

MAXIM INTEGRATED PRODUCTS — POWER MANAGEMENT STRATEGY

ABSTRACT

This report (81 pages, 72 figures) delivers in-depth and comprehensive coverage of Maxim's power management strategy of business, products, and technologies from a range of perspectives including fit with Maxim's overall business, corporate transformation, revenue by segments and product portfolio segmentation, strategy for growth and emerging market opportunities, product portfolio analyses by power domain covering about 2,000 generic products, and process technology and manufacturing transformation and trends.

The "New Maxim" that has emerged since 2007 is still not well understood by industry analysts and competitors. Maxim, a \$1.65B company in 2009, has undergone a dramatic transformation that has been by now completed. Elements of Maxim's radical departure from its historical business model include:

- Maxim has departed from a traditional product-oriented structure used by almost all analog IC vendors to a targeted end-market structure
- Maxim has ceased the traditional approach of acquiring fabs; it has been closing fabs and has been increasingly outsourcing production to foundries
- Maxim, like Texas Instruments, is introducing an 180nm BCD-based technology platform this year (2010) that will become its workhorse process technology
- Maxim's new technology platform will be outsourced to foundries for both 200mm and 300mm wafers. Maxim's 300mm approach will significantly change Analog IC economics, including in BCD-based PMICs (highly integrated multi-functional Power ICs)

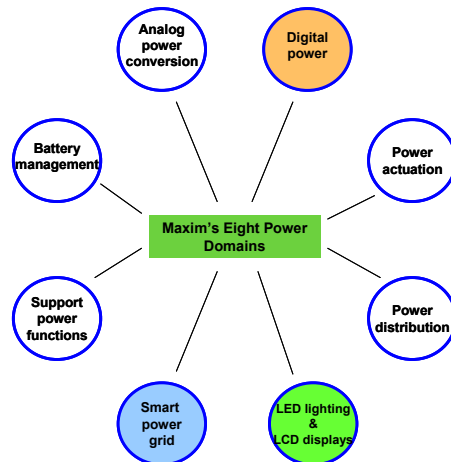
Process Technology Usage by Power Domain Generic Products						
Power Domain	Number of Generic Products	Representative Product Types	% of Generic Products			
			BiCMOS	BCD (BiCMOS-DMOS)	Other	
Analog Power Conversion	685	Switching DC/DC converters, linear LDO regulators, high-integration PMICs	35%	60%	5%	Volume PMICs
Support Power Functions	831	Voltage supervisors and sequencers, voltage references	90%	0%	10%	
Power Distribution	199	Hot-swap controllers, power switches, power-over-Ethernet (PoE)	40%	60%	0%	
Battery Management	91	Battery chargers and fuel gauges	35%	55%	10%	
Lighting and Displays	127	LED drivers, LCD power supplies	20%	75%	10%	Volume PMICs
Power Actuation	54	Power MOSFET drivers, ORing, MOSFET controllers	15%	80%	5%	
Smart Power Grid	4	Smart metering ICs, power grid monitoring / protection ICs, power line communication (PLC) ICs	75%	20%	5%	Volume PMICs
Digital Power	2	Digital power manager	0%	0%	100%	
TOTAL	1,993		57%	36%	7%	
Excluding Support Power Functions	1,162		34%	62%	4%	

The report is important for understanding Maxim’s strategy and investment patterns in high growth and emerging power management areas; targeted growth areas include digital power, LED lighting and LCD displays, and smart power grid applications. Our report provides an indispensable guide and valuable resource for business strategy and product marketing professionals in the power management area.

The report is structured into nine parts.

Section 1 provides an introduction and overview of the report coverage.

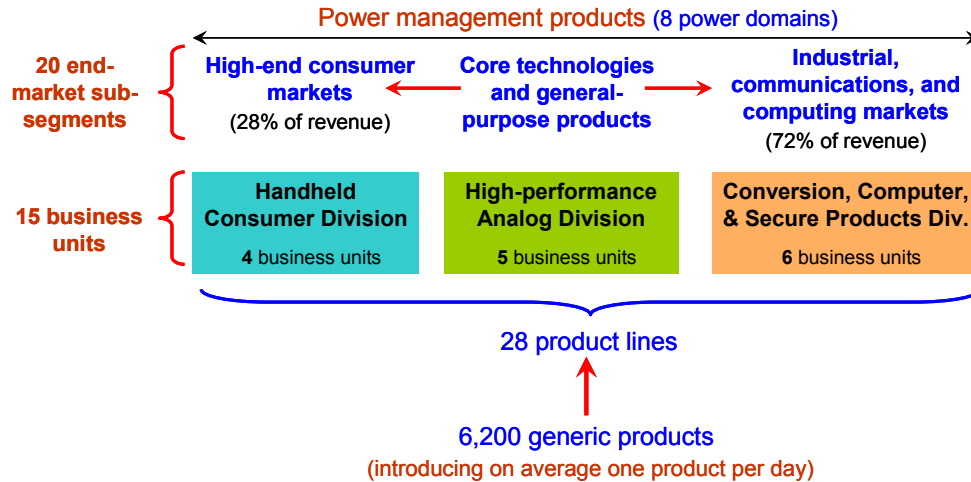
Section 2 delivers key findings and implications that serve as an executive summary. Maxim participates in eight power domains. On average Maxim has 221 products per product line, \$110M of revenue per business unit, and \$83M of revenue per end-market sub-segment; it introduces one generic product per day.



Product category	Maxim 2009 revenue		Attributes
	\$M	% of total	
Analog/mixed-signal products			
General-purpose ICs	957	58%	Single-function products dominate Gross margin in excess of 70% Industrial, computing, and communications applications dominate
• High-performance analog	490		
• Power management	467		
Application-specific ICs	379	23%	Application-specific standard and customer-specific products. Multifunction products dominate. High-end consumer applications dominate
• Mixed-signal analog	230		
• Power management	149		
Digital products	314	19%	Microcontrollers and memories dominate
Total Maxim	1,650	100%	
Total power management	616	37%	

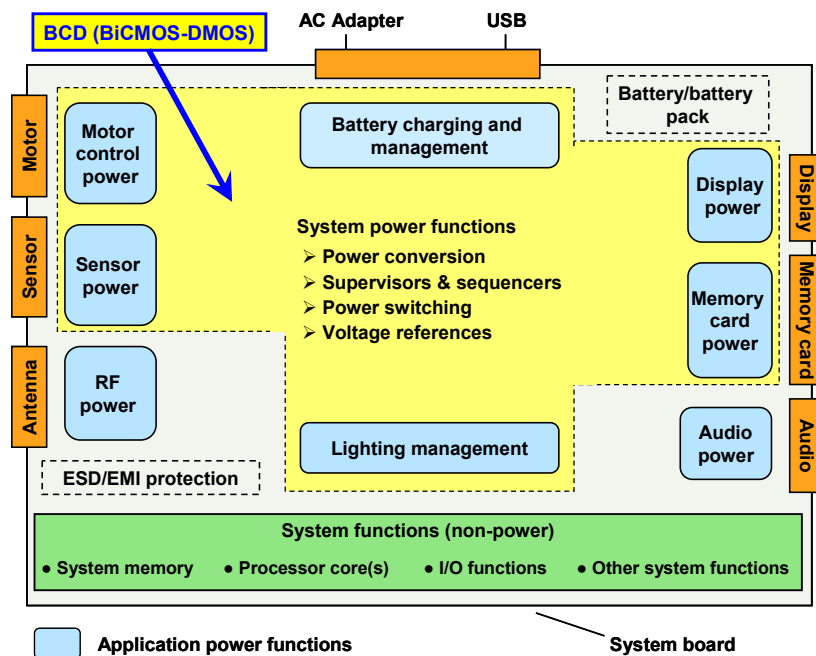
Section 3 provides an overview of Maxim’s new business model and strategy with an emphasis on power management. This section demonstrates how Maxim leverages its power management business and provides insights into the company’s financial performance by business segment and product category. This section provides insights into the company’s business structure and how it addresses targeted end- market opportunities.

Section 4 introduces our segmentation of Maxim’s power products into eight power domains—three of which address high, emerging growth market opportunities. These include digital power, lighting and displays power, and smart power grid. This section provides an overview of Maxim’s product portfolio by power domains as well as integration trends.



Vendor	Single-function ICs						Multi-function ICs		Grand total	
	Inductor based		Charge pump		Linear/LDO		Total generic products	Products		% Grand total
	Products	% Total	Products	% Total	Products	% Total				
TI	460	32%	72	5%	908	63%	1,440	52	3%	1,492
National	209	53%	24	6%	162	41%	395	13	3%	408
Linear	567	84%	39	6%	68	10%	674	34	5%	708
Maxim	375	66%	51	9%	145	25%	571	53	8%	624
Intersil	227	88%	2	1%	30	12%	259	0	0%	259
Analog Devices	23	32%	11	15%	37	52%	71	2	3%	73
AnalogicTech	63	79%	0	0%	17	21%	80	25	24%	105
MPS	99	86%	1	1%	15	13%	115	4	3%	119
Infineon	13	32%	0	0%	28	68%	41	8	16%	49
Rohm	89	24%	0	0%	275	76%	364	11	3%	375
STMicroelectronics	99	22%	1	0%	352	78%	452	6	1%	458

Section 5 details Maxim's five core power domains – analog power conversion, power actuation, power distribution, battery management, and support power functions.



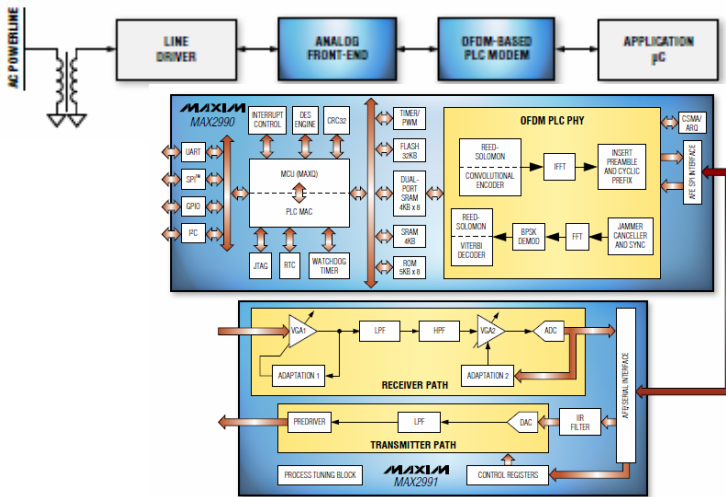
Section 6 focuses on growth power domains including digital power and lighting, and displays power.

Section 7 focuses on Maxim's smart power-grid power domain and how Maxim addresses this emerging market opportunity. This power domain targets an infrastructure market niche rather than an end-equipment type niche. This provides a relatively larger, global scale market

Multifunction PMICs for LCD Display (Integrated power MOSFETs)

# of products	Power conversion			LCD bias	Gamma buffer	VCOM buffer	# of channels
	Converter	Controller	LDO				
2	•			•	•	•	4
3	•		•	•	•	•	3
1	•		•	•	•	•	2
2	•			•	•	•	3
1	•			•	•	•	4
2	•			•	•	•	1
4	•		•	•	•	•	2
1	•		•	•	•	•	3
7	•		•	•	•	•	4
1	•			•			2
3	•					•	3
2	•						1

rather than an end-equipment type niche. This provides a relatively larger, global scale market



opportunity for a range of Maxim's products. In partnership with Sagem Communications and ERD-France, Maxim has developed an open standard (G3-PLC) using OFDM-based PLC technology. G3-PLC technology allows long-distance (10Km) data transmission and communication over medium-voltage (MV) power lines reducing the needed number of repeaters.

Maxim's Powerline Communications Chipset

Section 8 covers Maxim's high-end consumer business with a focus on cell-phones and battery-powered handheld equipment. This market segment represents Maxim's major business thrust that supports its medium-term revenue growth objectives.

Product type	Cell-Phone Revenues		Description
	\$M	% total	
Cell-Phone Power ICs	230	64%	
• System power functions	40		Standard
• Application power functions	70		Standard
• PMICs	120		Standard and customer-specific
Analog (non-Power ICs)	130	36%	Standard
Total	360	100%	

Section 9 covers technology and manufacturing trends. It details Maxim's dramatic change from its legacy corporate strategy to outsourcing and transitioning to a new 180nm (S18) BCD (BiCMOS-DMOS) workhorse platform technology that will use 300mm wafers in 2010

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