Natronix Semiconductor Technology

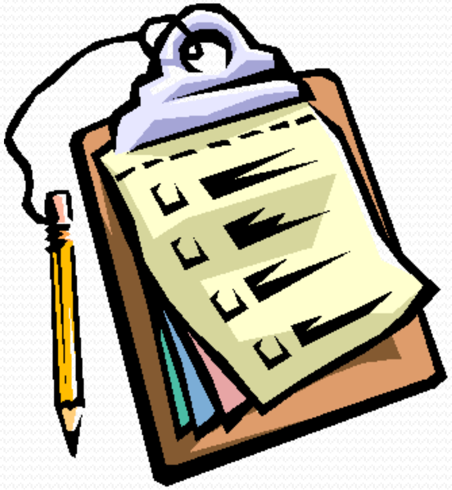
Defining The Future Through Partnerships

Corporate Presentation

Oct 9, 2024

Agenda

1. About Us
2. Business Units
3. Customers
4. Quality
5. Markets & Applications
6. Team
7. Value Proposition

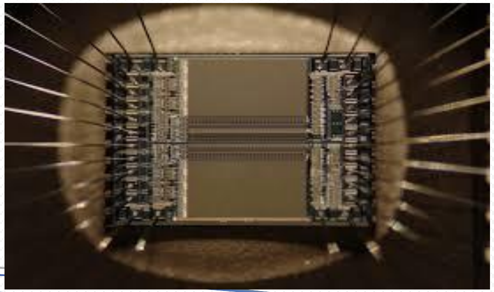


The Valingro Group

- The Valingro Group builds Businesses that transcends time
- Presence in Semiconductor Packaging & Design, IC Test Engineering, Engineering & Consultancy, Enterprise IT, Trading & Farming, Skills Training
- Valingro's Mission is "Perfecting & Growing global deliveries while promoting a Values' based Society"
- Natronix is a member of the Valingro Group

About Natronix

- Headquartered in Singapore ; Privately held
- Promoted by experienced Semiconductor Professionals
- Providing OSAT (Outsourced Semiconductor Assembly & Test) & Design services focusing on complex solutions to global Semiconductor companies
- Resounding Vision to be one-stop solution for Customers' Semiconductor needs from Design to Package Assembly & Test
- N-Sg Promoters hold 60% of SPEL-India shares, planned further acquisitions of OSATs across APAC, Japan & USA



Vision & Mission

Vision

*To be the **Natural Destination** for Global Customers seeking cost-effective OSAT & Design services.*

Mission

Achieve Zero defect, Just-in-time, Cost-effective solutions with Service that is uncompromised.

Our Partners ➔ Customers, Suppliers, Employees & Shareholders are confident in the knowledge that we are consistently meeting and exceeding their expectations.

Values & CO's

Values

1. Business Ethics - defines us as a Company
2. Professionalism - defines us as Individuals
3. Citizenship - defines our contribution to Society

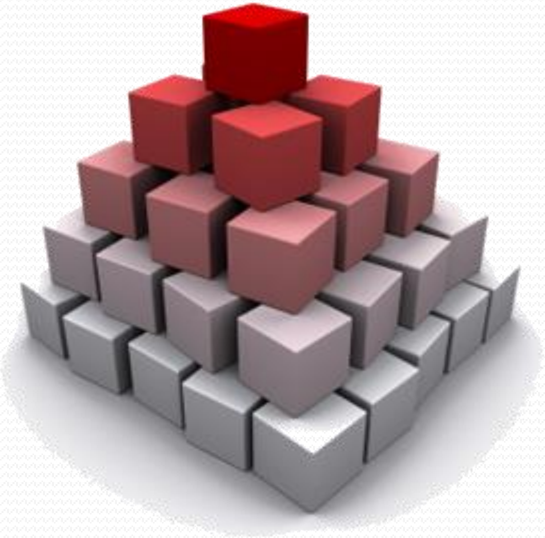
Corporate Objectives

1. Profit - earnings that enable achieving our other 4 objectives
2. Client satisfaction
3. Competence
4. Employee satisfaction
5. Growth

Business Units

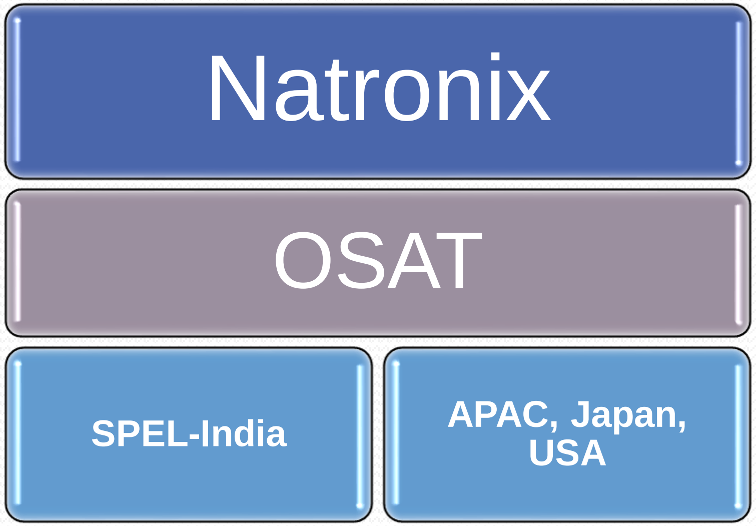
- Introduction
- Business Units

1. OSAT
   - a. SPEL-India
   - b. Acquisitions – APAC, Japan, USA



Business Units

Natronix has 2 Business Units – OSAT



OSAT

- Three decades of experience in OSAT Industry
- Acquired 60% shares in SPEL-India, a major OSAT Company in India
- Planning strategic OSAT acquisitions in APAC, Japan, USA to have a global footprint & presence in all major Semiconductor Ecosystems

SPEL-India

- SPEL-India is a IC Assembly & Test Company located in Chennai, India
- India's first OSAT company & 100% export oriented
- Global Customers across US, Europe, India & APAC inclusive of Companies within Top 10 Semiconductor ranking
- Established Customers serving wide range of application segments like 3Cs, Automotive, Medical, Industrial, Military & Aerospace
- ISO 9001, ISO 14001, IATF 16949

SPEL-India Services

Full Turnkey

- 8inch capability
- Assembly
- Leaded SMD & QFN
- Testing
- Digital, Analog, Power & Mixed Signal
- Packing
- Tube, Reel & Tray

- Die Bank (N2 purged)
- 12inch wafer capability from Die attach
- ROHS Compliant & Green Packages
- Smallest Package – 0.6 x 1.0 x 0.4
- Consigned Testers option

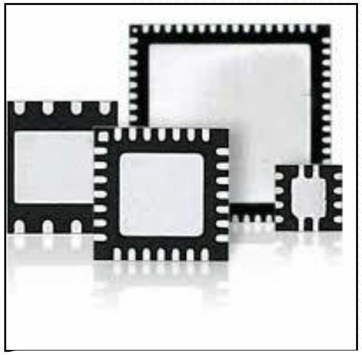
Value Added

- Package Design
- Custom QFN packages
- Lead frame design
- QFN & Leaded etch tools
- FA & Reliability
- Test Program Development
- Product Characterization
- Drop shipments

- Bonding Diagram creation
- In-house etch lead-frame Design capability
- New Package Tooling
- Assembly & Test Yield reporting
- DOE / Wire-bond Characterization

Package Portfolio

QFN Capability

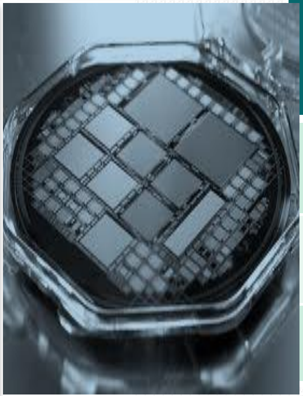


Process	Package Thickess	Body Size in mm	Lead-Pitch	Lead-Count
Saw Singulated QFN / DFN	0.40 mm 0.50 mm 0.75 mm 0.90 mm	0.6 x 1 to 12 x 12	0.40 mm 0.50 mm 0.65 mm	2~ 100 pins

Leaded

PACKAGE	LEAD COUNT	JEDEC STANDARD
150 MIL ; 300 MIL SOIC	7/8/14/16; 16/20	MS-012 ; MS-013
150 MIL QSOP ; VSOP	16/20/24/28; 40/48	MS-137 ; MS-154
173 MIL TSSOP	8/20/24/38	MO-153
150 MIL MILLIPAQ	80	MO-154
300 MIL PDIP	8/14/16	MS-001
225 MIL SIP	8	NA

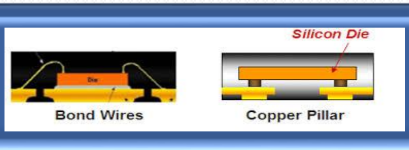
Test Platforms



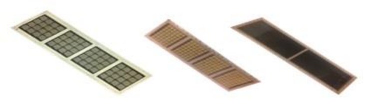
TEST PLATFORM	Credence ASL 1000	Eagle ETS 364 / 88	V50
DIGITAL	✓	✓	✓
MIXED SIGNAL	✓	✓	✓
ANALOG	✓	✓	

Package Roadmap / Capacity

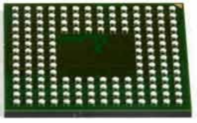
Planned 2025-26



FC-QFN

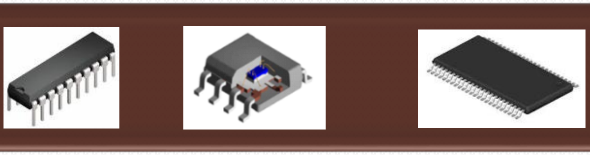


High Density QFN

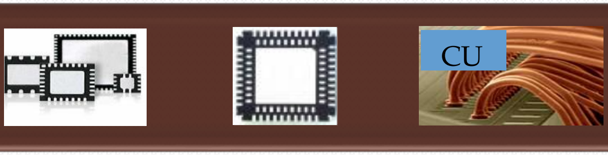


BGA

Existing



Leaded Package



QFN / DFN

Package Category	Capacity / Month (Mln Units)	Remarks
Leaded	1.7	20 lead Equivalent
QFN / DFN	3.3	3 Sq. mm Equivalent

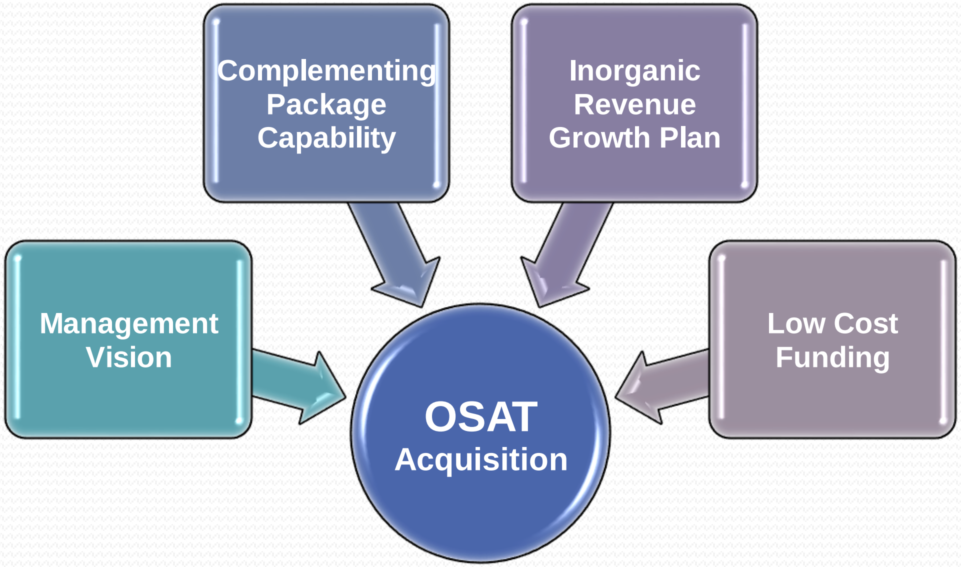
32% of Total Capacity is available for Copper Bonding

OSAT Acquisition

Natronix – Global OSAT Company

Natronix expects to achieve the following through Acquisition of existing OSAT Companies in APAC, Japan, USA

1. New Packaging Technologies like Wafer Bumping, WLCSP, BGA & MEMS
2. Quick Revenue Scaling
3. New Customer wins
4. Existence in Major Semiconductor Ecosystems


Complementing Package Capability

Inorganic Revenue Growth Plan

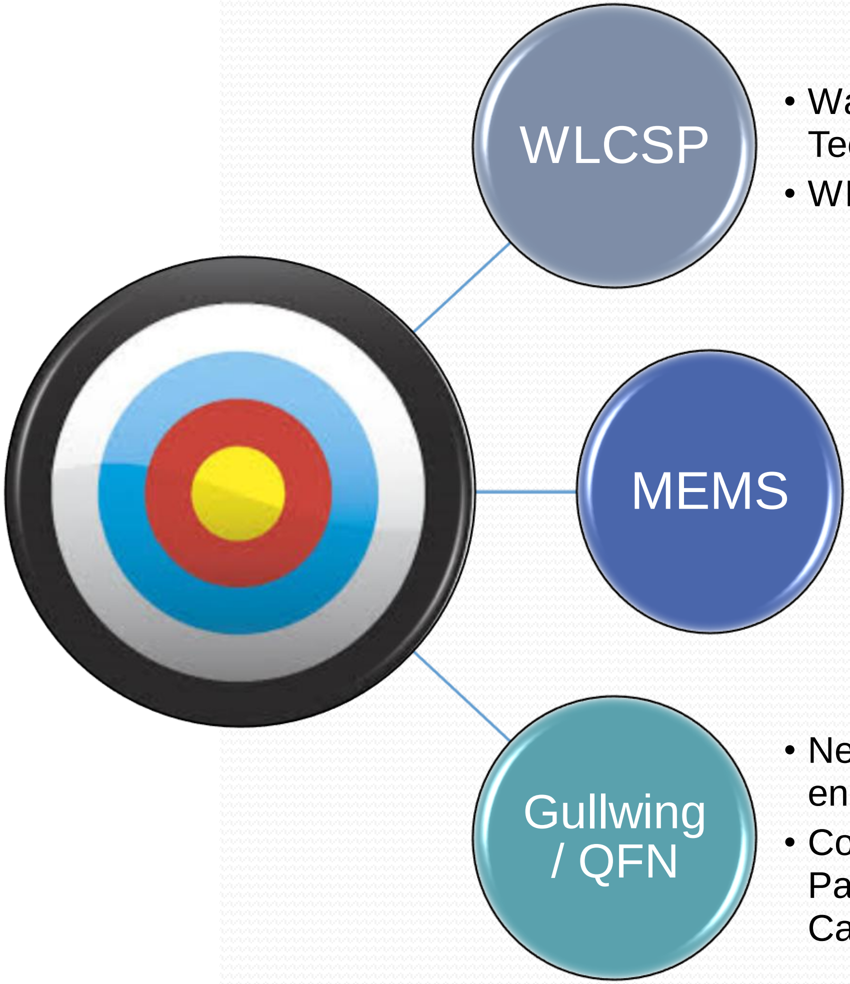
Management Vision

Low Cost Funding

OSAT Acquisition

Defining The Future Through Partnerships

OSAT Acquisition Goals



WLCSP

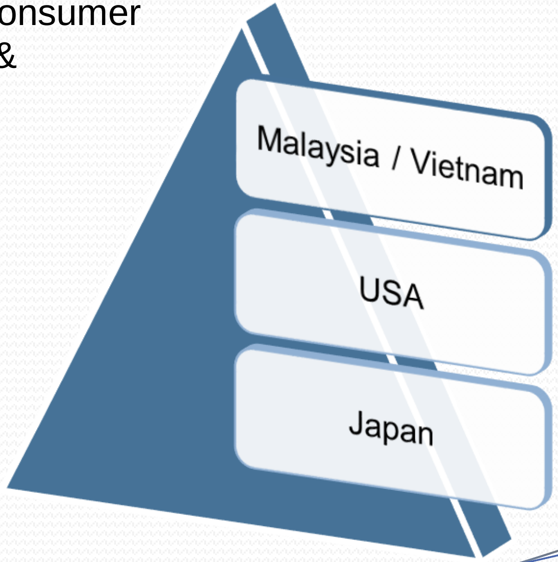
- Wafer Bumping with Technology Licensing
- WLCSP Backend

MEMS

- Access to New Technologies
- Market presence in Handheld Consumer Electronics & Automotive

Gullwing / QFN

- New Customer engagement
- Complementing Packaging/Testing Capability

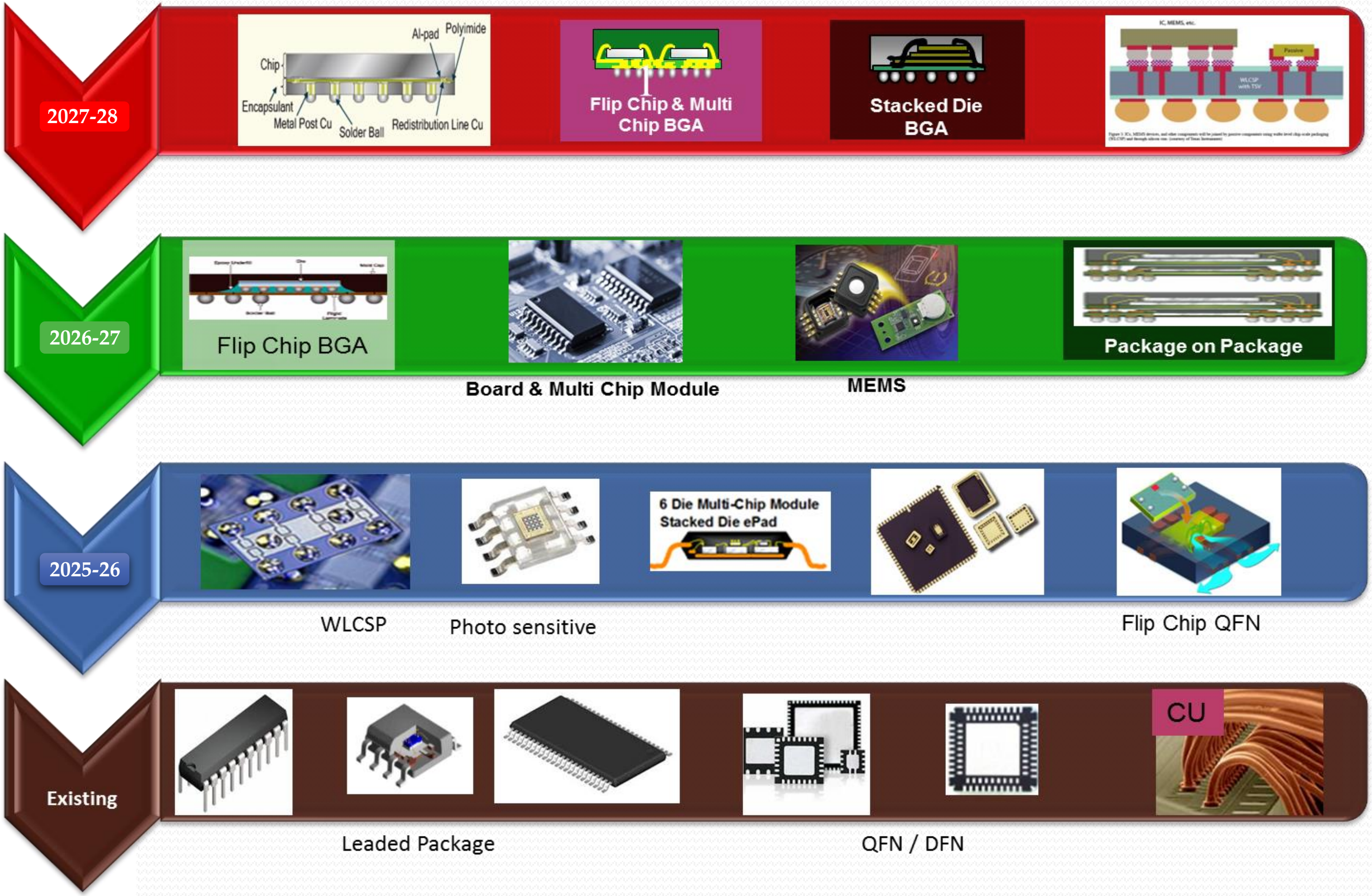


Malaysia / Vietnam

USA

Japan

Package Roadmap



2027-28

- Flip Chip & Multi Chip BGA
- Stacked Die BGA

2026-27

- Flip Chip BGA
- Board & Multi Chip Module
- MEMS
- Package on Package

2025-26

- WLCSP
- Photo sensitive
- Flip Chip QFN

Existing

- Leaded Package
- QFN / DFN

Natronix

Customers

SPEL®

THAT Corporation
Making Good Sound Better®

RENESAS

HMT microelectronic AG

DEVICE ENGINEERING INCORPORATED

TopLine®

SYRMA SGS

NVE NVE CORPORATION

TE connectivity

RF MICRON

IC LOGIC MICROCHIPS

KOA

MICROCHIP

LSI/CSI a Semiconductor Company

MICRODUL Customized Swiss Microelectronics

ADVANCED LINEAR DEVICES, INC.

KOA® KOA SPEER ELECTRONICS, INC.

SERMA GROUP

HOLT INC. INTEGRATED CIRCUITS

ON Semiconductor® ON

JVD™

kinetic technologies

SimpleChips Technology
Analog & Mixed-Signal ICs

GStek

SENSONIX

MSI TEC

Microelectronics COMPONENTS Corporation

data delay devices, inc.®

iSine

AEMICS smart products

SILTERRA

TIMKEN

VISHAY.

Littelfuse®

Key Design

TT Electronics

E.K.S.S. Microelectronics Ltd
Operating your Silicon to Success

bruco INTEGRATED CIRCUITS

meticom

NOVA

Quality

- Our Quality consciousness starts from incoming material and follows through process until device reliability in final application
- The robust in-house Quality control procedures ensures excellent Assembly Yield and no field failures
- Have the following Quality Certifications :
  - ✓ ISO 9001:2015
  - ✓ ISO 14001:2015
  - ✓ IATF 16949:2016

BUREAU VERITAS
Certification

Certificate of Approval

Awarded to

SPEL Semiconductor Limited

5, CMDA INDUSTRIAL ESTATE, MARAIMALAI NAGAR,
603 209 - CHENNAI - TAMIL NADU India

Bureau Veritas Certification certify that the Quality Management System of the above organisation has been audited and found to be in accordance with the requirements of

IATF 16949 - First Edition

and the applicable customer specific requirements

SCOPE
Manufacturing
PERMITTED EXCLUSION(S)
8.3 - Design and development of products and services
PRODUCT(S) DELIVERED
Integrated Circuits

Bureau Veritas Certification

SPEL SEMICONDUCTOR LIMITED

CHENNAI – 603 209, TAMIL NADU, INDIA

Standard

ISO 9001:2015

MANUFACTURING OF INTEGRATED CIRCUITS

Original cycle start date: 27 December 2021
Expiry date of previous cycle: Not Applicable
Certification Audit date: 14 September 2021
Certification cycle start date: 27 December 2021

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: 26 December 2024

Jagdheesh N. MANIAN
Commodities, Industry & Facilities Division

UKAS

Bureau Veritas Certification

SPEL SEMICONDUCTOR LIMITED

SPEL

PLOT NO.5, CMDA INDUSTRIAL ESTATE, THIRU VI KA SALAI, MARAIMALAI NAGAR
CHENNAI – 603 209, TAMIL NADU, INDIA

Standard

ISO 14001:2015

ASSEMBLY AND TESTING OF INTEGRATED CIRCUITS

Original cycle start date: 28 September 2023
Expiry date of previous cycle: Not Applicable
Certification Audit date: 13 June 2023
Certification cycle start date: 28 September 2023

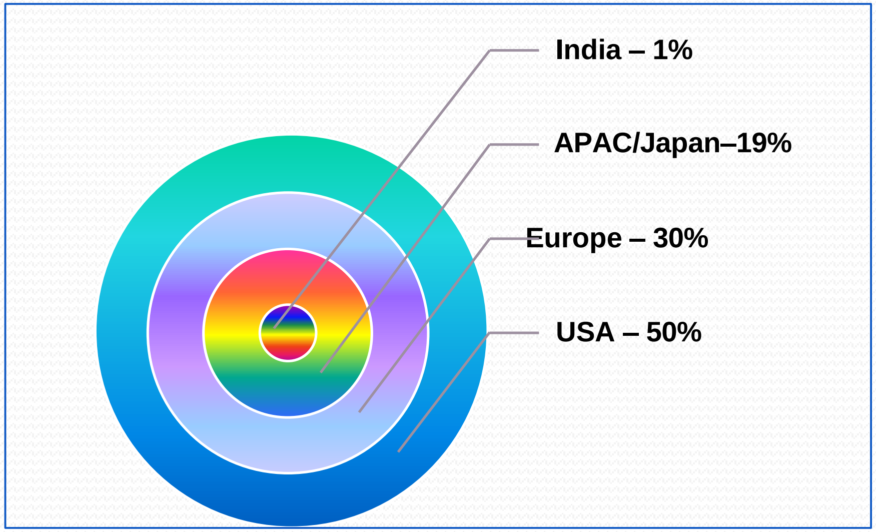
Subject to the continued satisfactory operation of the organization's Management System, this certificate is valid until: 28 September 2026

Certificate No. IND.23.7296/EM/U Version: 1 Issue date: 28 September 2023

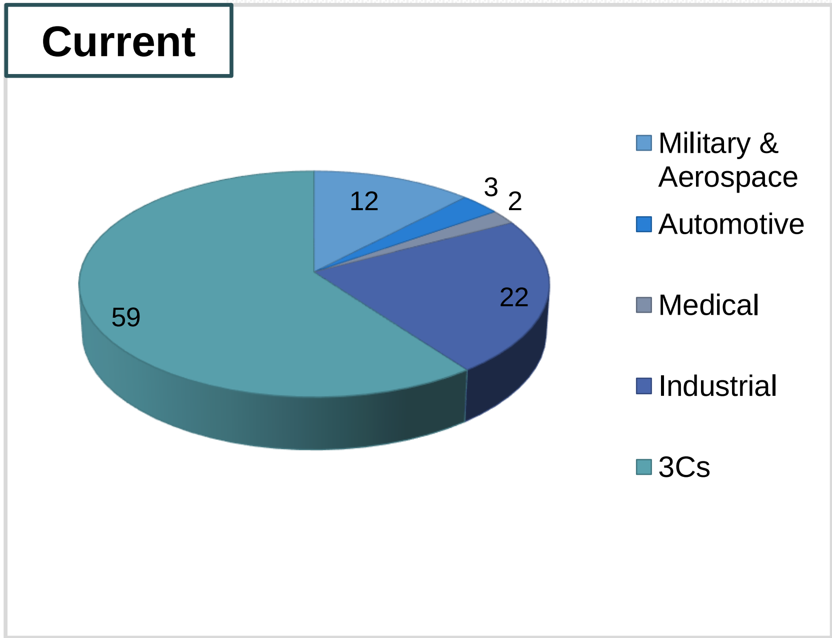
Signed on behalf of BVCH SAS UK Branch
Director – CERTIFICATION, South Asia
Commodities, Industry & Facilities Division

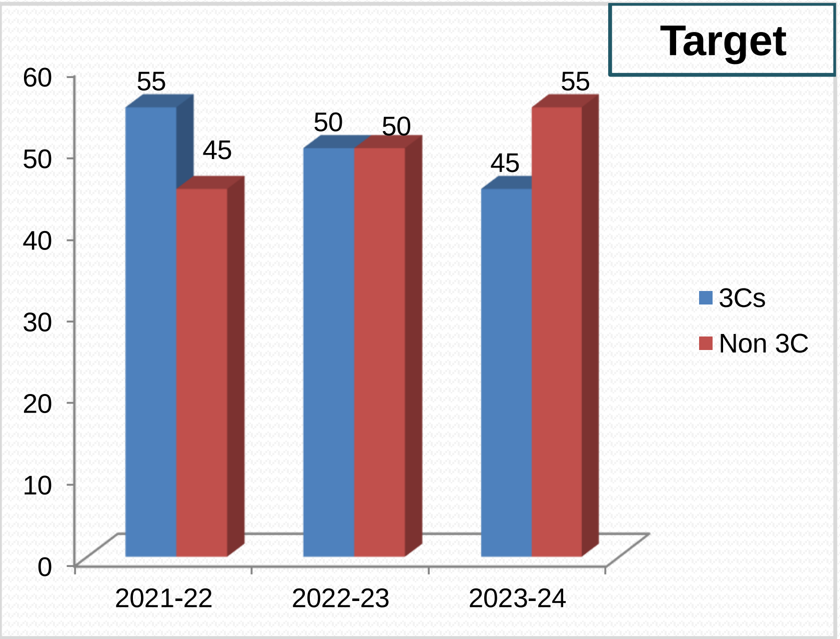
UKAS

Customers by Region



Customers by Application





3Cs – Computing, Communications & Consumer Electronics

Defining The Future Through Partnerships

Team

- Design Engineers with wide Domain expertise & experience
- Technically qualified Operators & Technicians
- Skilled engineers & experienced Management
- Low attrition rate (< 6%). Developed second-in-line in all Functions starting from Supervisor levels
- Strong engineering database ensures that any attrition will not affect any process
- Over 55% of the Employees have over 15 years of service
- Low direct labor cost & Management provides various Employee welfare schemes as a motivational activity through Employee Welfare Committee
- Training Cell providing comprehensive training (including Customer Loyalty & Soft-skills) to all levels, at regular intervals & conducts tests to ensure capability
- Talent pool available from Local universities with electronics/semiconductor background

Hiring, Training & Career Growth

Hiring

- Procedures & processes ensure recruitment & deployment of people right mix
- We are an equal opportunity Employer
- All recruitment decisions are made on basis of merit only

Training & Development

- Aligning skills of people with current job needs
- Developing people for enhanced future roles through training
- Aim to enable our people to acquire right skills & attributes

Retaining / Career growth

- Policies at our organization aim to attract, motivate, recognize and retain professional staff members
- Internal equity, market competitiveness and high performance are 3 fundamental principles of our remuneration policies
- Performance management system helps individuals in investing their efforts in right direction

Environmental Care & ROHS

- The organization constantly reviews the environmental policy, environmental management programs, adheres to various environmental regulations and works toward continual improvement of the Environment Management system in all its manufacturing locations.

- The management and employees are committed to prevent and abate pollution and adopt various control measures in conserving energy and all natural resources.

- SPEL’s manufacturing location is surrounded by more than 1,000 trees, abundant greenery including plants, lawns, vegetation area for in-house consumption.

- ROHS (Restriction of Hazardous Substances) compliance as per EU directive, effective from July 01, 2006
- Molding - using Green Compounds
- Plating of Terminals - 100% Pb-Free matte Sn plating or NiPdAu finish

Socio Economic Contribution

S-E-C is primarily done by One-to-One Mentoring as each person encourages & motivates the other, towards a more purposeful & effective lifestyle. Towards this, there are 3 areas that each of us can assist by making these a part of our day to day approach :

1. Following discipline in any and everything we do
2. Providing a helping hand to people around us in any way we possibly can
3. Showing the right path forward to people around

Proven Credentials

1. Growth established in Lead-frame based OSAT

a. Continuous increase in Revenue and Volume
b. Instrumental in bringing Technology driven products like QFN
c. Instrumental in bringing Kaizen, 5S, Lean Manufacturing Concept

2. Competing Globally

Company has spread their service beyond USA. Customers are spread in APAC, Europe and Japan

3. Track record

Track record has been established with all.

- Customer Satisfaction
- Vendors
- Employees
- Bank
- QCDS factors

4. Having required Base to Grow Beyond

With the relationship that been established with Stakeholders – Customers, Vendors, Investors & Employee, Promoter can take the company to greater heights

Value Proposition

- Focused Customer solutions and partnerships
- Provides lead frame design, drop shipment, material selection solutions to Customers
- Excellence in Time to market & Low cost products
- On Time Delivery is 98% & lowest cost than Taiwan market
- Absolute Quality assurance
- Zero Customer returns, Zero field failures
- Streamlined manufacturing process
- Assembly line in universal standard
- Hard working & talented work force
- 20+ years experience & 55% force is with SPEL for more than 15 years
- Established Infrastructure & proven track record
- Well equipped assembly line with power back up
- 100% Customer Satisfaction
- More than 3 decades experience in OSAT business
- Global Company provides complete solution in Package Assembly/Test & Chip Design

Failure Analysis Capability

- **Internal / external inspection**
- High / low power microscope
- **X-RAY**
- **Decapsulation**
- Niesene
- **Open / short test**
- **85% / 85ºc moisture soak**
- **Environmental Test Chamber**
- **Temperature cycle**
- ENVIRO SYSTEM chamber
- **HTOL Test Chamber**
- **Reflow Oven**
- **CrateringTest**

Final Tester & Handler Summary

Final Testers		
Tester Name	Manufacturer	Model
TMT	TMT inc	ASL1000
TMT	Credence	ASL1000
ETS3	Teradyne	ETS364
ETS4	Teradyne	ETS364
ETS	Teradyne	ETS88
MCT	MCT	MCT 2010
HANDLERS		
Handler	Manufacturer	Model
H-18	Micro Comp Tech	MCT3608E
H-49	Micro Comp Tech	MCT5105
H-51	Micro Comp Tech	MCT5105
H-29	Multitest	8704
H-36	Sessco	Gravity
H-55	SRM	XD248
H-56	SRM	XD248
H-42	TeSsec Mapper	3270-H

Contacts

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