

# Linear Circuits Data Acquisition and Conversion



1989

DOCKET

**Linear Products** 

**A L A R M** Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

| Linear Products Quick Reference Guide  |  |                     |  |
|--|--|---------------------|--|
| Data Book  | Contents   | Document No.        |  |
| <ul> <li>Linear Circuits Vol 1<br/>Amplifiers, Comparators,<br/>and Special Functions</li> </ul> | Operational Amplifiers<br>Voltage Comparators<br>Video Amplifiers<br>Hall-Effect Devices<br>Timers and Current Mirrors<br>Magnetic-Memory Interface<br>Frequency-to-Voltage Converters<br>Sonar Ranging Circuits/Modules<br>Sound Generators | SLYD003<br>1989     |  |
| <ul> <li>Linear Circuits Vol 2<br/>Data Acquisition<br/>and Conversion</li> </ul>                | A/D and D/A Converters<br>DSP Analog Interface<br>Analog Switches and Multiplexers<br>Switched-Capacitor Filters   | SLYD004<br>1989     |  |
| <ul> <li>Linear Circuits Vol 3<br/>Voltage Regulators and<br/>Supervisors</li> </ul>             | Supervisor Functions<br>Series-Pass Voltage Regulators<br>Shunt Regulators<br>Voltage References<br>DC-to-DC Converters<br>PWM Controllers   | SLYD005<br>1989     |  |
| <ul> <li>Telecommunications<br/>Circuits</li> </ul>  | Equipment Line Interfaces<br>Subscriber Line Interfaces<br>Modems and Receiver/Transmitters<br>Ringers, Detectors, Tone Encoders<br>PCM Interface<br>Transient Suppressors   | SCTD001A<br>1988/89 |  |
| • Optoelectronics and<br>Image Sensors   | Optocouplers<br>CCD Image Sensors and Support<br>Phototransistors<br>IR-Emitting Diodes<br>Hybrid Displays   | SOYD002<br>1987     |  |
| • Interface Circuits   | High-Voltage (Display) Drivers<br>High-Power (Peripheral/Motor) Drivers<br>Line Drivers, Receivers, Transceivers<br>EIA RS-232, RS-422, RS-423, RS-485<br>IBM 360/370, IEEE 802.3, CCITT<br>Military Memory Interface                        | SLYD002<br>1987     |  |
| <ul> <li>Speech System Manuals</li> </ul>  | TSP50C4X Family  | SLPS025<br>1988     |  |

As of March 1989

Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

DOCKET

## Linear Circuits Data Book 1989

Volume 2 Data Acquisition and Conversion



**R M** Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

DOCKET

Δ

Α

#### TLC545M, TLC545I, TLC545C, TLC546M, TLC546I, TLC546C Lincmos™ 8-BIT ANALOG-TO-DIGITAL PERIPHERALS WITH SERIAL CONTROL AND 19 INPUTS

INPUT AO

INPUT A1 2

INPUT A2 3

INPUT A3 4

N DUAL-IN-LINE PACKAGE (TOP VIEW)

 $\bigcup_{28} \bigvee_{CC}$ 

D2850, DECEMBER 1985-REVISED SEPTEMBER 1988

27 SYSTEM CLOCK

25 ADDRESS INPUT

26 1/0 CLOCK



addition

used as :k signal

ently the on, after CS must lifting in d by the ∶k signal cognized

ific point d begins until the signal in must be edge of and hold

factory.

- LinCMOS<sup>™</sup> Technology
  - 8-Bit Resolution A/D Converter
- Microprocessor Peripheral or Stand-Alone Operation
- On-Chip 20-Channel Analog Multiplexer
- Built-In Self-Test Mode
- Software-Controllable Sample and Hold
- Total Unadjusted Error . . . ±0.5 LSB Max
- Timing and Control Signals Compatible with 8-Bit TLC540 and 10-Bit TLC1540 A/D **Converter Families**

| TYPICAL PERFORMANCE      | TL545              | TL546              |
|--------------------------|--------------------|--------------------|
| Channel Acquisition Time | 1.5 μs             | 2.7 μs             |
| Conversion Time          | 9 μs               | 17 μs              |
| Sampling Rate            | $76 \times 10^{3}$ | $40 \times 10^{3}$ |
| Power Dissipation        | 6 mW               | 6 mW               |

#### description

The TLC545 and TLC546 are LinCMOS™ A/D peripherals built around an 8-bit switchedcapacitor successive-approximation A/D converter. They are designed for serial interface to a microprocessor or peripheral via a 3-state output with up to four control inputs [including independent System Clock, I/O Clock, Chip Select (CS), and Address Input]. A 4-MHz system clock for the TLC545 and a 2.1-MHz system clock for the TLC546 with a design that includes simultaneous read/write operation allowing high-speed data transfers and sample rates of up to 76,923 samples per second for the TLC545, and 40,000 samples per second for the TLC546. In addition to the high-speed converter and versatile control logic, there is an on-chip 20-channel analog multiplexer that can be used to sample any one of 19 inputs or an internal "self-test" voltage, and a sample-and-hold that operate automatically or under can microprocessor control.

The converters incorporated in the TLC545 and TLC546 feature differential high-impedance reference inputs that facilitate ratiometric conversion, scaling, and analog circuitry isolation from logic and supply noises. A totally switchedcapacitor design allows low-error (±0.5 LSB)

LinCMOS is a trademark of Texas Instruments Incorporated

PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications are the tarms of Taxos Instruments

TEVAS I

NPUT

INPUT INPUT NPUT

NPUT

Find authenticated court documents without watermarks at docketalarm.com.

INPUT A4 15 24 DATA OUT 23 CS INPUT A5 6 22 REF + INPUT A6 21 🗌 REF --INPUT A7 8 INPUT A8 9 20 INPUT A18 INPUT A9 10 19 INPUT A17 18 INPUT A16 INPUT A10 11 INPUT A11 12 17 INPUT A15 INPUT A12 13 16 INPUT A14 GND 114 15 INPUT A13 FN CHIP CARRIER PACKAGE (TOP VIEW) VCC SYSTEM CLOCK I/O CLOCK A2 A1 A0 INPUT A3 INPUT INPUT INPUT 2 25 ADDRESS INPUT INPUT A4 5 24 DATA OUT INPUT A5 6 23 CS INPUT A6 7 22[] REF + INPUT A7 8 REF -INPUT A8 19 21 **INPUT A18** 20 INPUT A9 10 19 INPUT A17 INPUT A10 11 12 13 14 15 16 17 18 A13 A14 A15 A16 A11 A12 GND

> Samsung Electronics Co., Ltd. et al. Ex 1017, p. 4

**Data Sheets** 

#### TLC545M, TLC545I, TLC545C, TLC546M, TLC546I, TLC546C LinCMOS™ 8-BIT ANALOG-TO-DIGITAL PERIPHERALS WITH SERIAL CONTROL AND 19 INPUTS

conversion in 9  $\mu$ s for the TLC545, and 17  $\mu$ s for the TLC546, over the full operating temperature range. Detailed information on interfacing to most popular microprocessors is readily available from the factory.

The TLC545M and the TLC546M are characterized for operation from -55 °C to 125 °C. The TLC545I and the TLC546I are characterized for operation from -40 °C to 85 °C. The TLC545C and the TLC546C are characterized for operation from 0 °C to 70 °C.

#### functional block diagram



operat

I/C CLOI

ADDRE INPI

> DA' Ol

NOTES:

S Ir P P O

absolu

S C

Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

# DOCKET



# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## **Real-Time Litigation Alerts**



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## **Advanced Docket Research**



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## **Analytics At Your Fingertips**



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

#### LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

### **FINANCIAL INSTITUTIONS**

Litigation and bankruptcy checks for companies and debtors.

## **E-DISCOVERY AND LEGAL VENDORS**

Sync your system to PACER to automate legal marketing.

