



*High Performance Analog Solutions for Digital World*

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*Union Semiconductor, Inc.*

*Company Profile*

*&*

*ESD Protection Product Business*

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## **Company Outlook**

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- *Founded in Jan. 08, 2001 in Shanghai, China.*
  - *Initial Capital 1.8 M*
  - *Fabless chip design house Focused on Analog & Mixed Signal chip design & marketing*
  - *32 Employee in China, 6 Design Engineers.*
  - *Setup Distribution Channel in Taiwan, China & Japan in 2005.*
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## **Product Portfolios**

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- *Standard 232, 485 Interface*
  - *ESD Protection & EMI Filter*
  - *Power supplies & Management Product*
  - *Analog Switch*
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## ISO9001:2000 Quality System





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## Contracted Manufacturing

- **Contracted Wafer Fabs**
  - ASMC
  - SinoMOS
- **Test Facilities**
  - 58 Institute
  - Hualing
- **Assembly Facilities**
  - CJ-Elec
  - LPS
  - ChipPAC





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## Process Technology

- CB12
  - CB12 is a 1.2 micron dual-metal BiCMOS process
  - 40V High Voltage NMOS Transistor
  - Isolated NMOS Transistor
  
- CB8
  - CB8 is a 0.8 micron dual-metal BiCMOS process
  - 100V High Voltage NMOS XTR
  
- C35
  - Low Power & Low Voltage
  - High Density
  
- S0782C
  - ESD Protection

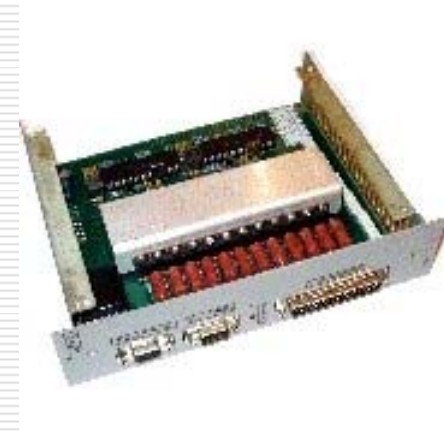




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## RS485 Interface Application

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## RS232 Interface Application







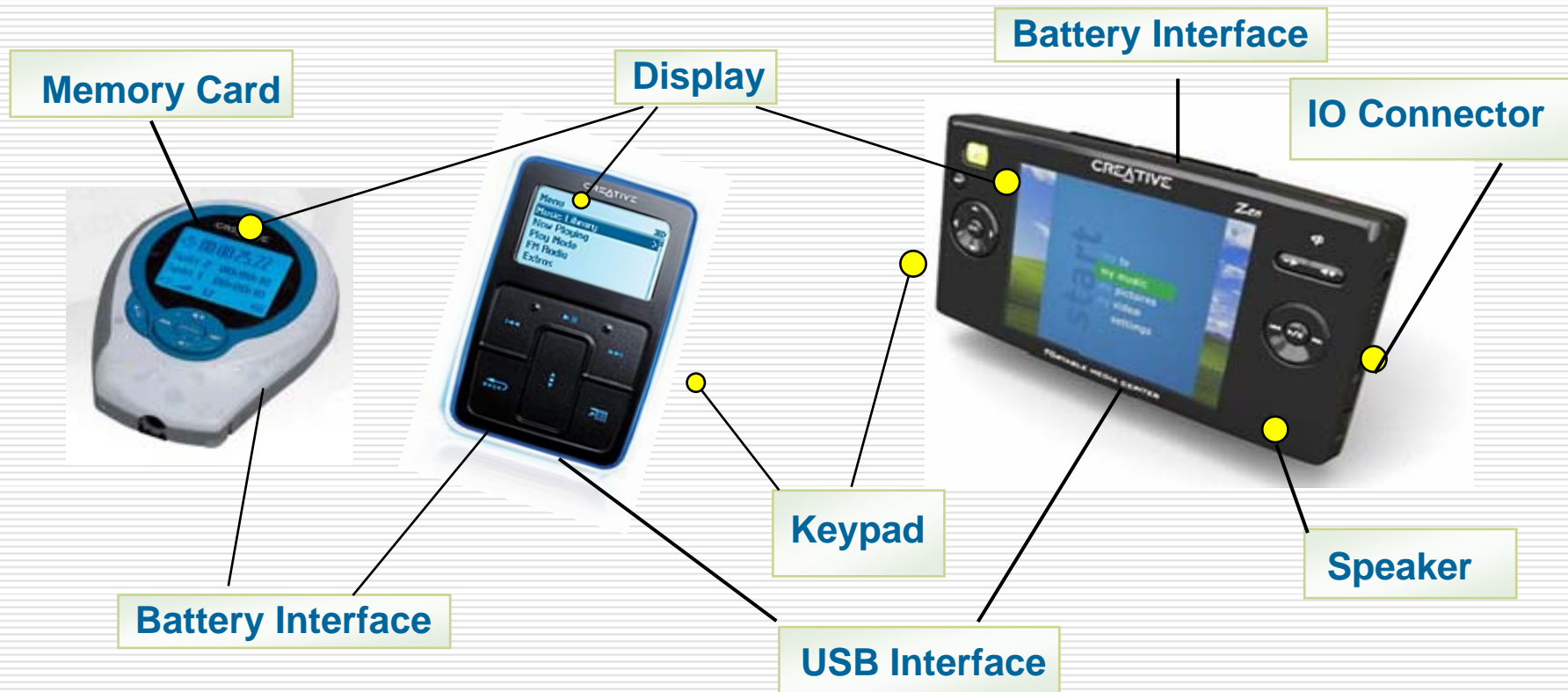
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## ESD Protection Application

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## Where is ESD Protection Needed?



- Components in these areas can be damaged by an ESD pulse as low as 2 kV
- All input/output (I/O) ports and cables are entry points for ESD

## Where is ESD Protection Needed?





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## Union's Product Offer for Handset

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- *UM5055- Single Channel ESD Protection Device in SOD523 package*
  - *UM5059 - Single Channel ESD Protection Device in SOD882 package*
  - *UESD54 - 4 channel ESD Protection Device in SC88 package*
  - *UESD55 - 4 channel ESD Protection Device in SC89 package*
  - *UESD56 - 5 channel ESD Protection Device in SC89 package*
  - *UESD57 - 6 channel ESD Protection Device in DFN 6 package*
  - *UESD53 - 5 channel ESD Protection Device in SC88 package*
  - *UM1005 - 4 channel Low Cap ESD Protection Device in SOT23 package*
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## Union's Future Product Offer for Handset

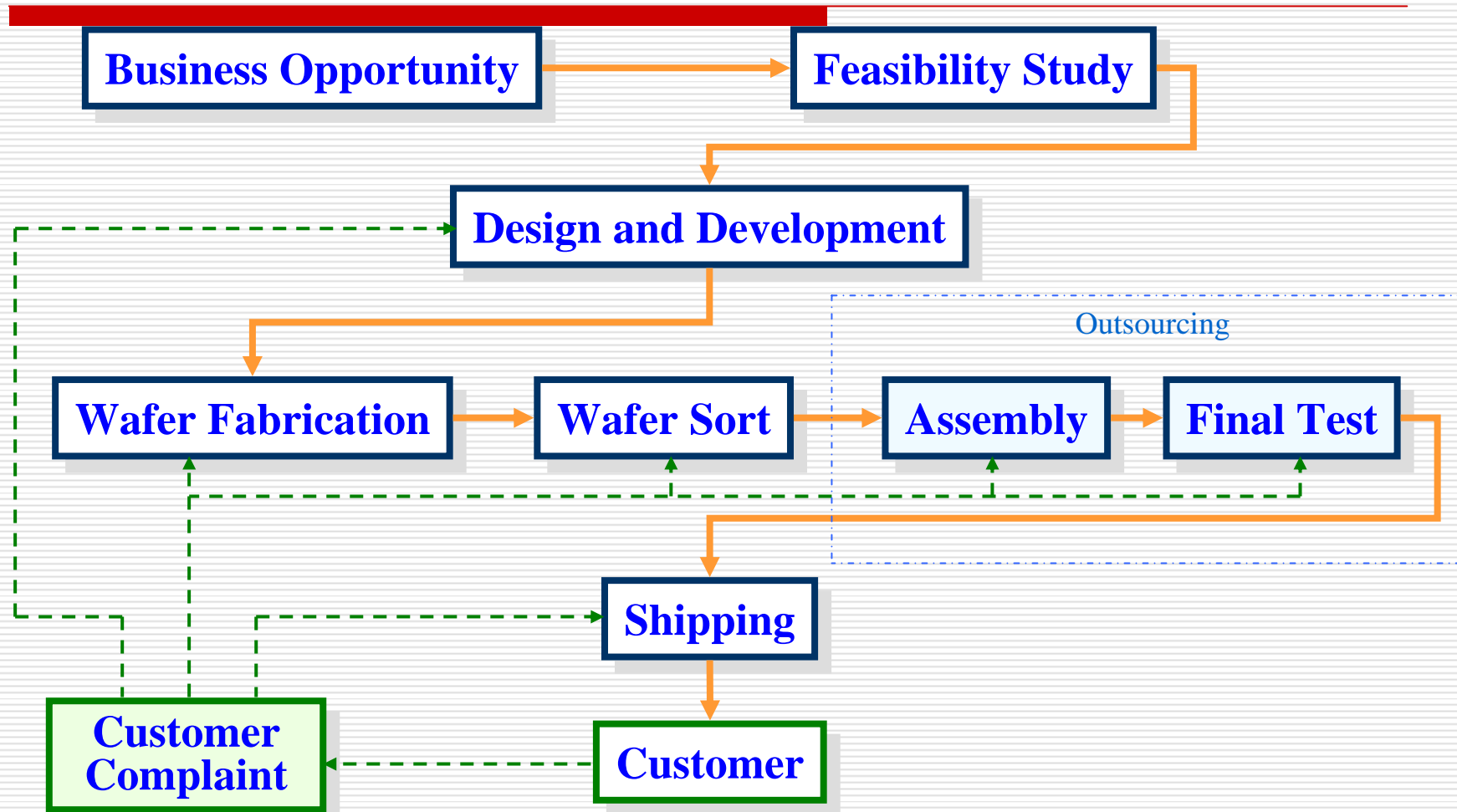
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- *UM4684- Dual SPDT Analog Switch with 0.8 Ohm On Resistance*
  - *2 channel ESD Protection Device with EMI Filter in QFN package for Speaker & Earphone Port*
  - *4 channel ESD Protection Device with EMI Filter in QFN package*
  - *6 channel ESD Protection Device with EMI Filter in QFN package*
  - *8 channel ESD Protection Device with EMI Filter in QFN package*
  - *8 channel ESD Protection Device with EMI Filter in CSP package*
  - *N-Channel VDMOS FET*
  - *P-Channel VDMOS FET*
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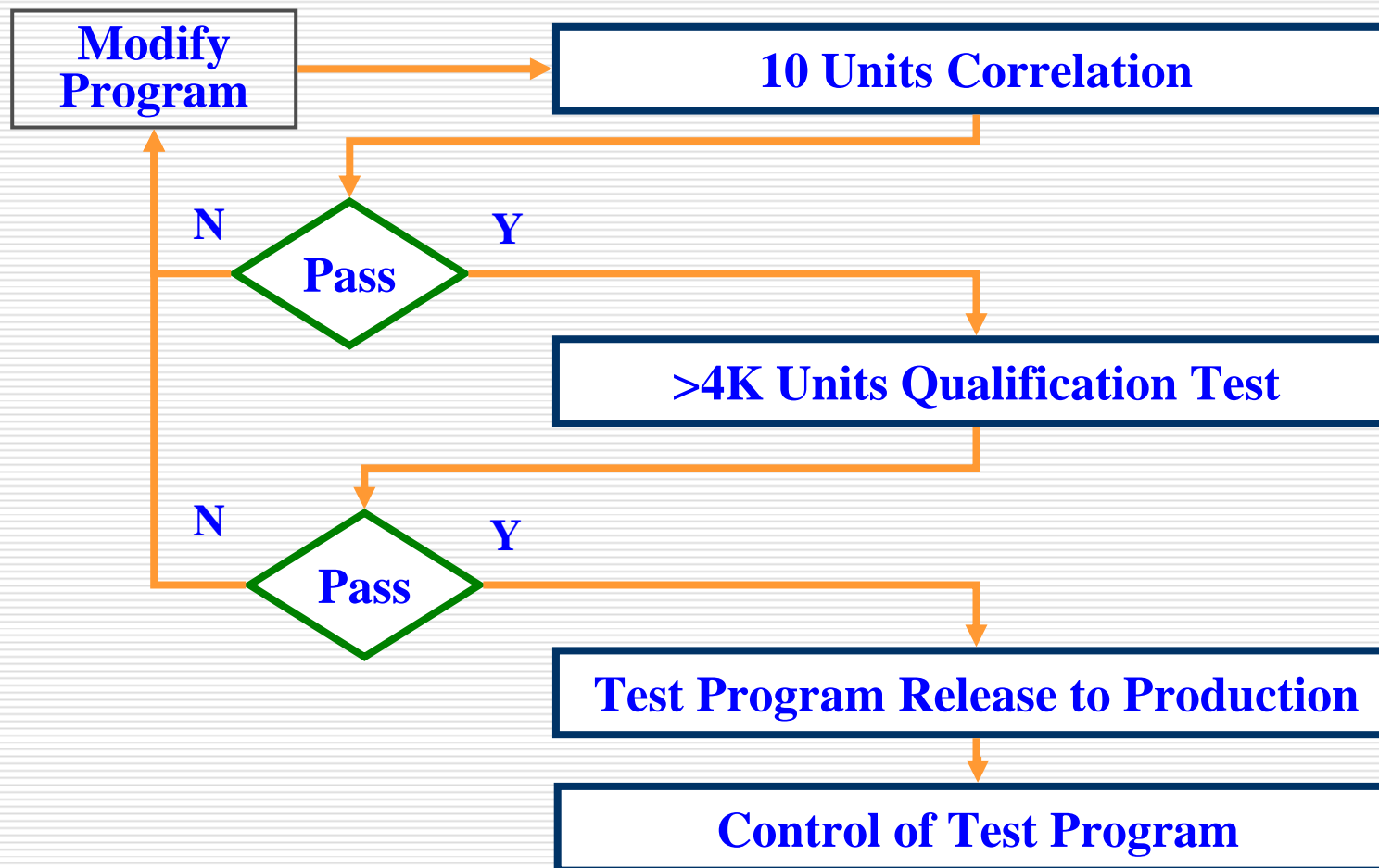
Product Realization Flow





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## Test Program Release & Control





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## FA Techniques

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- *Background Information Investigation*
  - *Failure Verification*
  - *Non-destructive Check/ Electrical Test*
  - *Decapsulation*
  - *Internal Inspection*
  - *Liquid Crystal/EMMI*
  - *Deprocessing*
  - *FIB / Cross Section/ SEM*
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SEM S-4800



FIB-FEI 611



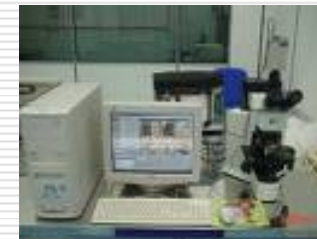
De-Layer



De-Cap



KeyTek Zapmaster

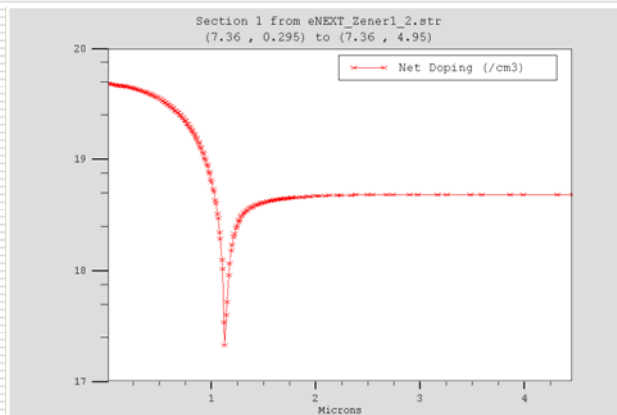
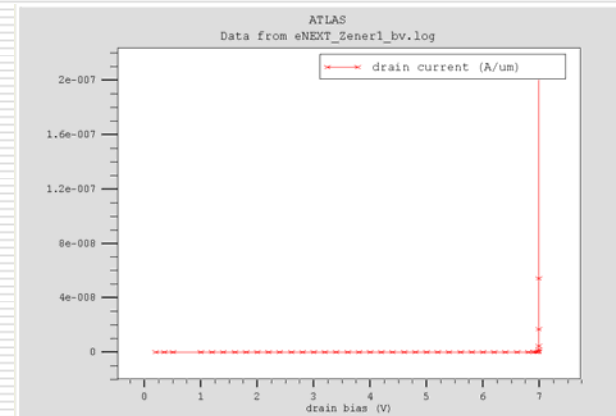
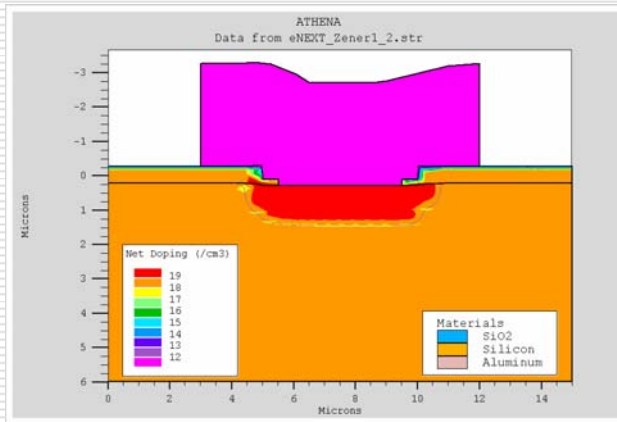


Optical Microscope



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### Design's Questions



- *ATHENA is used in Device process Development*
- *Good Fit between Modeling Simulation & Test Result*
- *Use Split to low design risk*



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## Quality's Questions

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- *Follow IEC 61000-4 to qualify ESD Protection Device*
  - *Wafer Probe @ Test House*
  - *Product tested at Room Temperature*
  - *No Production burn in, Vbump or IDDQ test performed.*
  - *We offer 12 months product warranty guarantee*
  - *We are doing process tuning, package flow control to enhance yield*
  - *All product are lead free & comply to RoHS*
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## Product Test Questions

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- *All outgoing product 100% tested using test Platform DTS1000*
  - *Reverse Breakdown Voltage & Leakage Current are 100% Tested using ATE*
  - *Junction Cap are sampling tested manually*
  - *Clamping Voltage & Peak Current are guaranteed by Design, No Test performed in Mass Production*
  - *Peak Pulse Power are calculated by Clamping Voltage & Peak Current*
  - *Burn in Conditions is 125 degree 168 hour 5V reverse biased, no obvious parameter shift observed.*
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## Logistics/Distribution

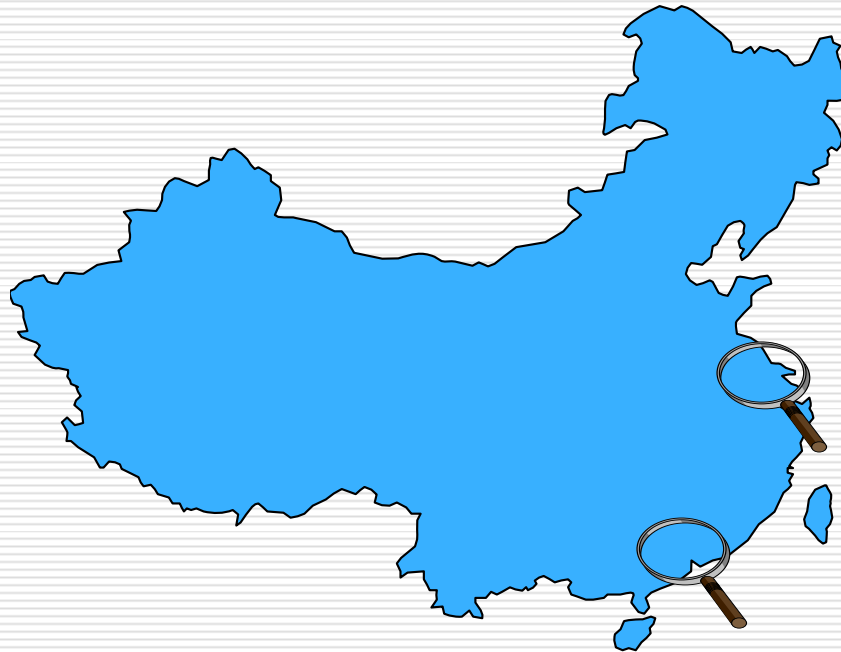
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- *All ESD Protection Parts are shipped in Tape & Reel*
  - *Carrier tape comply with EIA481*
  - *All products are shipped from Shanghai in Ex-Works Terms*
  - *General lead time for ESD Protection device is 6 weeks*
  - *Grace Tang is our CSR & Purchasing Contact Window .*
  - *Lynn Ma is Sales Contact Window*
  - *Liming Ge is product engineering contact window*
  - *Tina Liu is quality contact window*
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课程网址: <http://www.edatop.com/peixun/antenna/133.html>



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课程网址: <http://www.edatop.com/peixun/antenna/134.html>



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