

# Summary Specifications for 3M™ Flexible Circuits

Note: These Summary Specifications indicate individual capabilities; combinations may or may not be available for your design. Contact a 3M representative to discuss your specific requirements.

## Copper Conductor Features

Thickness range	18 - 36 microns
<b>Minimum conductor width:</b>	
Supported	20 microns
Unsupported	50 microns
Conductor width tolerance	+/- 20% of nominal
<b>Minimum space between conductors:</b>	
Supported	20 microns
Unsupported	50 microns
Minimum dimension of a copper hole	75 microns
Conductor sidewall angle	> 80°
Hardness (KHN, typical)	120

## Available substrates (thickness)

Kapton® Polyimide Type E	25, 50 microns
Kapton® Polyimide Type H	50 microns
Kapton® Polyimide Type V	50 microns
Apical® Polyimide Type HPNF	50 microns
Apical® Polyimide Type NP	75 microns
Liquid Crystal Polymer	25, 50 microns
<b>Substrate Features:</b>	
Minimum feature size	125 microns
Feature size tolerance (diameter)	+/- 50 microns
Registration to metal features	+/- 25 microns

## Cover Plating Capabilities

<b>Gold:</b>	
Purity	99.9%
Thickness	0.4 - 3.2 microns
Thickness tolerance	+/- 0.25 microns
<b>Electroplated Nickel:</b>	
Thickness	0.4 – 1.25 microns
Thickness tolerance	+/- 30% of nominal

## Circuit Protection Options

	Epoxy Solder Resist	Epoxy Acrylate Covercoat
Registration tolerance	+/- 200 microns	+/- 75 microns
Thickness range (over conductors)	15-50 microns	15-50 microns
Temperature resistance (260o solder reflow,5 seconds)	3 cycles min.	2 cycles min.
Pencil hardness	4H	4H
Minimum bending radius (on 50µm Kapton® H with 35µm conductors)	0.3 mm	0.3 mm

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Apical® is a registered trademark of Kaneka Corporation