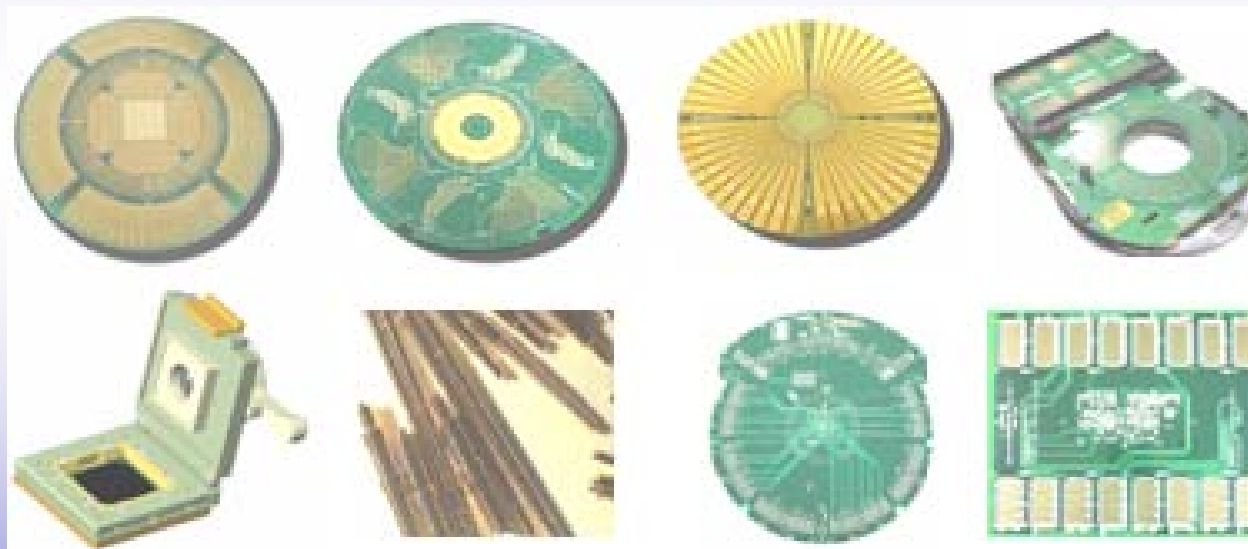


## PREQUALIFICATION STATEMENTS

Feb, 2023

# IC Test Interface PCB & Peripheral



**Newstep System Co., Ltd.**

Tel : 03-5400-788 Fax: 5400-930

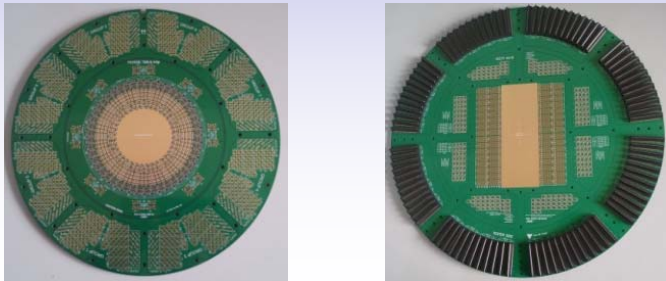
Email to: [nscservice@newstep.com.tw](mailto:nscservice@newstep.com.tw)

Home: [www.newstep.com.tw](http://www.newstep.com.tw)

# Main Business Item

- IC Tester Interface Products, Related Parts & Equipments

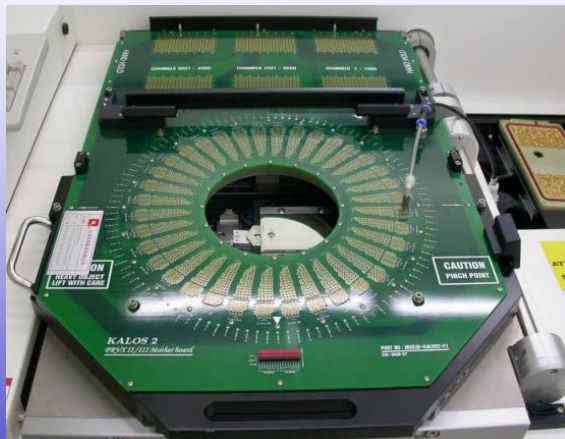
**Probe Card PCB  
for IC wafer test (~80 layers)**



**Load Board  
for IC final test**



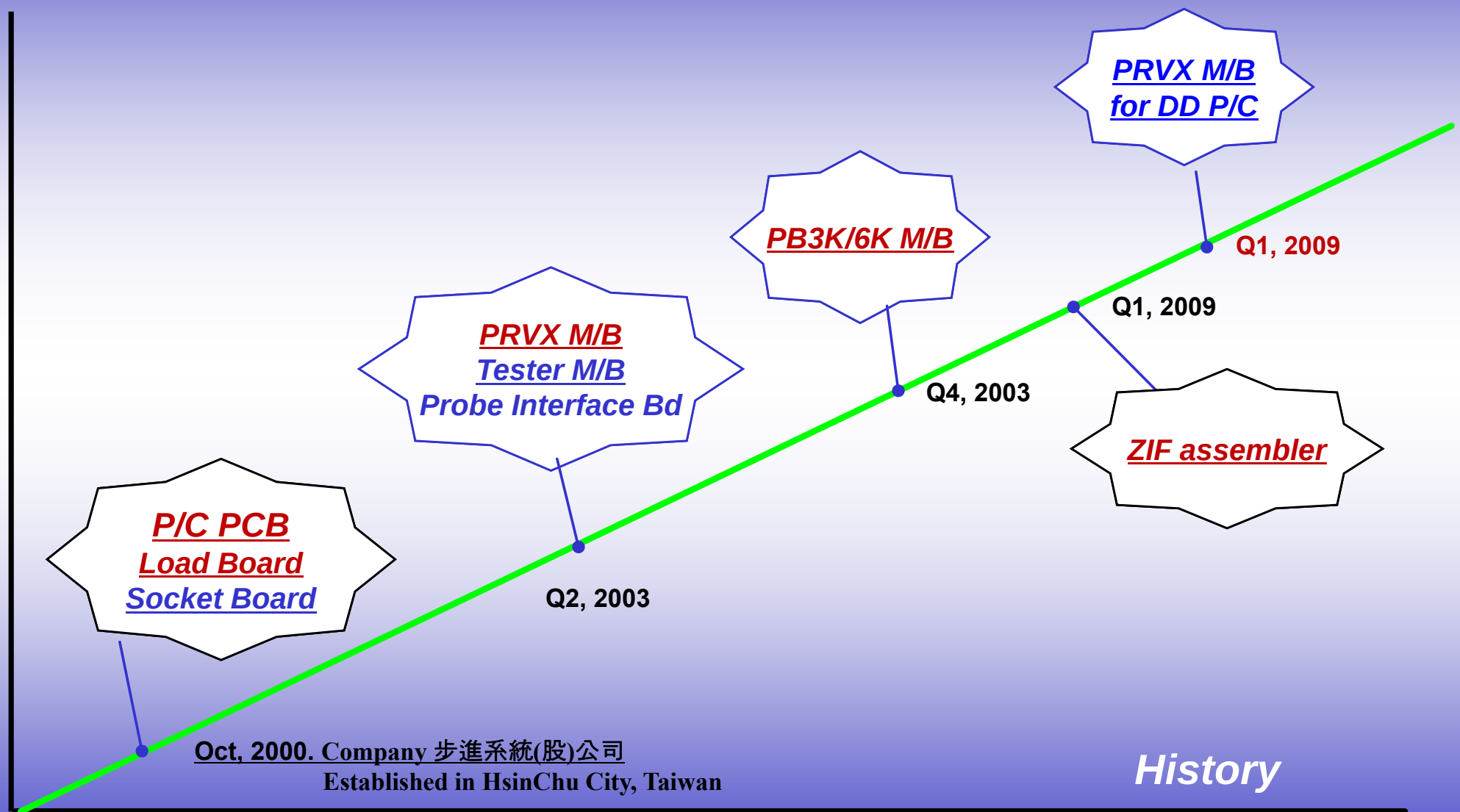
**P/C Analyzer MotherBoard  
for PRVX & PB3K/6K**



**PIB, Stiffener, Tube, Pogo Pin, etc.**



# BUSINESS HISTORY



# MAIN CUSTOMER

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## ■ KOREA

- Samsung, Hynix, DongbuAnam, LG Silicon Works
- SILICON MITUS, NEXT CHIP
- ADVANTEST, AMKOR, STATSChipPAC, GMTEST, iTEST
- SEMES, WILLTECH

## ■ TAIWAN

- IC D/H : EKE, ESMT, Sunplus, ICATCH
- IC fab. : PSC, TSMC
- Testing: Ardentec, GTC, KYEC, TeraPower, SPIL, Sigurd, Winstek
- P/C maker: JEM, FFI, MPI, PL, STAR, SV Probe

## ■ CHINA

- P/C maker: FFI, MaxOne, PL-Wuxi, TwinSemi

# Main Product (PCB)

## Probe Card PCB & Load Board

| <u>Advantest/Agilent</u> | <u>Xcerra (Cred.)</u> | <u>TERADYNE</u> | <u>Yokogawa</u>  | Major | Minor |                  |
|--------------------------|-----------------------|-----------------|------------------|-------|-------|------------------|
| T2000                    | HP4071~3              | D10             | Catalyst         |       |       | ITS9000          |
| T5335, 5365              | HP93K 9.5"            | DX              | ETS-300/364/600  |       |       | EXA3000          |
| T5371                    | VG93K 11"             | DX-DD           | FLEX, UFlex,     |       |       | JEC P2000        |
| T5375/77                 | VG93K_DD              | KALOS           | UFlex_DD         |       |       | TI VLCT-8"       |
| T5771* /T5581            | V4400                 | KALOS-XW        | J750, J750EX     |       |       | VLCT-12" RASP    |
| T6371/72/73              | V5400                 | KALOS2          | J995, J996, J997 |       |       | YTEC             |
| T6391(ND4)               | T5830*                | Sapphire        | Magnum*/M2_13"   |       |       | SCUD1A (V50)     |
| T6577*                   |                       |                 |                  |       |       | YT5100, S100_15D |
|                          |                       |                 |                  |       |       | LTX, Trillium    |
|                          |                       |                 |                  |       |       | Delta 50         |
|                          |                       |                 |                  |       |       | Trillium         |
|                          |                       |                 |                  |       |       | CASCADE          |
|                          |                       |                 |                  |       |       | KEITHLEY         |
|                          |                       |                 |                  |       |       | S600/S900        |
|                          |                       |                 |                  |       |       | MOSAID           |
|                          |                       |                 |                  |       |       | MS3480/85/90     |

## Mother Board for PRVX & PB3K/6K

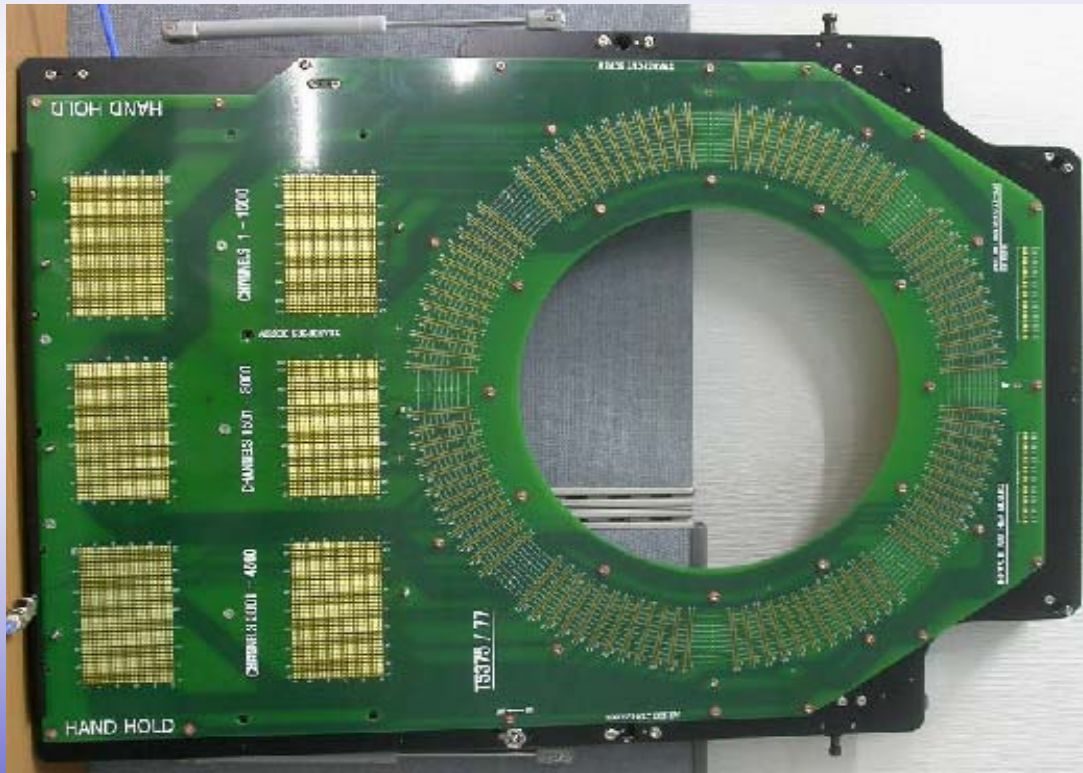
Advantest : T2000 (LIF con.), T5371, T5377 (ZIF), T5771, T5830(con.), T6371/72/73, etc.  
 (Agilent) : HP93K-9.5" & 11" , HP93K\_Direct Docking, V4400, etc.  
 Xcerra (Cred.) : D10, DX\_DD, KALOS-XW, KALOS-2 (top-referencing), Sapphire, etc.  
 Teradyne : Catalyst, J750, J971, FLEX, Uflex\_DD, Uflex+\_DD, etc.  
 Others : E320, Fusion, LTX-MX, Megatest, ST6730, VLCT, YT5100, S100\_15D, etc.

# Main Product (MotherBoard)

## ◆ MotherBoard for P/C Analyzer (PRVX, ProbeWorx, PB35/65K)

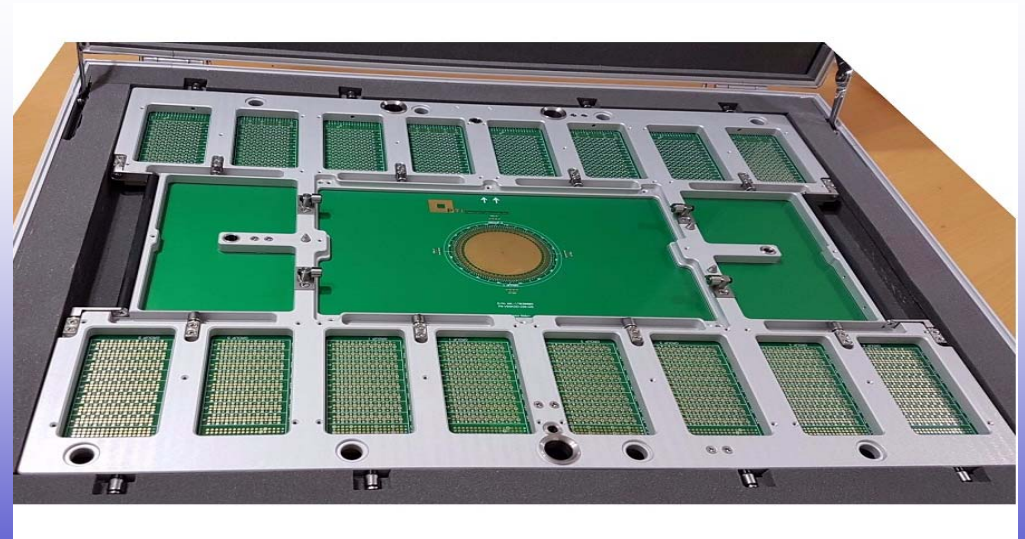
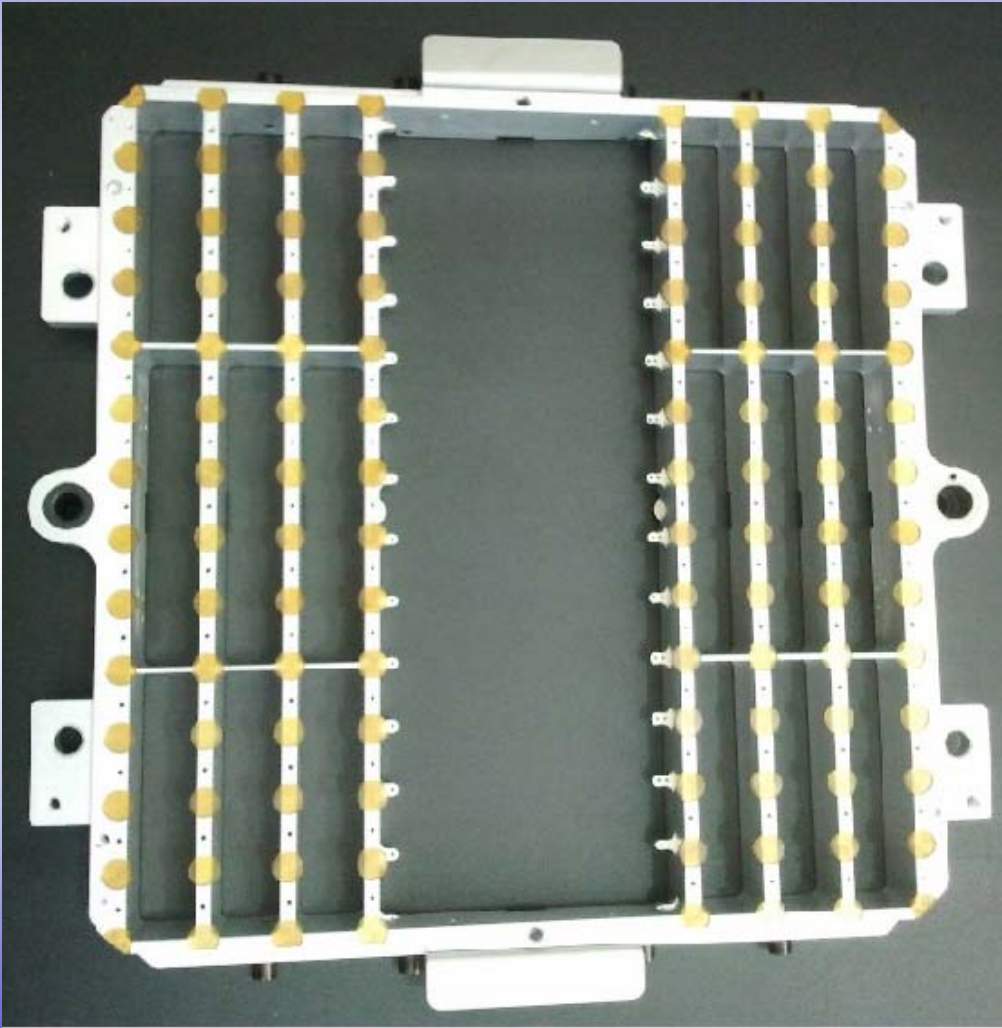
**T5377**

- 17.3" size, 6.3mm thickness
- 96 ZIF connectors assembled
- With Stiffener



# Main Product (Miscellany)

## Stiffener, Mounting Ring



# PCB QUALITY ASSURANCE (1)

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## ◆ Outgoing Test Item

- **Visual Inspection:**

- marking, plating, etc.

- **Mechanical Measurement:**

- flatness, size, thickness, hole size, etc.

- **Electrical Test:**

- Open/Short, leakage, impedance, DC (line) resistance, etc.

## ◆ One-to-one replacement of failure PCB

## ◆ 6 months of warranty before assembly

# PCB QUALITY ASSURANCE (2)

| Item                               | <u>General Control Spec</u>                    | Remark                |
|------------------------------------|------------------------------------------------|-----------------------|
| DRY Film resolution                | Max. 16000 DPI                                 |                       |
| Line etching tolerance (um)        | 1 Oz → Outer : 25, Inner : 12.5                |                       |
|                                    | 1/2 Oz → Outer : 15, Inner : 10                |                       |
| Leakage current                    | Max 5nA                                        | Signal                |
| DC (Line) resistance               | Max 1.5 ohms                                   |                       |
| <u>Impedance tolerance</u>         | 10% for general type                           | Special: 5%, 7.5%     |
| <u>Propagation Delay tolerance</u> | Max. 20%                                       | Special: 10%          |
| <u>Flatness error – whole area</u> | 1.0 mil/inch                                   | Special: 0.8 mil/inch |
| <u>Flatness error – inner area</u> | 0.7 mil/inch                                   | Center/window area    |
| Diameter & Thickness error         | Max. 0.25 mm                                   | Special: 0.15 mm      |
| Hole diameter tolerance            | Max. 0.05 mm                                   |                       |
| AU Plating thickness (um)          | Soft: Max 0.2, Hard : Max 0.1 (Normal : 0.05 ) |                       |

# PCB CAPABILITY

| Item                  | Capability                                                 | Remark                    |
|-----------------------|------------------------------------------------------------|---------------------------|
| Layer Count           | ~80 layers                                                 |                           |
| Thickness             | ~9.0mm                                                     |                           |
| Thickness Error       | +/- 0.1mm                                                  | General: +/- 0.2mm        |
| Size                  | 760 x 580 mm                                               |                           |
| Via/Pad Pitch         | 0.37mm ~                                                   |                           |
| Line / Space. Min.    | 60/60um                                                    | @inner layer              |
| VIA A/R (縦横比)         | 29                                                         | <b>Φ0.15mm @4.4t</b>      |
| Warpage error         | ~0.8/1000                                                  | General: 1/1000           |
| Material              | FR4, FR4_High-Tg, Megtron_4&6, N4000-13, Polyimide, Rogers |                           |
| Speed max.            | 4.5Gbps                                                    | @Load board               |
| Impedance error       | +/- 7.5%                                                   | General: +/- 10%          |
| <b>Drill Diameter</b> | <b>Via Pitch min.</b>                                      | <b>PCB Thickness max.</b> |
| Φ0.15mm               | 0.37mm                                                     | 4.4mm                     |
| Φ0.20mm               | 0.40mm                                                     | 4.8mm                     |
| Φ0.30mm               | 0.50mm                                                     | 6.3mm                     |

# PCB MATERIAL

|                              | Material Supplier      |        | DOOSAN     | DOOSAN       | DOOSAN        | NELCO               | Panasonic    | ARLON   | ARLON     |
|------------------------------|------------------------|--------|------------|--------------|---------------|---------------------|--------------|---------|-----------|
|                              | Material Name          |        | DS-7408    | DS-7409      | DS-7409S(N/F) | N4000-13/SI         | Megtron4     | HF      | 85N       |
| Item                         | ID Reference (UL/ANSI) |        | FR4        | FR4, High-Tg | FR4, High-Tg  | High-Tg             | High-Tg      | High-Tg | POLYIMIDE |
| Dielectric Constant Er       | at 1GHZ                |        | 4.2        | 4.2          | 4.27/4.20     | 3.7/3.4             | 3.8          | 3.75    | 4.2       |
|                              | at 1MHZ                |        | 4.5~4.8    | 4.5~4.8      | 4.5~4.8       |                     | 3.9          |         |           |
| Dissipation factor           | at 1GHZ                |        | 0.015-0.02 | 0.015-0.02   | 0.015-0.02    | 0.009/.008 (2.5MHZ) | 0.005 (1GHZ) | 0.004   | 0.01      |
|                              | at 1MHZ                |        | 0.017      | 0.017        | 0.017         |                     |              |         |           |
| Physical                     | Flammability class     | -      | 94 V-0     | 94 V-0       | 94 V-0        | 94 V-0              | 94 V-0       | 94 V-0  | 94 HB     |
| Glass Transition Temperature | Tg (TMA)               | °C     | 143        | 160          | 173           | 200                 | 170          | 190     | 250       |
|                              | Tg (DSC)               | °C     | 145        | 170          | 180           | 210                 | 176          | 205     | -         |
|                              | Tg (DMA)               | °C     | 180        | -            | -             | 240                 | 210          | -       | -         |
| Thermal Ex-pension           | CTE X                  | ppm/°C | 15         | 14~16        | 15            | 10~14               | 12~14        | 14~16   | 16        |
|                              | CTE Y                  | ppm/°C | 13         | 13~14        | 13            | 10~14               | 13~15        | 14~16   | 16        |
|                              | CTE Z                  | ppm/°C | 45         | 45~55        | 45            | 3.5(%)              | 35           | 1.2(%)  | 1.2(%)    |
| Physical                     | Peel strength          | KN/m   | 1.6-1.8    | 1.8          | 1.4-1.6       | 1.31                | 1.2          | 1.58    | 1.24      |
|                              | Water absorption       | %      | 0.08~0.10  | 0.1~0.14     | 0.05~0.08     | 0.1                 | 0.1          | 0.1     | 0.27      |

# STRONG POINT

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- **Superior & Stable Quality**

- Design & production know-how from long experience (over 20 yr)
- Good process control by “dedicated” manufacture line.
- Stable quality in electric and mechanical characteristic.
- Can support up to 80 layers of PCB (T5377, KALOS2, V5400)

- **Quick Delivery** (based on 30 layers of P/C PCB, 20 layers of Load Bd)

- 1 day by keeping PCB in stock (for universal type)
- New design & delivery : 3~5 weeks
- Repeat order delivery : 2 weeks

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*Thank You for Your Attention !!*