

Matrix Electronics Co.,Ltd

LAN MAG Business-Unit Presentation



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About Matrix LAN MAG BU

Matrix LAN MAG business-unit was established on August 2002 , and The Business-Unit is experienced magnetics components partner that provide the needed technical solutions to customers . Matrix Group has a long operating history of innovation in magnetics and connectors, as well as the ability to ramp into high-quality with volume production.

Our Mission

- Quality First-----Quality
- Competitive Pricing-----Cost
- Keep Promise-----Delivery
- Satisfied Service-----Service
- Innovative Technology-----Technology
- Win-Win



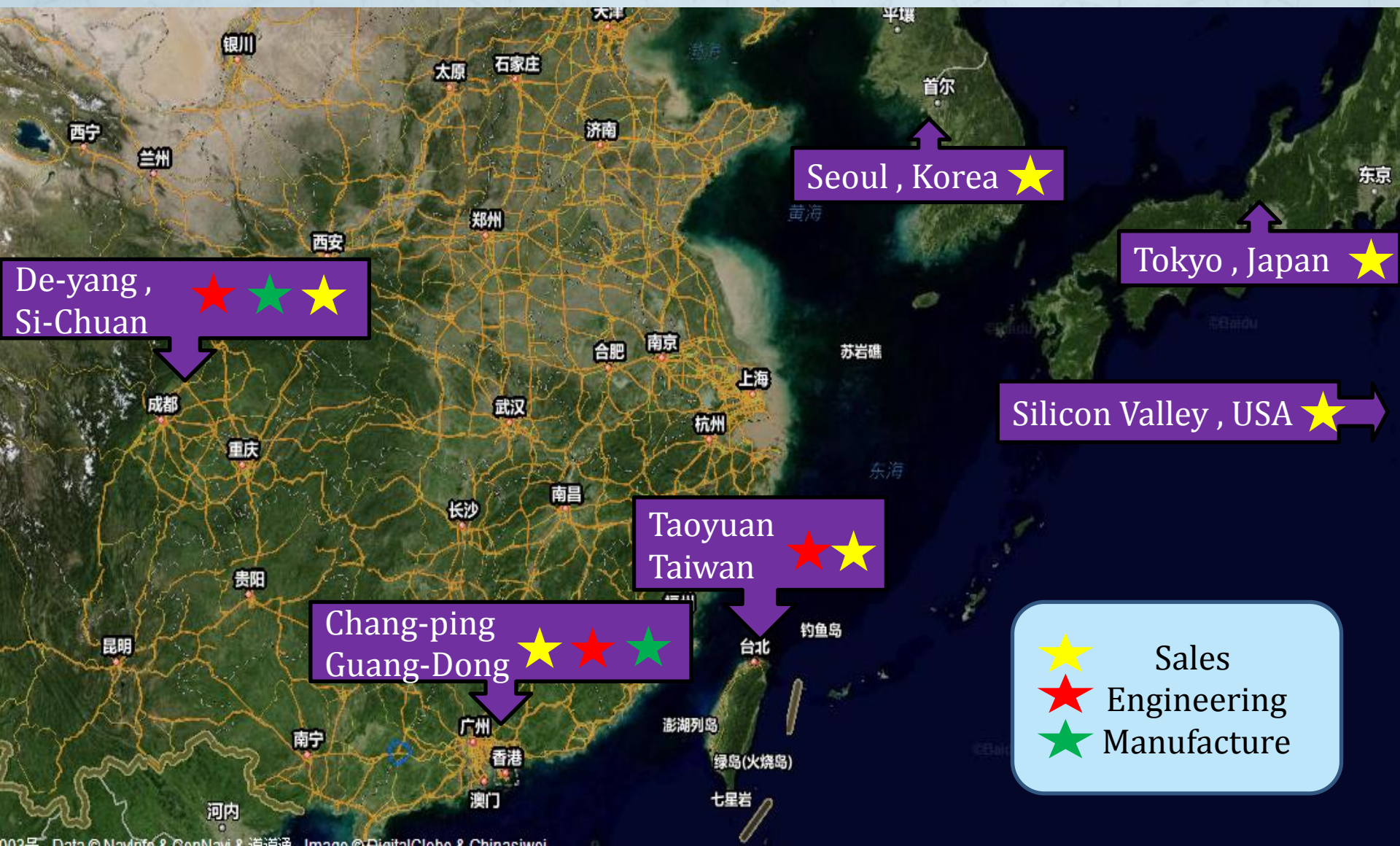
Background

- 2002 Aug. : Established factory in Chang -ping town , Dong Guan , China.
- 2003 Jun. : OEM service for a Japanese listed customer
- 2006 Nov. : Got ISO 9001:2000 certification.
- 2006 Nov. : OEM service for a Taiwanese listed customer
- 2006 Dec. : Stop leaded product manufacture , 100% RoHs compliant
- 2008 Nov : Build R&D team , do ODM service for customers .
- 2009 Jun. : Start manufacture Halogen-free products .
- 2010 Sep. : Established factory in Deyang city , Sichuan province , China
- 2012 Jul. : Established brand company **Matrix** in Taiwan to service end customers
- 2013 Sep. : Released 10G product under MP for server and storage customers
- 2013 Nov. : Released PCB LAN magnetics and protected by worldwide patents



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Our locations



Sales



Engineering



Manufacture



SWOT Analysis

Internal

Strength

- 1.Strong R&D capability , we have 96/88/72 PIN Giga LAN and 10G product under MP currently.
- 2.Vertical integration , we manufacture mechanical parts by ourselves to reduce the cost and ensure the quality.
- 3.Autmatation , we have another subsidiary company to design and build automation machines.

Weakness

- 1.New brand in market which need time to build up credit to customers .



External

Opportunity

- 1.There are still a lot of customers care about quality and engineering capability instead of price only.
- 2.Our PCB LAN transformer is very competitive on Quality and Delivery especially when labor cost increase and labor shortage happened every year in China.

Threat

- 1.Traditional product meets huge competition on price form Chinese local supplier.
2. Labor cost in China increase every year..



Production Scale

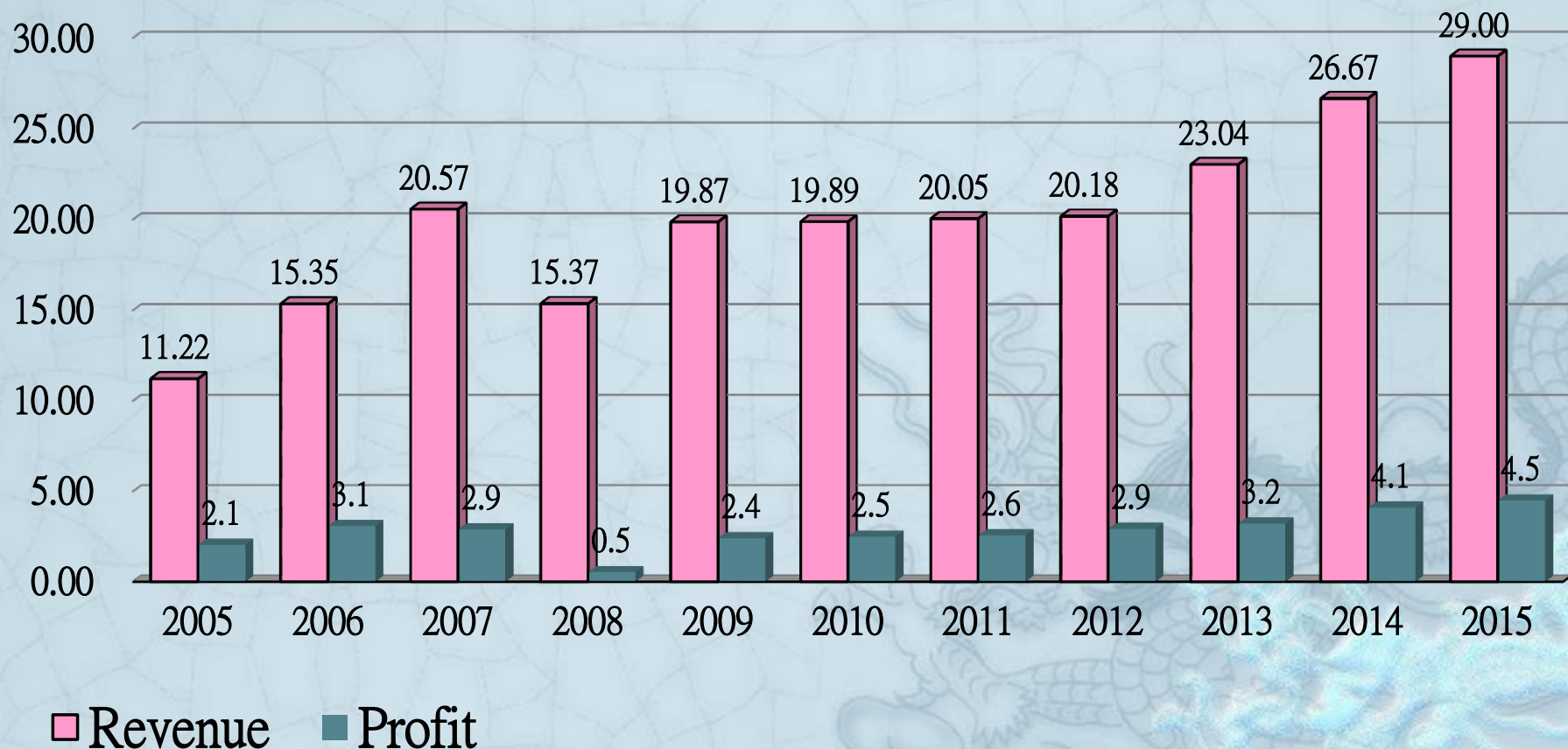
| Location | Product | Space | Employee |
|---|--|----------------------|----------|
| Chang-Ping Plant (Dongguan ,Guangdong) | Power Transformer Power Inductor 、 LAN Transformer | 8,000 M ² | 1350 |
| Zhong-Jiang Plant (Deyang , Sichuan) | LAN Transformer 、 RJ45 Mag-jack | 3,000 M ² | 430 |



Revenue and Profit

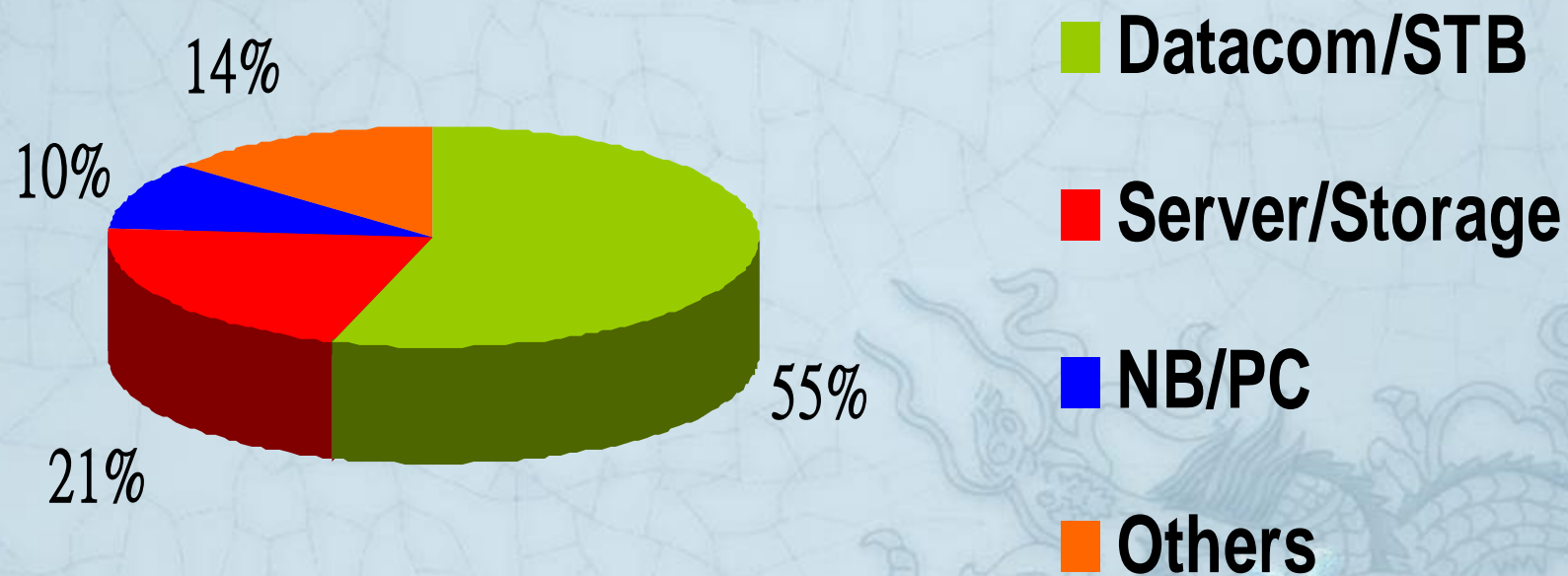
Forecast

Unit : Million USD/Year





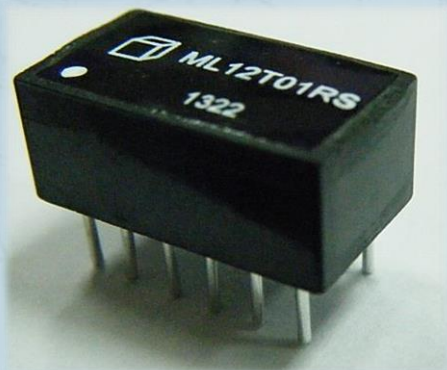
Customer application



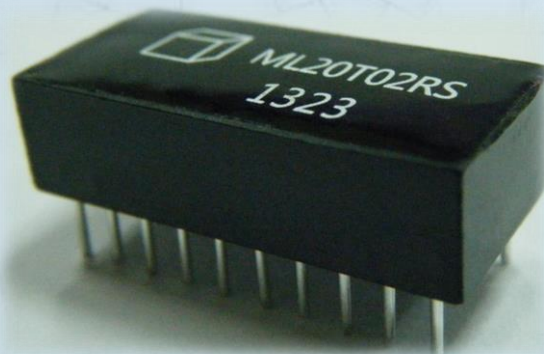


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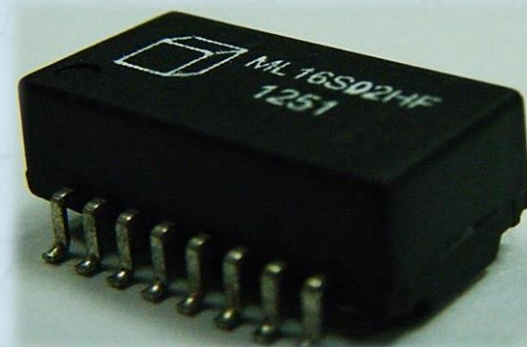
10/100 Fast LAN Transformer



Single 12/16PIN DIP



Dual 20/24PIN DIP



Single 16PIN SMD



Pulse / Choke



Single PCMCIA SMD



Quad 40PIN SMD



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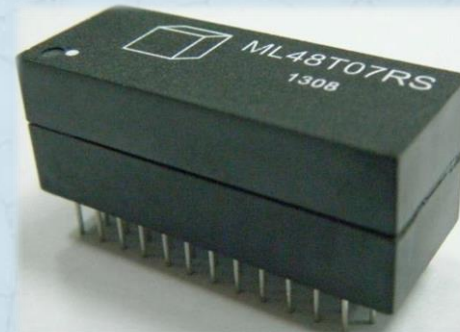
10/100/1000 Giga LAN Transformer



Single 24PIN SMD



Dual 48PIN SMD



Dual 36/48PIN DIP



Quad 72PIN DIP



Quad 72PIN DIP



Quad 88/96PIN DIP



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RJ45 Integrated LAN Transformer

1XN (N=1,2,4)RJ45 integrated 10/100 or 10/100/1000 LAN



DIP 1X1 w/ LED



DIP 1X1 w/o LED



SMD 1X1 w/ or w/o LED



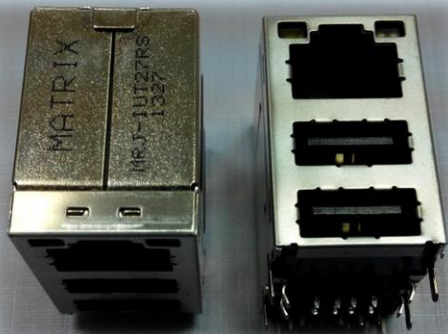
DIP 1X4 w/ or w/o LED



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RJ45 Integrated LAN Transformer

2XN (N=1,2,4,6,8)RJ45 integrated 10/100 or 10/100/1000 LAN



DIP RJ+USB2.0/3.0



DIP 2X4/2X6 w/ or w/o LED



DIP 2X1 w/ or w/o LED



DIP 2X8 w/ or w/o LED

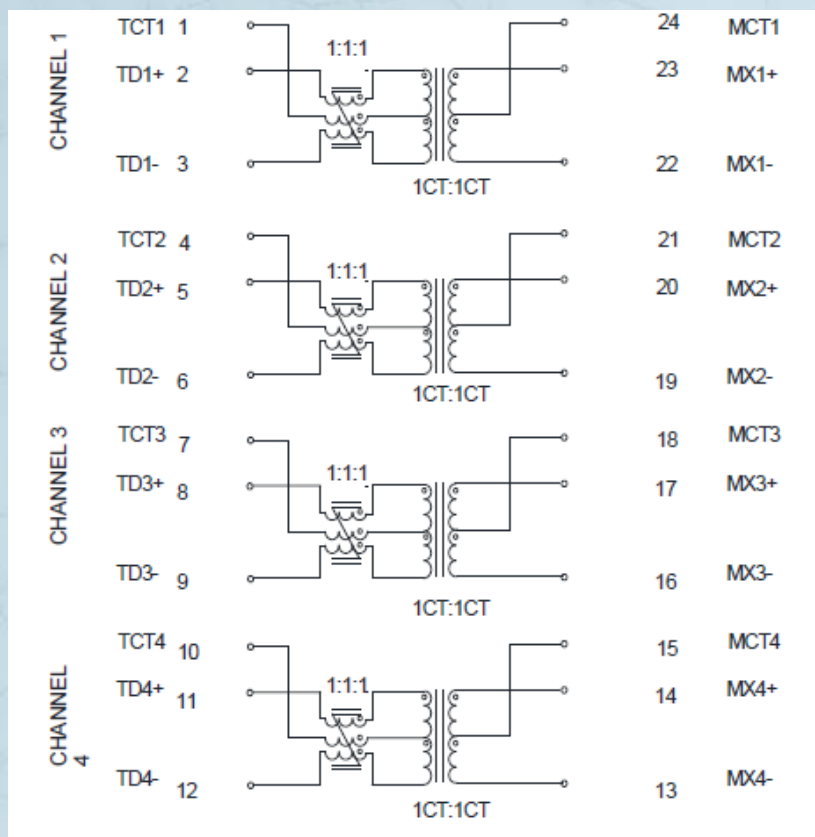


10G LAN Transformer

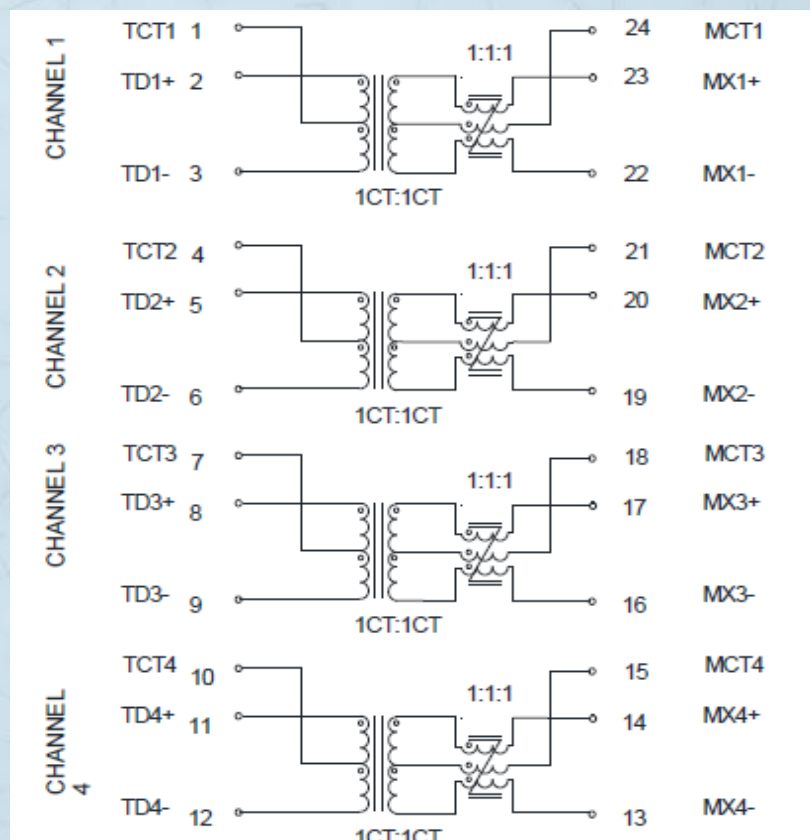
2013
New
Release

Feature :

1. Compliant with IEEE 802.3 standard
2. Application Frequency up to 500MHz



P/N : ML24S15RS



P/N : ML24S16RS

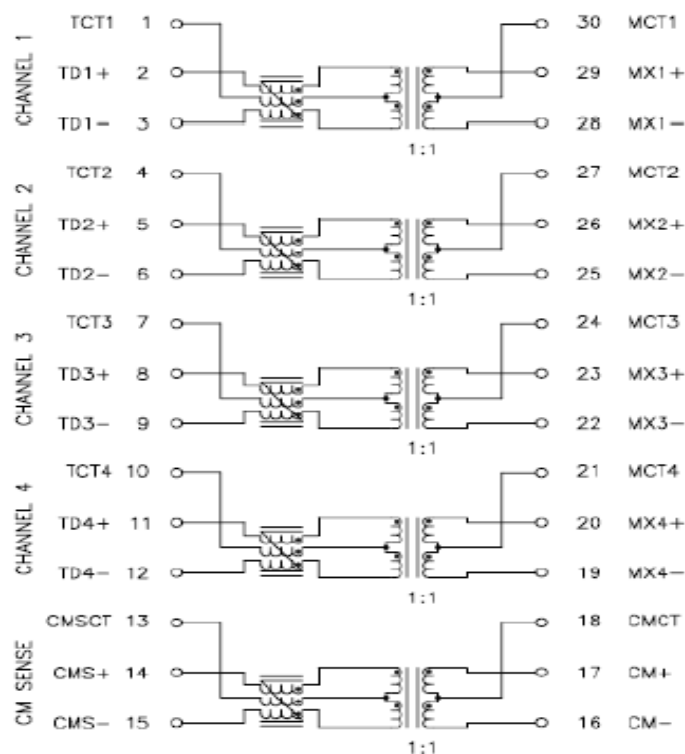
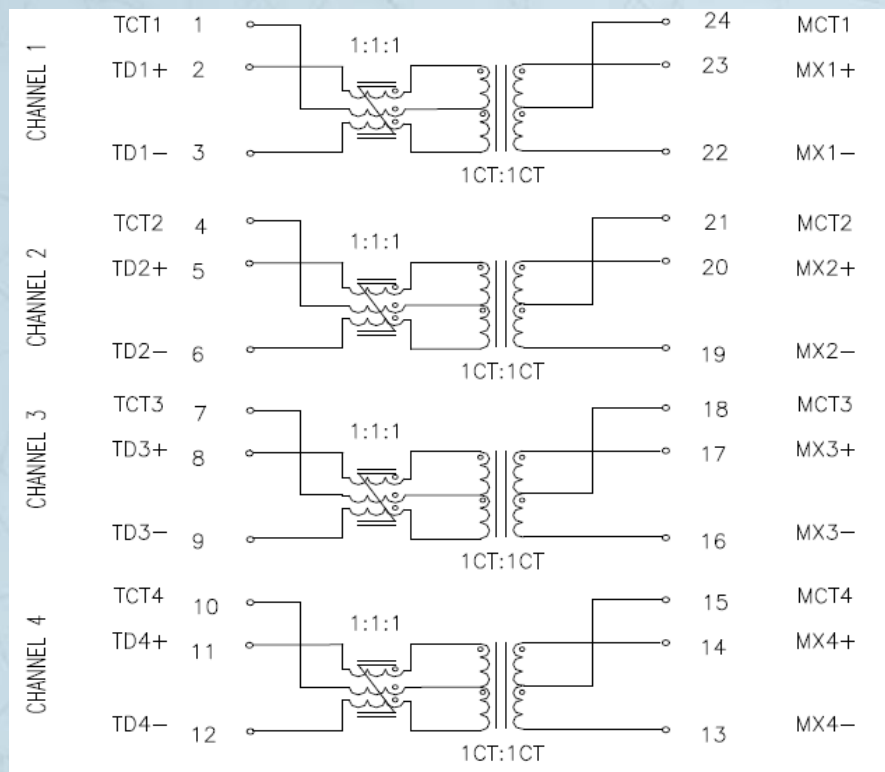


2.5G LAN Transformer

2015
New
Release

Feature :

1. Compliant with IEEE 802.3at POE+ standard
2. Application Frequency up to 250MHz



P/N : ML24S29RS/ML24S31RS

P/N : ML30S01RS



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PCB Type LAN Transformer

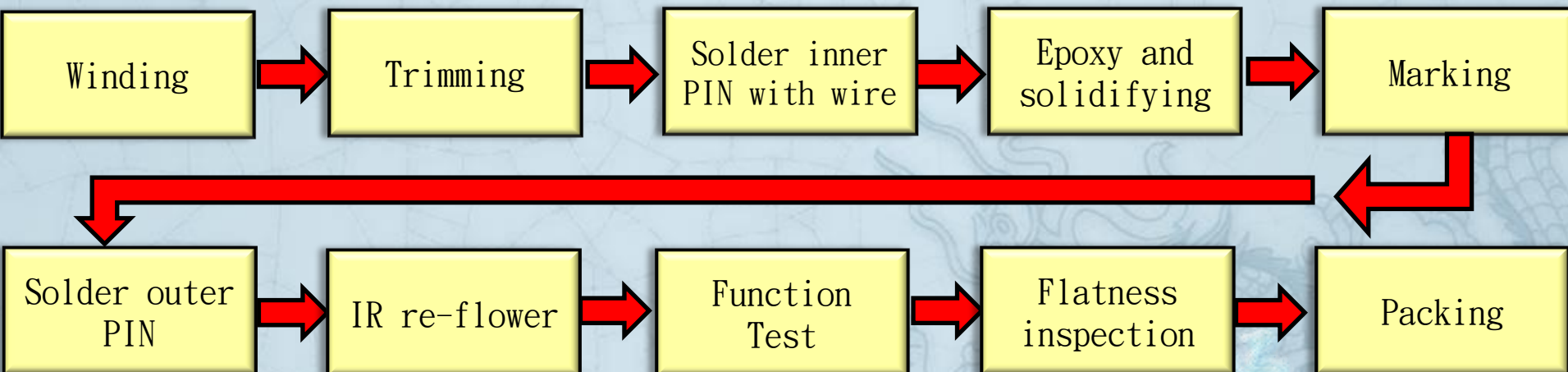
2013
New
Release



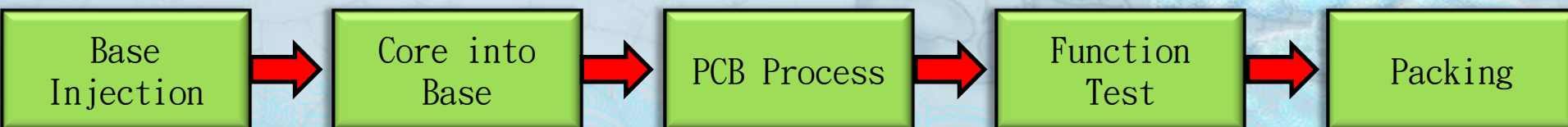
Feature :

1. Comply with IEEE 802.3at standard
2. 350uH @ 8mA/18mA DC Bias
3. Comply with RoHs and Halogen Free requirement

Traditional product procedure (■ means hand-made)






PCB type LAN manufacture process(■ means machine-made)



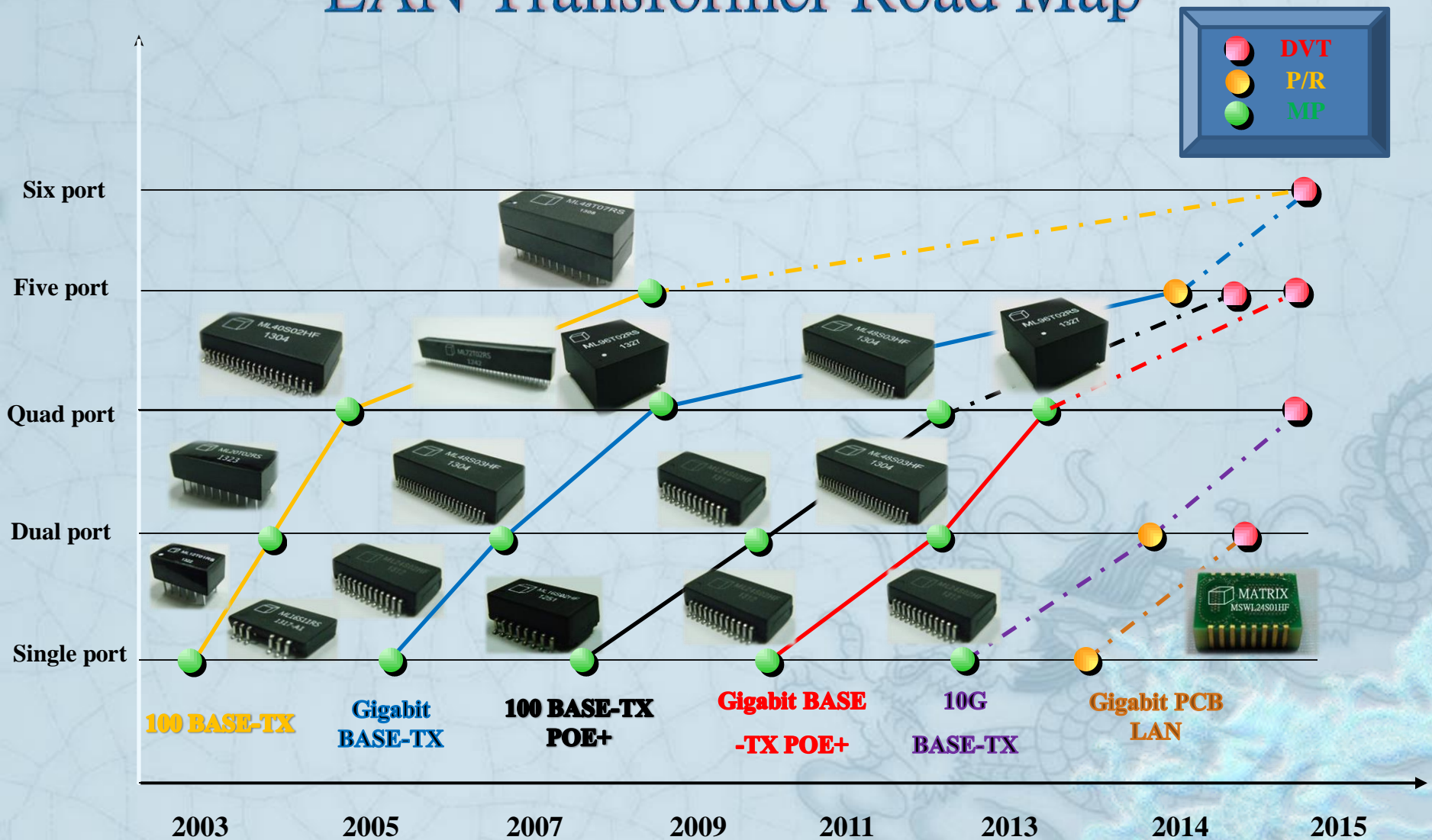


Comparison Table

| | Traditional LAN  | Chip LAN  | PCB LAN  |
|------------------|---|--|---|
| Auto-manufacture | NO | YES | YES |
| Functionality | Good | Bad | Good |
| Size | Middle | Small | Big |
| POE+ Capability | YES | NO | YES |
| Consistency | Bad | Good | Excellent |
| Reliability | Bad | Good | Excellent |
| Cost and Price | Low (Going up) | High (Going down) | High (Going down) |
| L/T | 6~8 W | 2~4W | 1~3W |

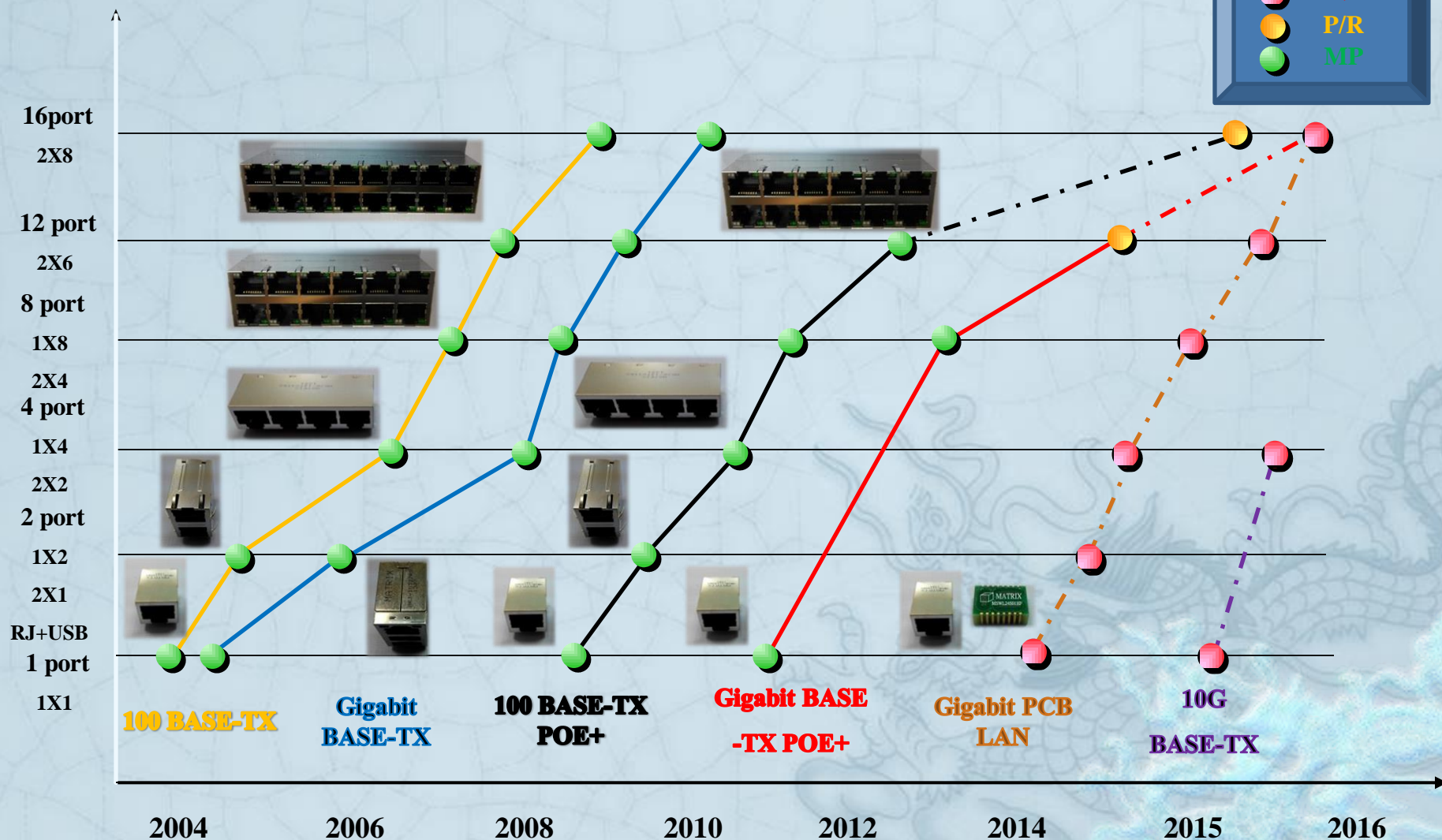


LAN Transformer Road Map





RJ45 Integrated LAN Road Map





Vertically Integration – Metal Shield

| Straight Side Press | Machine Vendor | Quantity | Capacity | Precision |
|---------------------|----------------|----------|----------|--|
| | | | KN | mm |
| HHD-65 | Min-Su | 1 | 65TONS | Stroke 25-30mm; 200~1000/m; H=235MM; H1=195~235MM; S=550*320; 590*420*80MM Thickness=0.10~0.80MM : $\Delta \pm 0.01 \sim \Delta \pm 0.05$ |
| M-40 | Min-Su | 7 | 40TONS | |
| NM-40 | Ma-Su | 2 | 40TONS | |
| | Chen Li | 1 | 25TONS | |
| | Chen Li | 1 | 30TONS | |
| | Chen Li | 1 | 60TONS | |
| NCP-110 | SINO | 2 | 110TONS | |
| SN1-80 | SEYI | 1 | 80TONS | |
| NC1-110 | SEYI | 3 | 110TONS | |
| SN2-110 | SEYI | 1 | 110TONS | |
| SNS2-160 | SEYI | 2 | 160TONS | |
| NS1-1500(1) | AIDA | 1 | 1500KN | |
| NS2-2000(1) | AIDA | 1 | 2000KN | |



Vertically Integration – Metal Terminals

| High-Speed Press | Machine Vendor | Quantity | Capacity | Precision |
|------------------|----------------|----------|----------|--|
| | | | KN | mm |
| H Type | AIDA | 1 | 40TONS | Stroke 20-30mm; 200~1200/m; H=235MM; H1=195~235MM; S=550*320; 590*420*80MM Thickness=0.10~0.80MM : $\Delta \pm 0.01 \sim \Delta \pm 0.05$ |
| H Type | AIDA | 2 | 30TONS | |
| H Type | KYORI | 5 | 30TONS | |
| H Type | DOBBY | 1 | 30TONS | |
| H Type | INGYU | 1 | 25TONS | |
| H Type | MICRON | 1 | 35TONS | |
| H Type | MICRON | 1 | 60TONS | |
| H Type | MING SHIUH | 2 | 30TONS | |
| H Type | XING LI | 1 | 30TONS | |
| C Type | MICRON | 5 | 35TONS | |
| Total | | 40 | | |



Vertically Integration – Plastic Base / Housing/Case

| Machine | Machine Vendor | Quantity | Capacity | Precision |
|-------------------|----------------|----------|-----------|---------------------------------|
| | | | KN | mm |
| Injection Machine | SUNZHAN | 7 | 50T&75T | Mini thickness=0.2mm ±0.03mm |
| | Demag | 4 | 80T | |
| | EH | 4 | 100T | |
| | EA | 3 | 120T&140T | |



Vertically Integration – Equipment for Tooling

| Machine | Model Name/Machine Vendor | Quantity |
|--------------------------------------|---------------------------|----------|
| Grinding Machine | KSD (TW) | 2 |
| | Zhun Li (TW) | 8 |
| Milling Machine | TOPONE | 5 |
| Precision Wire-cutting Machine (CNC) | Sodik(AQ360/AQ560) | 2 |
| | Charmilles | 2 |
| PG (Optical Grinding) | Wasino gls5t (JP) | 1 |
| EDM (Electric Discharging Machine) | ZNC50 | 2 |
| Total | | 22 |



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Matrix Zhong-Jiang Plant





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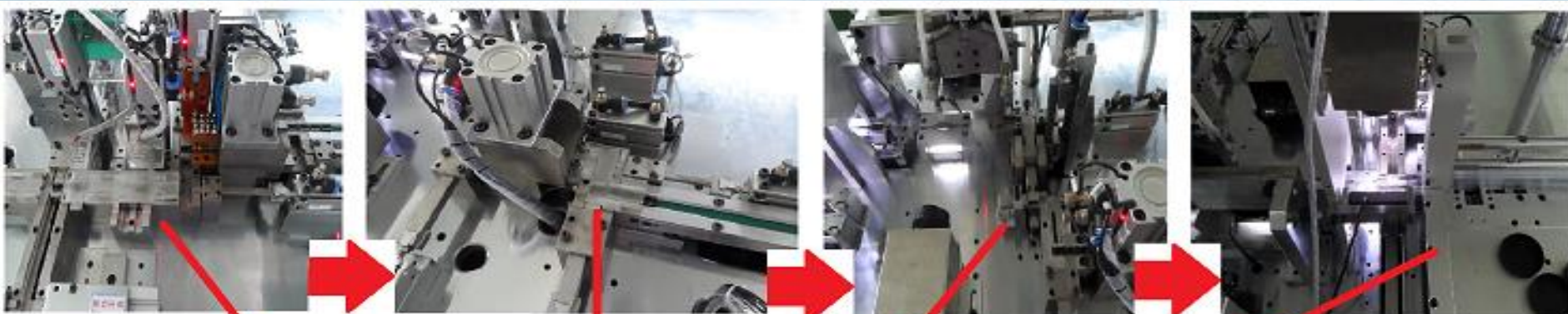
Auto-winding machines





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Automatic PIN Flatness / Function Test / Packing



SMD 16PIN
SMD 24PIN
SMD 40PIN
SMD 48PIN



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Matrix Dongguan Plant





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Matrix Dongguan Plant





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Matrix Dongguan Plant





Reliability Test Plan

| | | |
|-------------------------------------|--|---|
| |  |  |
| Mating/Unmating Force | | ● |
| Durability | | ● |
| Vibration | ● | ● |
| Mechanical Shock | | ● |
| Temperature Life | ● | ● |
| Thermal Shock | ● | ● |
| Humidity-temperature cycling | ● | ● |
| Salt Mist | | ● |
| Resistance to Soldering Heat | ● | ● |
| Dust and Sand Test | | ● |



Instrument List for Reliability

| Item | Model Name | Quantity |
|-----------------------------------|-------------------|----------|
| Overhead Projector | MITUTOYO | 5 |
| Microscope | MITUTOYO | 1 |
| CCD microscope (Triple Dimension) | ZIP250 | 1 |
| CCD microscope (Double Dimension) | NIKON | 3 |
| X-Ray | USA CMI900 | 1 |
| X-RF | EDX720 | 1 |
| Hardness-meter | AIKOH | 1 |
| Pull & Push meter | AIKOH | 4 |
| Salt Test Machine | TAIWAN CHANG HONG | 1 |
| IR Reflow Machine | SUNEAST NT-6N | 1 |



Instrument List for Reliability

| Item | Model Name/Machine Vendor | Quantity |
|-------------------------------|---------------------------|----------|
| Electronic Test instrument | SHANG HAI | 3 |
| Humidity Test Instrument | ZHENGZHI | 1 |
| Thermal Shock Test Instrument | ZHENGZHI | 1 |
| Grinding Test Machine | TAIWAN CHANG HONG | 1 |
| Vibration Test Machine | TCAITA | 1 |



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CCD microscope (Triple Dimension)





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RoHs 2.0 and Halogen Test Instrument





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IR Re-flower





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Thermal Shock and Humidity Test Instrument





Other Instrument for Reliability





Capacity

| Product | Monthly Capacity |
|---------------------------------|--------------------|
| 10/100 DIP LAN Transformer | 4.5 Million ports |
| 10/100 SMD LAN Transformer | 12.0 Million ports |
| 10/100/1000 DIP LAN Transformer | 6.5 Million ports |
| 10/100/1000 SMD LAN Transformer | 8.0 Million ports |
| Others | 6.0 Million ports |



Why Matrix ?

1. Capability on product design to meet IEEE and EMC for more then ten years .
2. We have been doing EMS for more then ten years , which teach us to control the cost .
3. We have been doing EMS for American , Japanese , and Taiwanese customers for more then ten years , which teach us to manufacture good quality products .
4. We have sales offices and distributors in Taiwan , USA , China , Japan , and Korea to provide local support on technical and logistic .



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Thanks !