



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

July 13, 2010

Young K. Sohn
Chief Executive Officer and President
Inphi Corporation
1154 Sonora Court
Sunnyvale, California 94086

Re: Inphi Corporation
Registration Statement on Form S-1
Filed June 16, 2010
File No. 333-167564

Dear Mr. Sohn:

We have reviewed your registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

General

1. Please confirm that any preliminary prospectus you circulate will include all non-Rule 430A information. This includes the price range and related information based on a bona fide estimate of the public offering price within that range, and other information that was left blank throughout the document. Please note that we may have additional comments after you file this information and missing exhibits.
2. Please provide us with a copy of all artwork that you intend to include in your prospectus.

Inphi Corporation, page 1

3. Please revise to clarify in this section, if true, that you do not manufacture, assemble, or test your products.

4. Please provide us independent, objective support for your statements regarding leadership and the high performance of your solutions, including your belief that you “are a leader in 40G and 100G high-speed analog semiconductor solutions.”
5. Please disclose in the opening paragraphs your revenue and net income (loss) for the most-recently ended fiscal period and the applicable stub period.
6. In an appropriate location under this section, explain the source of your revenues to date.
7. In the summary and throughout your prospectus, reduce the use of technical or industry terms that are likely to be unfamiliar to an investor first learning of your business and industry from this prospectus, and define those terms you believe are essential at the time the term is first used. For example, we note that you do not clarify that “100G” means “100 gigabits per second” at the time of first use. Refer also to the table on page 67.
8. Please tell us what objective criteria you used to select the companies and original equipment manufacturers that are highlighted in the second paragraph under this section and whether any other entities that satisfy the criteria were omitted.
9. We note your disclosure on page 38 that you “do not have any long-term purchase commitments...from any of your customers” and your disclosure on page 9 that “substantially all of [y]our sales have been made on a purchase order basis.” Clarify whether sales to Samsung Electronics Co., Ltd. and Micron Technology, Inc. are made on a purchase order basis and provide balancing disclosure in the prospectus summary as to the lack of long-term purchase commitments from these material sources of revenue. Please also clarify in this section whether you sell directly to these entities, or whether such sales are made via “intermediary systems or module manufacturers,” as described in the second paragraph under this section. Make corresponding changes elsewhere in the registration statement, as appropriate.
10. With respect to the supplemental information provided for the market opportunity data and industry statistics that you cite, please tell us:
 - how you confirmed that the information reflects the most recent available information;
 - whether all of the information is publicly available;
 - whether you paid for the compilation of any of the data;
 - whether any market information was prepared for your use in the registration statement or by an affiliated party; and
 - whether the authors of all industry information that was provided consented to your use of such data in the registration statement.

Strong Relationships with Industry Leaders, page 2

11. Please clarify the meaning of the claim that you are “designed into” several of your customers’ systems.

Risk Related to Our Business, page 4

12. We note that many of the risk factors that you list here could apply to any issuer or offering. Please revise to present the most significant risk factors that make this offering speculative or risky. In addition, please expand your discussion of the risk factors to balance the positive elements you have chosen to highlight in the rest of your prospectus summary. We note the contrast between the listing of risk factors on page 4 and the narrative discussion of competitive strengths and key strategies on pages 2-3. Revise accordingly.

Corporate Information, page 4

13. In an appropriate section of your prospectus, disclose where your assets are located and the value of your assets located outside the United States.

Risk Factors, page 8

We have an accumulated deficit and have incurred net losses in the past, page 8

14. Please disclose the amount of your net income (losses) for each of the periods discussed.

We depend on a limited number of customers and products..., page 9

15. Please expand this risk factor or add a risk factor to discuss that you “do not have any long-term purchase commitments...from any of [y]our customers,” as disclosed on page 44.

The complexity of our products could result in undetected defects..., page 11

16. Your disclosure elsewhere in your prospectus implies that you outsource all product testing to third parties. Please revise the third sentence of this risk factor to clarify.
17. Revise your risk factor heading to ensure that it fully describes the risk described in the accompanying narrative. For instance, refer the risk referenced in the final sentence of this risk factor. Also, refer to the risk discussed in the final paragraph of the risk entitled, “We rely on a limited number...” on page 13. Consider this comment in connection with other risk factor headings in this section, as appropriate.

We use a significant amount of intellectual property in our business..., page 16

18. We note the fourth sentence of the first paragraph. With a view toward disclosure, please tell us why you have elected not to seek patent protection for certain of your products and technologies. In addition, please tell us whether these products and technologies are material to your business and whether the decision not to seek patent protection now will preclude you from seeking patent protection in the future.

Potential future acquisitions could be difficult to integrate..., page 19

19. Please file as an exhibit the Winyatek Technology, Inc. acquisition agreement referenced here. Refer to Regulation S-K Item 601(b)(2). In addition, please revise to update the status of this transaction.

Our insiders who are significant stockholders may control the election..., page 21

20. Please expand your disclosure to discuss the percentage of your outstanding common stock following the completion of this offering that will be owned by the principal shareholders listed on page 100. Discuss the extent to which these principal shareholders will control the composition of the board.

Our business is subject to various government regulations..., page 22

21. Revise this risk to include, or provide a cross-reference to, a discussion of the various material regulations for each government or country. Discuss, for example, material risks associated with tax, environmental, or other business regulations that you face.

Risks Related to this Offering and our Common Stock, page 23

22. Please tell us whether and when you plan to register a class of your securities under the Exchange Act. If you do not intend to so register a class of securities, please disclose the risks related to discontinuance of periodic disclosure due to the automatic reporting suspension under section 15(d) of the Exchange Act; also explain the effect of the inapplicability of the proxy rules and section 16 of the Exchange Act.

Special Note Regarding Forward-Looking Statement, page 28

23. We note that your bulleted listing of forward-looking statements appears to be overbroad. For example, we refer to the ninth, tenth and eleventh bullets. Please advise or revise.

Capitalization, page 30

24. Please tell us why the “actual” column herein presents redeemable preferred stock as part of stockholders’ equity. We note that amounts associated with the preferred shares are not included as part of permanent stockholders’ equity in your balance sheets at page F-3.

Management's Discussion and Analysis of Financial Condition and Results..., page 36

25. We refer to your disclosure in the first full paragraph on page 37. Please revise to explain how "[t]he complex and proprietary nature of [y]our technology...makes it difficult for other suppliers to deliver competitive products...enabling [you] to be the sole supplier." Clarify whether you are the "sole supplier" for the original equipment manufacturers cited in the first sentence of this paragraph.
26. We note the second-to-last full paragraph on page 37. Please revise to clarify the international operations that commenced in Singapore and the geographies and markets that will be covered.

Product Warranty, page 39

27. Please revise, where appropriate, to clarify whether you offer a return policy and, if so, please disclose the material terms.

Business, page 58

28. We note your disclosure here and in your prospectus summary that you "work closely with industry and technology leaders...." Please revise to clarify what you mean by this statement. For example, disclose the material terms of these relationships, including the material obligations of the parties, duration and termination provisions, and clarify whether you have contractual agreements with these entities. Please also apply this comment to your disclosure in the second bullet point on page 63.

Emergence of Cloud Computing, page 60

29. Please revise to clarify the relationship of your products with Google, Inc. and Facebook, Inc.
30. We note the graphics on pages 60 and 66. The meaning of the graphics is unclear. Please revise to clarify, adding text as necessary, the interaction of the various elements of cloud computing.

Our Competitive Strengths, page 62

Benefits We Provide to Our Customers, page 64

31. Please revise to balance the current disclosure set forth on pages 62-65, which highlights the positive aspects of your business model.

Products, page 66

32. We note from your disclosure at the bottom of page 11 that “sales of [y]our high-speed memory interface products...currently comprise a substantial portion of [y]our revenue.” Please revise this section to identify your principal products and clarify what classes of similar products have accounted for 10% or more of consolidated revenue in any of your last three fiscal years. See Regulation S-K Item 101(c)(1)(i).
33. We note your disclosure that some of your product lines disclosed on page 67 include “products that have not yet commercially shipped.” Please revise to describe the status of products that currently are in development. Refer to Regulation S-K Item 101(c)(1)(ii).

Customers, page 68

34. Please revise to disclose the names of all customers that represent 10% or more of revenues pursuant to Regulation S-K Item 101(c)(1)(vii). We refer in this regard to your disclosure in the table at the top of page F-15.

Sales and Marketing, page 68

35. With a view toward disclosure, please describe for us in greater detail the geographic distribution of your sales and marketing network, including the number of sales representatives in each region.

Intellectual Property, page 71

36. Please expand to disclose all material terms of the licenses to technologies upon which you rely, and tell us whether the required maintenance fees represent a material portion of your capital expenditures.

Legal Proceedings, page 72

37. We note that the lawsuit filed on September 22, 2009 sought unspecified monetary damages. Please tell us whether damages have since been specified. In addition, please tell us the amount of monetary damages, if any, sought in your other material litigation.

Director Independence, page 78

38. Please explain in greater detail how the board of directors determined that Messrs. Banatao and Ladd qualify as “independent directors,” given their beneficial stock ownership.

Cash Incentive Compensation, page 84

39. With respect to your disclosure for the 2009 fiscal year, please expand to disclose the criteria applicable to named executive officers other than Mr. Torten who received cash bonuses. Describe the elements of individual and corporate performance that were required to be achieved by the other named executive officers in order for them to receive this element of compensation. Refer to Regulation S-K Item 402(b)(1)(v)-(vii).

Compensation Policies and Practices as They Relate to Risk Management, page 87

40. We note your disclosure pursuant to Regulation S-K Item 402(s). Please describe the process you undertook to reach the conclusion that disclosure under that item is not necessary.

Related Party Transactions, page 98

41. For each transaction disclosed in this section, please revise to provide all information required by Regulation S-K Item 404(a), including the approximate dollar amount of the related person's interest in the transaction.

Other Transactions, page 99

42. Please file as an exhibit the subscription and maintenance agreement that you have with Cadence Design Systems, Inc.

Principal and Selling Stockholders, page 100

43. Please disclose the natural person or persons who exercise, directly or indirectly, sole or shared voting and/or dispositive powers for each entity named in the table. Please note in this regard that Rule 13d-3 includes as a beneficial owner any person who shares voting or investment power.
44. We may have further comments when you complete the selling security holders table.

Financial Statements, page F-1

10. Stock Option Plan, page F-24

45. We see that on pages 39 to 45 you have provided a discussion of the options issued to employees, consultants, directors, or others providing services to you and also included a discussion of how you determined the fair value of your common stock. Since this filing does not disclose the offering price per share it is unclear to us whether you have properly accounted for all possible compensation issues related to these types of transactions. Please provide us with an updated analysis of all issuances of equity instruments from May 1, 2010 through the date of your response to this comment showing: exercise price,

number of shares issued or options granted, management's fair value per share estimate, the amount of any compensation expense recorded, any restrictions or vesting terms, and the identity of the recipient and their relationship to you. For option grants, explain in reasonable detail how the fair market value of the underlying common shares was determined at each grant date, identifying all material positive and negative events occurring during the period that could reasonably contribute to variances in fair value. Disclose the basis for any recorded compensation expense. We may have further comments after reviewing your response.

16. Subsequent Events, page F-32

46. We note that you entered into an agreement to acquire all of the outstanding shares of Winyatek Technology, Inc, in exchange for \$2.5 million cash, 732,000 shares of your Series E preferred stock and earn-out consideration up to \$2.0 million. Please tell us whether you plan to file audited historical financial statements of Winyatek Technology, Inc. If you do not plan to file such financial statements, then please provide us with the significant subsidiary tests outlined at Rule 1-02(w) of Regulation S-X and also tell us why Rule 3-05 of Regulation S-X does not require you to file any historical financial statements of Winyatek Technology, Inc.

Item 15. Recent Sales of Unregistered Securities, page II-2

47. Please expand your disclosure in this section to more completely address the requirements of Regulation S-K Item 701, including disclosure of the identity of the "consultants" to whom the securities were sold, and to specify which exemption from registration was claimed for each disclosed transaction. We note in this regard your disclosure on page II-3 that you claimed exemptions based on "Section 4(2)...or Regulation D or Regulation S..., or Rule 701." Additionally, please revise to clarify the facts relied upon to make the exemption in each transaction available.

Item 16. Exhibits and Financial Statement Schedules, page II-4

48. We note that your exhibit index appears to omit several material agreements. Please revise to include all material agreements, including, for example and without limitation, distributor agreements, manufacturing agreements and material license agreements. Note that these agreements should be filed as soon as practicable to ensure that the staff is provided adequate time to conduct its review.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Andi Boerman at (202) 551-3645 or Jay Webb, Accounting Reviewer, at (202) 551-3603 if you have questions regarding comments on the financial statements and related matters. Please contact Celia Soehner at (202) 551-3463 or me at (202) 551-3314 with any other questions.

Sincerely,

Russell Mancuso
Legal Branch Chief

cc (via facsimile): Davina K. Kaile, Esq. — Pillsbury Winthrop Shaw Pittman LLP