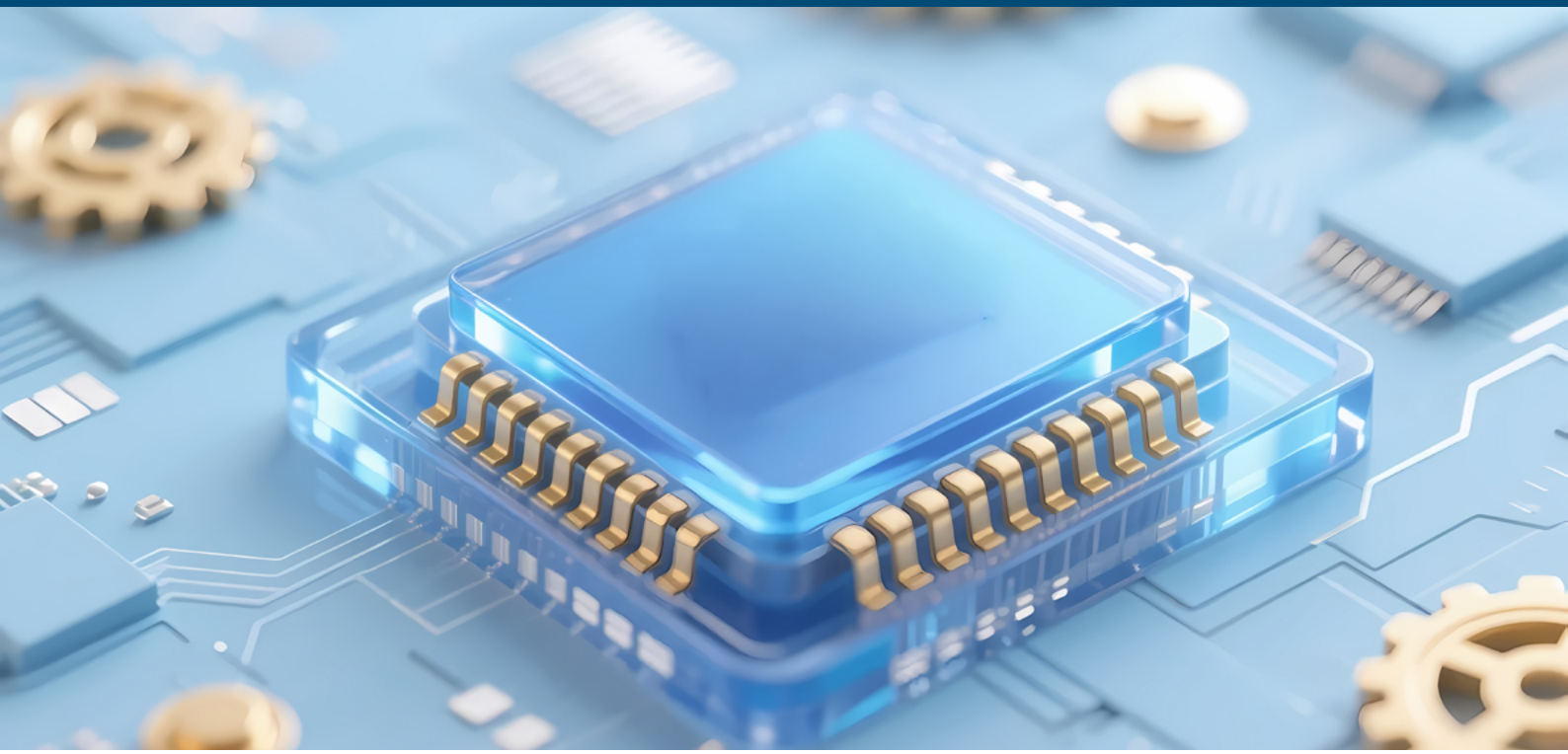
A3ACPNLDO 1.5V Low Dropout Regulator



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 A3ACPNLDO1.5V Low Dropout Regulator

The 1.5 V LDO takes a regulated 5 V supply as input and generates a stable 1.5 V output. It uses a 1.2 V reference from the BGR. A 100-pF internal output capacitor is used for loop stability. The LDO can source a constant load current of up to 10 mA. An NMOS pass transistor is used to achieve better PSRR, making it suitable for powering noise-sensitive analog and mixed-signal blocks.

Bandgap reference (BGR) supply

Bias generation and current reference circuits

Operational amplifier (Op-Amp) supply

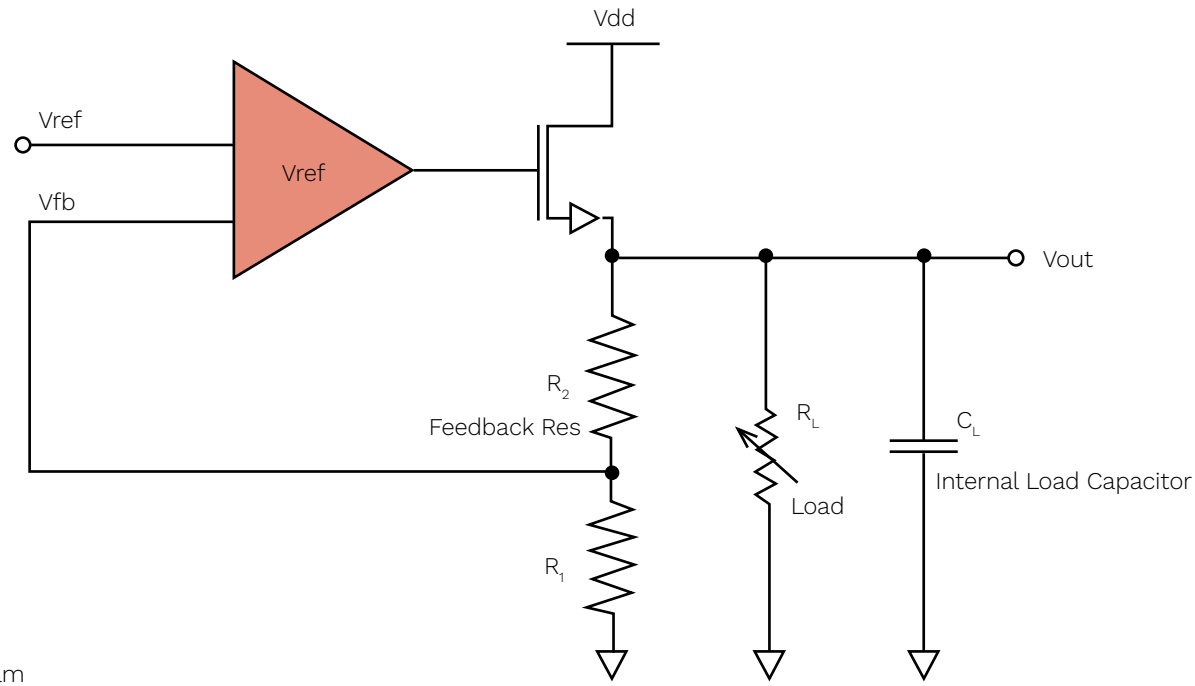
Comparator supply rails

ADC and DAC analog supply

PLL, VCO, and clock generation circuits

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:** 5V
- **Output Voltage:** 1.5V
- **Reference voltage:** 1.2V
- **Maximum Load current:** 10mA DC

DC Simulation Results (Pre-Layout)

- **LDO Output Voltage:** 1.497 V to 1.498 V
- **Reference Voltage:** 1.198 V to 1.199 V
- **Total Current Consumption:** No Load 49.4 µA to 68.25 µA
- **Total Current Consumption – Full Load:** 9.972 mA to 10.3 mA
- **Operating Conditions:** VIN = 4.5 V to 5.5 V, TJ = −40°C to +150°C, TT/FF/SS corners

DC Simulation Results (Post-Layout)

- **LDO Output Voltage (VOUT):** 1.468 V to 1.478 V
- **Feedback Voltage:** 1.175 V to 1.182 V
- **Total Current Consumption – No Load:** 49.76 µA to 70.07 µA
- **Total Current Consumption – Full Load:** 9.835 mA to 9.886 mA
- **Operating Conditions:** VIN = 4.5 V to 5.5 V, TJ = −40°C to +150°C, TT/FF/SS corners

Stability Simulation Results (Pre-Layout)

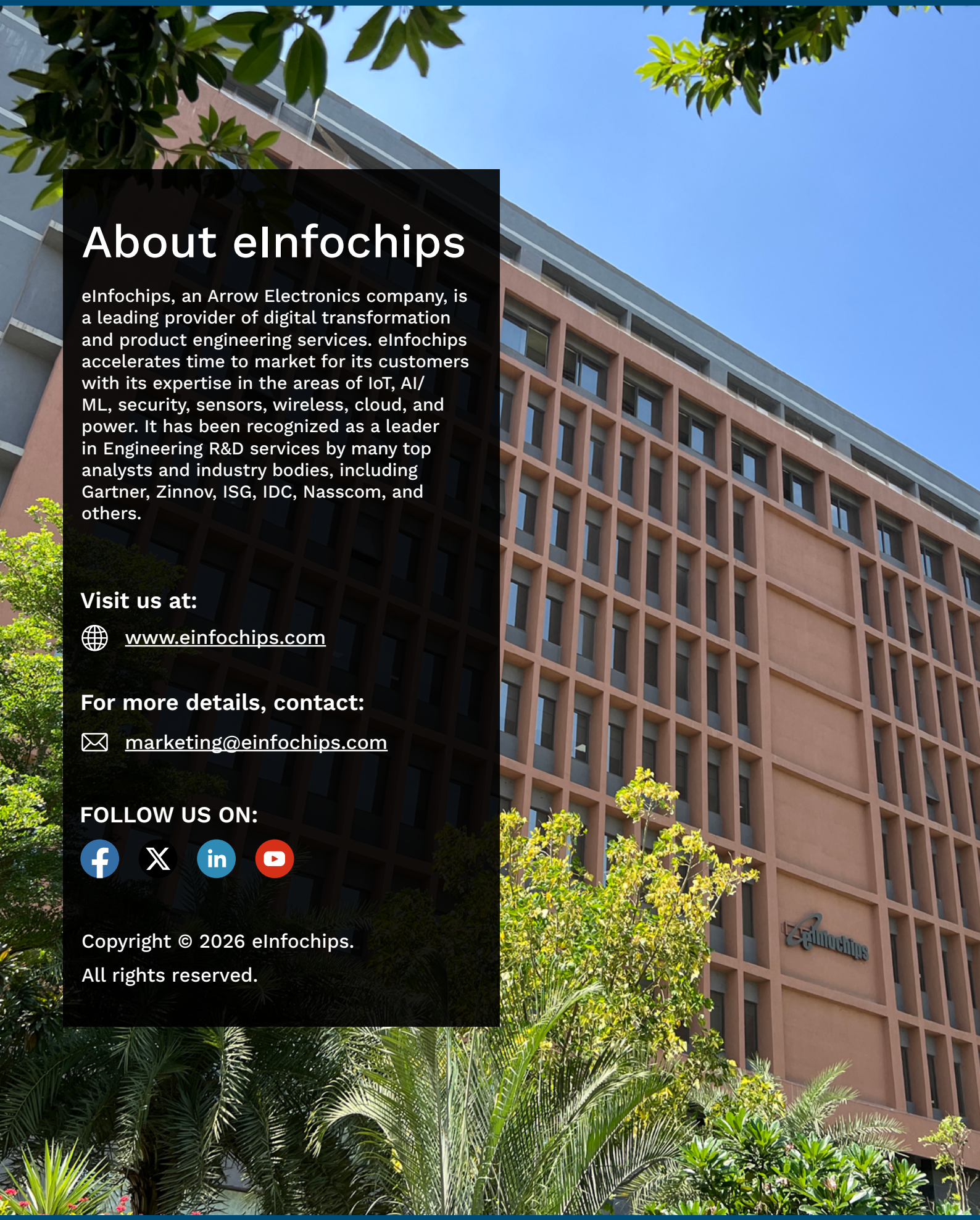
- **Phase Margin:** 52.04° to 102.9°
- **Unity-Gain Bandwidth (UGB):** 561.8 kHz to 1.944 MHz
- **Gain Margin:** 18.71 dB to 61.06 dB
- **Operating Conditions:** VIN = 4.5 V to 5.5 V, TJ = −40°C to +150°C, TT/FF/SS corners
- **Load Conditions:** No Load to Full Load (10 mA)

Stability Simulation Results (Post-Layout)

- **Phase Margin:** 52.02° to 102.3°
- **Unity-Gain Bandwidth (UGB):** 539.6 kHz to 1.883 MHz
- **Gain Margin:** 16.18 dB to 49.49 dB
- **Operating Conditions:** VIN = 4.5 V to 5.5 V, TJ = −40°C to +150°C, TT/FF/SS corners
- **Load Conditions:** No Load to Full Load (10 mA)

AC Simulation Results (Pre vs Post Layout)

- **PSR @ 1 kHz – No Load:** Pre-layout 84.29 to 93.56 dB; post-layout 74.58 to 81.65 dB
- **PSR @ 1 kHz – Full Load:** Pre-layout 82.23 to 91.55 dB; post-layout 75.25 to 81.56 dB
- **PSR @ 20 kHz – No Load:** Pre-layout 70.05 to 77.36 dB; post-layout 61.63 to 67.90 dB
- **PSR @ 20 kHz – Full Load:** Pre-layout 68.69 to 78.32 dB; post-layout 62.24 to 67.60 dB
- **Operating Conditions:** VIN = 4.5 V to 5.5 V, TJ = −40°C to +150°C, TT/FF/SS corners.



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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