



Building Leadership in Analog and Mixed Signal





DSP Growth Drives Analog Growth

- ◆ Complements TI's DSP position
- ◆ Design Teams working jointly on product roadmaps
- ◆ Data Converter and Power Management are architected for direct interface to TI DSPs
- ◆ Coordinated marketing programs
- ◆ Time to market advantages

Real World
(Analog)



Real World
(Analog)





TI Number One in Analog

Revenue Ranking for Analog Competitors

1. TI	2270
2. Philips	1973
3. STM	1848
4. Motorola	1416
5. Siemens	1295

1998

1. TI	2195
2. STM	1891
3. Philips	1717
4. Motorola	1418
5. National	1358

1997

Source: Dataquest

3

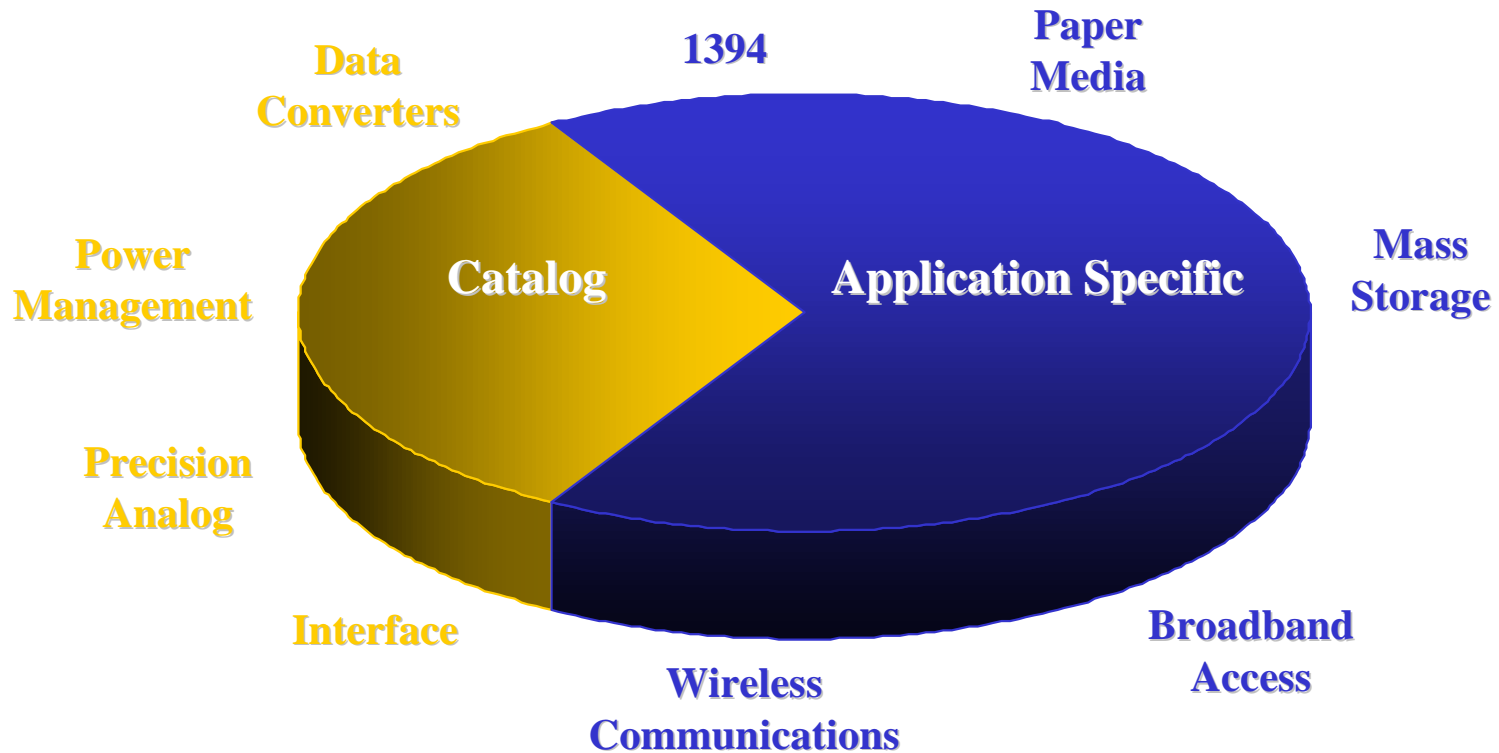
THE WORLD LEADER IN DSP AND ANALOG





Diversified Analog Markets

1998 Analog Market – \$21.1B





Analog Market Attractiveness

- ◆ One of three largest SC markets – \$21.1B (1998) and is projected to be \$40.6 billion market by 2002
- ◆ 15.9% projected Analog IC growth for 1999 compared to 11.8% projection for the overall semiconductor market
- ◆ Very diverse customer base
- ◆ Long product life cycle
- ◆ Low volatility
- ◆ Attractive industry returns



Leadership in Catalog Analog

Data Converters

ADI

TI

Maxim

Amplifiers

NSC

ADI

TI

Power Management

NSC

TI

LTC

Interface

TI

NSC

Maxim

- ◆ Strong participation in all product categories
- ◆ Re-use of process/design technology across application-specific and catalog analog products

Source: Dataquest - 1998



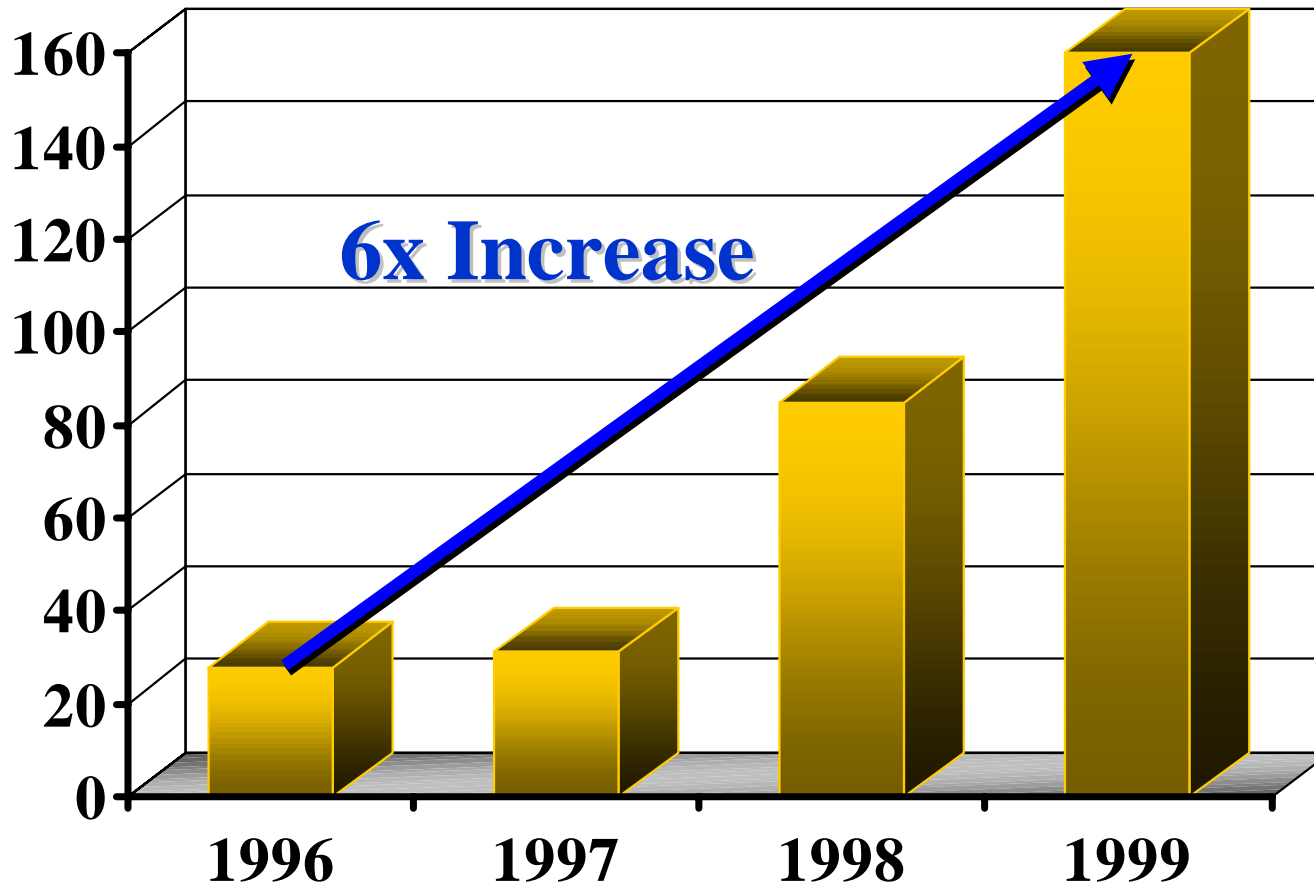
Unitrode Acquisition

- ◆ On July 26, TI announced its acquisition of Unitrode for approximately \$1.2 billion.
- ◆ Unitrode is an excellent fit to TI's Analog strategy for the mass market and complements our power management portfolio with leading edge products in battery management, power supply control and interface.
- ◆ The acquisition extends TI's leadership position in the growing power management market.



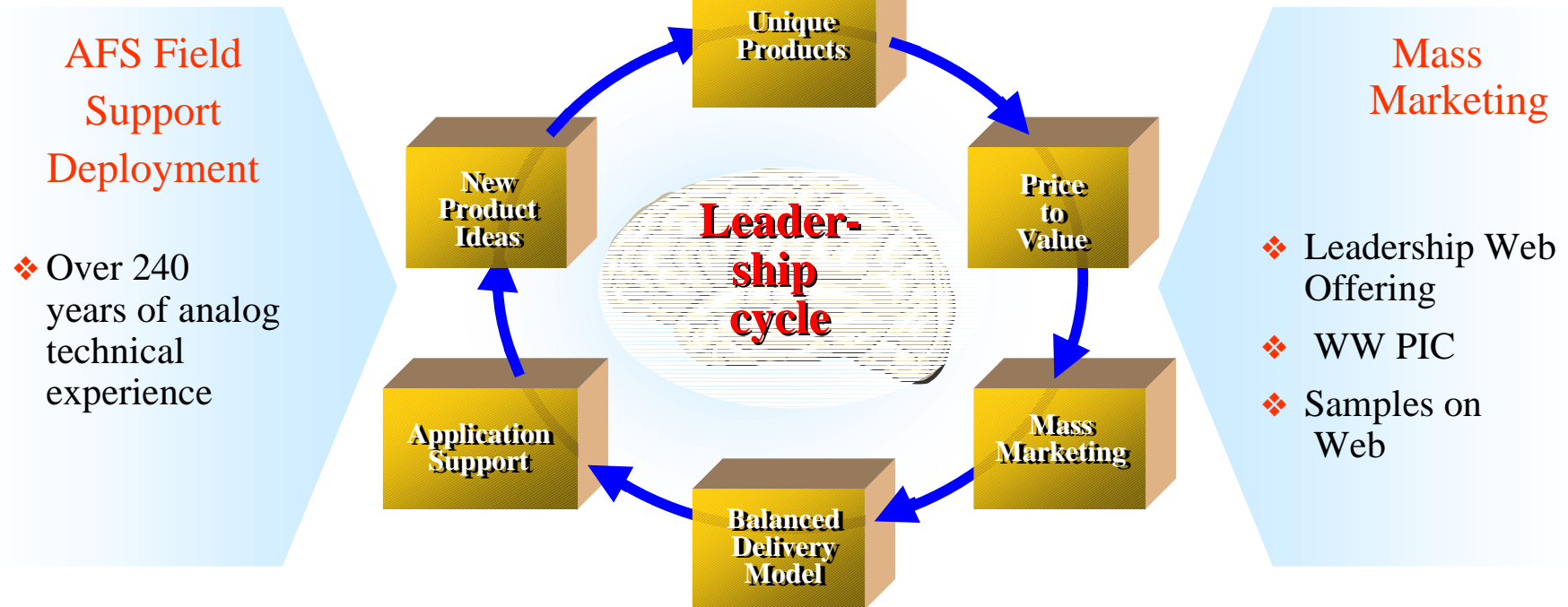
Analog Product Ramp Underway

Catalog Analog Products Released





Mass Market Infrastructure



- ◆ Give customers do-it-yourself, design-in tools
- ◆ Put technical application resources near customers
- ◆ Built world-class, fast, market-feedback loop
- ◆ Digikey set up to support small quantity orders



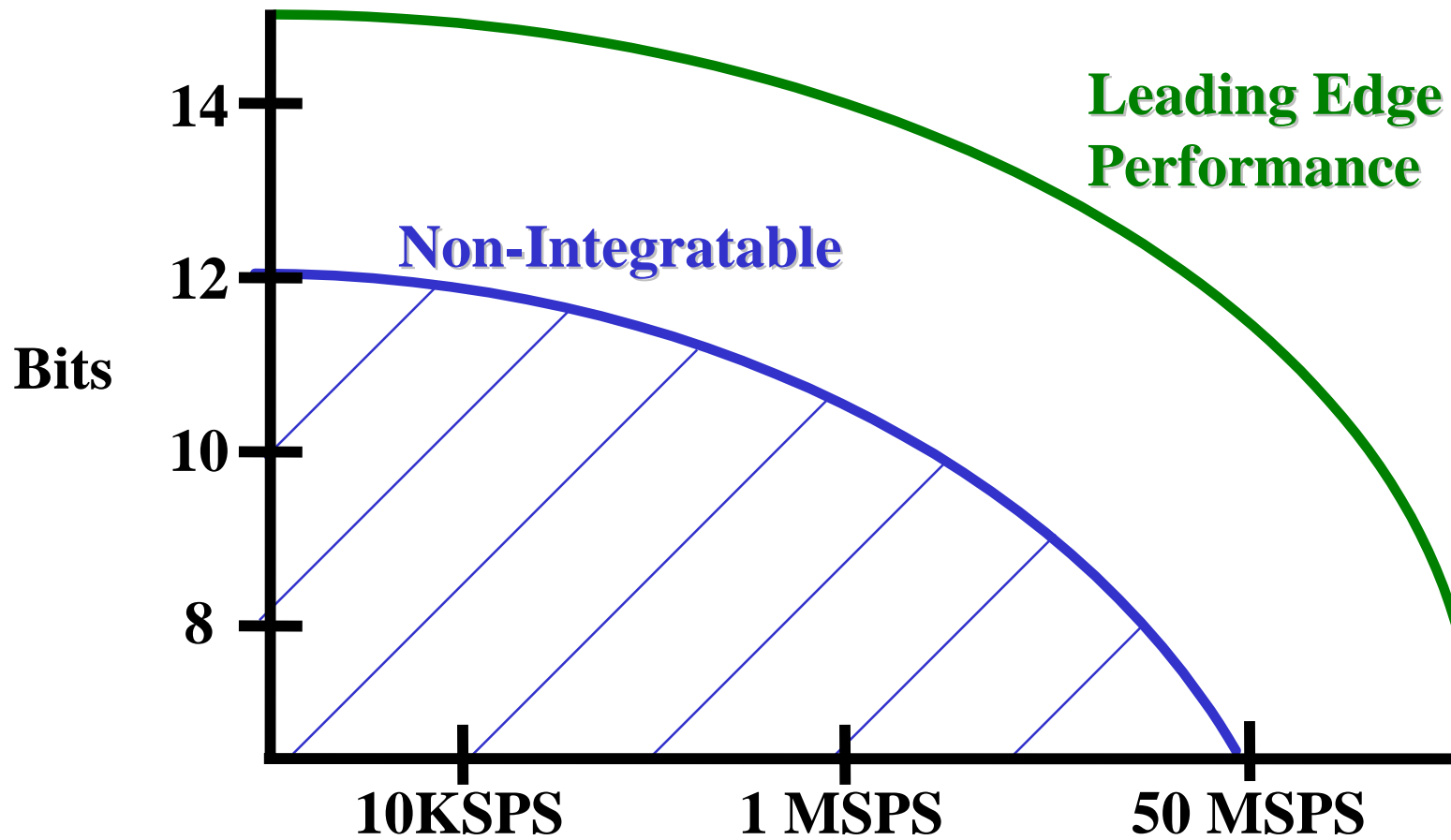
TPS56100 fully optimized for 'C6000 and 'C5000 Platforms

- ◆ Single-channel, high-speed controller
 - ❖ Programmable to support popular DSP voltage requirements
 - ❖ Hysteretic control technique enables fast transient response to support 'C6000 and 'C5000 applications
- ◆ Synergy with DSP design team enables:
 - ❖ Improved cycle time
 - ◆ Power management devices available at DSP release
 - ❖ Improved reliability
 - ◆ Design is optimized to support DSP systems
- ◆ Future Power Management DSP devices
 - ❖ DSP controllers , Supply voltage supervisors, Low Dropout Regulators



Data Converters

Market Trends





Enabling the Next Generation of DSP Applications

THS1206 - Industry First, DSP-optimized ADC+ FIFO

- ◆ 12 bit, 6 MSPS, Low Power ADC
- ◆ Fastest 4 Input Simultaneous Sampling ADC in the Industry today
- ◆ 16 Word FIFO Improves data transfer effective rate by 6 times
- ◆ Complete Data Acquisition System on a Chip and loaded with DSP Friendly Features
- ◆ Device drivers to be included in TI's Code Composer studio software tool



THS1206 Configuration Tool

Code & Edit

```
THS1206_plug.c
#define ADC TMS320C6701
#define TMS320C6000
#define CRO_VALUE 0x0
#define CR1_VALUE 0xBC
#define TRIGGER_LEVEL 14
#define PERIOD 0
#include "ths1000.h"

static inline void ths1206_reset(void)
{
    *THS1206_ADDRESS = (0x401);

    #ifdef TMS320C542
    port8000 = 0x4010;
    #endif
}
```

The screenshot shows the THS1206 Configuration tool interface. It features a menu bar with 'File', 'Config', and 'Help'. The main area is divided into several sections:

- Interface Settings:** Target Processor: TMS320C6701 - 100MHz; DATA_AV Polarity: High (selected); DATA_AV Type: Pulse (selected); Read/Write Type: RD / WR (selected); Data Format: Binary (selected).
- ADC Settings:** Channel Sel.: Analog input AINP; Conv. Clock: 4167 kHz; Mode: Continuous Conversion; Trigger Level: 14; Ref. Voltage: Internal (selected); Test Mode: Normal Mode; Offset Cancel: No (selected); Debug Mode: Off (selected).
- Current Selection:** A table showing bit patterns for Reg0 and Reg1.

Bit	9	8	7	6	5	4	3	2	1	0
Reg0	0	0	0	0	0	0	0	0	0	0
Reg1	0	0	1	0	1	1	1	1	0	0

Buttons at the bottom include: Verify and Create Routine, Reset THS1206, Configure THS1206, Power Down, Read Back Registers, and Exit.



Summary

- ◆ TI is fully committed to provide leadership catalog products. We have the resources, capabilities and the investment in place to continue to expand upon our Analog and Mixed Signal leadership in the market place
- ◆ TI is capitalizing on it's leadership in DSP and Analog and provides designers with complete and easy to use solutions
- ◆ TI has the infrastructure in place to provide customers with a wide range of support services, tools and documentation