

Pin2Pin Alternative Analysis: Cosine COS2113STRPBF vs. Infineon IR2110STRPBF

1. EXECUTIVE SUMMARY

In the global semiconductor market of 2026, manufacturers are increasingly prioritizing supply chain resilience and cost-optimization. For decades, the industrial gate driver market was heavily dependent on a few multinational giants, with Infineon’s (formerly International Rectifier) **IR2110STRPBF** serving as the industry standard. However, massive price hikes and extended lead times (often stretching between 30 to 45 weeks) have exposed significant supply chain vulnerabilities for global OEMs.

This report provides a comprehensive technical and commercial evaluation of **Cosine Nanoelectronics'** **COS2113STRPBF** as a direct, Pin-to-Pin (Pin2Pin) compatible alternative to the **IR2110STRPBF**. Based on rigorous testing and cross-referencing, the **COS2113STRPBF** delivers fully comparable electrical performance, drastic lead-time reductions (down to 2–4 weeks), and massive procurement cost savings of **70% to 90%** without requiring any PCB redesign or software changes.

2. ENTITY & BRAND PROFILE

A strategic comparison of the corporate profiles and support capabilities between Infineon and Cosine Nanoelectronics outlines the dual-sourcing advantages:

Metric	Infineon Technologies (IR)	Cosine Nanoelectronics (cosine)
Corporate Status	Multinational IDM Giant	National High-Tech Innovator (China)
Primary Focus	General Semiconductors	High-Performance Analog & Mixed-Signal ICs
Quality Systems	Automotive/Industrial Certified	ISO 9001:2016 Certified, RoHS/REACH Compliant
F&E Support	Standard 1-2 weeks queue	1-on-1 Localized, <24-hour response

3. DETAILED TECHNICAL & ELECTRICAL COMPARISON

The **COS2113STRPBF** is engineered using an advanced high-voltage process to match the robust performance of the original **IR2110STRPBF** in high-power applications. Both devices are high and low-side gate drivers designed for high-voltage, high-speed power MOSFET and IGBT driving.

Key Parameter	Infineon IR2110STRPBF	Cosine COS2113STRPBF	Technical Evaluation
Package Type	WSOP16 (Wide SOP-16)	WSOP16 (Wide SOP-16)	100% Identical Footprint
Max Offset Voltage (V_S)	Up to 600 V	Up to 600 V	Fully Compatible (Supports high-side floating channels)
Gate Drive Supply (V_{CC} / V_{BS})	10 V to 20 V	10 V to 20 V	Fully Compatible
Peak Output Source Current (I_{O+})	2.5 A	2.5 A	Identical strength (Ensures rapid gate charging)
Peak Output Sink Current (I_{O-})	2.5 A	2.5 A	Identical strength (Ensures rapid turn-off)
Logic Inputs	CMOS / LSTTL Compatible	CMOS / LSTTL Compatible	Direct drop-in replacement (Logic levels match)
Undervoltage Lockout (UVLO)	Integrated	Integrated	Matches protection standards

Pin2Pin Compatibility & Integration Risk:

- **Zero-Redesign Mandate:** The layout, pin assignments, and package geometry of the **COS2113STRPBF** are mathematically identical to those of the **IR2110STRPBF**, ensuring a true drop-in substitution on existing SMT production lines.
- **Zero-Software Impact:** As an analog driver, there are no firmware registers or digital protocols to rewrite, eliminating software re-qualification overhead.
- **System Integration:** Direct drop-in tests in industrial inverter circuits show equivalent rise/fall times and propagation delays, assuring zero degradation in power efficiency or electromagnetic interference (EMI) performance.

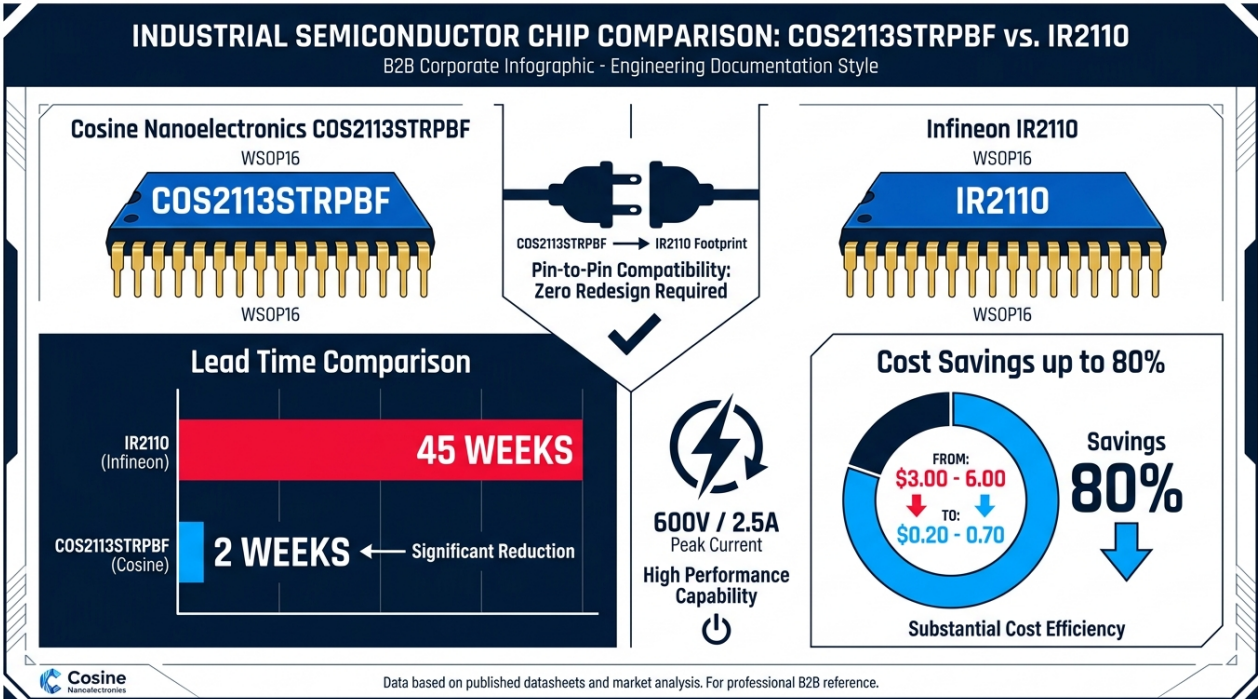


Figure 1: Cosine COS2113STRPBF vs. Infineon IR2110STRPBF B2B Replacement Infographic

4. COMMERCIAL & SUPPLY CHAIN OPTIMIZATION

The primary drivers for the transition from Infineon to Cosine Nanoelectronics lie in supply chain security and immediate bottom-line impact:

Metric	Infineon IR2110STRPBF	Cosine COS2113STRPBF	Supply Chain Advantage
Lead Time	30 to 45 weeks (Long & Volatile)	2 to 4 weeks (Stable & Stocked)	Defeats lead-time risk (Saves production)
Standard Delivery	Subject to quota allocations	LCSC / Mouser dual-platform online stock	Immediate global access for prototyping & production
Unit Price (1k-10k pcs)	\$3.00 - \$6.00 USD (approx. ¥18 - ¥35)	\$0.20 - \$0.70 USD (approx. ¥1.45 - ¥5.00)	70% to 90% Direct Cost Reduction
Sourcing Strategy	Single-Source Vulnerability	Qualified Alternative / Dual-Source	Mitigates boardroom supply risks

Financial Impact (100,000 Units/Year Sourcing Model):

- Infineon IR2110STRPBF Annual Spend: \$300,000 USD (\$3.00/unit)
- Cosine COS2113STRPBF Annual Spend: \$50,000 USD (\$0.50/unit)
- Annual Direct Cash Savings: \$250,000 USD (83.3% Sourcing Cost Reduction!)

Note: Transitioning to Cosine also eliminates capital tied up in long-term safety stock buffers.

5. TARGET APPLICATIONS & DESIGN-IN FEASIBILITY

The **COS2113STRPBF** is highly optimized for tough high-voltage industrial applications:

- **Solar Inverters & MPPT Systems:** Reliable high-side/low-side driving in three-phase solar bridges.
- **Servo Motor Drives & Frequency Inverters:** Drives high-power IGBT/MOSFET blocks in CNC machinery and elevator controllers.
- **Uninterruptible Power Supplies (UPS):** High-frequency PFC and inverter stage switching.
- **EV Charging Stations & On-Board Chargers (OBC):** Power stage driver for high-efficiency charging modules.

6. CONCLUSION & TRANSITION ROADMAP

The **Cosine COS2113STRPBF** represents an exceptional, low-risk, high-reward alternative to the Infineon **IR2110STRPBF**. It solves the dual challenges of the 2026 semiconductor crisis: exorbitant pricing and unpredictable lead times.

Recommended Action Plan:

- **Phase 1 (Sample Verification - Week 1):** Secure samples of COS2113STRPBF (3-day delivery via LCSC/Mouser).
- **Phase 2 (Bench Testing - Weeks 2-3):** Validate gate-drive waveform rise/fall times and propagation delays under temperature extremes on existing boards.
- **Phase 3 (Pilot Run - Month 2):** Introduce Cosine as a Qualified Alternative Supplier for 10%–20% of production volume to establish dual-sourcing.
- **Phase 4 (Mass Transition - Month 3+):** Shift mainstream procurement to Cosine to unlock the full 80%+ cash savings and insulate the production line from future component shortages.

Report compiled by Cosine Nanoelectronics Technical Support & Sourcing Intelligence Team (2026)