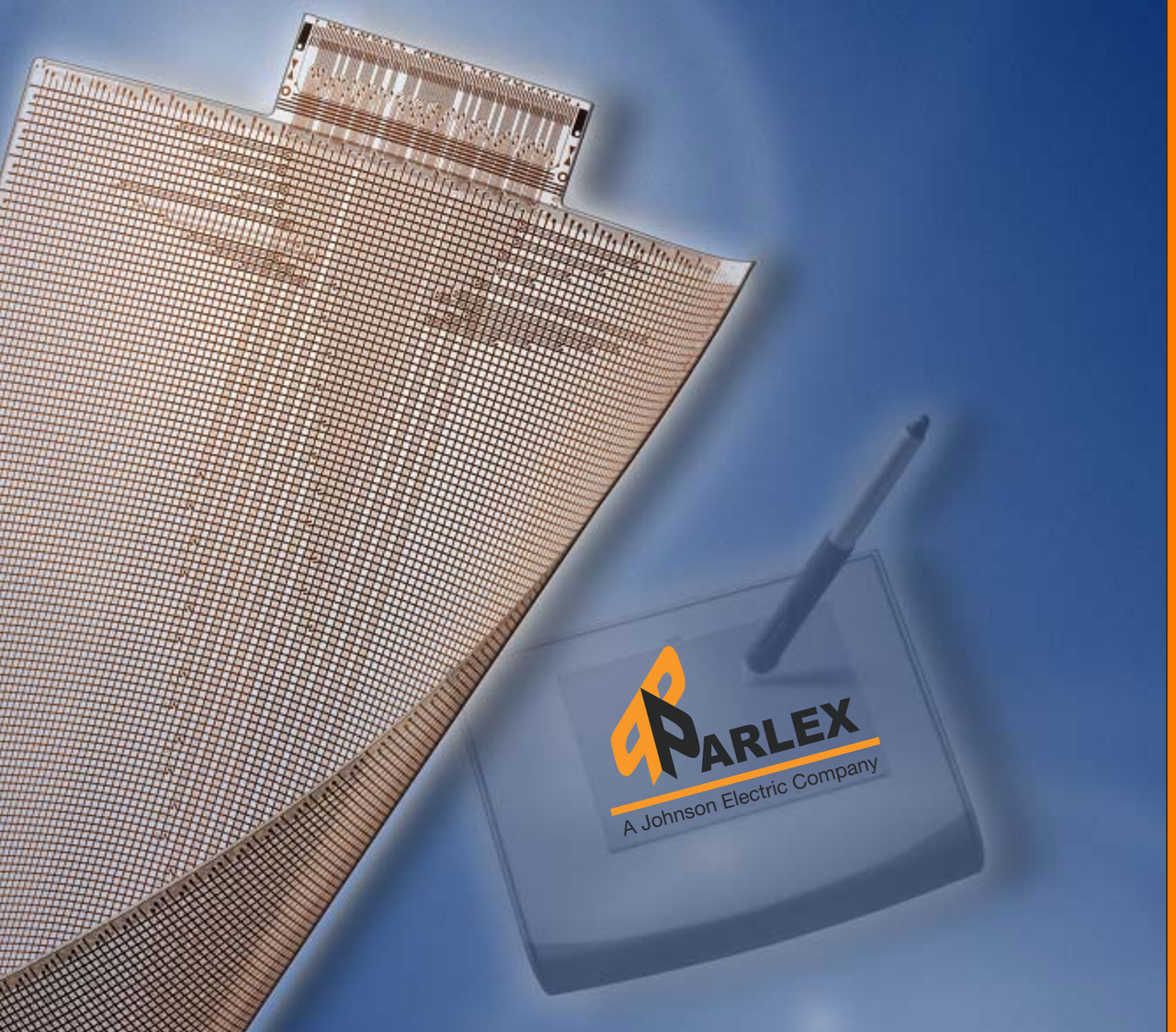
High volume...adhesiveless...double-sided flexible circuit manufacturing.....

All made easy with Palflex® Plus Technology from Parlex



Palflex® Plus Technical Specifications

Substrate Film	Polyester (PET), Polyetherimide (PEI) and Polyimide (PI) Thickness: 25 to 125 µm (1 to 5 mils)
Copper	Electrodeposited High Ductility Thickness: 5 to 50µm Ductility: >2000 cycles (IPC TM 650 2-4-3-1) Elongation at break: 12% (Tested at 35µm thick)
Micro Via Hole	Diameter: 40 to 100µm (after laser). Blind microvias– minimum diameter 65µm
Image Resolution	Line/space: 60/60µm
Surface Finishing	Nickel: 2 to 5 µm, Gold: 0.05 to 0.25µm Compatible with both Flip Chip & Wire Bonding Specific finishing per customer's demand (e.g., Cu, Palladium, OSP, LPI Soldermask, laminated coverlayer and more)
Sprocket Hole	Tolerance sprocket hole to Cu features: ±50µm
Slitting	Standard: 35±0.1mm width Other widths available upon request
Packaging	Standard reel width: 35mm (other widths avail. upon request) Reel length: 600m
Assembly	Compatible with full range of downstream assembly processes including SMT, solder and ACA/ACF attachment

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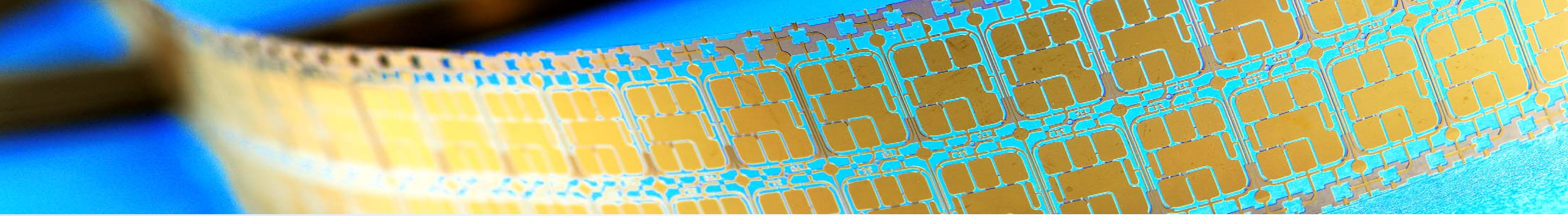
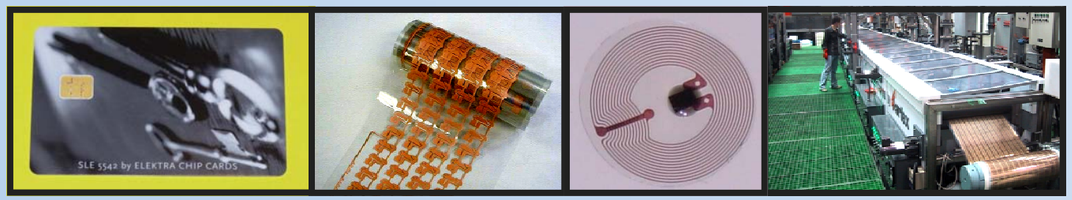


Palflex® Plus Technology from Parlex– the easy, cost effective way to implement adhesiveless, double-sided flexible circuits into your next automated assembly

For over 35 years, Parlex has led the way in supplying cost effective methods to make miniature flexible circuits that work.....and look great, too. When the demands of your next manufacturing challenge require a high volume solution, count on Parlex exclusive Palflex® Plus Technology.

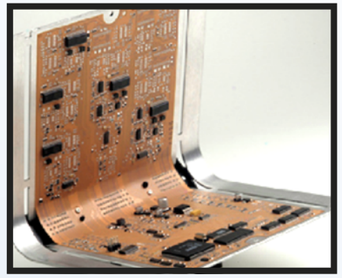
Palflex Plus High Performance Advantages:

- **Easy to automate**– All substrates available in continuous reel-to-reel formats; custom hole generation for many different manufacturing formats.
- **Adaptable to many applications**– Including Smartcard FCOS, RFID, Displays, electronic identification, antennas, medical sensors, automotive ECU.
- **Wide manufacturing flexibility**– Double-sided for easier miniaturization; each circuit solution can be easily customized to fit standard equipment. Supports SMT, wave solder and ACA/ACF attachment.



Palflex Plus circuits are used extensively in Smartcard applications (photo left) and for making cell phone antennas in volume (middle photos). Palflex Plus substrates are made exclusively by Parlex in ISO-certified facilities worldwide (photo right). For more information on the use of Palflex Plus substrates for your next application, contact your local Parlex Applications Specialist.

- **Customizable to fit most needs**- Available in a wide range of surface finishes, film substrates & thicknesses, large & shaped holes possible.
- **Delivers excellent cosmetics**– Thin, uniform flexible substrates for easy integration; supports blind microvias. PET substrates available in clear, black or white formats for the perfect look.
- **High reliability, durability & dimensional stability**– Adhesiveless construction for better heat tolerance in hostile use environments; excellent heat dissipation when bonded to aluminum heatsink; superior contact life and corrosion protection with Au plating option.



Palflex Plus circuits can be laminated to aluminum substrates for superior heat dissipation in automotive engine control units (photo right). For improved reliability in processing, Palflex Plus circuits display minimal, predictable distortion profiles with the substrates used below (see chart).

	PI	PET	PEI
Constant Operating Temperature	150ºC	105ºC	140ºC
Dimensional Stability (IPC-TM-650 2.2.4 Method B)	0.25%	0.4%	0.2%
Moisture Absorption (ASTM D570)	2.8%	0.8%	1.25%