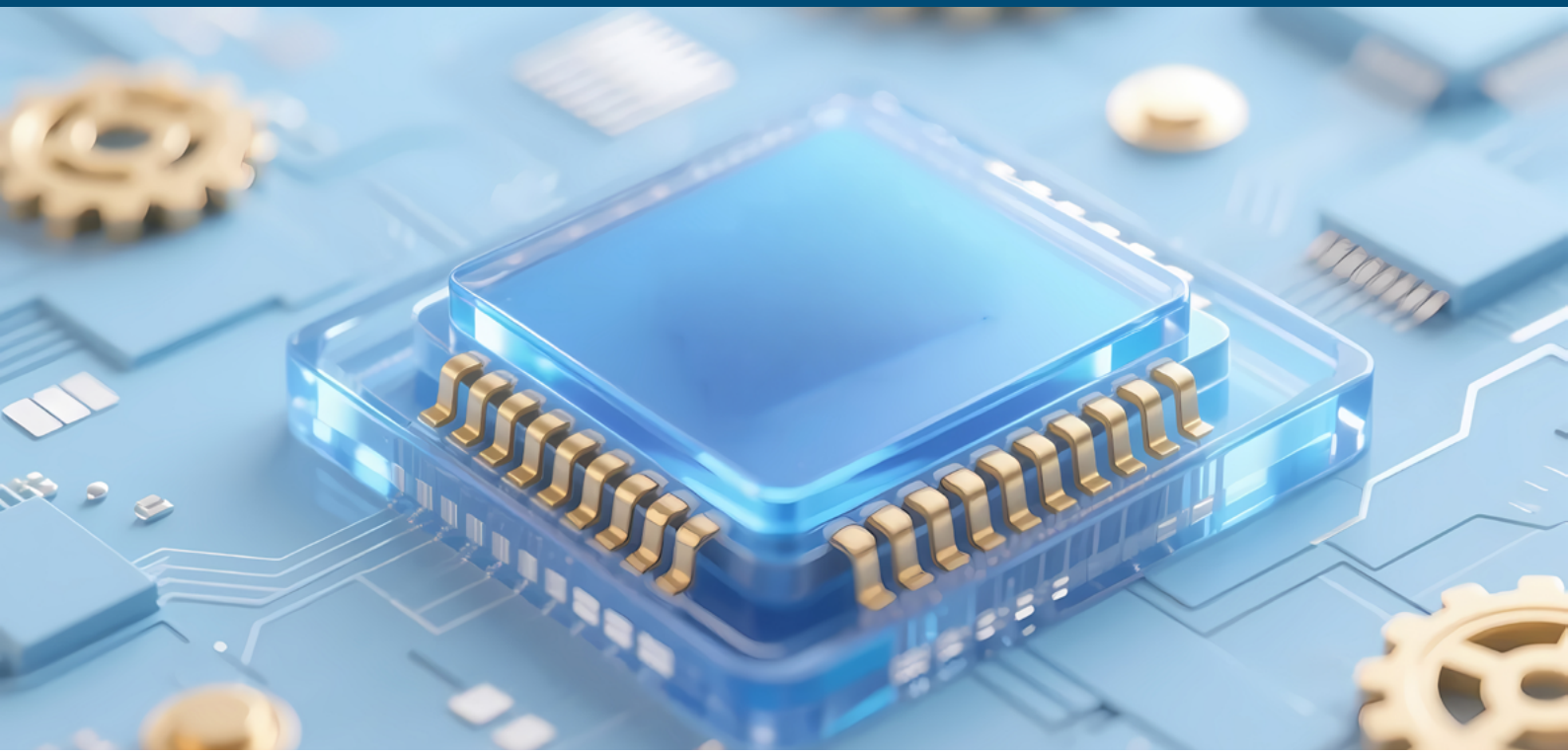
# LDO5V Low Dropout Regulator



## About eInfochips

eInfochips is a product engineering and semiconductor design services company offering ASIC/SoC design, Analog & Mixed- Signal IP development, FPGA design, and embedded engineering services across multiple industry segments.

eInfochips provides silicon-proven Analog IPs and custom design solutions for power management, data conversion, connectivity, and mixed-signal applications. The company enables customers to accelerate chip development and deliver high-performance, power-efficient semiconductor products.

## eInfochips A3ACPNLDO5V Low Dropout Regulator

The A3ACPNBTC LDO is a low-dropout linear voltage regulator designed to generate a regulated 5 V output from a 4 V to 32 V input supply (KL30). The regulator utilizes a 1.2 V bandgap reference (BGR) to achieve accurate output voltage regulation across operating conditions.

An integrated 100 pF output capacitor provides internal compensation and stability. The LDO is capable of sourcing up to 20 mA load current and is intended to provide a stable supply for the Voltage Monitor and BGR Calibration blocks.

**Low-side gate driver supply in smart power/IPS ICs**

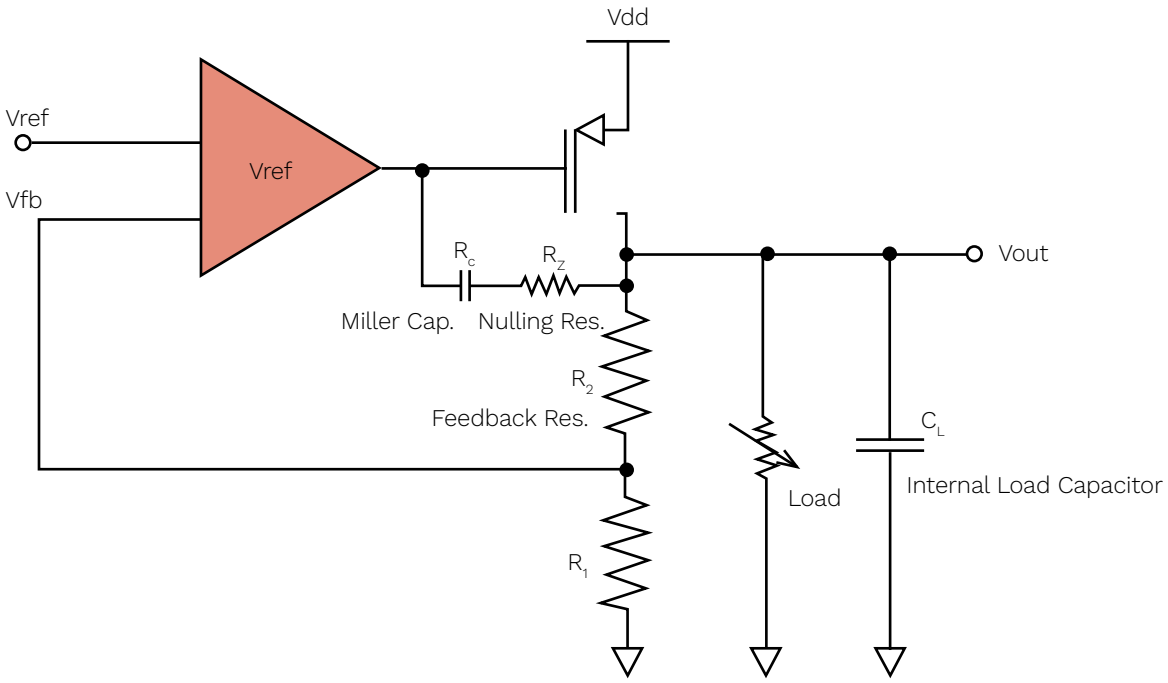
**Half-bridge and full-bridge MOSFET/IGBT gate drivers**

**Motor control and power conversion pre-drivers**

**Automotive and industrial gate-drive rails**

## eInfochips Advantages

- **30** Years of experience in system design
- **17** Design centres worldwide
- **400+** Tapeouts
- **100M+** Product deployments across globe
- **180nm to 18A** expertise




Block Diagram

## Features

- **Input Voltage Range:** 4V to 32 V
- Output Voltage Specified over Temperature
- Excellent Load Regulation
- Specified 20mA Output Current

## DC Simulation Results (Pre-Layout)

- **Output Voltage (VOUT):** 4.995 V to 5.005 V
- **Feedback Voltage (VFB):** 1.198 V to 1.201 V
- **No-Load Current Consumption:** 47.23 µA to 63.89 µA
- **Full-Load Current Consumption:** 20.03 mA to 20.06 mA
- **Operating Conditions:** TT/FF/SS, VIN = 6 V to 32 V, TJ = -40°C to +150°C

## DC Simulation Results (Post-Layout)

- **Output Voltage (VOUT):** 4.99 V to 5.004 V
- **Feedback Voltage (VFB):** 1.198 V to 1.201 V
- **No-Load Current Consumption:** 47.18 µA to 63.41 µA
- Full-Load Current Consumption: 20.01 mA to 20.04 mA
- Operating Conditions: TT/FF/SS, VIN = 6 V to 32 V, TJ = -40°C to +150°C

## Stability Simulation Results (Pre-Layout)

- **Loop Gain:** 58.52 dB to 80.77 dB
- **Phase Margin:** 53.6° to 98.05°
- **Unity Gain Bandwidth (UGB):** 58.4 kHz to 487.1 kHz
- **Gain Margin:** 14.97 dB to 35.47 dB
- **Simulation Conditions:** TT/FF/SS, VIN = 6 V to 32 V, TJ = -40°C to +150°C

## Stability Simulation Results (Post-Layout)

- **Loop Gain:** 58.49 dB to 80.77 dB
- **Phase Margin:** 46.06° to 93.82°
- **Unity Gain Bandwidth (UGB):** 55.15 kHz to 442 kHz
- **Gain Margin:** 12.23 dB to 33.52 dB
- **Simulation Conditions:** TT/FF/SS, VIN = 6 V to 32 V, TJ = -40°C to +150°C

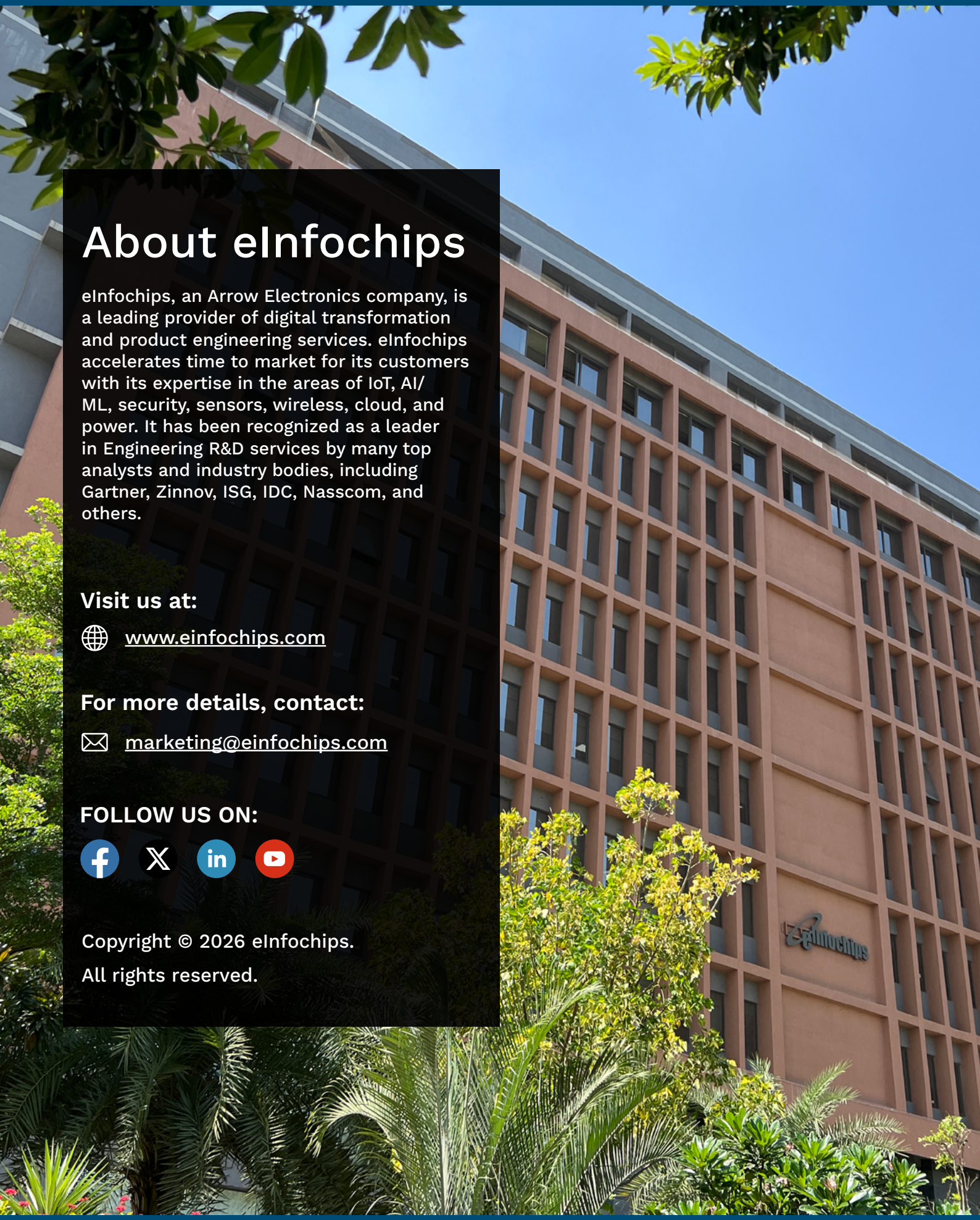
## AC Simulation Results (Pre vs Post Layout)

### (Pre vs Post Layout)

- **PSRR @ 1 kHz:** -53.90 dB to -36.23 dB
- **PSRR @ 20 kHz:** -27.90 dB to -10.72 dB
- **Simulation Conditions:** TT/FF/SS, VIN = 6 V to 32 V, TJ = -40°C to +150°C

### (Post-Layout)

- **PSRR @ 1 kHz:** -53.34 dB to -35.90 dB
- **PSRR @ 20 kHz:** -27.34 dB to -12.33 dB
- **Simulation Conditions:** TT/FF/SS, VIN = 6 V to 32 V, TJ = -40°C to +150°C



# About eInfochips

eInfochips, an Arrow Electronics company, is a leading provider of digital transformation and product engineering services. eInfochips accelerates time to market for its customers with its expertise in the areas of IoT, AI/ML, security, sensors, wireless, cloud, and power. It has been recognized as a leader in Engineering R&D services by many top analysts and industry bodies, including Gartner, Zinnov, ISG, IDC, Nasscom, and others.

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www.einfochips.com

**For more details, contact:**

marketing@einfochips.com

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