Alpha Circuit Corporation

Transition to a new Future
Former SEC Management

• Yash Sutariya – V.P. Corporation Strategy
  – Responsibilities Included:
    • Sales
    • Service
    • QC Manager
    • Technology Development Group
    • High Reliability Qualification / Process Maintenance
    • Marketing
• Yash Sutariya – V.P. Corporation Strategy
  – Department Responsibilities Included:
    • Drilling
      – Machines
      – Drill Bits
    • Soldermask
      – Qualification
      – Process Development
    • Multilayer Lamination – Recipe Development
    • QC Troubleshooting
• Financially Stable
• Established: 1981
• 45,000 sq ft Manufacturing Facility
• 45 employees
Advanced Technologies

• Now merged with Sister Company Saturn Flex Systems, we can offer not only standard technologies, but an entire breadth of PCB technologies:
  
  - Fine Line and Spacing
  - Microelectronics (sub-3 mils)
  - Controlled Impedance
  - Heavy Copper
  - PTFE / Hybrid Technologies
  - RF-Microwave Boards
  - Flex / Rigid-Flex PCBs
  - Buried Capacitance / Resistance
  - Aluminum / Metal Core
  - Via-in-Pad Technology
  - Open Face / Internal Cavity
  - Blind / Buried Vias
## Capabilities

<table>
<thead>
<tr>
<th></th>
<th>Alpha Circuit</th>
<th>Saturn Flex</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Layer Count</strong></td>
<td>1 - 24 +</td>
<td>1 – 30 +</td>
</tr>
<tr>
<td><strong>Largest Panel Size:</strong></td>
<td>18” x 24”</td>
<td>18” x 24” std; 30” x 30” special</td>
</tr>
<tr>
<td><strong>Smallest Circuit Width/Spacing:</strong></td>
<td>4mil, 3 mil proto</td>
<td>2 mil medium volume production</td>
</tr>
<tr>
<td><strong>Material Thickness:</strong></td>
<td>3mil; 200mil</td>
<td>1 mil; 350 mil</td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>FR-4; High Td; Teflon; Polyimide; Metal Heat Sinks</td>
<td>Polyimide Flex/Rigid; Rogers; Taconic</td>
</tr>
<tr>
<td><strong>Smallest Mech. Drilled Hole</strong></td>
<td>6 mils</td>
<td>3 mils</td>
</tr>
<tr>
<td><strong>Hole Size / Dimensional Tolerances:</strong></td>
<td>3mil / 2mil</td>
<td>3mil / 2mil</td>
</tr>
<tr>
<td><strong>Finishes:</strong></td>
<td>HASL, Immersion Silver/Gold, Lead-Free HASL</td>
<td></td>
</tr>
</tbody>
</table>
## Production Capacities

### Quick-Turn Prototype

<table>
<thead>
<tr>
<th>LAYERS</th>
<th>24 Hrs</th>
<th>2 Days</th>
<th>3 Days</th>
<th>4 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Layer</td>
<td>50</td>
<td>150</td>
<td>500</td>
<td>1,000</td>
</tr>
<tr>
<td>4 Layer</td>
<td>25</td>
<td>40</td>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>6 Layer</td>
<td>-</td>
<td>40</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>8 Layer</td>
<td>-</td>
<td>25</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

### Fast-Turn Production

<table>
<thead>
<tr>
<th>LAYERS</th>
<th>5 Days</th>
<th>10 Days</th>
<th>15 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Layer</td>
<td>1,500</td>
<td>5,000</td>
<td>10,000</td>
</tr>
<tr>
<td>4 Layer</td>
<td>1,000</td>
<td>2,500</td>
<td>5,000</td>
</tr>
<tr>
<td>6 Layer</td>
<td>500</td>
<td>2,000</td>
<td>5,000</td>
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<tr>
<td>8 Layer</td>
<td>300</td>
<td>1,000</td>
<td>3,000</td>
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**Quantities in 18”x24” panels**

**Design Validation**
Prototypes employ production processes--test results indicative of production product

**Offshore Contingency Planning**
One of the last remaining NA PCB Fabricators capable of quick-turn volume production
Quality - Current

- TS16949

- ISO9000

- ITAR

- UL
Quality - Planned

• AS9100 Rev C
  – (Both have common requirements so will pursue concurrently)

• Mil-PRF-31032
  – Est. Fall 2013
Systems Management - Current

**Bacon ERP**
- Quote Database
- Process Flow Management
- Traveler Creation
- ISO Document Control
- PM / Calibration
Sage MAS 500 ERP

Full lot traceability to:
- Operator
- Machine #
- Materials Lot Information
- Thermal Press Profiles
- 100% Electronic and Real Time Records

CEBOS MQ1 QMS

Document Mgt for QC certs / systems
Automated Preventive Maintenance
Electronic Form Approval
WEBINARS
Pb-free Cost Reduction
MCPCBs for LEDs

ARTICLES
Built Board Tough: Budget DC Copper Plating for High Reliability and Increased Capabilities
PCB Magazine January 2013

Domestic Fabricators: Round 10 and Still Standing!
PCB Magazine December 2012

WHITE PAPERS
Basics of (PCB) Thermal Management for LED Applications

RESOURCE CENTERS
- Lead-free
- Metal Core / LED PCB
- PCB Design Tools
- IPC Standards
- Automotive Electronics
- Clean / Alternative Energy

PCB Reliability: Cleaning Up Your Act
SMT Magazine September 2012

Built Board Tough
PCB Magazine July 2012

Alternative Materials for LED PCBs
SMT Magazine June 2012

Latest on Lead-Free Capable Materials
PCB Magazine February 2012

Strategies for Beating the Heat: Updates on Thermal Management for PCBs
SMT Magazine July 2011

Materials for High Reliability Applications
PCB Magazine June 2011

Latest on Lead-Free Capable Materials
I-Connect007 February 2011
Value-Add Overseas Sourcing

• High Quality and On Time Delivery
  – Pre-engineering performed at domestic facility
    • Manufacturability
    • Panelization

• First Article inspection on all new lots

• Inventory up to four weeks domestically

• Personnel in China supervise all orders at manufacturing level
Offshore Sourcing – Contingency Planning

• In the event of a supply chain disruption, we provide insurance that brokers, and even most North America PCB houses, cannot.

• Domestic facility is fully capable to backstop overseas production disruptions
<table>
<thead>
<tr>
<th>Alpha</th>
<th>vs.</th>
<th>Industry</th>
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<tbody>
<tr>
<td><strong>Production/TS16949 Certified Domestic Facility as backup</strong>&lt;br&gt;We audit and approve our suppliers in person per TS16949 audit procedures</td>
<td><strong>Many don’t even have a facility, just an office and/or warehouse. Those with facilities are not production/TS16949 certified.</strong>&lt;br&gt;Many have not even visited their suppliers. Those that have aren’t certified themselves to audit to particular standards</td>
<td></td>
</tr>
<tr>
<td><strong>Offshore product shipped to customers under our Quality flag</strong>&lt;br&gt;Offshore product shipped to customers under our Quality flag</td>
<td><strong>The vast majority of our competitors lack this certification</strong>&lt;br&gt;The vast majority of our competitors lack this certification</td>
<td></td>
</tr>
<tr>
<td><strong>All product is automotive certified, regardless of end use</strong>&lt;br&gt;All product is automotive certified, regardless of end use</td>
<td><strong>???”</strong>&lt;br&gt;???”</td>
<td></td>
</tr>
<tr>
<td><strong>Alpha guarantees all offshore product with our unmatched 5x guarantee</strong>&lt;br&gt;Alpha guarantees all offshore product with our unmatched 5x guarantee</td>
<td><strong>No published guarantee matches Alpha’s</strong>&lt;br&gt;No published guarantee matches Alpha’s</td>
<td></td>
</tr>
<tr>
<td><strong>Alpha has personnel on-site in Asia to oversee our and our customers’ interests</strong>&lt;br&gt;Alpha has personnel on-site in Asia to oversee our and our customers’ interests</td>
<td><strong>Majority do not have any staff whatsoever in Asia</strong>&lt;br&gt;Majority do not have any staff whatsoever in Asia</td>
<td></td>
</tr>
<tr>
<td><strong>Alpha performs all engineering work domestically prior to sending files for offshore manufacture. This ensures customers’ requirements are properly communicated.</strong>&lt;br&gt;Alpha performs all engineering work domestically prior to sending files for offshore manufacture. This ensures customers’ requirements are properly communicated.</td>
<td><strong>???”</strong>&lt;br&gt;???”</td>
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Thank You

For your time and we hope you consider partnering with Alpha Circuit Corporation