

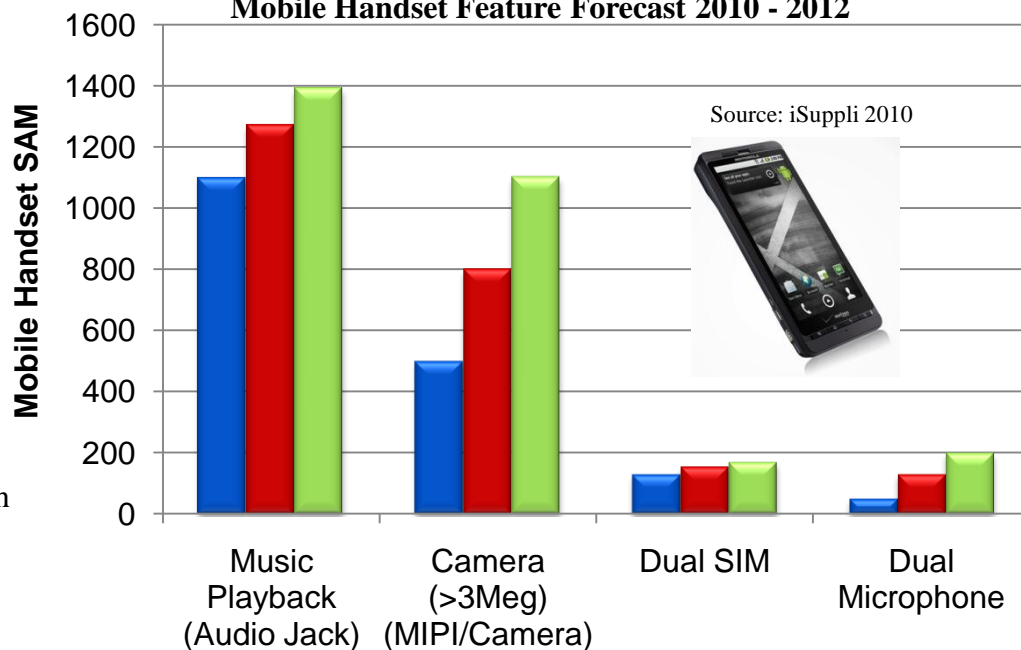
•Sharing one baseband port with two SIM cards

### Audio Jack:

- Detect and configure for 3 or 4 pole headset
- Route audio to either speakers or headphones
- Switch composite video or MIC to accessory plug

Fairchild Semiconductor is a global leader in innovative Analog Switch solutions designed to route, switch, isolate, protect and detect an array of signals in mobile devices.

**Mobile Handset Feature Forecast 2010 - 2012**



## ASSPs Enable Smart Phone Applications

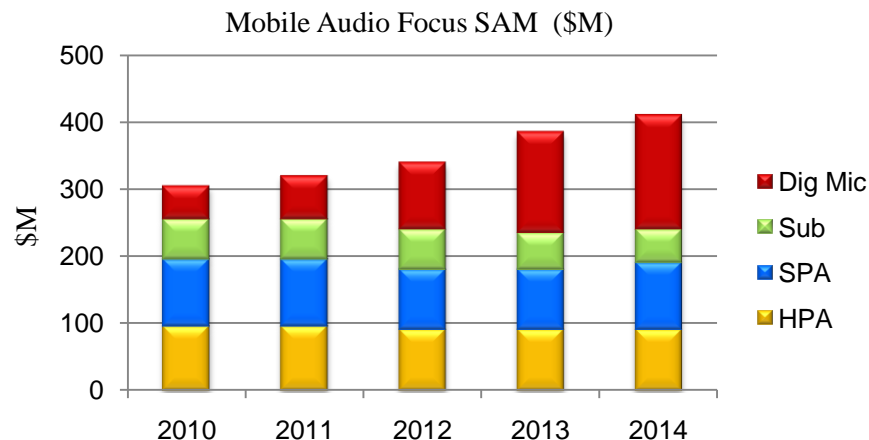
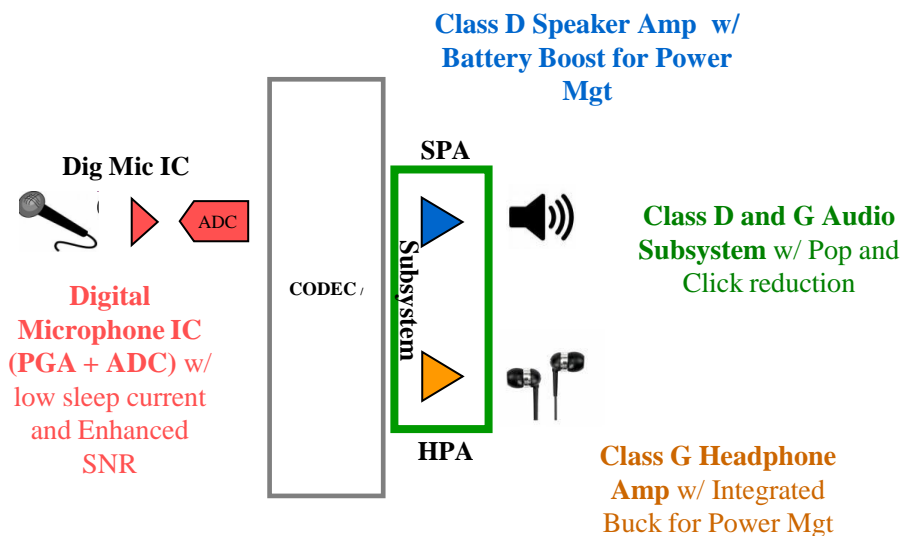


## ASSP Solutions

- 33% 3yr CAGR\*
- Fast growing, semi custom space
- Reset Timers Series; hardware reset for software lock up
- Temperature Sensors; provide thermal protection
- I/O Level Shifters for I2C, SD Memory and SIM cards
- Clock buffering and distribution
- Baseband / Application Processor I/O expansion

- Investment started in 2009 with purchase of Leadis Audio IP and Team
- Focused on proving competitive IP and selection as audio supplier at major handset suppliers

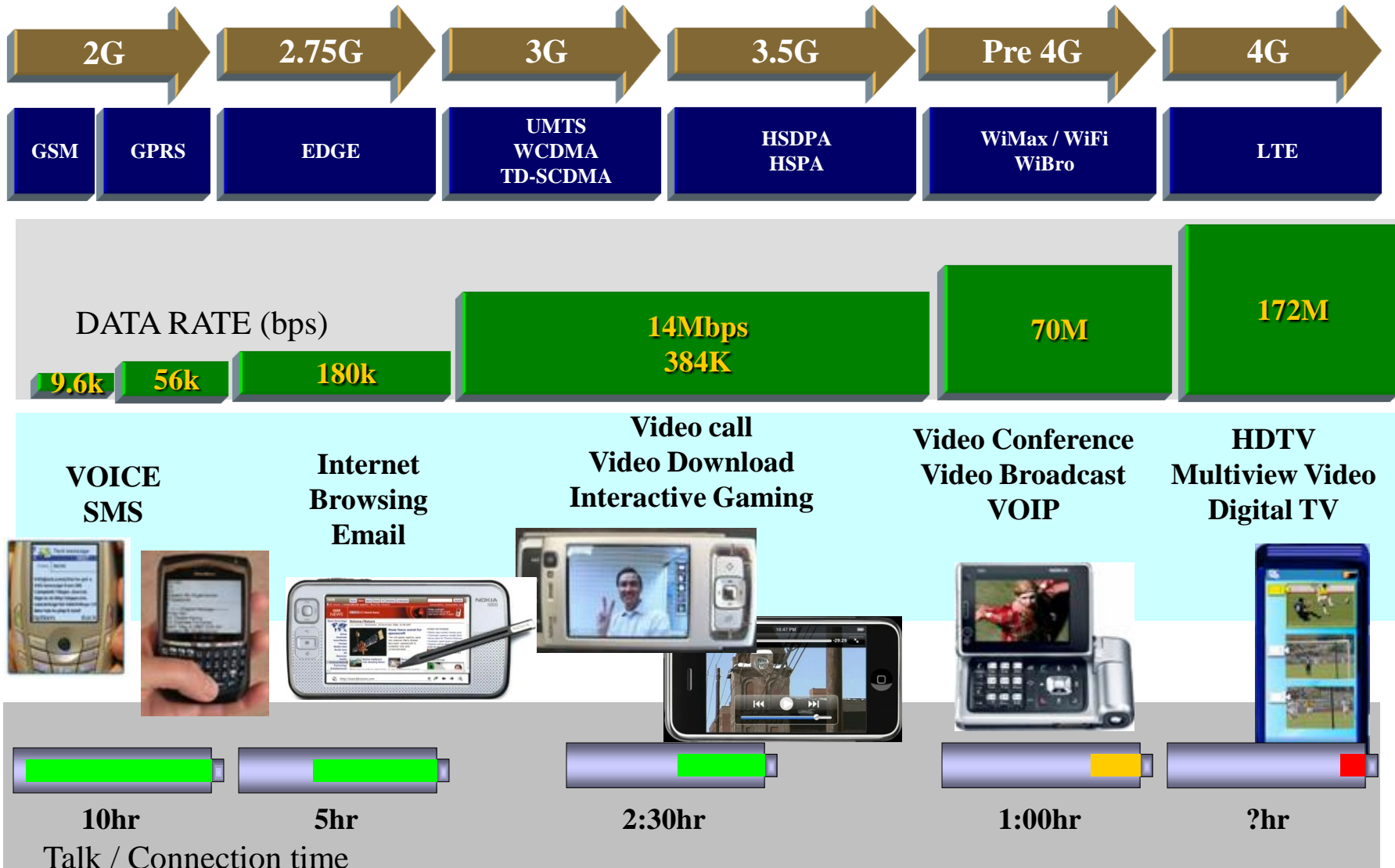
## Customer Driven Products Include:



Dig Mic = Digital Microphone IC  
 Sub = Audio Subsystem  
 SPA = Speaker Amplifier  
 HPA = Headphone Amplifier

Source: Fairchild

# Increasing Power Consumption



**BILLSHRINK**

**THE NEW GENERATION OF SMART PHONES** Newest arrival

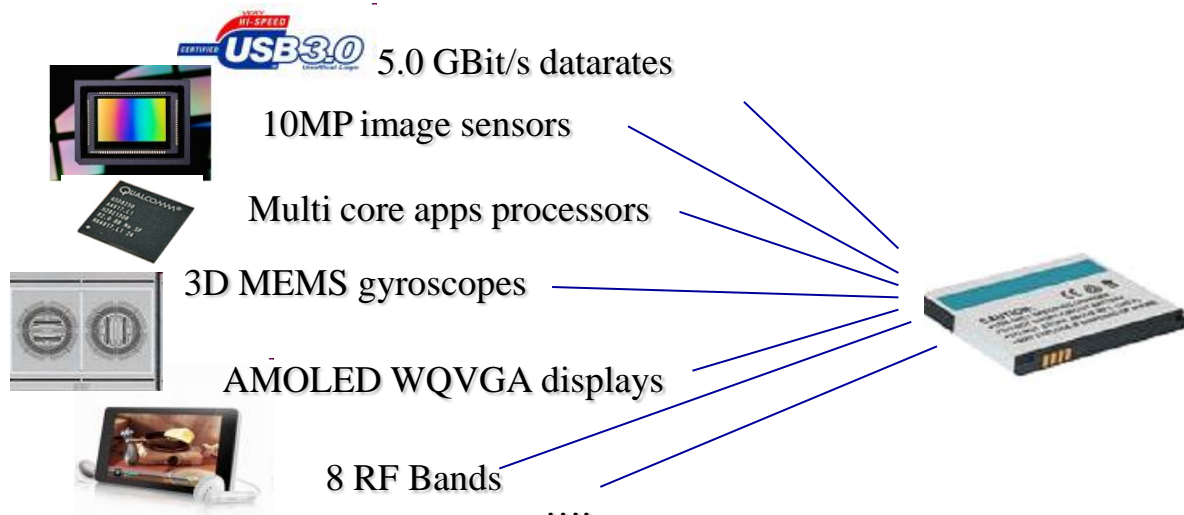
BillShrink.com proudly presents a comprehensive guide on some favorite smartphones. Don't waste your money, let BillShrink show you the way to financial freedom.

	<b>iPhone 3GS</b> <small>(AT&amp;T)</small>	<b>Palm Pre</b> <small>(SPRINT)</small>	<b>MyTouch 3G</b> <small>(T-MOBILE)</small>	<b>Motorola Droid</b> <small>(VERIZON)</small>
<b>STORAGE CAPACITY</b>	<b>16GB</b>	<b>8GB</b>	<b>4GB</b> <small>(EXPANDABLE TO 32GB)</small>	<b>16GB</b> <small>(EXPANDABLE TO 32 GB)</small>
<b>BATTERY LIFE</b>	<b>5</b> hrs - 3G TALK TIME <b>300</b> hrs - STANDBY	<b>5</b> hrs - 3G TALK TIME <b>300</b> hrs - STANDBY	<b>6</b> hrs - 3G TALK TIME <b>600</b> hrs - STANDBY	<b>6.4</b> hrs - 3G TALK TIME <b>270</b> hrs - STANDBY

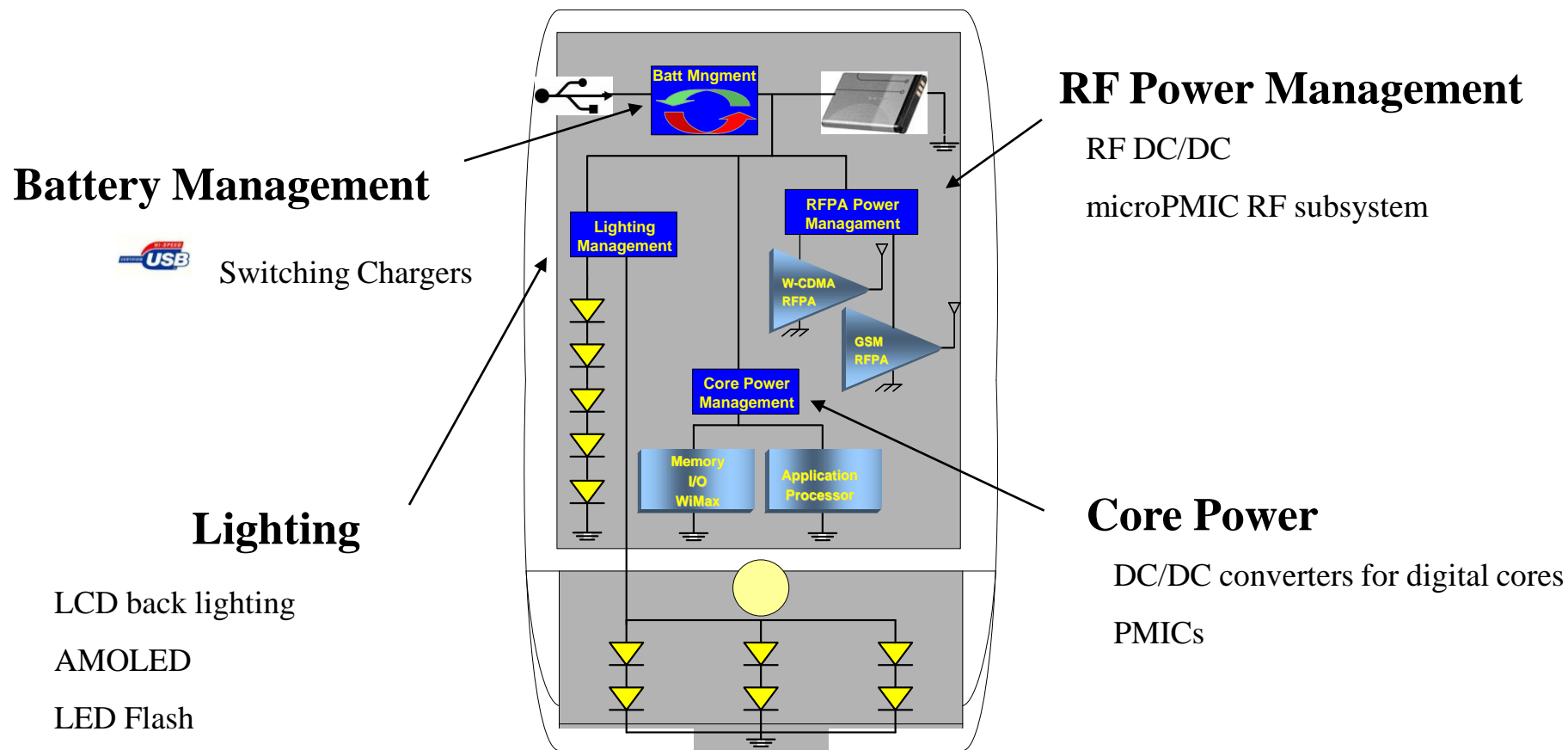
- Only 5 – 6.4 hrs of 3G talk time for leading smartphones
- Battery life gates user experience
- All 4 phones use a similar battery with a capacity of 1400mAh
- More functions...same battery form factor

## Bridging the energy gap:

- Higher energy density batteries (new Chemistries)
- Optimized usage of features (HW & SW)
- **More efficient conversion of battery power**
- Lower power consuming components







*Efficient DC/DC Conversion = Longer Battery Life*

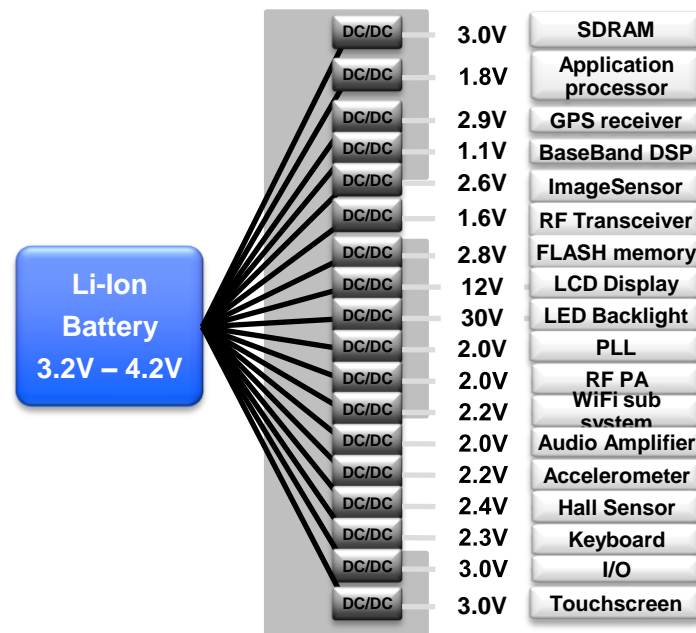


Low noise regulators for Proximity and accelerometers

Step-down DC/DC for SD Flash Memory Cards

Step-Up DC/DC converter of USB-OTG

Multi-Channel + Mixed Signal for Image sensor modules



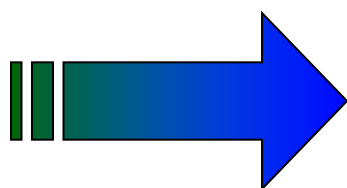
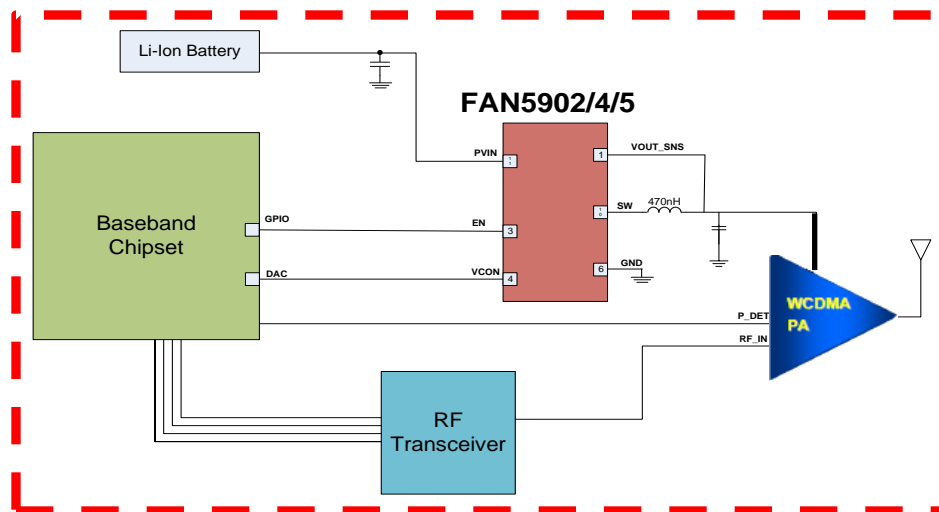
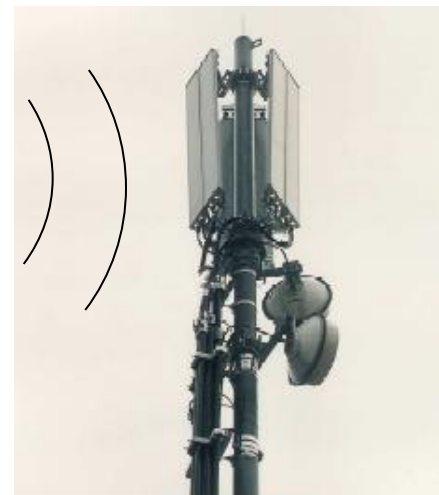
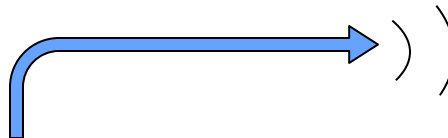
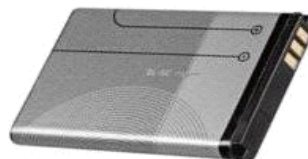
- Handset features and usage patterns continue to increase demands on energy efficiency
- Continues to drive adoption of switching DC/DC across a wider range of voltages
- Fast growing High Performance Analog Segment through 2014 (21% CAGR\*)

\*Q2 2010 iSuppli 2010-2014

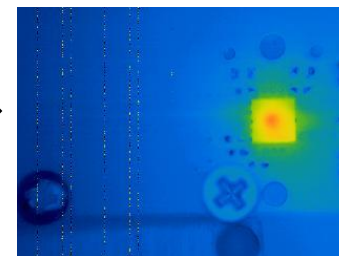
## Switching Regulator for RF Saves Power, Extends Battery Life

### 3G/4G Smart Phone

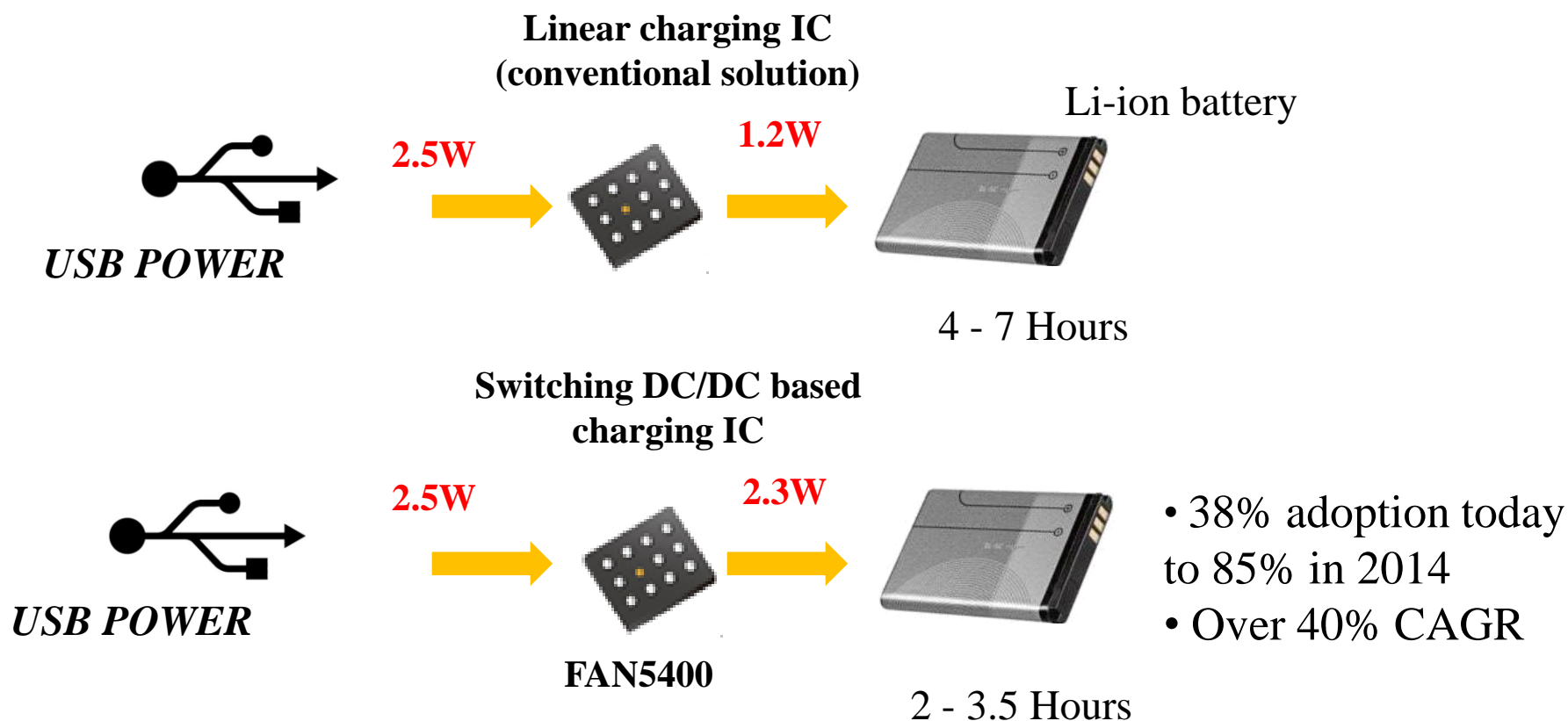
*+ 200 Minutes More Talk Time*  
*+ 140 Minutes More Access Time*  
*34% adoption today to 85% in 2013*  
*Over 40% CAGR*



*Runs 50% Cooler*

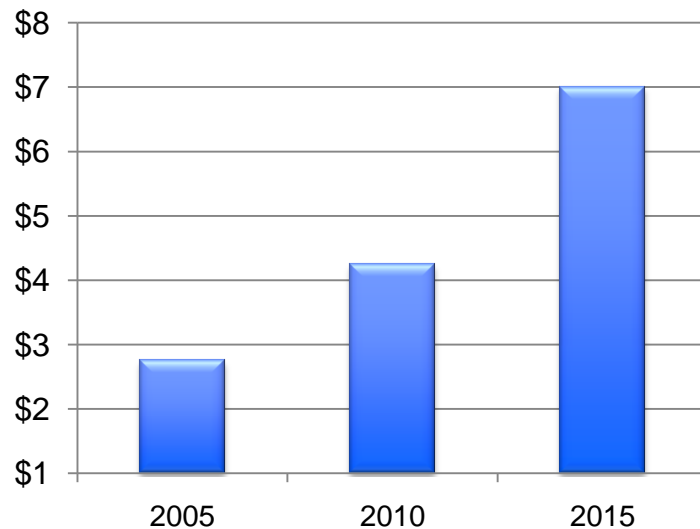


## Energy efficient charging reduces charge times of Smart Phones by up to 50%



- An analog business with a history and future of profitable growth

- Smart Phone addressable content continues to expand through adjacent product strategies



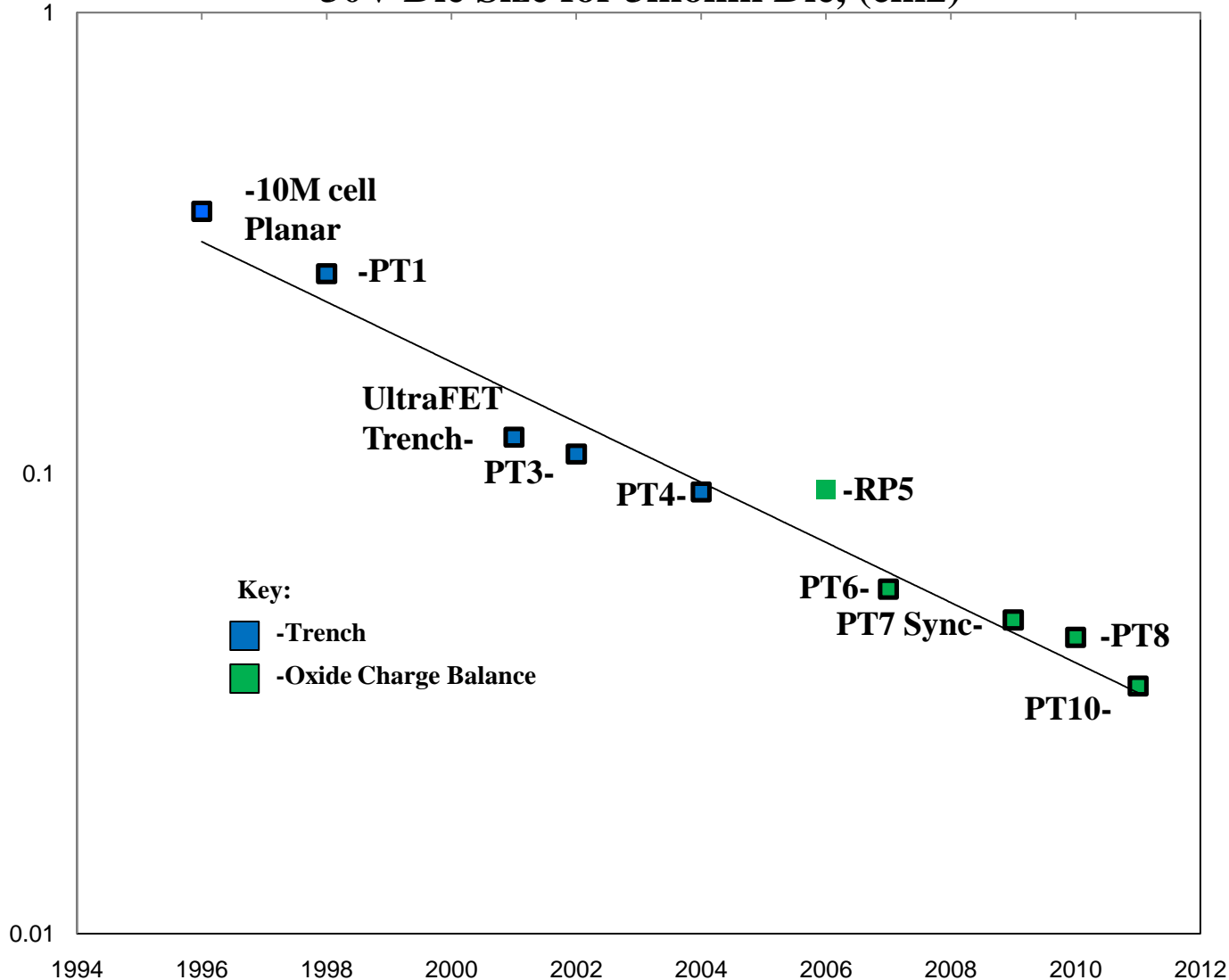
- We compete on the quality of our supply chain, manufacturing cost effectiveness, and breadth of IP/product portfolio to solve OEM needs
- Expect to double the business over the next 3-5 years

- Process Technology Continues to Drive Cost and Performance
- Packaging Technology Shift Enabled by Process Drives Power Density
- Performance Segments Require Power Density Improvements
- Efficiency Gains are Highly Valued
- Good Market Growth at 8% SAM CAGR

Source: WSTS Fukuoka May 28<sup>th</sup> 2010 – projection 2010 - 2013

# Process Technology Drives Cost and Performance

**30V Die Size for 3mohm Die, (cm<sup>2</sup>)**



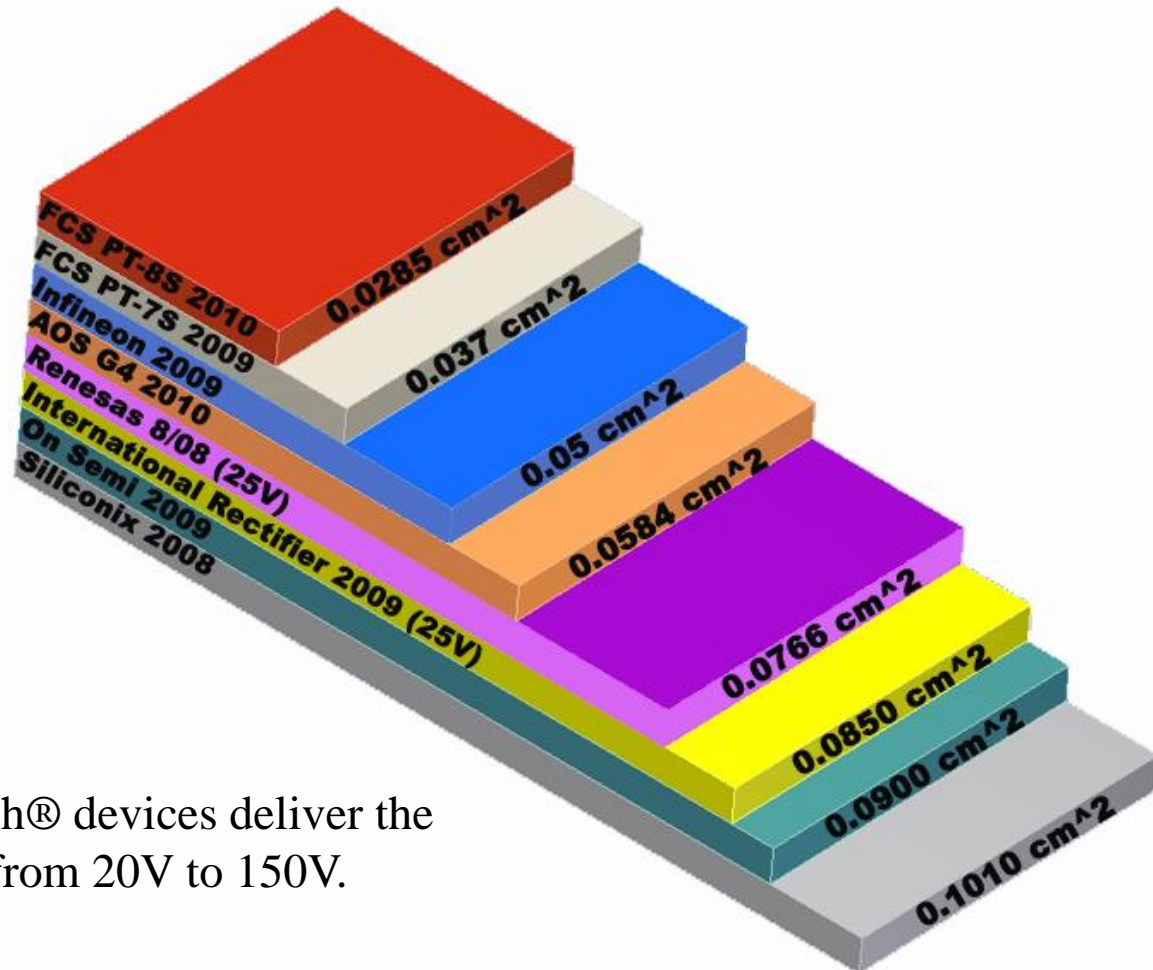
20% Average Die  
Size Reduction per  
Technology Node

*Enables :*  
-Die Cost Reduction  
(Margin  
Improvement)

-Smaller Package  
Footprint  
(Market Share)

# PowerTrench® Power Density Leadership

Relative die sizes for a 30V, 2mOhm die,  $V_{gs}=10V$



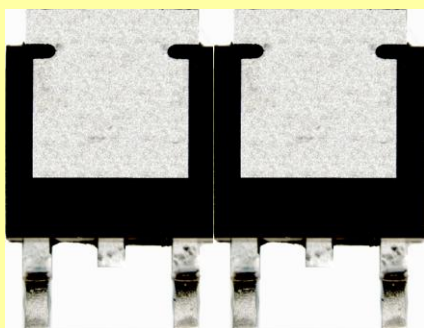
Fairchild PowerTrench® devices deliver the same size advantage from 20V to 150V.



## Old Approach

2 X D-Pak

130 mm<sup>2</sup>



2 X SO-8

60 mm<sup>2</sup>



20A DC/DC

## New Approach

2X 5x6 PQFN

60 mm<sup>2</sup>



2 X 3X3 PQFN

21 mm<sup>2</sup>



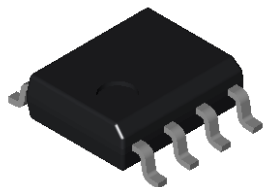
Power Stage

30 mm<sup>2</sup>

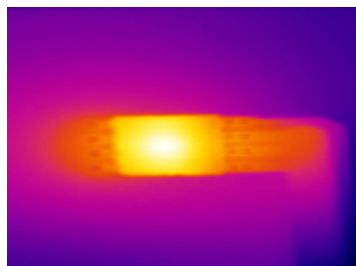


# Power Density Improves Over 8X

**SO-8**



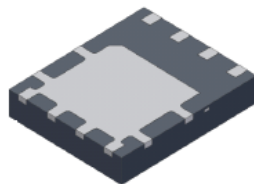
30 mm<sup>2</sup>



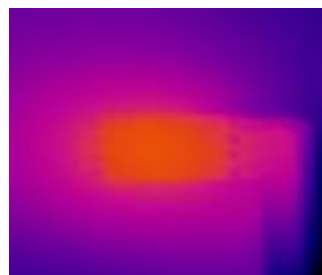
$\Theta_{JA} = 74.2^{\circ}\text{C/W}$

$P_d = 56 \text{ mW/mm}^2$

**Power 56**



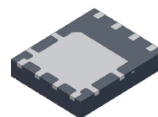
30 mm<sup>2</sup>



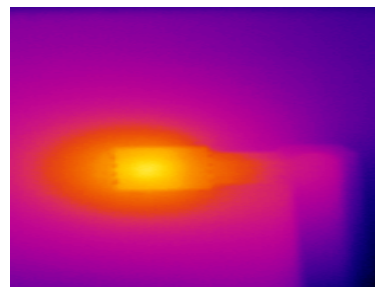
$\Theta_{JA} = 48.6^{\circ}\text{C/W}$

$P_d = 86 \text{ mW/mm}^2$

**Power 33**



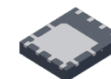
11 mm<sup>2</sup>



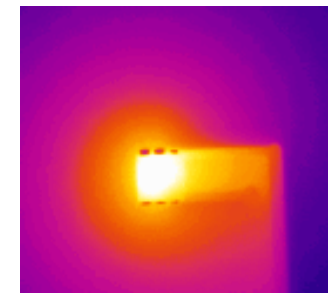
$\Theta_{JA} = 59.5^{\circ}\text{C/W}$

$P_d = 190 \text{ mW/mm}^2$

**Power 22**



4 mm<sup>2</sup>



$\Theta_{JA} = 65.8^{\circ}\text{C/W}$

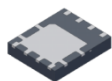
$P_d = 475 \text{ mW/mm}^2$

## Transitions

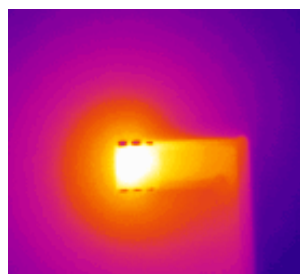
- Power56 to Power33
- SO8 to Power33
- Power33 to Power22 and Power Stage Duals

- Form Factors for Singles:

**Power 22**



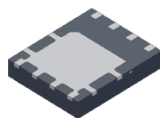
4 mm<sup>2</sup>



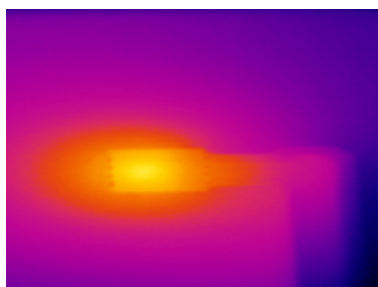
$\Theta_{JA} = 65.8^{\circ}\text{C/W}$

$P_d = 475 \text{ mW/mm}^2$

**Power 33**



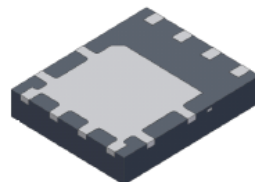
11 mm<sup>2</sup>



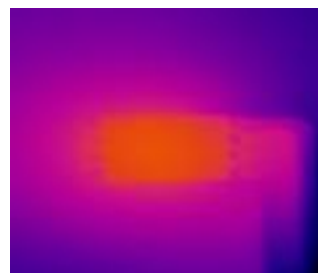
$\Theta_{JA} = 59.5^{\circ}\text{C/W}$

$P_d = 190 \text{ mW/mm}^2$

**Power 56**



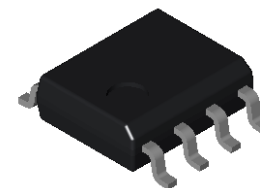
30 mm<sup>2</sup>



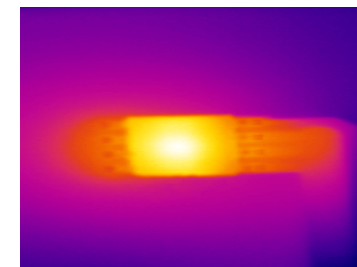
$\Theta_{JA} = 48.6^{\circ}\text{C/W}$

$P_d = 86 \text{ mW/mm}^2$

**Reference: SO-8**



30 mm<sup>2</sup>



$\Theta_{JA} = 74.2^{\circ}\text{C/W}$

$P_d = 56 \text{ mW/mm}^2$

A package portfolio to drive mobile computing transitions!

- Power56 to Power33
- SO8 to Power33
- Power33 to Power22 and PowerStage Duals

## Focus Areas

### Notebook Vcore

PowerStage 5x6 Duals 30V  
Power33 NCH 30V sub 3mOhm  
Power56 30VPT8S

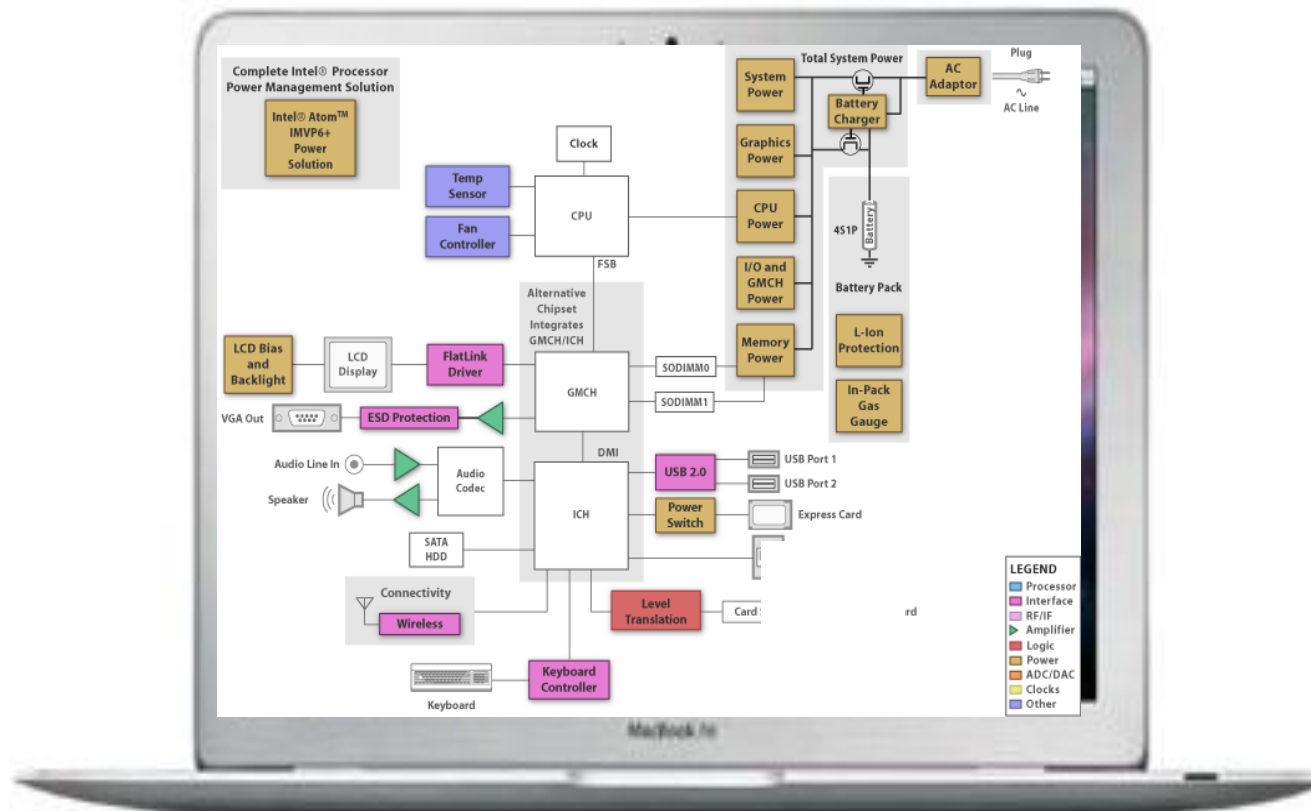
### Notebook DC:DC/Battery

PowerStage Dual 30V – 3x3,  
3x4.5, 5x6  
Power33 NCH 30V 3-30mOhm  
Power56 NCH 30V 3-15mOhm  
Power33 PCH 30V ST3  
Power33 NCH 30V Dual Cool™

### N VDC Notebook/Tablet

PowerStage Duals – 25V  
Power33 NCH 25V Dual Cool™  
Power33 PCH 25V ST3  
Power22 NCH 25V PT7  
CSP 20V NCH Zener PT7  
Power33 NCH 100V (LED BLU)

*Cost Effective Performance as Small as Possible*



LV MOSFET Content \$3.05 in 2013

*Efficient and Reliable Performance as Cool as Possible*

## Focus Areas

### LED BLU : Main Switching FET

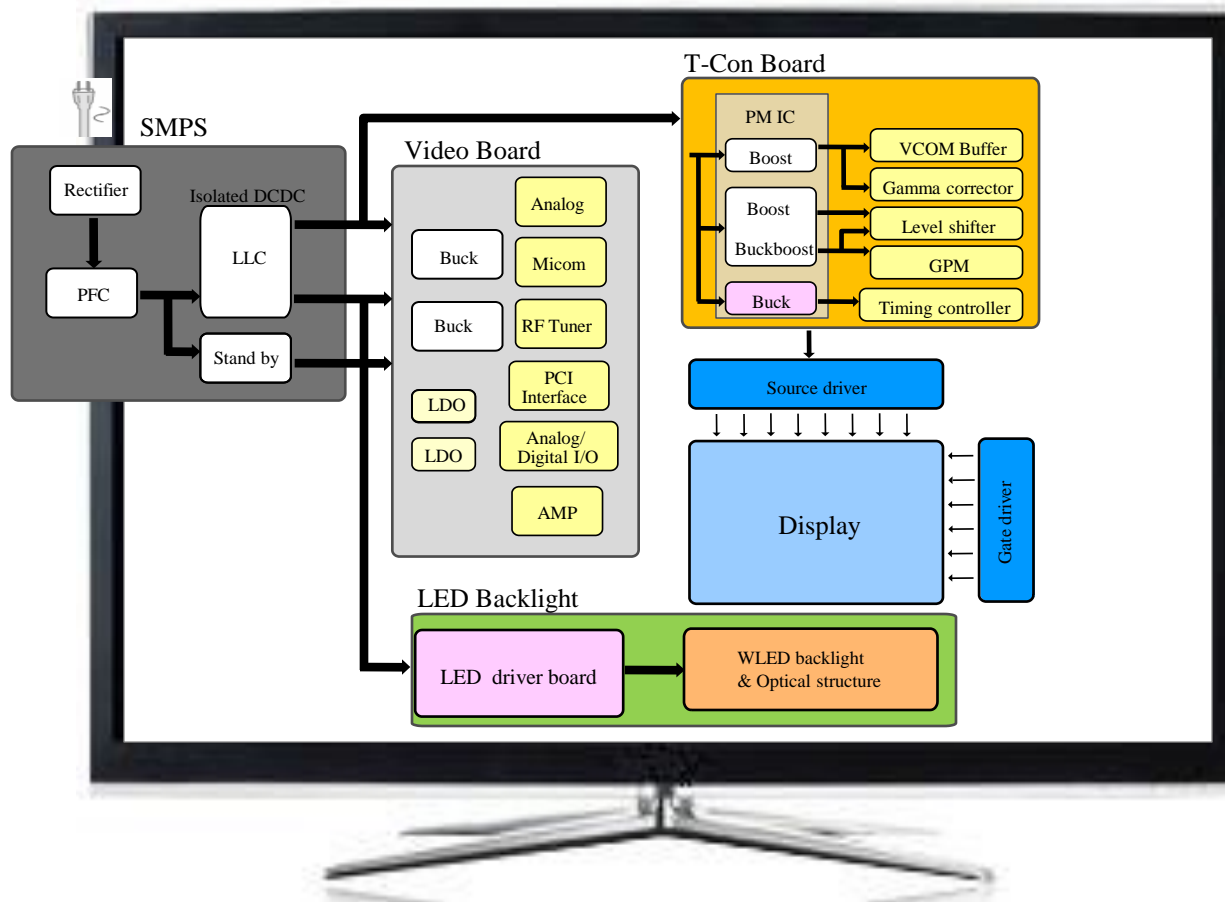
N-CH PT5 100V  
N-CH PT5 150V  
N-CH PT7 40V  
Power33, Power56, SOT223  
and DPAK

### LED BLU : Sync MOSFET

N-CH PT5 100V  
N-CH PT5 150V  
N-CH PT5 200V  
Power33, SOT223 and DPAK

### T-Con Board & Video Board :

PowerStage Duals – 30V  
Power33 NCH 30V PT7



LV MOSFET Content \$0.68 Today Growing to \$1.33 in 2013

## Focus Areas

**Power Sourcing Equipment Circuit**  
Isolation switch with wide SOA  
SOT223  
Power 33

**Powered Device Circuit**  
Isolation switch  
SSOT3  
SSOT6

**Powered Device DC-DC**  
Primary Switch 150V  
Power56, power33, SSOT3, SSOT6,  
SO8, DPAK  
Synchronous rectifier  
30V SO8, SSOT6, power33, power 56

**Powered Device Bridge**  
SSOT3  
SO8 Dual  
MLP Quad  
Power33

*High Levels of Reliability as Small as Possible*



LV MOSFET Content \$0.50 per port

## Focus Areas

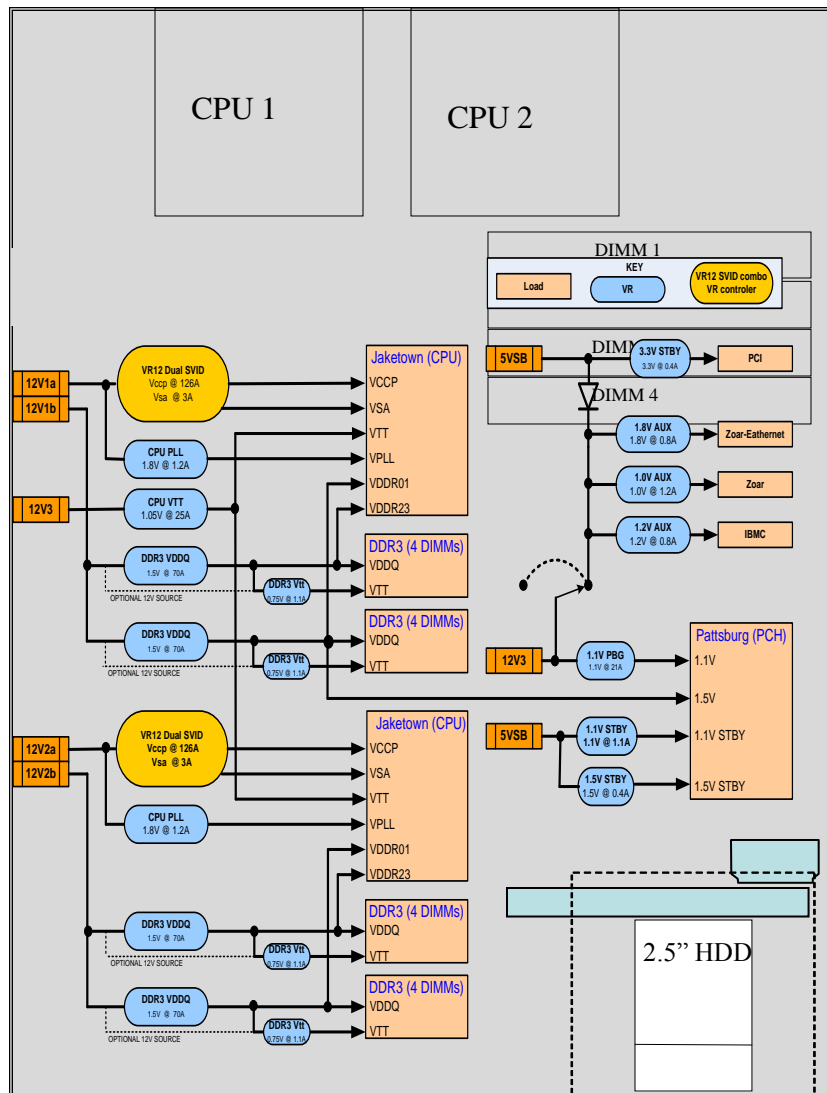
### Server Vcore/DDR

PowerStage56 25V  
Power33 25V PT8+  
Power56 25V PT7/8+  
Power56/33 Dual Cool  
DrMOS Multi-Chip-Module

### Server POLs

PowerStage56/34/33  
Power33 PT7/8  
Power56 PT7/8  
TinyBuck Integrated solution

*Most Efficient Performance as Small as Possible*



LV MOSFET content grows from  
< \$0.50 to > \$5.00 in 2013

# Dual Cool™ vs. DirectFET®

Direct FET

Dual Cool™

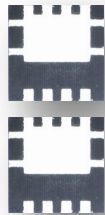
Small Can  
7.2mΩ



Medium Can  
2.4mΩ



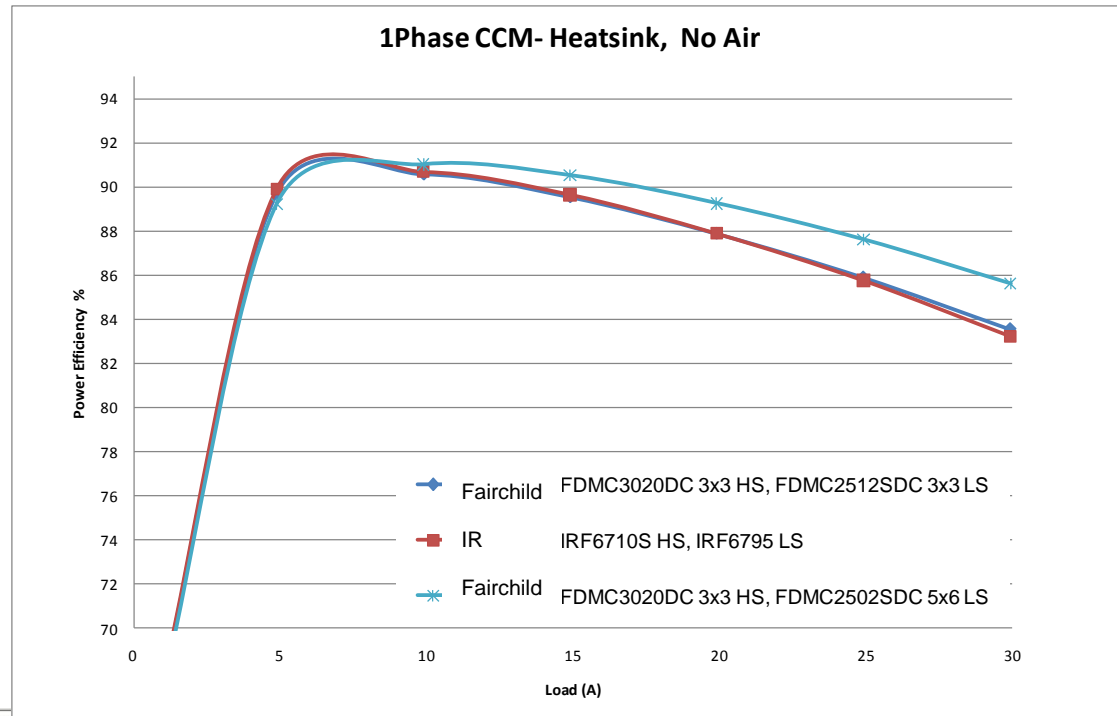
Component Area: 49mm<sup>2</sup>



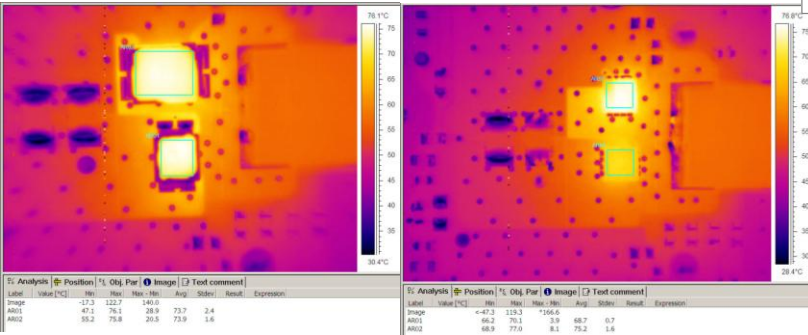
3x3  
7.2mΩ  
3x3  
2.4mΩ

Component Area: 21.5mm<sup>2</sup>

Dual Cool is Smaller



Dual Cool is More Efficient

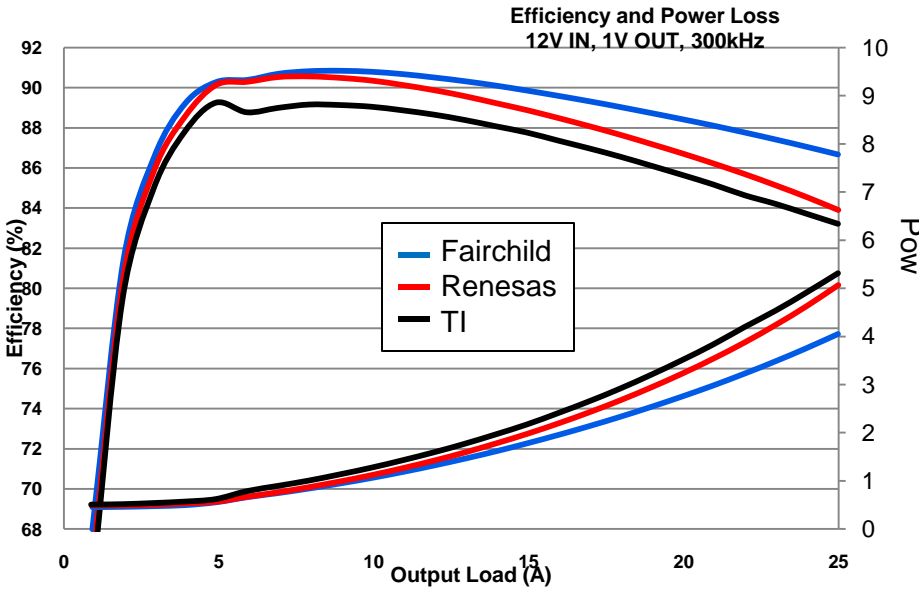


Dual Cool Runs Cooler

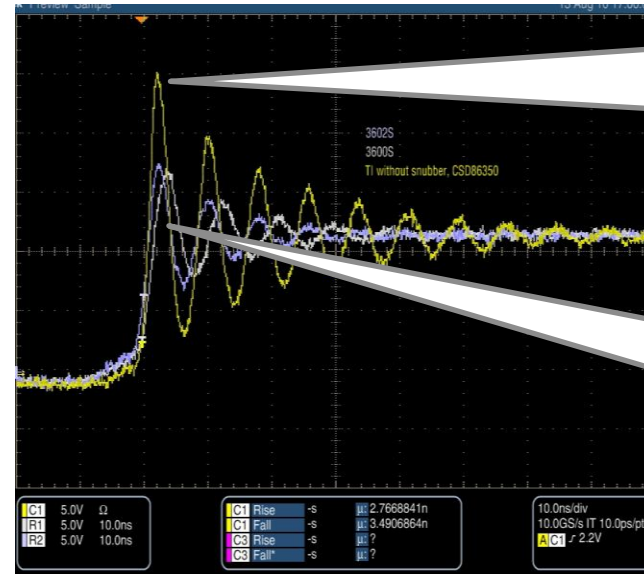
Dual Cool 3x3 and 5x6 ramp in 2011  
Lead applications are performance computing



# PowerStage Clip vs. TI Stacked vs. Renesas



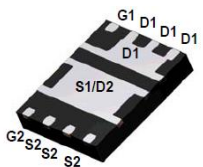
Power Stage is more efficient



Lateral Stacked Silicon process exhibits higher ringing than Shielded-Gate Trench Technology

Fairchild FDMS3600S and FDMS3602S

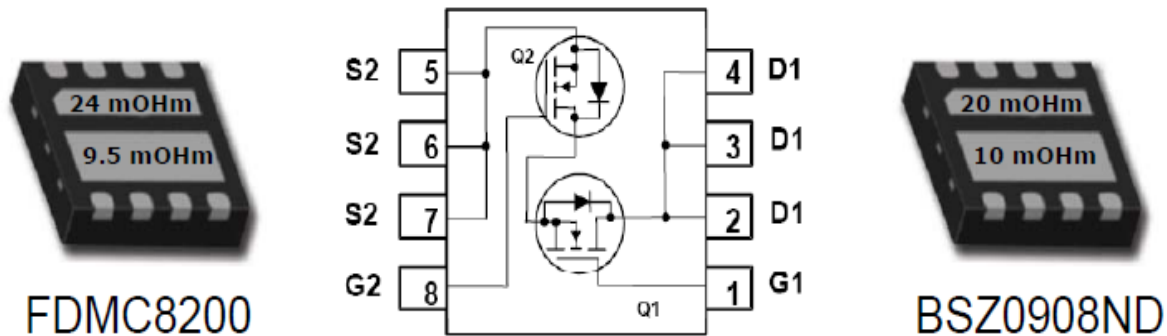
Power Stage low ringing, no snubber



Power Stage runs cooler

Components Tested:  
Fairchild FDMS3600S  
Renesas RJK0214  
TI CDS86350

Standardize Power Packages in order to minimize the amount of “unique” packages going into the Market



Enable end customers to shift into smaller Form Factors

## 25A Control and Synchronous Solutions

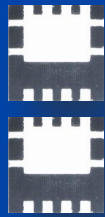
S  
7.2mΩ



M  
2.4mΩ



Component  
Area:49mm<sup>2</sup>



Dual Cool™ 3x3  
7.2mΩ

Dual Cool™ 3x3  
2.4mΩ

Component  
Area:21.5mm<sup>2</sup>

## 30A Control and Synchronous Solutions

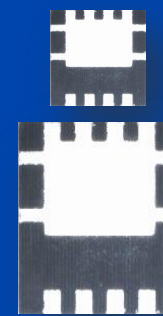
M



M



Component  
Area:62mm<sup>2</sup>



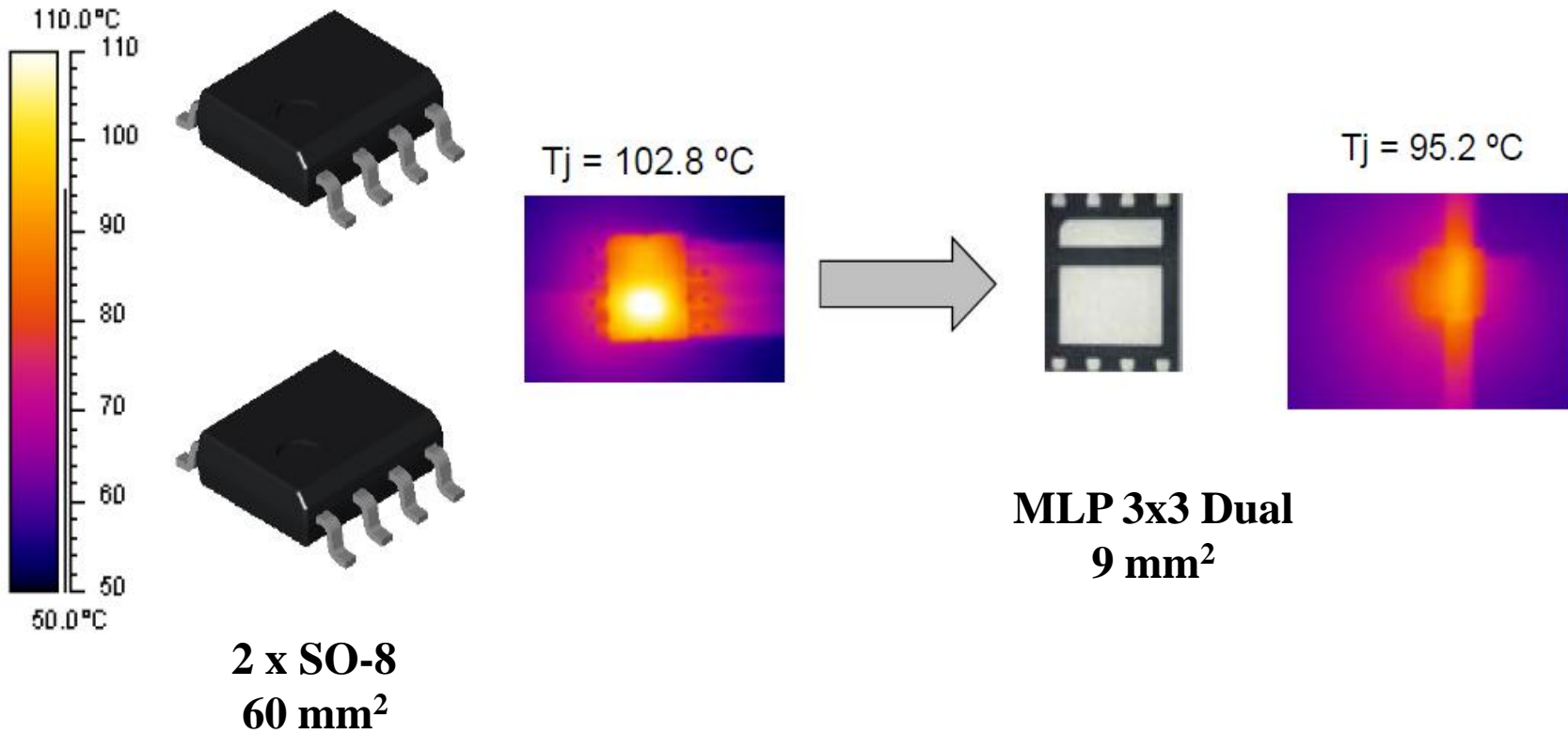
Dual Cool™ 3x3  
7.2mΩ

Dual Cool™ 5x6  
1.2mΩ

Component  
Area:41mm<sup>2</sup>

# Shifting the Form Factor

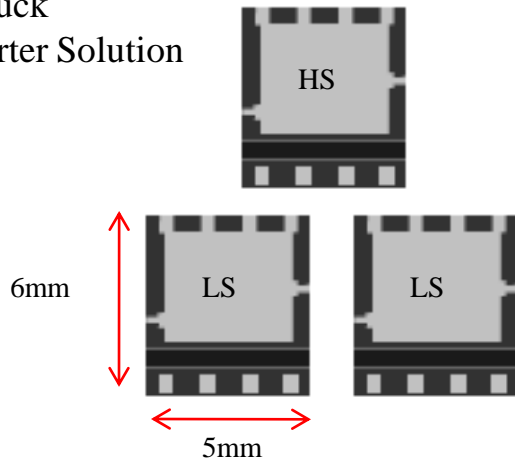
Utility SO-8's to Dual 3x3's



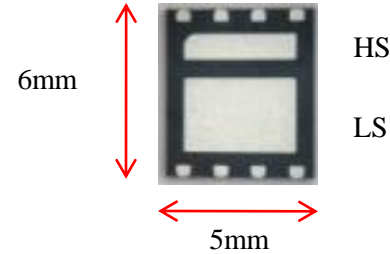
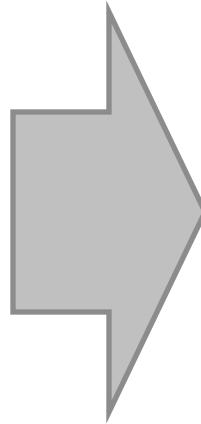
# Fairchild Integrated PowerStage Solutions

## High Side and Low MOSFETs in a Single Package

25A Buck  
Converter Solution

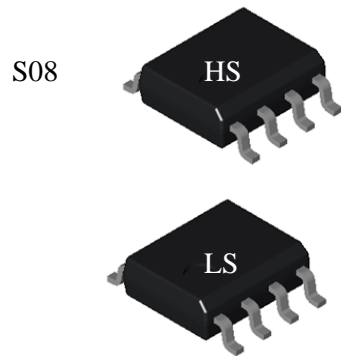


Standard Solution: 90mm<sup>2</sup>

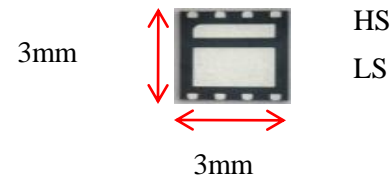


PowerStage Solution: 30mm<sup>2</sup>  
Better Performance, 3X Smaller Footprint

5A Buck  
Converter  
Solution

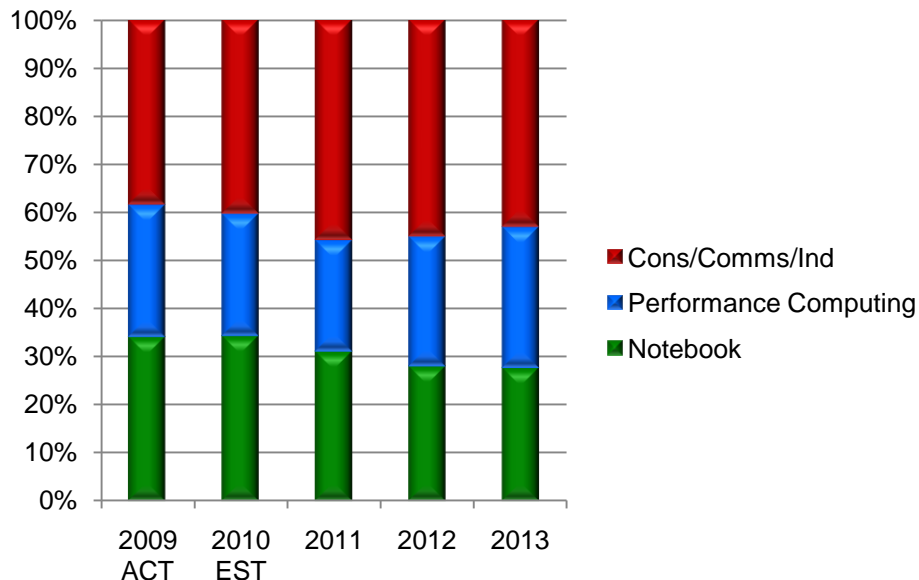


Standard Solution: 60mm<sup>2</sup>

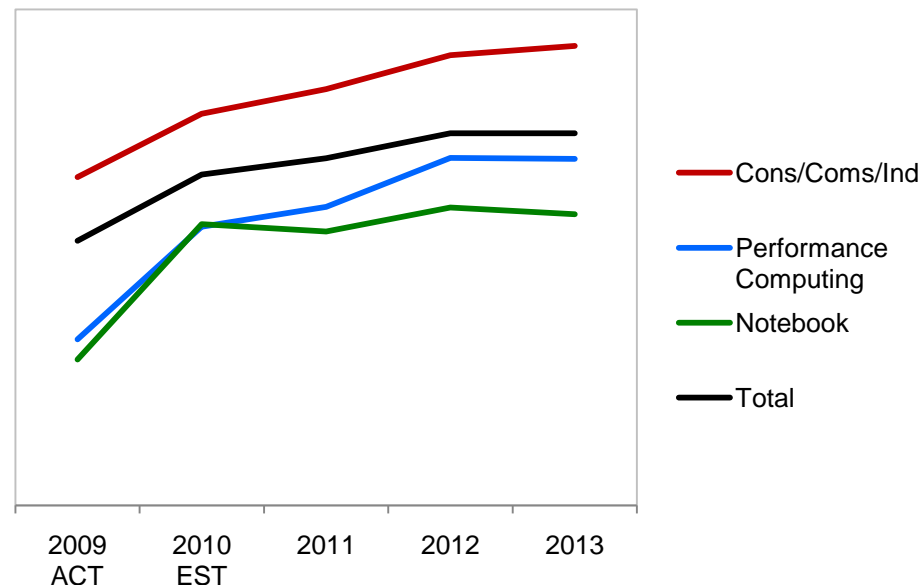


PowerStage Solution: 9mm<sup>2</sup>  
Better Performance, 7X Smaller Footprint

## LV MOSFET Segment Mix



## LV MOSFET GM Projection



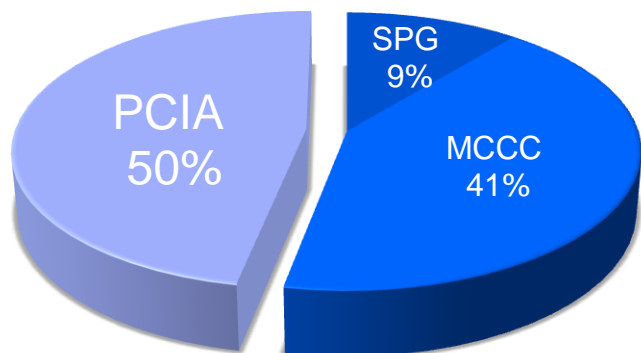
- Gross margin increases over 3 year horizon
- Mix of performance computing, consumer and communications increases

- Efficiency, Power Density, and Size are Valued in Performance Applications of the Communications, Consumer and Computing Segments
- Process and Package Technology are Key to Leading in These Value Dimensions
- Revenue Growth and Margin Expansion that Outperforms the Low Voltage MOSFET Market

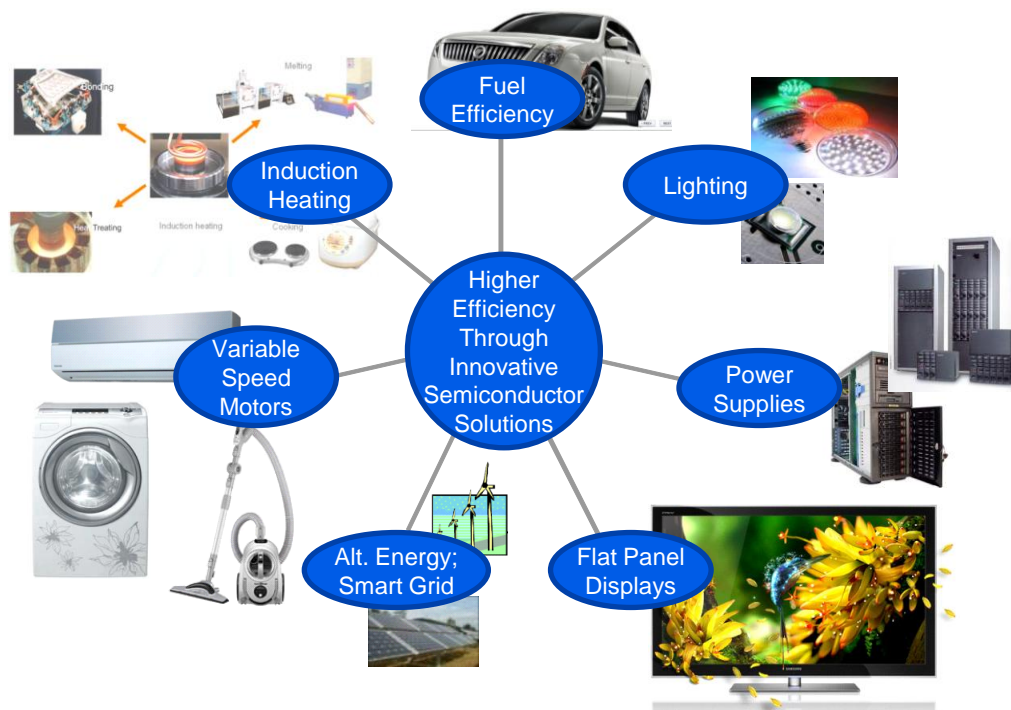
# Power Conversion, Industrial & Auto (PCIA) Group Overview



2011 - Sales



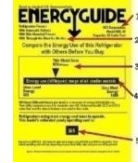
What Drives Our Business?



- Focus on improving the efficiency of customer s' applications
- Provide value through innovative Power Solutions
- Leverage our expertise in Discrete Technology, IC technology and Packaging Technology

# Regulation and Policy Drives our Markets

- Eco-friendly policies are moving the market WW
  - Energy Labeling, Energy Efficiency
  - Adoption of inverters in motor control applications
  - Change from traditional lighting to LED, CFL
  - Regional Examples:
    - EU: EPBD (Energy Performance of Building Directive) : All new buildings should consume zero energy from 2019
    - EU: New Energy Labeling system
      - For Eco-Design: <B grade prohibited for sale after July 2010
      - Only A-20% & A-40% products can be sold after July, 2013/14
    - US: Energy Star strengthening (eg, SEER12 → SEER16 for A/C)
    - China: New Energy Labeling System from June, 2010
    - Japan: ‘Top Runner’ program with APF since 2006
- Clean energy and IT advances create whole new markets
  - Renewable energy; PV Inverter
  - Smart Grid; E-Vehicle Charger and Smart Metering

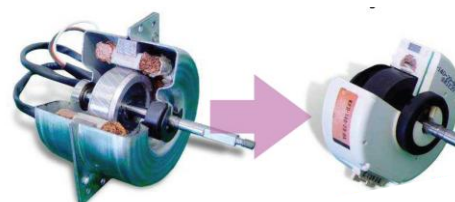


Energy		Washing machine
Manufacturer Model		
More efficient		
A		
B		<b>B</b>
C		
D		
E		
F		
G		
Less efficient		
Energy consumption kWh/cycle		<b>1.75</b>
<small>(Based on standard test results for 60°C cotton cycle) Actual energy consumption will depend on how the appliance is used</small>		
Washing performance		<b>A</b> B C D E F G
<small>A higher G score</small>		
Spin drying performance		<b>A</b> B C D E F G
<small>A higher G score</small>		
Spin speed (rpm)		1400
Capacity (cotton) kg		5.0
Water consumption		5.5
Noise (dB(A) re 1 pW)		5.2
	Washing	7.8
	Spinning	
<small>Further information contained in product brochure</small>		



- Brushless DC (BLDC) motors
  - Improved performance and efficiency
    - Lowers total cost of ownership
  - Reduced size = raw material savings
- Fairchild is well positioned to help our customers capitalize on the move from Mechanical control to Electronic solutions (inverters)
  - Our Smart Power Modules facilitate this transition easing the design requirements
  - Our IC's can simplify the control of these motors

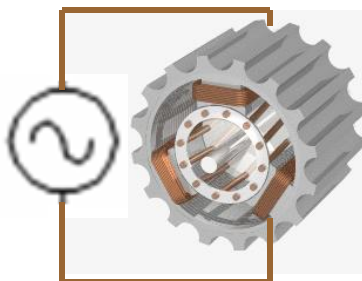
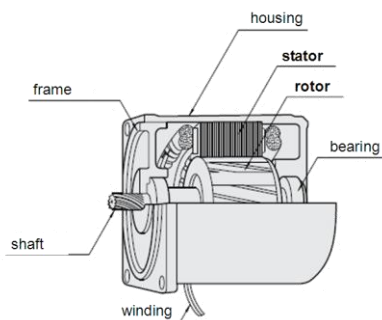
	AC	BLDC
Size/Weight	100%	70% of AC @1HP 55% of AC @2HP
Raw material cost	AC >= BLDC driven by size/weight	
Efficiency	40~45%	70~75%
Speed control	Difficult	Easy & Linear
Accuracy of Speed	3~5%	0.5%
Torque control	Poor	Controllable



# Induction Motor vs. BLDC Motor

## AC Induction motor

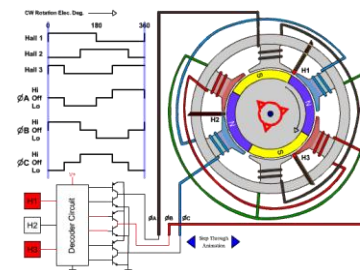
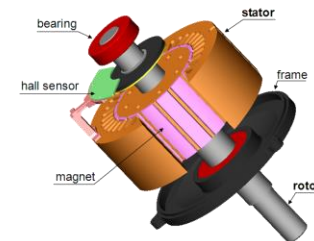
- The induction motor is also known as a *rotating transformer*.
- Power is supplied to the **rotor** by electromagnetic induction.
  - This method of transferring power to the rotor lowers the efficiency.
- The motor turns because of the magnetic force exerted between a stationary electromagnet (stator) and the rotating electromagnet (rotor).
  - The phase difference requires greater current and current losses to achieve power.
- The stator is also powered by AC, the low frequency (50/60 Hz) requires a bigger magnetic-core and more windings to couple the current from stator to rotor.



**VAC: 110V/220V;  
50/60 Hz**

## BLDC motor

- A Brushless DC motor has permanent magnets on the rotor which eliminates the problems of inducing current to the moving armature.
- An IC controller keeps the stator current in phase with the permanent magnets of the rotor
  - This requires less current to turn the motor with the same out force
- Resulting in greater efficiency and smaller size.

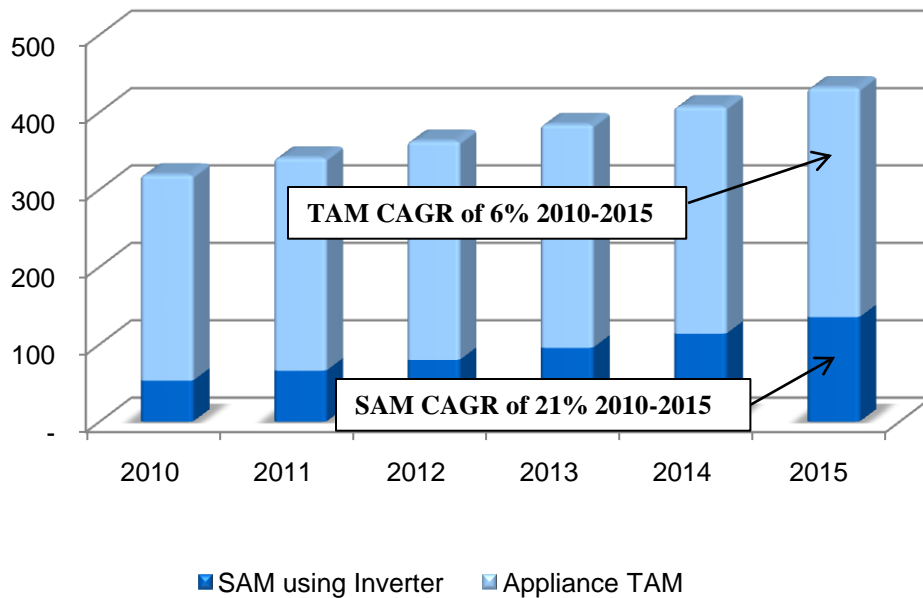


Power loss	Induction Motor	BLDC Motor
Capacitor loss (phase shift)	X	
Controller loss		X
Stator copper loss	X	X
Stator iron loss	X	X
Rotor copper loss	X	
Rotor iron loss	X	
Mechanical loss	X	X
Harmonic voltage & current loss	High	Low

*The speed and efficiency of AC induction motor is restricted by its power source (the line voltage and frequency). The power source of BLDC motor is controlled by semiconductor devices, which can achieve high efficiency at various speed and output load.*

# “Inverterization” Drives SAM Expansion in Appliances

M Units

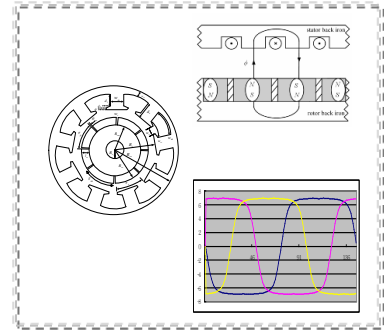
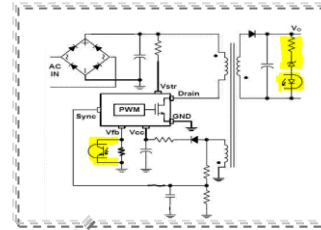
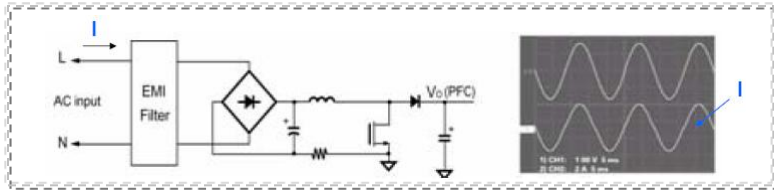


- Washing machines, refrigerators, air conditioners all require inverter driven motors to meet energy savings regulations
- Content: \$2 - \$20/system
- Our SPM solutions:
  - Reduce total system cost
  - Reduce development time
  - Optimize performance
  - Provide higher reliability
  - Reduce board space
- In 2009, SPM revenue remained flat to 2008
- Expect SPM revenue to more than double from 2010 to 2012

**TAM growth of end markets is modest, but Inverter % grows rapidly**

Source; IMS, iSuppli, Fuji Chimera, Darnell, WSTS etc

# Fairchild Solutions for BLDC Motor Control



**AC input** → **Rectifier, PFC**  
(\$0.10-0.25)

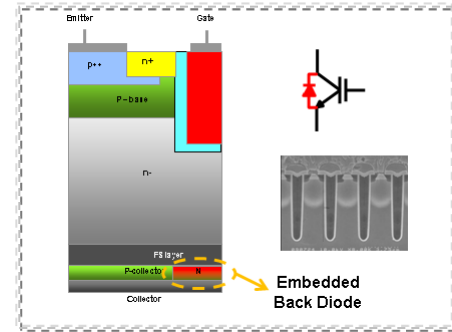
**Power Supply**  
(\$0.30-0.45)

**Motor Control IC**  
(\$0.80-\$1.80)

**Power Module, HVIC, MOSFET, IGBT**  
(\$2.00 - \$20.00)



**BLDC, PMSM Motor**



**Fairchild Shorted Anode Field-Stop IGBT**

**Communication Interface & I/O**

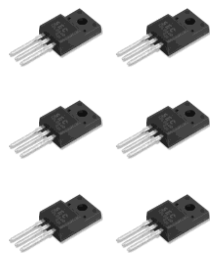
**Fairchild provides all semiconductor products required for driving BLDC Motor**  
**Content \$3.20-\$22.50**

# What is a Smart Power Module (SPM®)?

Expertise to integrate analog, discrete and high voltage technology together

## Integration of discrete components

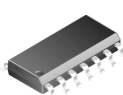
IGBTs/FRFETs



HVICs

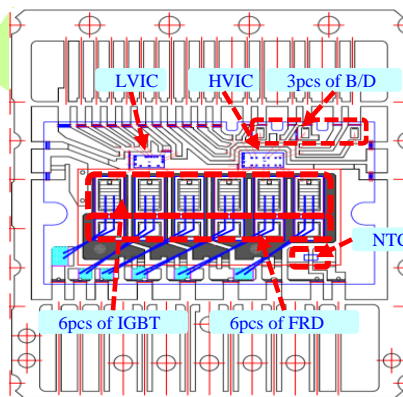
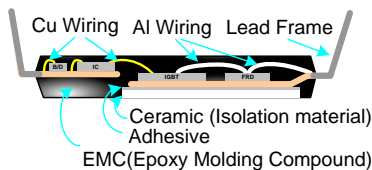


LVIC



Peripherals

- Bootstrap diodes
- NTC thermistor



## Enhances Protection

SPM's built-in HVIC and LVIC with protection circuit

## Optimizes Design

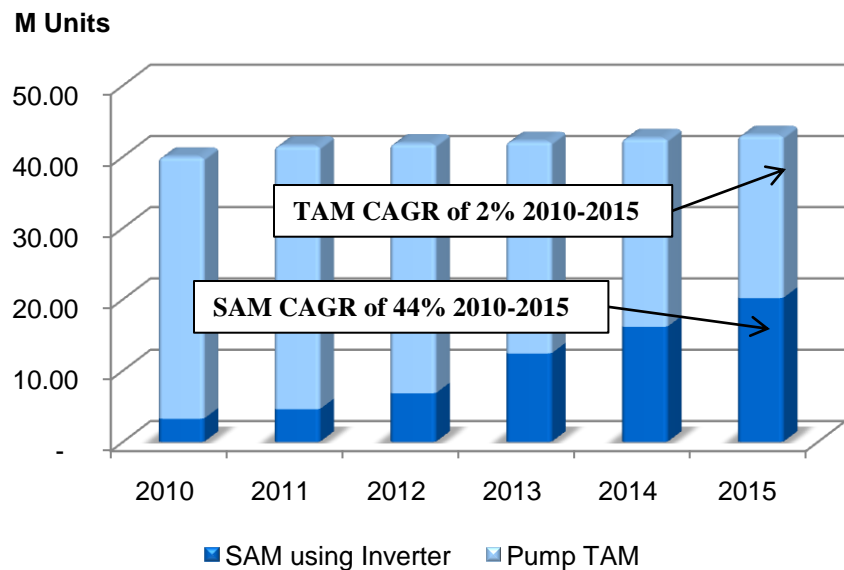
SPM optimizes driving characteristics for built-in power devices

SPM integration, enhances productivity while simplifying manufacturing

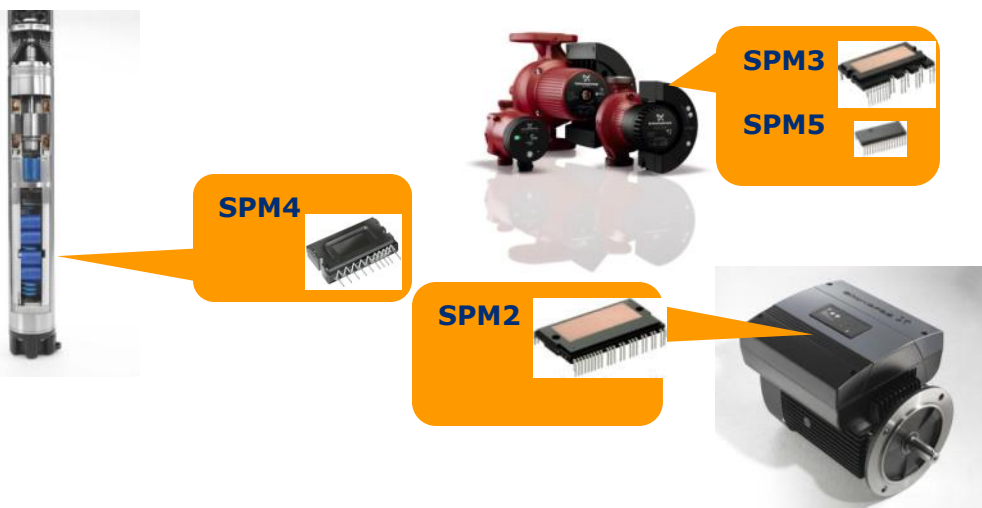
Facilitates Manufacturing

## Summary

- Reduced total system cost
- Reduced development time
- Easy management
- Optimized control flexibility
- Higher reliability
- Board space savings

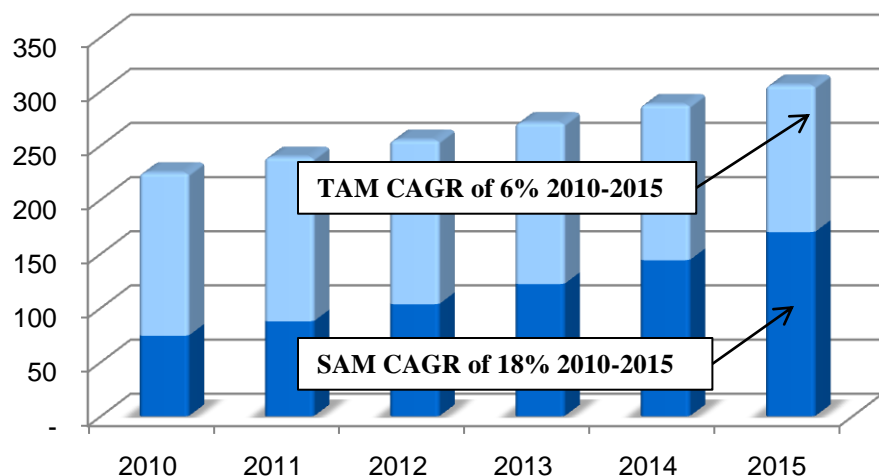


- Small overall pump growth but regulations in EU will push adoption of BLDC inverter
- Working with many of the world's leading customers
- Broad portfolio of SPM products to address many needs
  - SPM5 → Circulation pump
  - SPM4 → 2ø General pump
  - 1200V SPM2 → 3ø General pump
- Content \$
  - Circulation pump : \$2.5 ~ \$5.0
  - 2ø General pump : \$18 ~ \$36
  - 3ø General pump : \$27 ~ \$50





M Units



■ SAM using Inverter ■ Fan TAM



- In fans, like appliances, BLDC motor usage is rapidly outpacing traditional AC motors
- We provide both the IC control and power train
- Our SPM solutions outperform IGBT based one-chip solutions
  - MOSFET has superior efficiency in major fan motor area
  - MOSFET has superior ruggedness (10 times longer short circuit time)
- Our IC solutions provide customers with a simple way to implement control
- BOM\$ (40W ~ 70W fan motor)
  - Module(SPM5) \$1.6 ~ \$3.0
  - Motor control IC \$0.7 ~ \$ 1.4

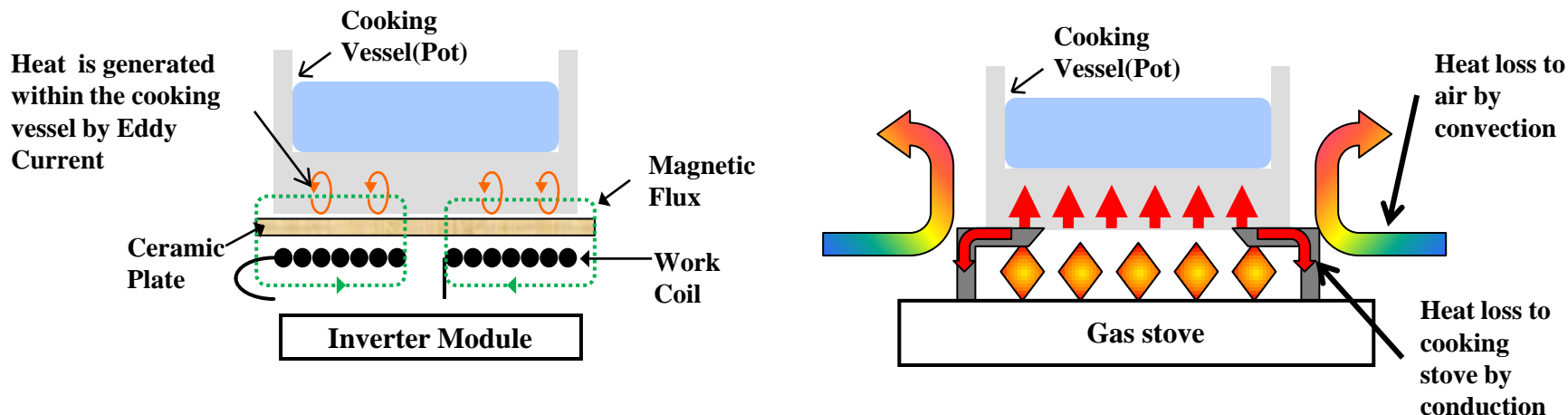
# Application: Induction Heating and Microwave Oven

- The global penetration rate of inverter based Microwave Ovens (MWO) was estimated to be just over 10% in 2005
  - Adoption of inverter technology for MWO will improve the efficiency and the performance of MWO
  - The share of inverter based MWO is projected to grow to 40 ~ 50%
- Chinese manufactures start to design Induction Heated (IH) rice cookers as the demand of multifunction capabilities increase
- Energy Efficiency labeling program in Asia will also drive the market growth of IH rice cooker and inverter based MWO



# Working Principle of IH Cooker

## ✓ Electromagnetic Induction + Skin Effect + Heat generation in cooking vessel



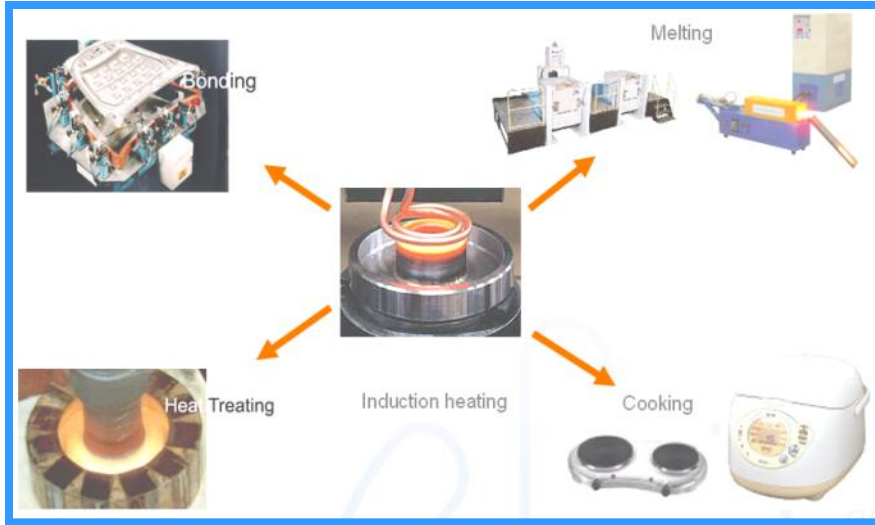
## ✓ Conventional Heating Methods

*Cooking vessel is heated through thermal conduction or radiation from heat source including combustion of gas, hotplate with heating coil and thermal radiation from Halogen. So there is some amount of thermal energy loss due to conduction or convection during thermal energy transfer from heating source.*

## ✓ Induction Heating Methods

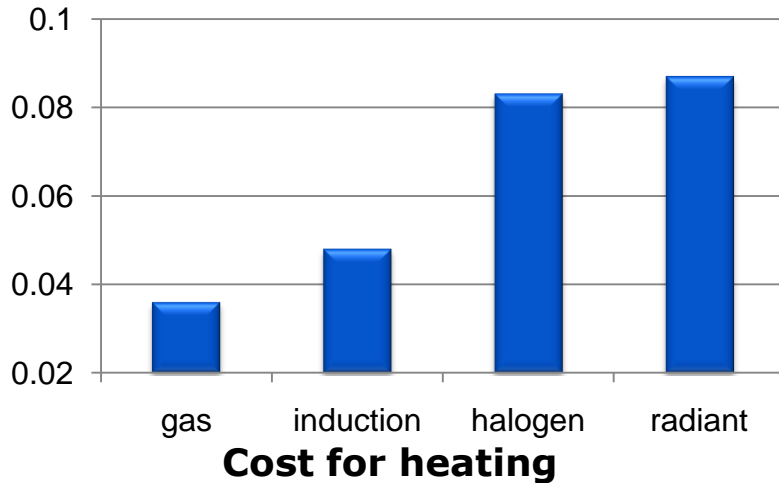
*Only electromagnetic energy is transferred to cooking vessel from Induction cooker, so there is no thermal energy transfer resulting in no thermal energy loss during the process. All the transferred electromagnetic energy is used to heat the cooking vessel itself.*

# Induction Heating Energy Savings

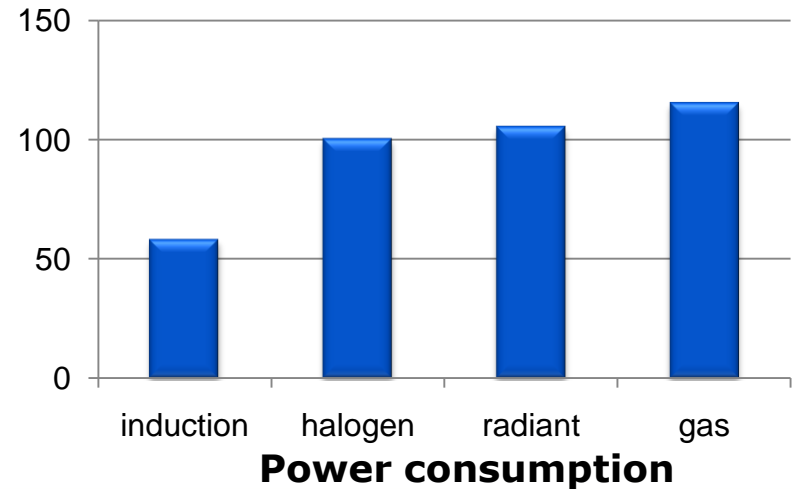


Cooking Method	Efficiency	
Induction	90%	
Halogen	58%	
Electric	47%	
Gas	40%	

Cost of heating ½ litre of water from 20° C to 95° C

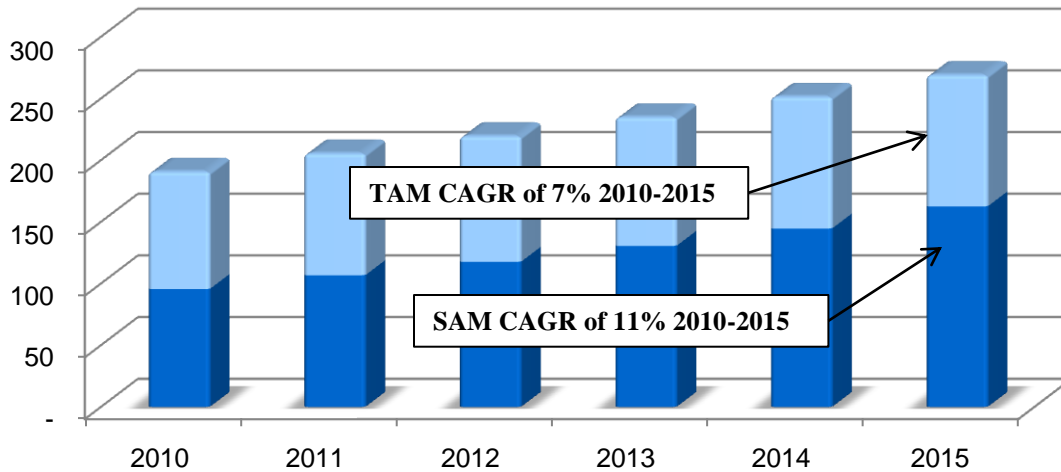


Power Consumption for heating ½ litre of water from 20° C to 95° C

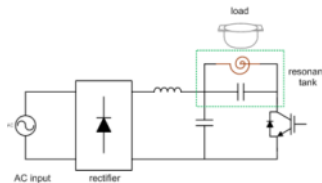
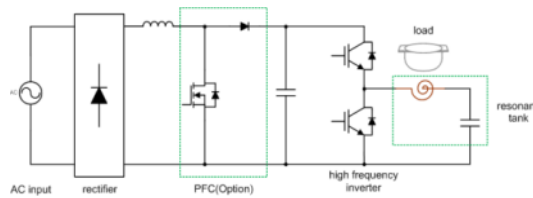


# Application: Induction Heating & Microwave Oven

M Units



■ SAM using Inverter ■ TAM

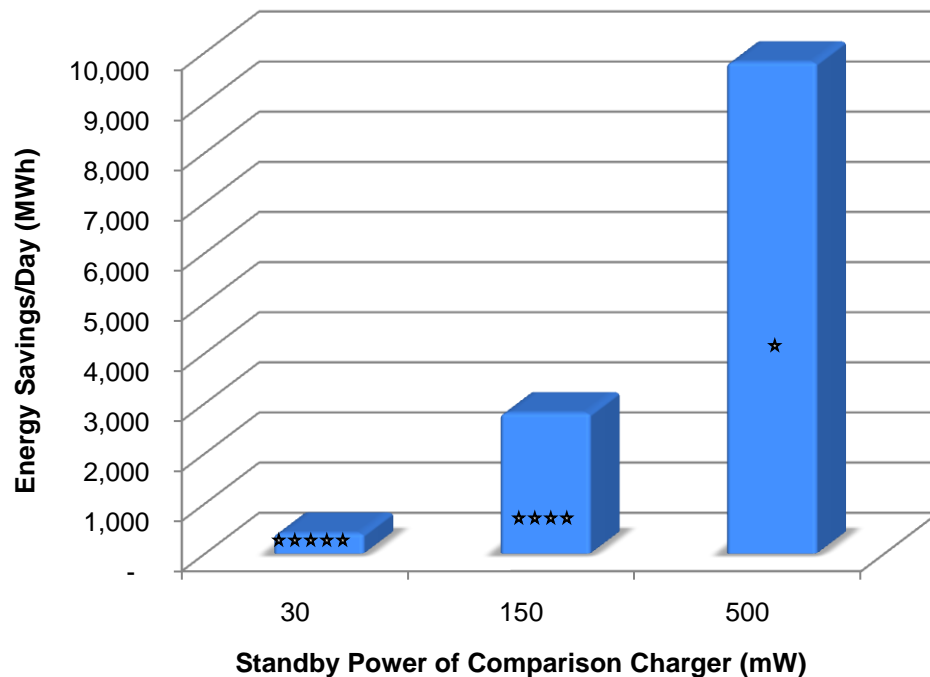


- Energy Savings and increased functionality driving adoption of inverters in cooking applications
  - Particularly strong in Asia and EU
- FCS provide a broad family of IGBT's and Drivers for these applications
- Content:
  - IH cooktop:
    - 8 x 600V IGBT or 4 x 1200V IGBT
    - \$3.70 ~ \$7.60/system
  - IH tabletop:
    - 1200V IGBT,
    - \$0.60 ~ \$0.95/system
  - MWO :
    - 2 x 600V IGBT or 1-2 1000V IGBT,
    - \$0.85~ \$1.6/system
  - Rice Cooker :
    - 1000V IGBT or 1200V IGBT,
    - \$0.85 ~ \$1.90/system
- Key Customers Include: BSH Balay, Fagor, Midea, Fushibao, Panasonic, Hitachi, Cuckoo

## Why is this important?

- Current specs for cell phone chargers require <500mW under standby conditions
- Most chargers have standby power in the range of 30-150mW
- FCS has launched a <10mW solution
- Typical chargers are in standby >20 hours every day
- More than 1B chargers are sold annually

## Potential Energy Savings with conversion to FCS IC

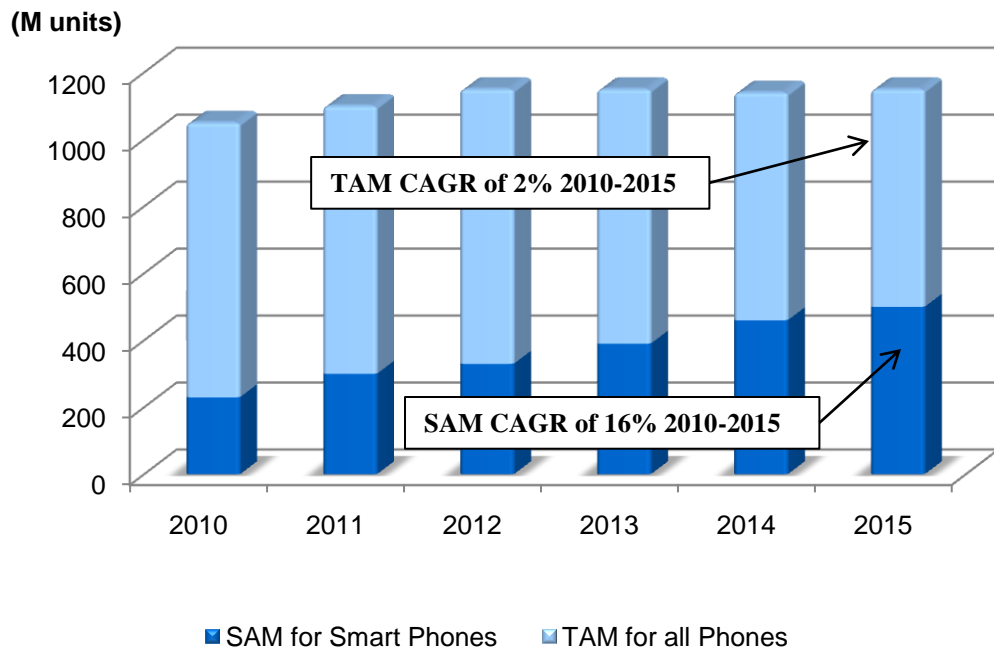


### Energy Rating System :



*Most chargers are rated 4-stars now*

# Smart Phone Chargers



- Smart Phones require increased power to drive additional performance
  - 5W+ needed from charger
- FCS controllers provide a unique feature set:
  - Best-in-class standby power
  - Accurate current and voltage regulation
  - Reduced component count
- Content up to \$0.40 per charger



# Application: High Efficiency Computing and Consumer - World Class Standby Power

Std by of LCD TV/ LED TV

LCD/LED Monitor



NB



Green Mode PWM - Best standby power performance <math><100\text{mW}</math> @ <math>25\text{mW}</math>

PowerSwitch which meets PC 2013 EuP <math><0.5\text{W}</math> @ <math>0.25\text{W}</math> w/o external circuitry

Green Mode PWM – best combination of peak power and standby <math><30\text{mW}</math> @ no load

Std by of PC



Green Mode PWM – only design for NPB adapter w/ <math><30\text{mW}</math> @ no load



Printer

Broad Portfolio of patents filed to secure our power saving leading position



Strong Market Acceptance of our <75W solutions driven by our low load power and our high efficiency



Adoption drivers:

- Power Saving
- Peak power management ( printer )
- Rich functionality
- Service support

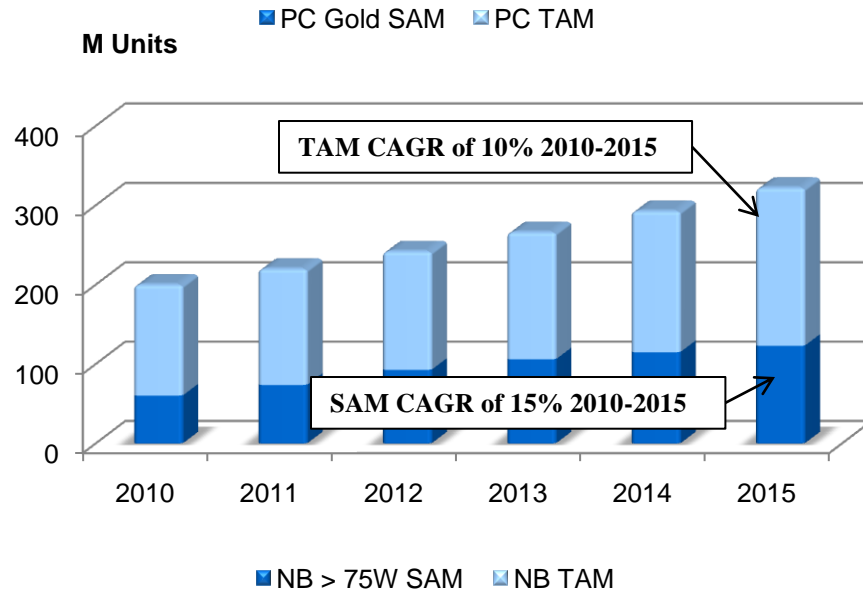
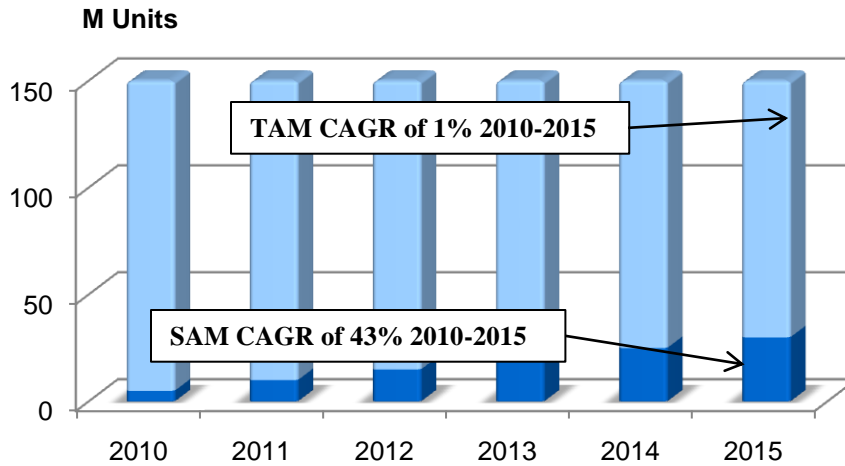
Key Design in :

- NB: Acer, Dell, HP, Lenovo, Asus
- LCD Monitor: AOC, Innolux, LG
- Printer: HP, Samsung
- Game: Wii



**Content ranges from \$0.16 - \$1.1**

# Application: High efficiency DT/NB Power Supplies



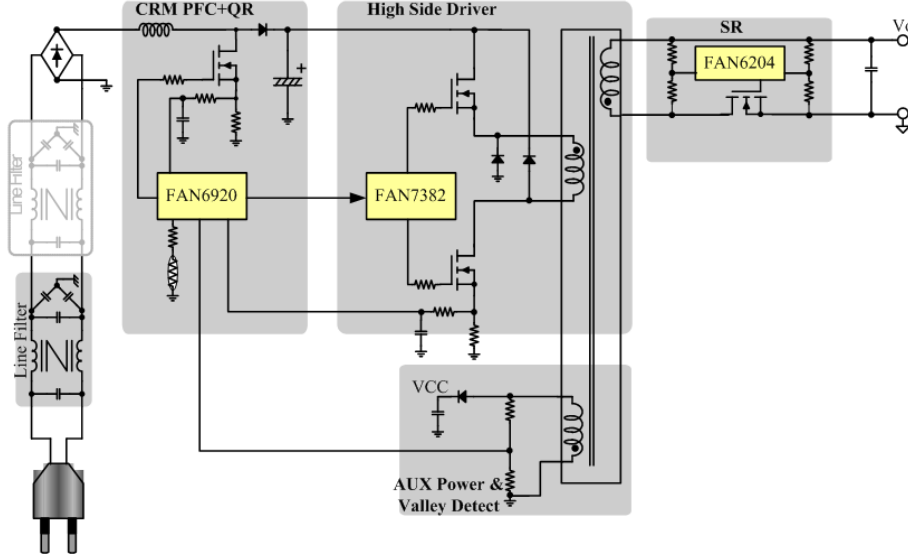
- Computing market continues to drive towards higher efficiency at full load while minimizing power at low loads
- FCS controllers provide a unique feature set:
  - Leading Patented Power Saving Technology
  - Higher efficiency
  - Reduced component count
  - Easy to design
- Content:
  - \$1.50-\$2.00 per PC
  - \$0.65-\$1.20 per NB adapter



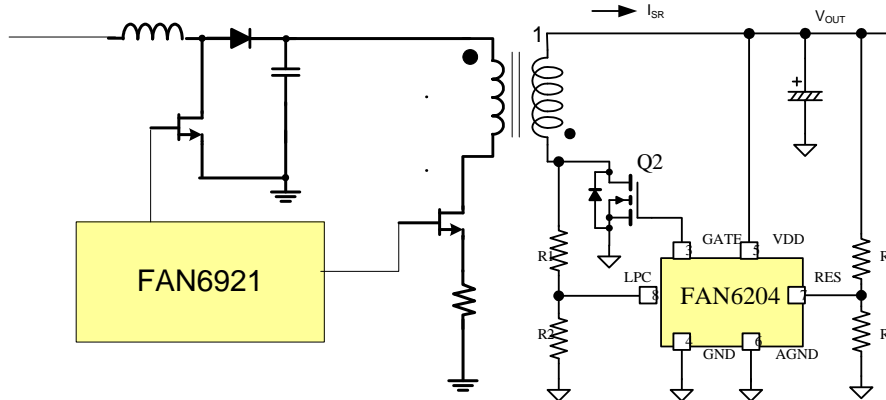
## PFC + QR combo

## High Side Driver

## Syn. Rectifier Controller



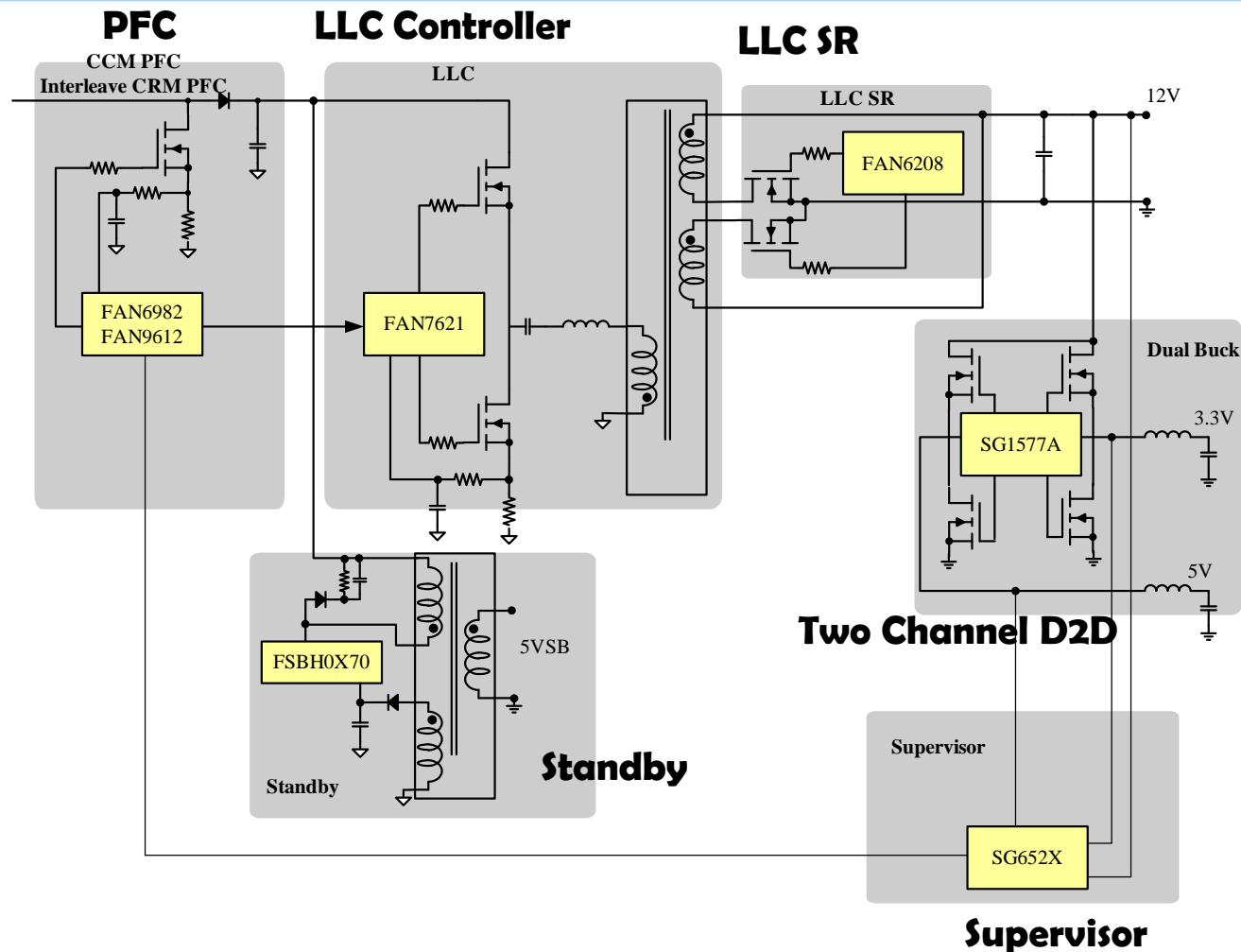
- Content: \$0.9~\$1.2
- Next gen of NB adaptor solutions to meet **92%+** efficiency
- High integration provides cost effective design
- Wider power range 75W~250W
- Allows for very slim design



## PFC + QR combo

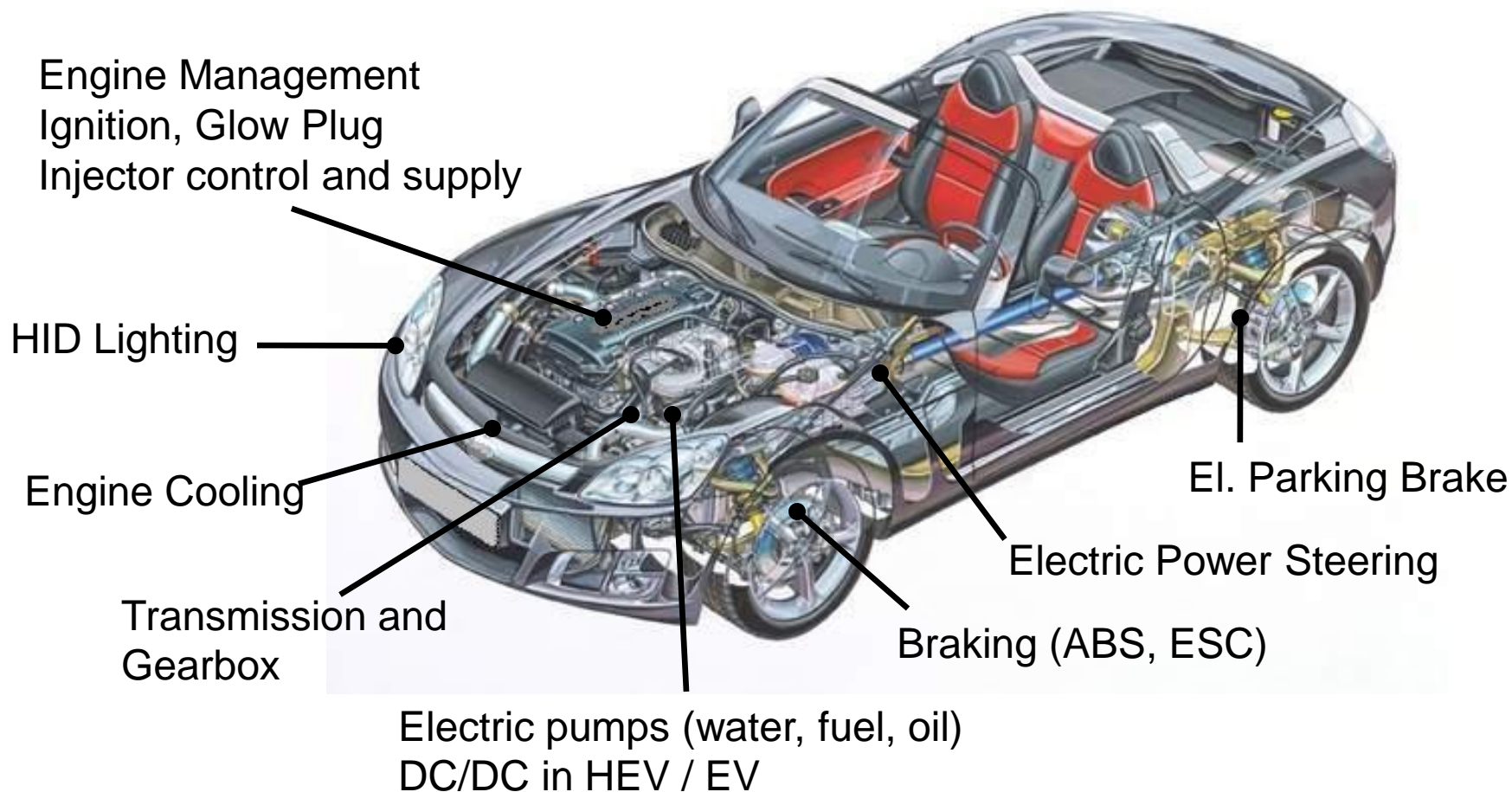
## Syn. Rectifier Controller

- Content: \$0.65~\$0.8
- Current mainstream solution for NB adaptors
- Meets 90%+ efficiency, high integration , 75W~150W



- Content: \$1.5~ \$2.0
- Multiple sockets necessary to meet High efficiency necessary for 80+ gold
- Low standby power to meet 2013 EuP lot 6 regulation: <math><0.5W@0.2W</math>

## Robust Auto Solutions for energy efficient applications



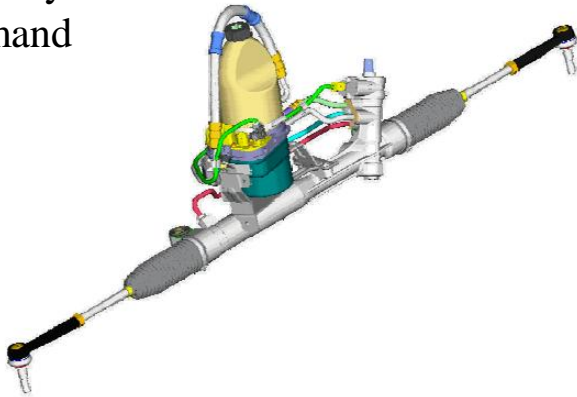
# Power Steering Types

## (HPS) Purely hydraulic power steering

Pump mechanically attached to the engine.  
Pump power output proportional to RPM  
Pump must satisfy assistance at min RPM, thus at high RPM energy is wasted.

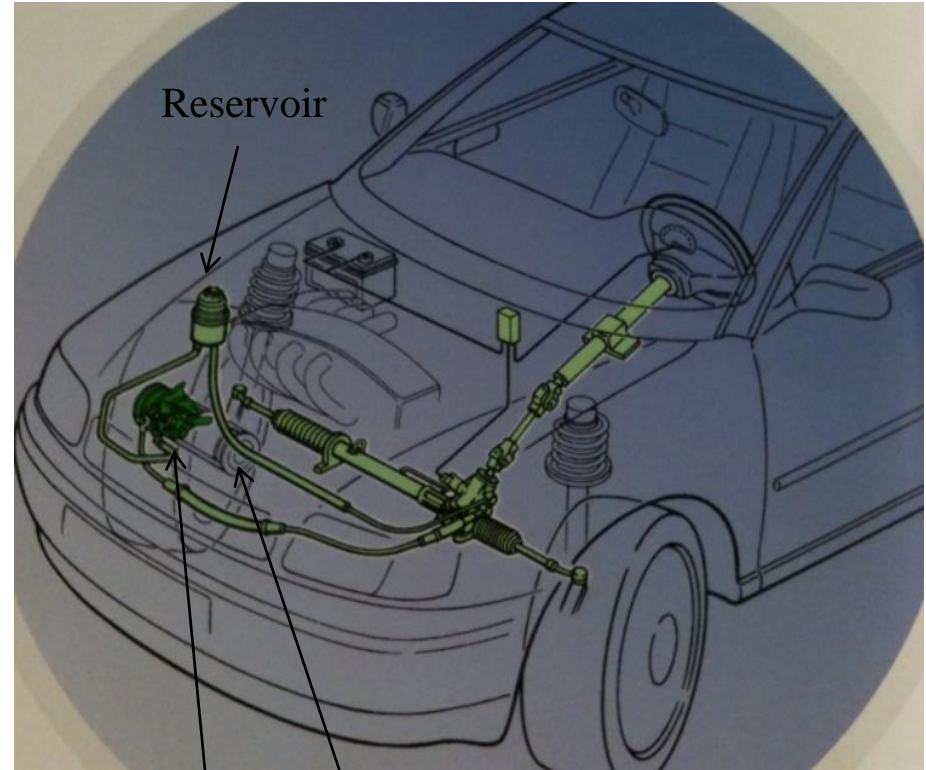
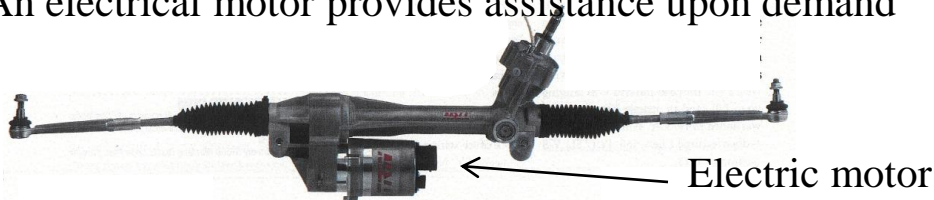
## EHPS

Pump mounted locally  
Pump powered by an electrical motor  
only upon demand



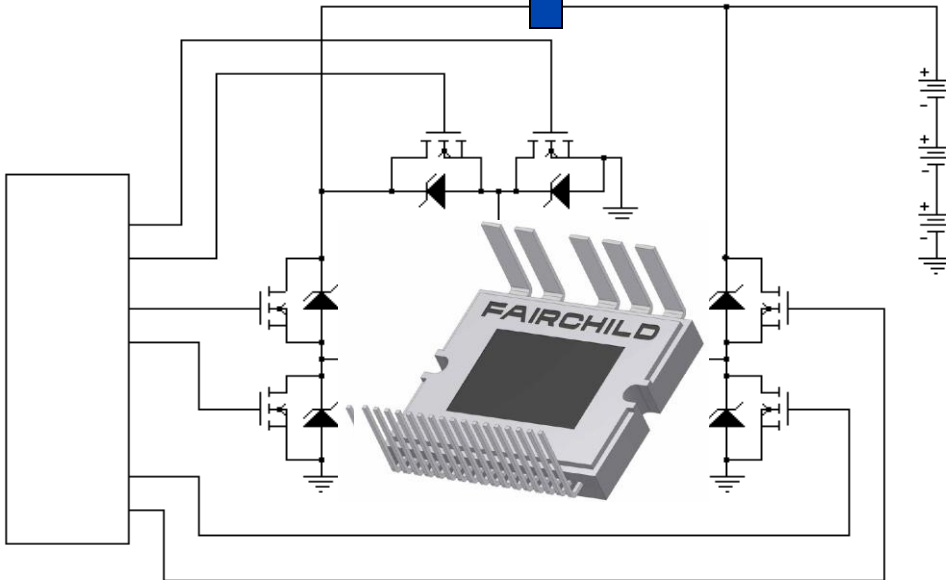
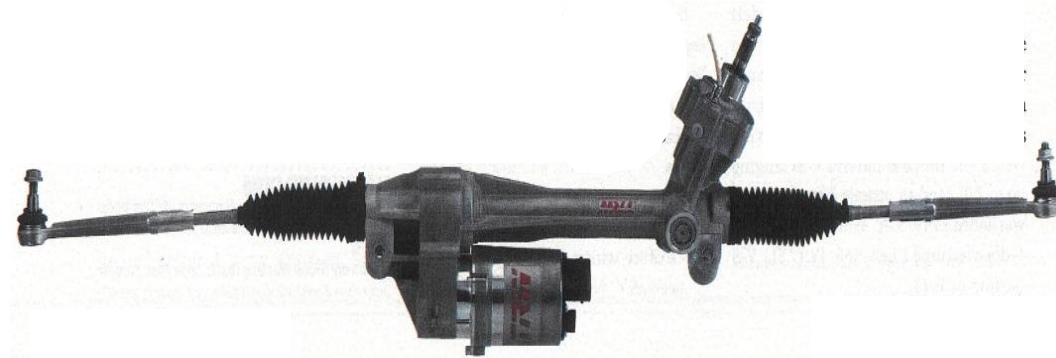
## EPS

No Pump, no hydraulic fluid.  
An electrical motor provides assistance upon demand



Pulleys and belt from engine crankshaft power the pump  
Pump for HPS has to be beside the engine, thus requiring long hoses.

# Application: Automotive Power Modules for Electric Power Steering



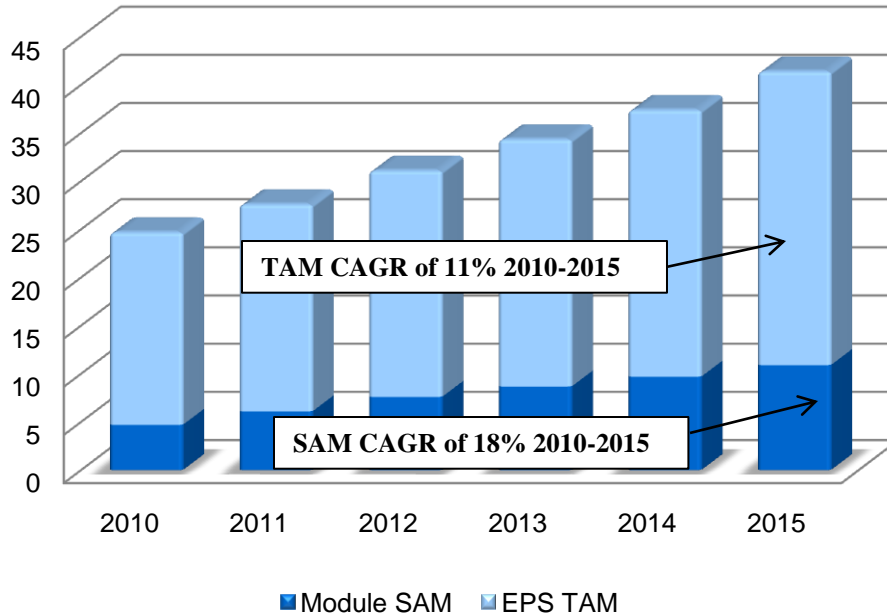
- EPS/EHPS:
  - Saves fuel (up to 7%)
  - Improves performance
  - Simplifies mechanical design

Increasingly adopted in new vehicles - conventional as well as EV/Hybrid
- APM Modules help to:
  - Optimize power output
  - Improve reliability
  - Ease design through integration of components
  - Ease installation due to compact design



# Application: Automotive Power Modules for EPS

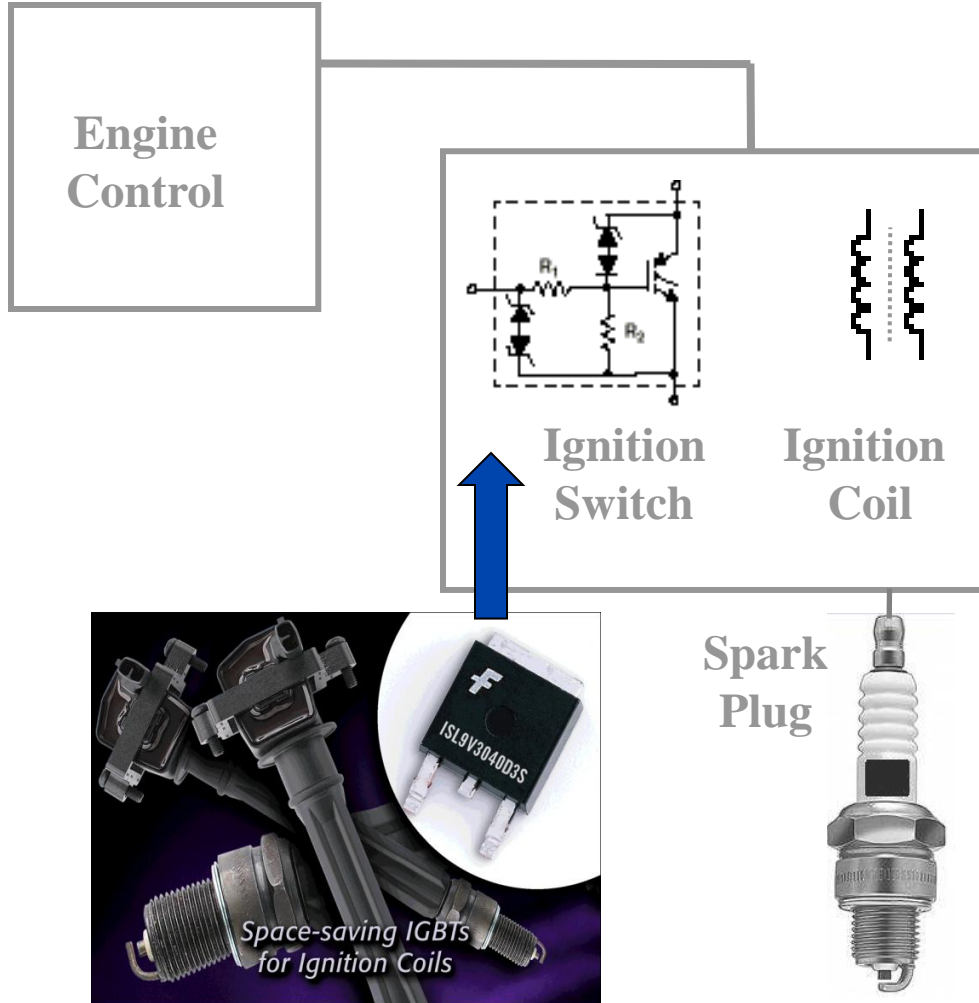
M Units



- \$12 to \$25 per system / vehicle
- **2009:** Fairchild sold modules for 300k vehicles
- **2010:** Modules for 900k vehicles will be sold by end of the year
  - *3 platforms and 5 car models*
- **Outlook 2012:** 2-3M Fairchild APM modules
  - *9 platforms with 20 car models will be in production by end 2012*
- Other hydraulic systems are all potential opportunities



# Application: Automotive IGBTs for Ignition Systems

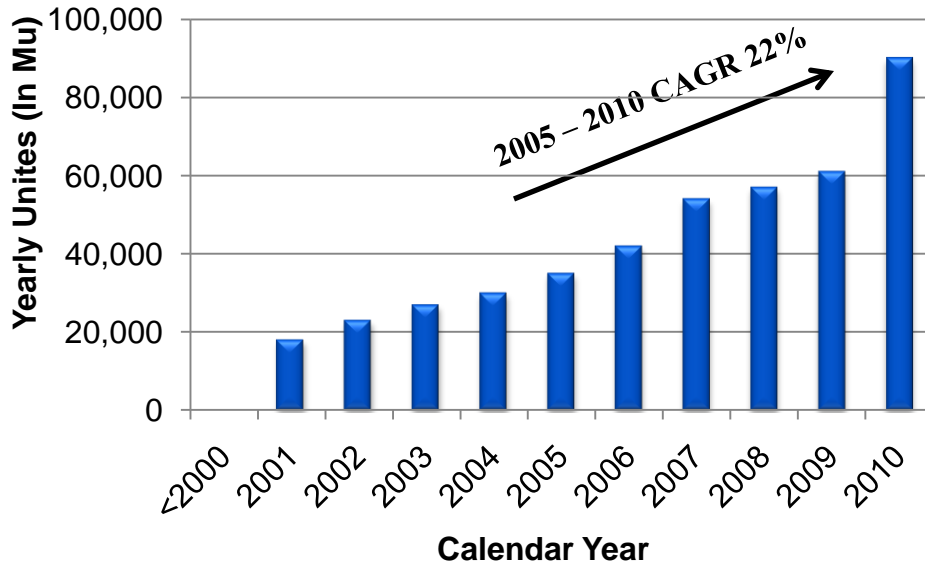


- **Fairchild supports the full portfolio of IGBTs for Ignition systems**
- **Fairchild Ignition IGBT products:**
  - Improve thermal management in a reduced footprint
  - Facilitate high system reliability
  - Best in class energy handling capability
  - Simplify design
  - Improve fuel efficiency

**Fairchild is the number one supplier across all ignition architectures, from “Coil on Plug” to advanced multispark “Switch on Plug” systems**

# Application: Automotive IGBTs for Ignition Systems

Ignition IGBT Sales History



- **Strong growth:**

- **2009:** 61Mu/year (Y-on-Y growth)
- **Forecast 2010:** 94Mu/year
- **2012:** targeting > 110Mu/year

- **Content:** \$2 to \$10 for a 4 cylinder gasoline vehicle

- **Further growth will be fueled by:**

- New technologies allowing for reduced die size hence smaller packages
- New Smart Ignition and Ignitor Module products



**EcoSPARK®**  
delivers  
benchmark  
energy  
capability per  
unit area

- PCIA are in a “Target Rich” environment
  - While many of our end markets have single digit TAM growth...
  - ...Energy efficiency is driving double digit SAM growth.
- Our technology should allow us to take significant market positions
  - We have a unique combination of IC, Discrete and Packaging capabilities to create value added products

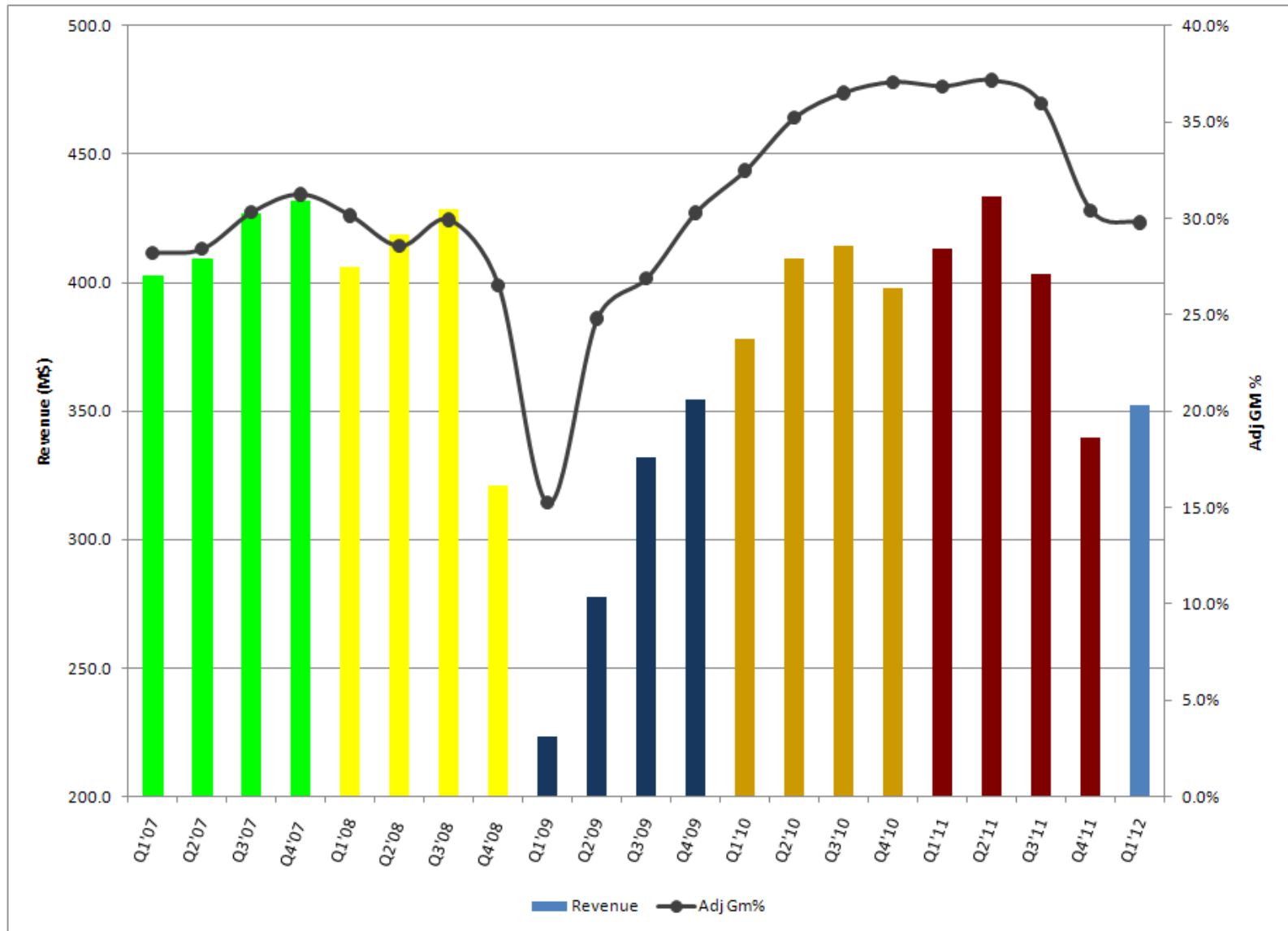
# Finance Overview

## Highlights of the Quarter – Q1 2012

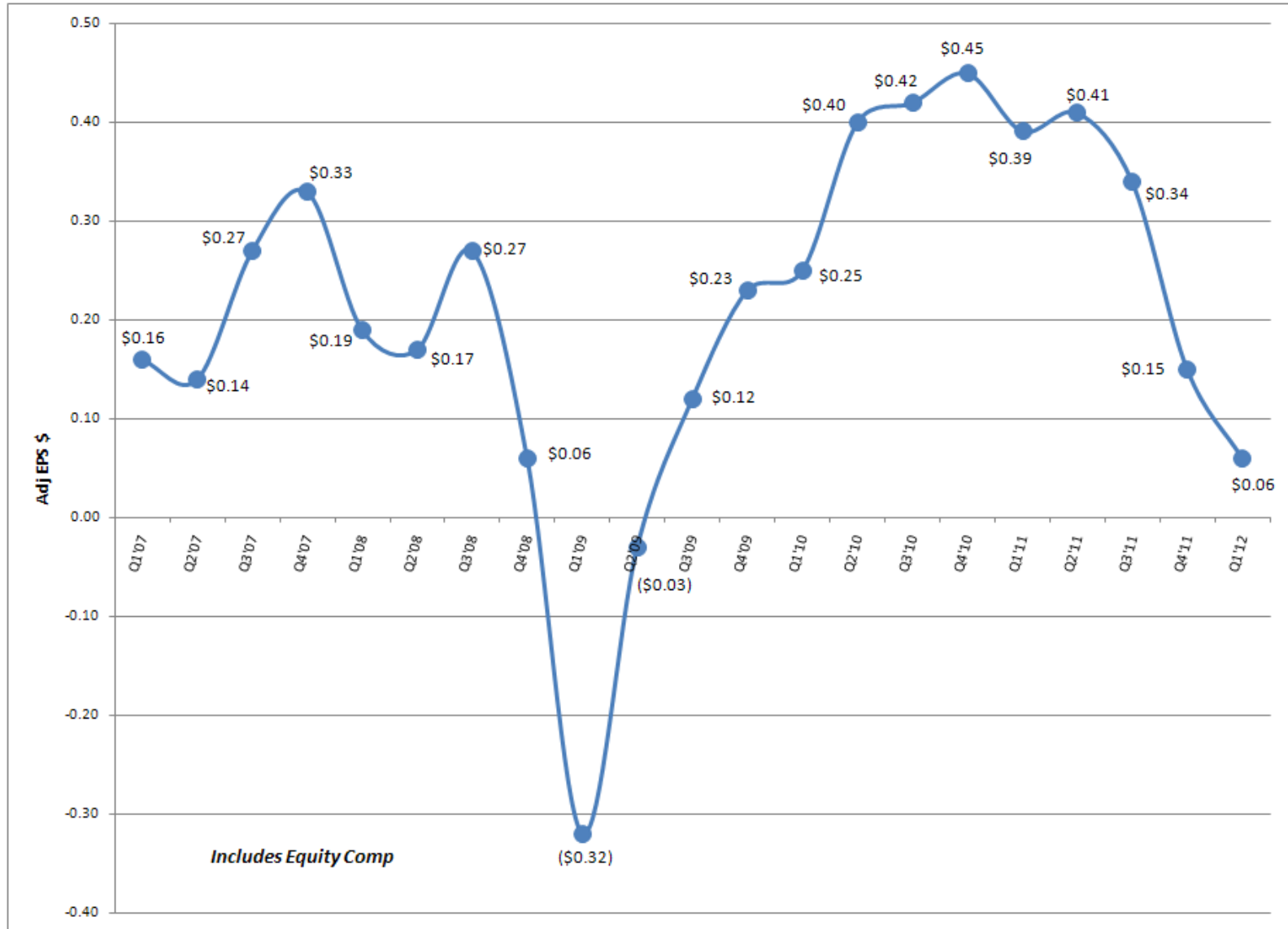
- Sales were \$352m, up 4% QoQ and down 15% YoY...growth due primarily to extra week in Q1 in addition to a solid recovery in optoelectronics and strong sales for power conversion products
- PCIA sales were up 7% QoQ due to opto recovery and 11% QoQ sales growth for power conversion business. Disruptions from the floods in Thailand reduced total company sales in Q1 by about a 1%. Supply issues resolved in January
- MCCC sales were up 3% QoQ in what is seasonally the weakest quarter in the year
- Adjusted gross margin was 29.8%, down 60 bps QoQ...GM decreased due to lower factory loadings during holiday shutdowns in late Q4 and early Q1. GM also reduced by roughly a 1.5 percentage point impact from 8” fab start costs
- Distribution POS increased 4% QoQ which resulted in a modest reduction in channel inventory dollars and weeks
- Reduced internal inventory by 2% in dollars resulting in 85 DOI...this is a comfortable level as we enter peak demand period
- Pricing was down about 3% QoQ...this is worse than typical due to annual negotiations and short term pricing deals on commodity products to improve factory loadings in the 1H. Expect pricing to return to normal range in Q2
- Utilization increased to roughly mid-80’s% as we began ramping the factories to support higher Q2 sales...lead times are at normal levels with mobile analog the longest

- Sales expected to be \$360 – 380m...current scheduled backlog covers the low end of this range
- Gross margin expected to be 32.5 – 34.0% due primarily to higher factory loadings and better product mix
- R&D and SG&A forecast at \$96 - 99m
- Adjusted tax rate forecast to be between 15% +/-3%

# Adjusted Revenue & GM%



# Adjusted EPS



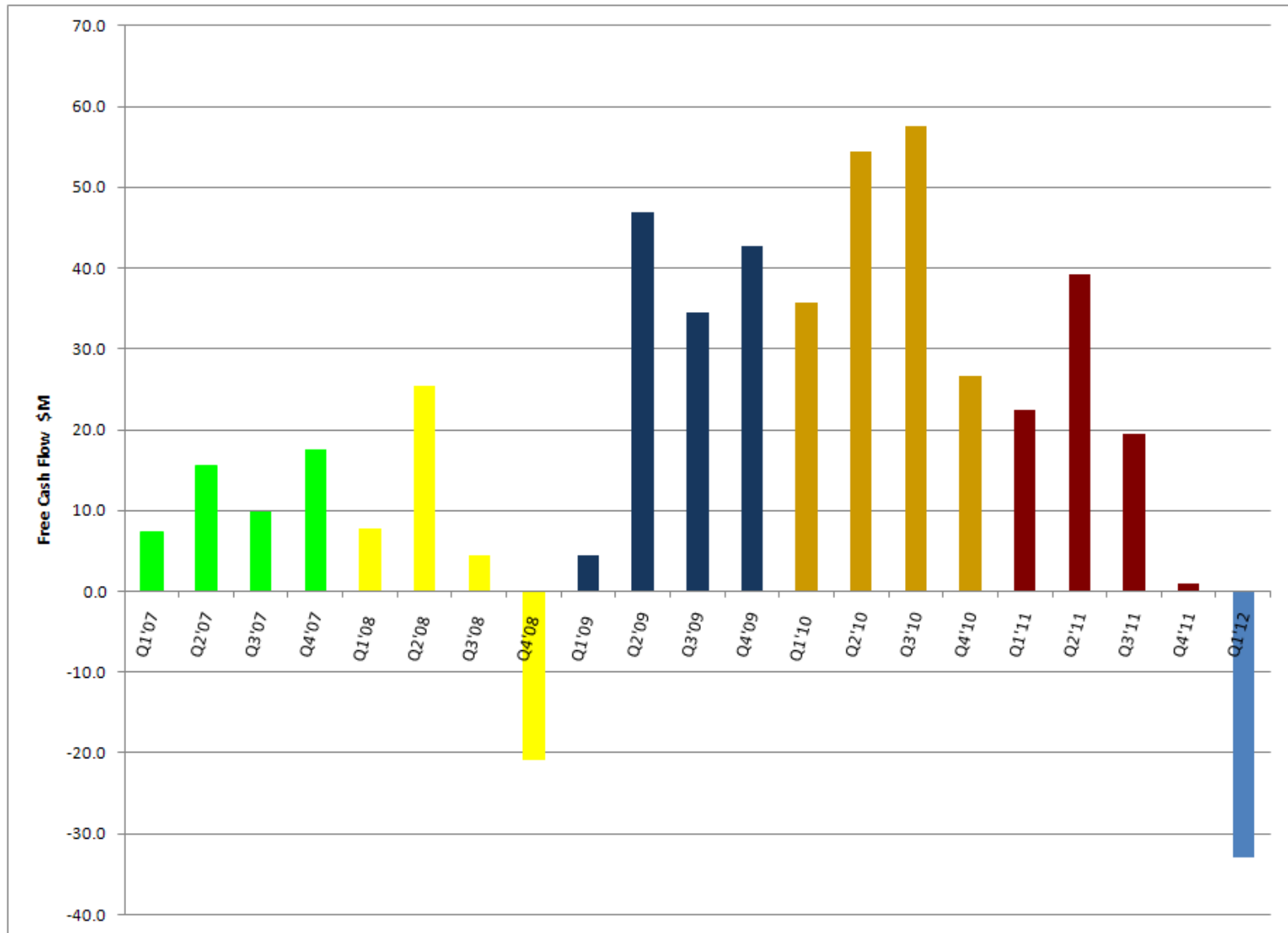


# Balance Sheet Improvement

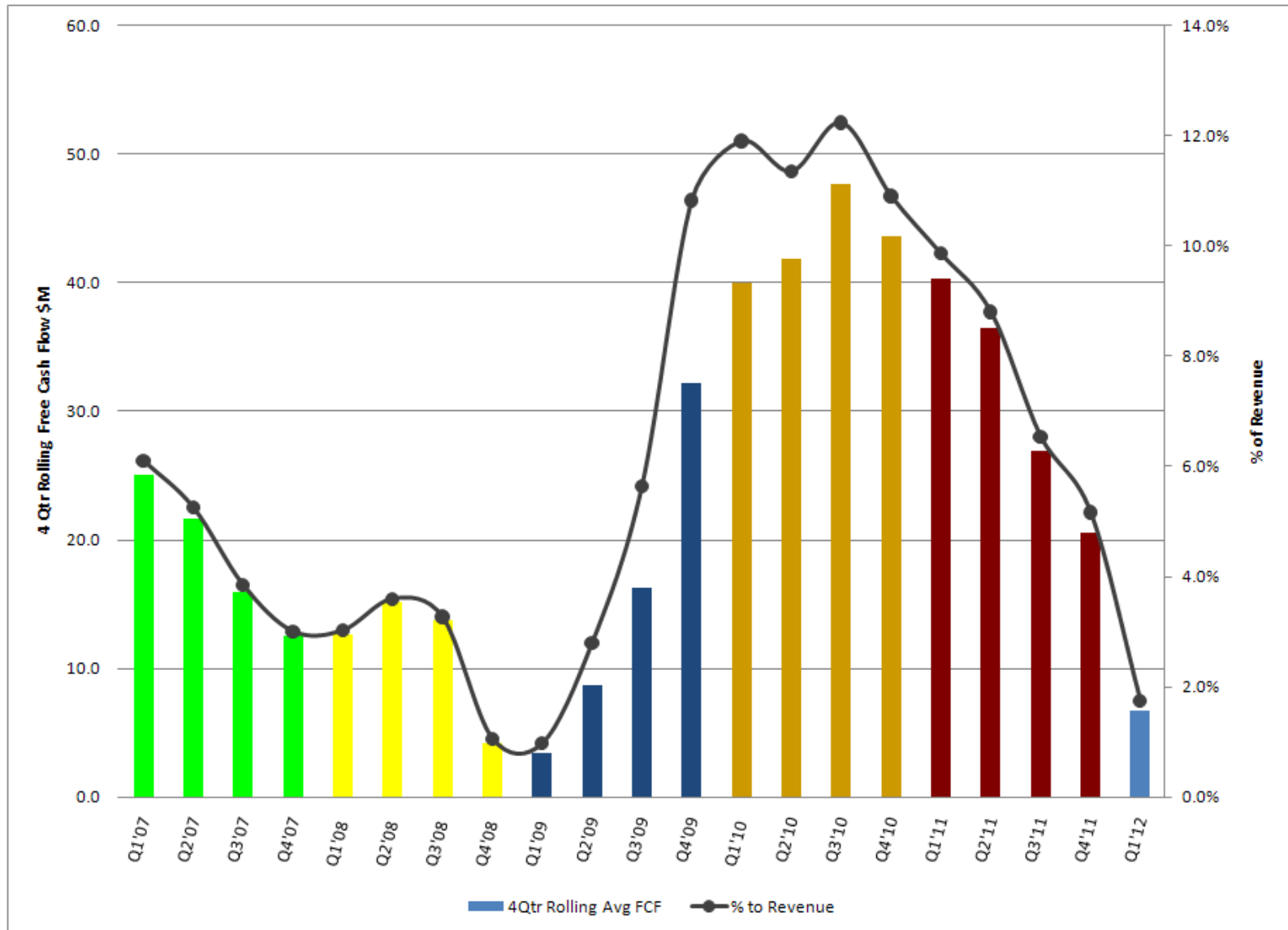
## Disciplined Asset Management

- Q1 balance sheet remains very strong:
  - Cash and investments exceed debt by \$111m
  - Debt remains at lowest level in company history at \$300m
  - Internal inventory reduced to a comfortable 85 DOI
  - DSO at 46 days
  - Days of payables at 50 days
- FCF was -\$33m...\$50m in capex and annual bonus paid in Q1
- Primary focus remains investing in our business
  - Small MEMS acquisition in Q4 2010
  - Small SiC acquisition in Q1 2011
  - Capex for conversion to 8” mfging and new products
  - Repurchased nearly 3m shares in 2011
  - R&D spending up 27% in 2011, SG&A up just 1%

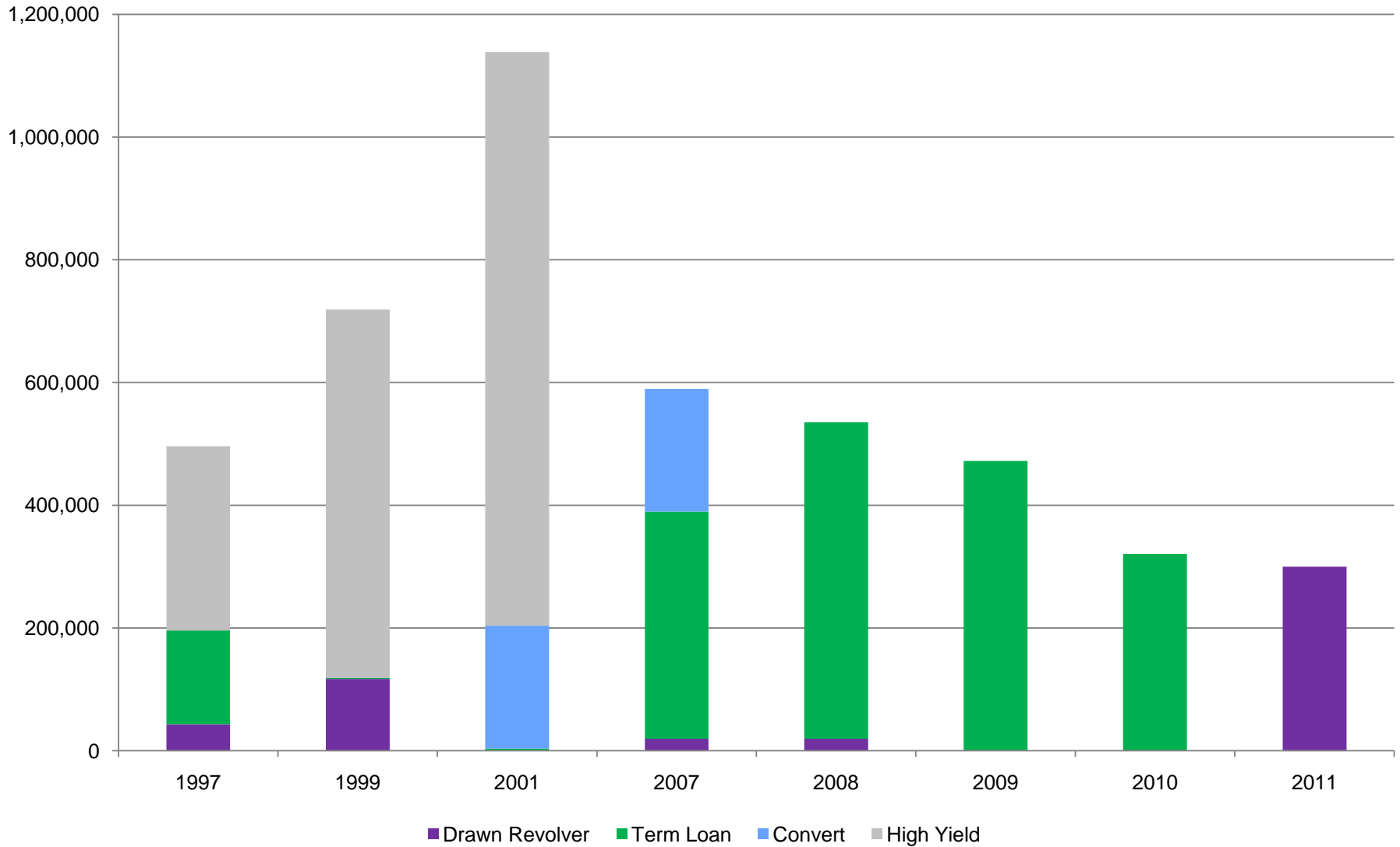
# Free Cash Flow



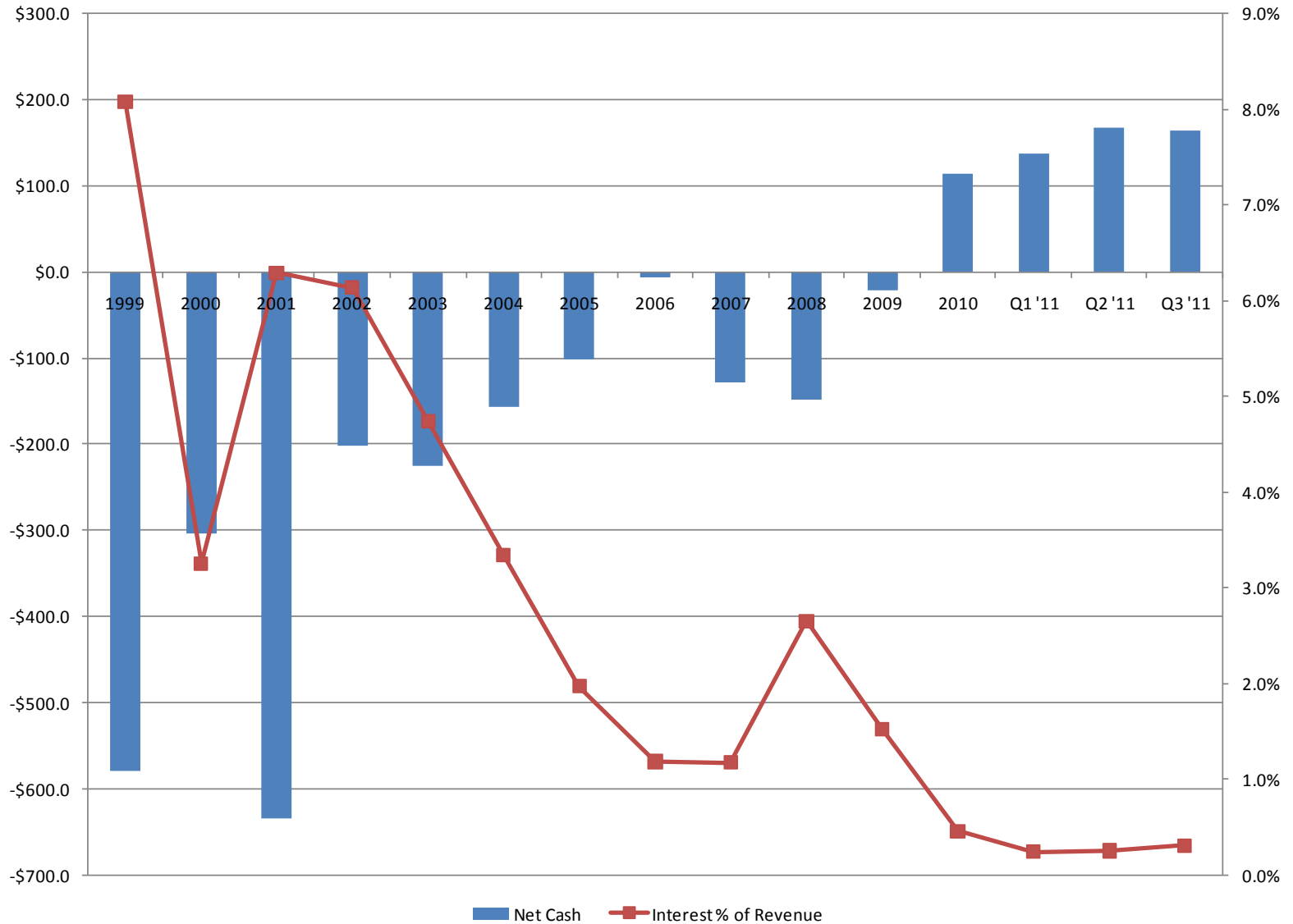
# 4 Qtr Rolling FCF % Revenue



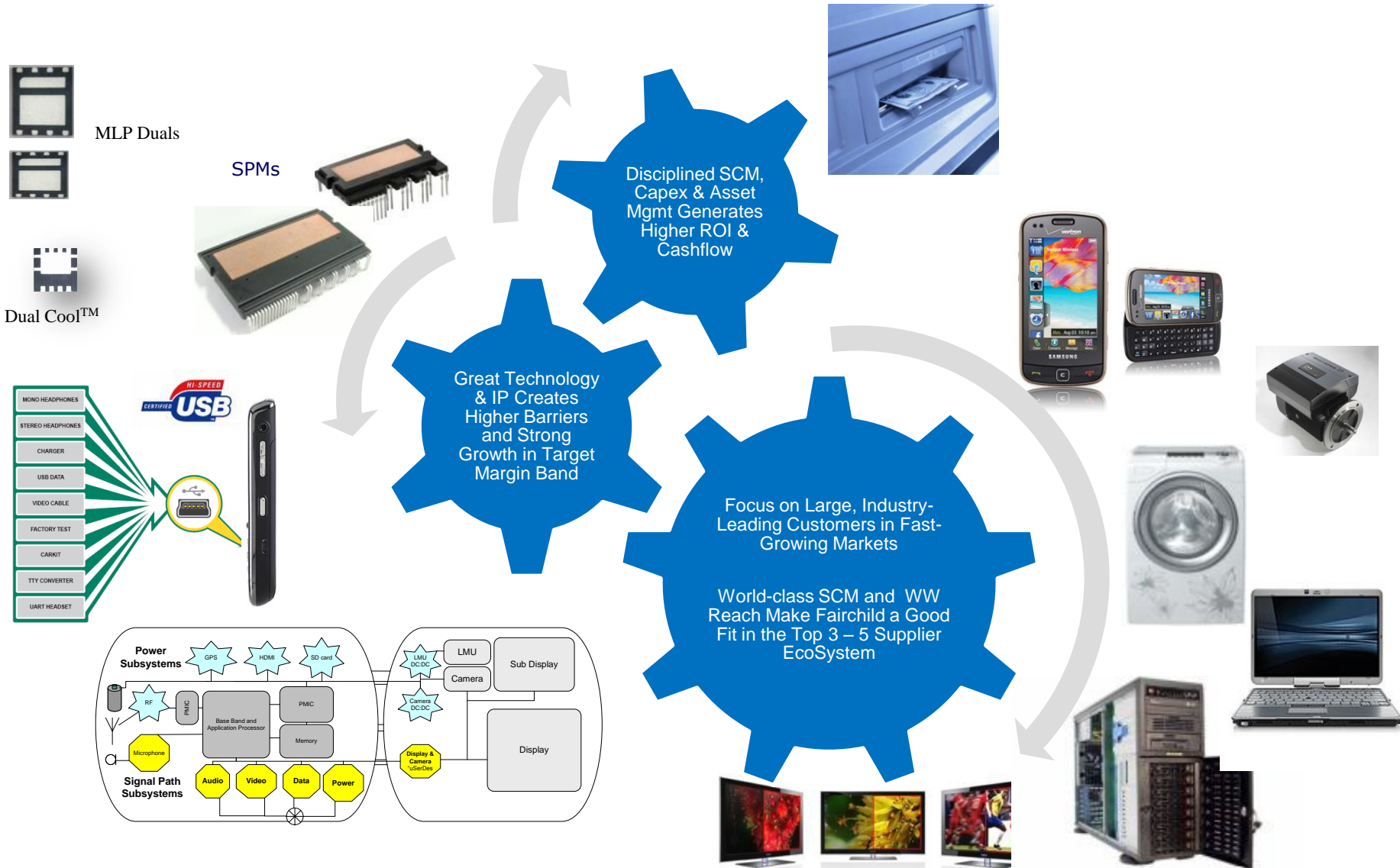
# Debt Composition & Trend



# Net Debt & Interest Trend



# Why Fairchild is Winning



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