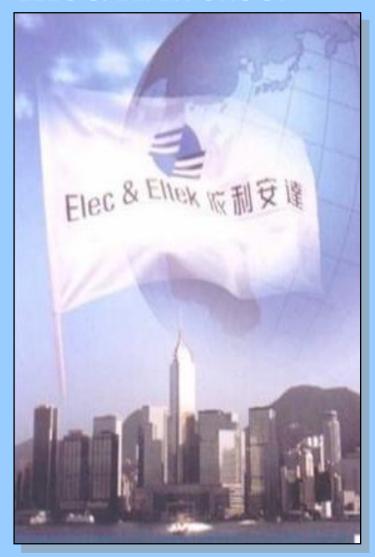
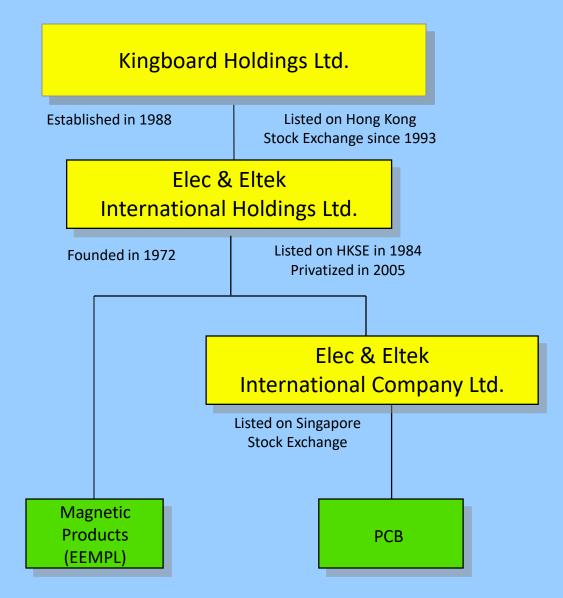


#### **ELEC & ELTEK GROUP**

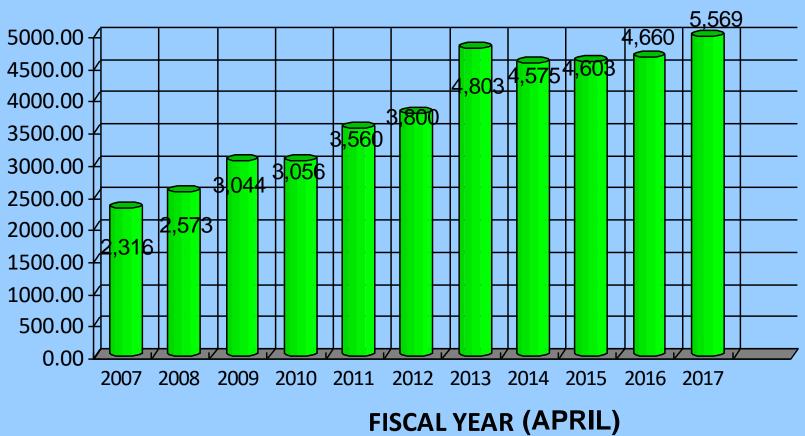




Kingboard Group has over 50,000 employees worldwide.

#### **Kingboard Holdings Limited (TOTAL SALES TURNOVER)**





## **EEMPL - TOP 10 CUSTOMERS**





















# **ACTIVE CUSTOMERS - EEMPL**

- Absopulse
- Adtran
- Allied Telesysis Inc.
- Alcatel / Lucent
- Alaxala
- Ambit
- Anritsu
- Askey Computer
- ASUSTek Computer
- Atrica
- Avaya
- Aztech Systems / Azuno
- Bosch Group Detection Systems
- C&D Technologies
- Calix Networks
- Canon
- Cisco Systems
- Comtest Advanced Network
- Dasan Networks
- Digi
- Digitel
- D-Link

- Echostar
- EERO
- Energizer
- Ericsson
- First International Computer (FIC)
- Fujitsu
- Gateway Computer
- H3C
- Hewlett Packard
- Hitachi
- Hon Hai
- Honeywell
- Integrated Devices Tech.
- IKOR
- Invensys / Lambda
- Juniper Networks
- Konica Minolta
- Kyocera
- Lexmark
- Marconi
- Methode Electronics
- Microsoft
- Mitac

- Mitsubishi
- Nakayo
- NCR
- NEC
- Netopia
- Nigata Seimitsu
- Nokia
- OKI
- Omron
- Oracle
- Pace Micro
- Panasonic
- Pepperl & Fuchs
- Philips
- Primax
- Quanta
- Sagem Telecom
- Samsung
- Siemens
- Sierra Wireless
- Silver Spring Networks
- Soma Networks
- Sony
- SynQor

- Tandberg
- Tatung
- TechniSat Electronik
- Toshiba
- Fuji Xerox
- Zebra (Motorola)
- Zoll Medical
- SPAL Automotive
- Meta Systems
- MES
- CEBI

#### Wireless Chargers

- BMW
- AUDI
- MERCEDES
- ALAC
- BURY
- CONTINENTAL
- VALEO
- PIEKER

• Customers, who have also purchased Magnetic Integrated Connector(MIC), are highlighted in Blue and Green for Automotive Proprietary Information to E & E Magnetic Products Limited. Data is subject to change without prior notice.

# **EMS / CEM PARTNERS - EEMPL**

- Ambit
- Askey
- Asustek
- Benchmark
- Celestica
- Compal
- Computime

- Flextronics / Solectron
- Foxconn / Hon Hai
- Inventec
- Jabil
- Kaga
- Microlink (Foxling Group)

- SCI / Sanmina
- SIIX
- Quanta
- Venture
- World Fair
   Electronics
   Technology Ltd



# **EEMPL Product Families**Products by Applications for 7 Major Areas

#### Networking Discretes

- Transformers or Filters for 10, 100, 10GBase-T applications
- Transformers for PoE/PoE+ applications

#### Magnetic Integrated Connectors

- Magnetics

   integrated RJ-45
   connectors for
   10/100/1000Base-T
- Magnetics

   integrated RJ-45
   connectors for
   PoE/PoE+
   applications
- Magnetics integrated combo connectors for LAN and USB

#### Telecom Discretes

- Transformers for Sonet/SDH(STM-1/E4/CMI)applications
- Transformers for T3/DS3/E3/STS-1 applications
- Transformers for T1/E1/CEPT/ISDN-Pri applications
- Transformer for ISDN U-Interface or S-Interface applications
- Multi-layers and Wire Wound Chip Inductors and CMCs
- Multi-layers EMI
   Bead Inductors

#### Broadband Access

- Filter, Splitter, Transformer, or Common Mode Choke for xDSL applications
- Transformer or coupler for HomePlug
- Transformer, Splitter, or Filter for HFC or cable modem applications.
- Multi-layers and Wire Wound Chip Inductors and CMCs
- Multi-layers EMI
   Bead Inductors

# Power Magnetics

- Miniature SMT
  Power inductor for desktop, notebook, or handheld device.
- High current(up to 125A) power inductor for low voltage DC/DC conversion
- Power magnetics for Current Sense applications
- Power magnetics for SMPS applications
- Automotive grade power inductors and transformers to meet ISO16949 and AECQ200 requirements
- Chip type CMCs for power line noise filtering

#### Electronic Modules

- AFE module for for ADSL or VDSL applications
- Line Protection
   Module for Telecom
   applications
- Transceiver module for LAN applications
- POTS filters for xDSL applications
- POTS or ISDN splitter for xDSL applications
- Power modules/converter for customized applications

## Wireless Coil Module

- Customize shape is available
- High efficiency & suitable for Wireless power transmission
- Designed for varies Portable Electronic Device application
- Small and thin Coil module meet WPC standard
- Various
   operating
   temperature &
   frequency range
   available



Products for Automotive

## **Product – Networking Discretes**

#### **Ethernet Network (IEEE802.3)**

 Support Integrated Transformer Modules with multiport channels in various packages

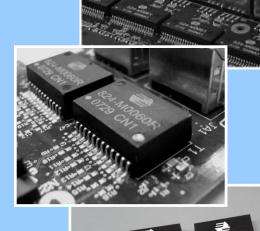
 Support full range applications for twisted-pair transmission medium

- 10/100Base-T
- 1000Base-T
- 10GBase-T
- Power over Ethernet (PoE)
  - Support up to 350mA balanced DC line current
- Power over Ethernet Plus (PoE Plus)
  - Support up to 1,000mA balanced DC line current
- Extended temperature range available











11111

## **Product – Magnetic Integrated Connectors**

Unique 'One-Side' and 'Clip-n-Lock' Architecture to fit with single and multi-ports for different applications:

'One-Side' & 'Clip-n-Lock' MIC Series

- 10/100/1000Base-T, per IEEE 802.3
- PoE, per IEEE 802.3af
- PoE Plus, per IEEE P802.3at
- 10G, per IEEE 802.3an
- Standard and extended temperature ranges
- Third Party Certified
  - Mech.: TIA/EIA-568-B, Cat 6
  - Elec.: UL1863; CAN/CSA-C22.2 No. 182-4-M90.1990
- EMC: FCC Part 68, sub-part F; FCC (CFR47) Part 15 Class B, EN55022 Class B and CISPR 22 Class B for Gigabit Workin Environment

#### **Customized Designs:**

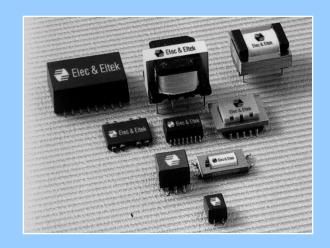
- Various packages including 1x1 1x8, 2x1 2x8, and combo(RJ-45+USB ports)
- Various panel orientation (right angle, vertical) and footprint types
- Integration with protection device or diode bridge to me specific transient requirements

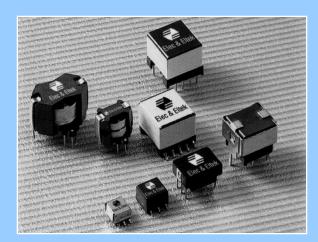


### Product - Telecom & Broadband Access

#### **Transformers, Common Mode Chokes and Coupled Inductors**

- Provide the isolation, impedance matching and EMI suppression in the following applications
  - Analog Telephone Network:
    - Transformer for both Soft Modem and Traditional Analog Modem applications
- Digital Telephone Network:
  - Transformer and CMC for T1/E1/J1, T3/E3/DS3/STS-1, E4/STM-1, ISDN Pri-Interface, S-Interface, U-Interface applications
- Digital Subscriber Loop (DSL):
  - Transformer, CMC, Coupled Inductor for VDSL/VDSL2, ADSL/ADSL2/ADSL2+, HDSL/HDSL2/HDSL4/SDSL/G.SHDSL applications
- Cable Modem / Cable TV:
  - RF Transformer, Transmission Line Transformer, Mixer, Splitter for Cable Modem, TV set-top box applications
- Extended temperature range available





# **Product -Power Magnetics for Consumers & Automotives**

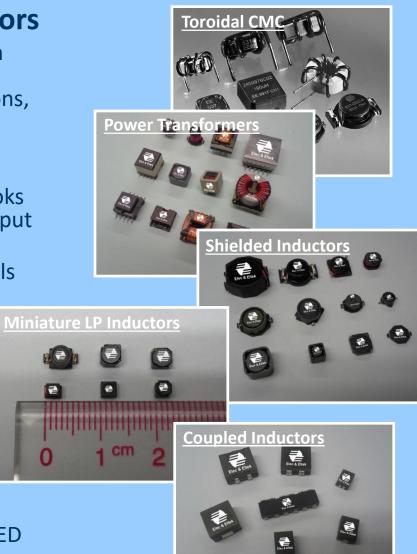
**Products: Transformers, CMCs, and Inductors** 

- Utilize low loss materials and unique winding approach provide high power density low loss parts for the applications include high-speed servers and workstations, telecom switching networks, routers and base station equipment.
- The miniature low profile and shielded construction inductors provide the features today's tablets, notebooks and portable devices the energy storage and input-output filters demands.

 The A-Grade series provide high reliability for Industrials and Automotives applications

#### **Applications:**

- AC-to-DC Switching Mode Power Supply (SMPS)
- DC-to-DC converters in Distributed Power Architectures (DPA)
- Point of Load (POL) Systems
- Coupled Inductors for High Current Voltage Regulator Module/ Drop (VRM / VRD)
- SEPIC and Buck Boost types inductors for High Bright LED Lightings
- Digital Amplifiers for Automotive's Audio System



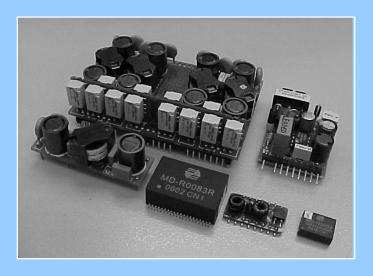
### **Product – Electronic Modules**

### **Telecom / Broadband Access Applications:**

- Multi-Port xDSL AFE Module
- Single Port xDSL CO / CPE Splitter
- Multiple Port xDSL CO / CPE Splitter with integrated relay control
- Coupled Inductor with integrated OC/OV protection devices.
- Multi-port T1/E1 Module with integrated protection devices (chip side, line side or both)
- Multi-port ISDN S-Interface Module with integrated protection devices
- Multi-port Relay Driver Module

#### **Power Applications:**

- Customized DC-DC/AC Converter for industrial applications
- Customized Power modules for customer specific applications
- Customized modules with cable assemblies (eg. SPP+ and QSFP Connectors)



#### **EEMPL Position & Wireless Coil Module Products**

### EEMPL Position

- An associate member of WPC since 2009
- WPC sets international standard for compatible wireless charging
- >10 regular members & > 120 associate members in WPC
- E&E Transmitter Module (Tx) and Receiving coil (Rx) met WPC standard
- An adoptor member of A4WP (Since 2012)
- Member of PMA (Since 2013)
- Already works with various members,
   ODM/OEM, Test Laboratory accessories makers,
   ...etc for different wireless Power design











- Wireless Charger for NDS, I-Phone
- Wireless Charger for Energizer (Qi certificated)

Wireless Charger for Zens / Maxwell / Sang Fei / LG / Sanwa



maxell

# **EEMPL's Magnetics for Automotive**

**Shielded-Type Power Inductors and SEPIC** 

**Transformers (ASIS series)** 

# **Car Navigation and ECU Parking Sensor Shielded-Type Power Inductors Shielded-Type Power Inductors (ASIS series)** (ASIS series) **Shielded-Type Power Inductors** for D-Amp (ASEPT series) **Wireless Power Transfer** Air Con/ Cooling Fan WPC A6/A13 TX Coils **Power Inductors and HC Rod Inductors for Brushless fans Battery Power Control** (A31 series) **LED Lightings/HID Headlights Isolated Power Transformers for Battery**

Charging, Monitoring, Air Con, Lightings,

**IGBT etc. (A35 series)** 

# **Discrete - IC Partners**

IC Company	Product Application	Technology / Design / Project
Agere / LSI	Telecom	DAA Transformer for Soft Modem applications
AMD	Networking, Power Management	MIC and Magnetics for 100/1GBase-T and POL applications
Analog Devices	Broadband Access	SLIC Module, Line Driver Module, xDSL transformer / inductor (CO / CPE side)
Broadcom	Broadband Access, Networking	Magnetic discrete for VDSL, Multi-Port MIC and/or magnetic discrete for their 100/1G/10GBase-T and PoE / PoE+ applications
Conexant	Networking, Telecom, Power	SmartDAA transformer, HomePlug magnetic, LAN magnetics, power inductor, etc.
Fairchild	Power Management	Power magnetics in POL applications
Infineon	Broadband Access	SLIC Module, Line Driver Module, transformer/inductor for
		VDSL2/VDSL/ADSL2+/G.SHDSL(CO / CPE side)
Valens Semicondutor	Networking	Magnetics for 10GBase-T applications
IDT	Power Management	VRM Coupled Inductor, Wireless Charging
Intersil	Networking, Power Management	Magnetics and MIC for 100/1GBase-T, VRM/VRD applications
Linear Technology	Power Management	Power magnetics in VRM / VRD / POL / PoE / PoE+ applications
Marvell	Networking	Single-Port/Multi-Port MIC and/or magnetic discrete for 100/1GBase-T / PoE / PoE+, Magnetics for VDSL2
Maxim / Dallas	Power Management	Power Magnetics in Battery Charger, POL applications
National Semi	Networking	MIC and magnetics for 100/1GBase-T, POL, PoE / PoE+ applications
PMC Sierra	Networking	Magnetics for T1/E1, T3/E3 reference designs
SMsC	Networking	Magnetic discrete and MIC for 100Base-T reference design
ST Mirco	Networking	MIC for 100Base-T applications, Magnetics for ADSL, G.SHDSL
TDK	Telecom	Magnetic for E4/STM-1 applications
Texas Instrument	Broadband Access, Power Management	Magnetic for xDSL, PoE / PoE+, Power Management reference design, Wireless Charging

# **Product Compliances**































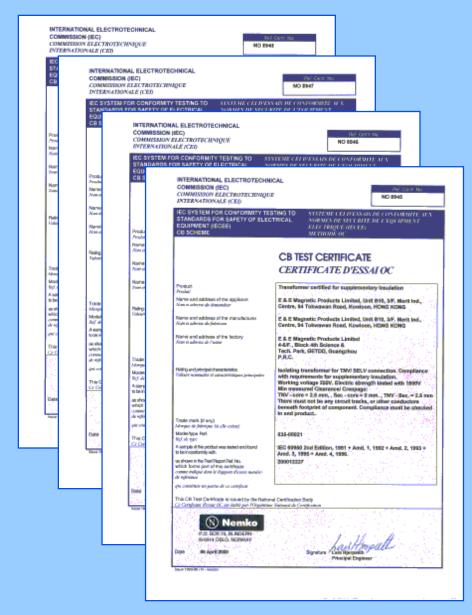






- All products are well designed to meet or exceed the applicable standards set by the organizations such as IEEE, ANSI, ETSI, ITU etc.
- The mechanical configurations are designed to meet the applicable standards set by IEC, EIA, TIA, JEDEC etc.
- For safety critical products, they are designed to meet the requirement set by safety agencies such as UL, CSA, BABT, Nemko, Finko, Demko, Semko etc.
- Corporate Membership in DSL Forum, VDSL Alliance.

## **Product Certificates - EEMPL**





# **R&D** Facilities

ltem	Equipment	Manufacturer	Model	Parameters
1	RF Network Analyzer	AGILENT	8751A	5Hz-500MHz
2	RF Network Analyzer	AGILENT	8753ES	
3	ENA Series Network Analyzer	AGILENT	E5071B	300KHz-8.5GHz
4	Harmonic Distroition and Noise Analyzer	Audo precision	2222	
5	RF Impedance and material Analyzer	AGILENT	4291B	1MHz-1.8GHz
6	Precision DC Power Source	AGILENT	E3634	0-25V,7A/0-50V,4A
7	Digital Power Analyzer	Chroma	2100	
8	Automatic Transformer Test System	Tong Hui	TH2819XB	
9	Programmable LCR Meter	Fluke	PM6306	
10	Precision Low Ohm Tester	нюкі	3220	
11	Precision LCR Meter	AGILENT	4284A	20Hz-1MHz
12	Precision LCR Meter	Wayne Kerr	WK 3260B	100A DC Bias
13	Digital Profile Projector	Mitutoyo	PJ-A3000	
14	3D Optical Measurement System	Seven Sea	IA-4030	Accurancy: XY(3um)
15	AutoCAD LT 2012			
16	Solidwork			
17	ProE			
18	Protel			
19	CorelDraw Designer			
20	Adobe Acrobat			

# **Reliability Lab Facilities**

Item	Equipment	Manufacturer	Model	Parameters
1	X-Ray Analytical Moriscope	Horuba	XGT-100WR	
2	Programmable Hi/Lo Temp. Chamber	Espec	MC-710P	-70°C to +150°C
3	Temp. Shock Chamber	Espec	TSA-71L-A	-77°C to +205°C
4	Programmable High Temperature Oven	Espec	S332-4KW	200°C
5	High Temperature High Pressure Chamber	Gongwen Equipment	SHA-240	Temp. Range: 10°C to 135°C Humidty Range: 100% RH Pressure Range: 0 - 2.5kg/mm2
6	Temperature/Humidity Chamber	Gongwen Equipment	GDS-150	Temp. Range: 0°C to 150°C Humidty Range: 20 to 98% RH
7	High Temperature Oven		YA-300	Temp. Range: Room Temp to 300°C
8	Hot Air Reflow Simulator (for Pb products)	Navanakorn	HA-7CR	Temp. Range: Room Temp to 280°C Deferent Speed: 0.35-1.2m/minutes
9	Hot Air Reflow Simulator (for Pb-free and RoHS products)	Sun East	NT-8A-V2	Temp. Range: Room Temp to 300°C Deferent Speed: 0.35-1.5m/minutes
10	Electrodynamic Vibration Test System	Dongling Tech	ES-3-150	Frequency Range: 5 - 4000Hz Amplitude Range: 2.5mm Max
11	Salt Spray Tester	Gongwen Equipment	DR-60	JIS;ISO3768/3769/3770; ASTM/B117/B268
12	Programmable Peel Force Test	NTE	JE PET-500	Weight Range: 0 to 500g Angle Range: 165 - 180 Deg.
14	Solderability Tester		SD-4CR	Temperature: 400°C
15	Push/Pull Tester			
16	Durability Tester			
17	RJ45 Loading Rotation (Gorilla) Tester			

# **Tests Compliance with Automotive's AEC-Q200**

Item	Description	Test Method & Condition	Reference Document
1	High Temperature Exposure (Storage)	1000 hrs at rated operating temperature (i.e. 130°C), unpowered	MIL-STD-202 Method 108
2	Temperature Cycling	1000 cycles (-40°C to +125°C)	JESD22 Method A104
3	Moisture Resistance	T=24 hours/cycle. Note: Steps 7a & 7b not required, unpowered.	MIL-STD-202 Method 106
4	Biased Humidity	1000 hours 85°C/85%RH, unpowered	MIL-STD-202 Method 103
5	Operational Life	1000 hrs.@125°C	MIL-PRF-27
6	External Visual	Inspect device construction, marking and workmanship, under 10X microscope	E&E Workmanship Standard & MIL-STD- 883, method 2009
7	Physical Dimension	Verify physical dimensions to E&E specification	JESD22 Method B-100, E&E specification
8	Terminal Strength (Leaded Type Device Only)	Test leaded device lead integrity only. Conditions: A(910 g), C(1.13kg), E(1.45kg-mm)	MIL-STD-202 Method 211
9	Resistance to Solvents	Add Aqueous wash chemical. OKEM Clean or equivalent. Do not use banned solvents.	MIL-STD-202 Method 215
10	Mechanical Shock	Figure 1 of Method 213. Condition C.	MIL-STD-202 Method 213
11	Vibration	5g's for 20 minutes, 12 cycles each of 3 orientations.  Note: Use 8"x5" PCB, .031" thick, 7 secure points on one long side and 2 secure points at corners of opposite sides. Test from 10-2000Hz	MIL-STD-202 Method 213
12	Resistance to Soldering Heat	Condition B. No pre-heat of samples. Note: Single Wave Solder – Procedure 2 for SMD with solder within 1.5mm of device body	MIL-STD-202 Method 210
13	Thermal Shock	-40/+125°C. Note: Number of cycles required is 300. Maximum transfer time is 20 seconds. Dwell time is 15 minutes. Air-Air	MIL-STD-202 Method 107
14	ESD		AEC-Q200-002
15	Solderability	Magnification 50x, a) Method B, 4 hrs @ 155°C dry heat @235°C, b) Method B @ 215°C category 3, c) Method D category 3 @ 260°C	J-STD-002
16	Electrical Characterization	Parametrically test per lot and sample size requirements, summary to show Min, Max, Mean and Standard deviation at room as well as Min and Max operating temperatures	·
17	Flammability	V-0 or V-1 Acceptable	UL94
18	Board Flex	Appendix 2 Note: 2mm (Min)	AEC-Q200-005

Proprietary Information to E & E Magnetic Products Limited. Data is subject to change without prior notice.

# **Special Inspection Equipment**



**3D Measuring System** 



X1000 Electronic Microscope



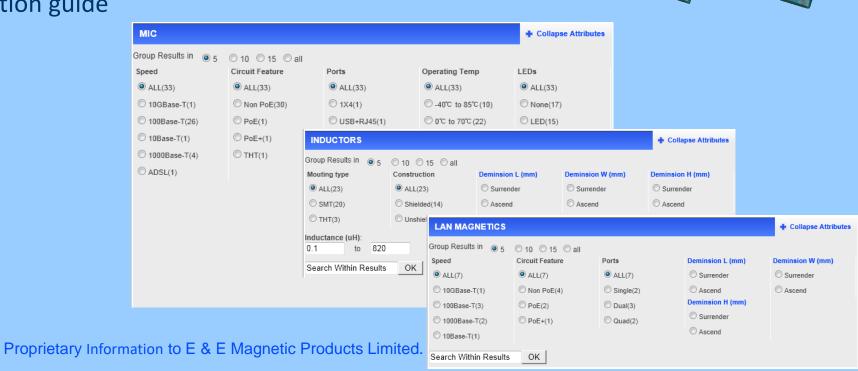
**Specimen Cross Section** 

# **Green On-Line Customer Support**

 Comprehensive and interactive indexed eCatalog for Power Magnetics, Networking Discretes and Magnetic Integrated Connectors (MIC) products

Provide both online and offline FLASH, PDF,
 Mac OSX and iPad tablet formats

Straightly web-based button-pick product selection guide



# **EEMPL Manufacturing Locations**



- Guangzhou HQ to Hong Kong, 1.5 hrs. Drive
- Guangzhou to LuoDing, 3 hrs. Drive
- Guangzhou to Yangon, 3 hrs. Flight

# **EEMPL Manufacturing Location & Functions**

### **Guangzhou HQ**

- >3,000 sq ft. of Office Area
- 100 employees
- Logistic and IT; Sales & Marketing;
   Customer Services; R&D



#### **LuoDing Plant**

- ISO9001, ISO14001 & TS16949 Certified
- Product Safety: UL, VDE, TUV, CB etc.
- >120,000 sq. ft. of Production Area in 2 buildings
- 2,500 employees
- Part of Purchasing & PMC
- Trial Run & Mass Production with auto/semi auto processes; Flat Wire Winding; Plastic Moldings
- Tooling Workshop; Manufacturing Eng'g; PMC



#### **Myanmar Plant**

- Set up in April, 2013
- Hlaing Thar Yar Township, Yangon Division
- >70,000 sq ft. of Production Area
- 1,000 employees
- ICM assembly & simple toroidal winding
- Manufacturing, Eng'g.







# **Automated Manufacturing Facilities Power Products**

Materials **Preparation** 



Winding



**Assembly** 



**Soldering** 



Copper foil taping



**Flat Wire Winding** 



PI and Drum Core Gluing



Soldering with adjustable dipping angle



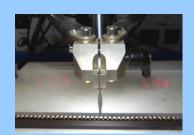
**Insulation striping** 



**Bobbin Winding & Taping** 



**IR Glue Curing** 



Spot/Impulse Welding

**Taping for PI's Base** 

# Particular Auto. Manufacturing Facilities Spiral Coils Production



**Spiral Coil Winding** 



**Integrated Line** 

# **Automated Manufacturing Facilities**LAN/RJ45/Telecom. Products

Materials **Preparation** 



Winding



**Assembly** 



Lead Forming/ Trimming with pre-test



auto toroid grading m/c



auto toroid winder



**IR Reflow** 



pick and place m/c



auto wire twisting m/c

# **Automated Manufacturing Facilities**

#### **Electrical Tests**



Semi Auto X'fmrs /Inductors with Hipot Test Station



Semi Auto X'fmrs /Inductors Test Station (2)



LAN/RJ45 Semi Auto Test Station (2)



RJ45 Connector Loading Rotation Test Station



Auto LAN/ Telecom/ Inductors Test Station with handler



Auto hi-speed LAN/
Telecom/ Inductors Test
Station with handler

# **Automated Manufacturing Facilities**

### **Molding and Machines Workshop**



Wire Cut Electrical
Discharge M/C (WEDM)



**Injection molding** 



Electrical Discharging M/C (EDM)



**Transfer molding** 



**Pin Insertion** 

# THE END



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