

Standard Force Sensor

TPE-500 SERIES DATA SHEET



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Standard Force Sensor

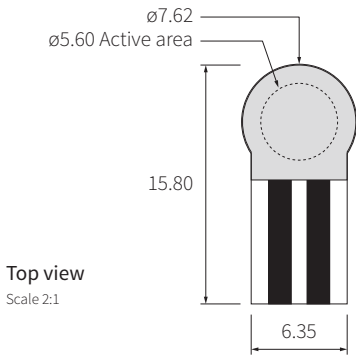
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Standard Force Sensor

TPE-500 / TPE-500s

Mechanical data

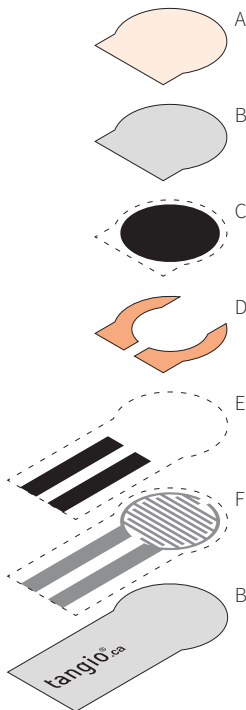


Active area	ø5.60mm	Trace width	0.25mm
Thickness (inc. 0.05mm adhesive)	0.325 / 0.25mm	Trace pitch	0.50mm
Mode	Shunt	Spacer height	0.05mm
Overall diameter	7.62mm	Tail length	9.00mm
Sensor overall length	15.80mm	Tail width	6.35mm

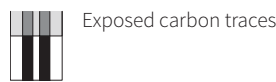
Interconnect options and part numbers

Stacked view

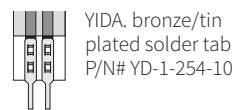
- A Adhesive
- B PET
- C FSR
- D Spacer
- E Tail carbon
- F Silver conductive



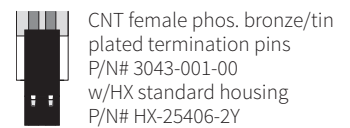
TPE-500A / TPE-500sA



TPE-500B / TPE-500sB



TPE-500C / TPE-500sC



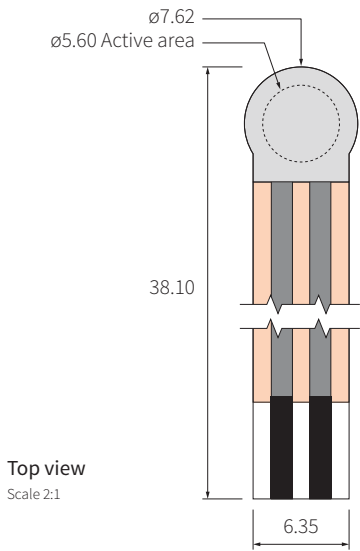
Device characteristics

Characteristic	Description	Value	Notes
Actuation force	Force to reach 10MΩ	< 30g / < 10g	Average of 100 samples
Force range	linear region of log/log	Up to 5kg	Higher forces can be achieved with custom sensor and actuation methods
Long term drift	1kg for 48hrs	< 2%	Per log time
Single part repeatability	100 actuations of 1kg	2%	1 standard deviation/mean
Part to part repeatability	100 sensors same batch	+/- 4%	1 standard deviation/mean
Low temp. storage	-20°C for 250hrs	8%	Avg. change in resistance of 5 sensors
High temp. storage	+85°C for 250hrs	4%	Avg. change in resistance of 5 sensors
High humidity storage	+85°C/85%RH for 250hrs	8%	Avg. change in resistance of 5 sensors
Lifecycle durability (10M)	1kg force at 3Hz	7%	Avg. change in resistance of 4 sensors
Hysteresis	100 actuations of 1kg	5%	Avg. change in resistance of 100 samples
Operational temp. range	100 cycles at 0.5kg	-20 to +85°C	

Device characteristics and mechanical data stated in orange text refer to TPE-500s. All values typical, and quoted at 10N applied force unless otherwise stated. Force dependent on actuation interface, mechanics, and measurement electronics.

Standard Force Sensor

TPE-501 / TPE-501s



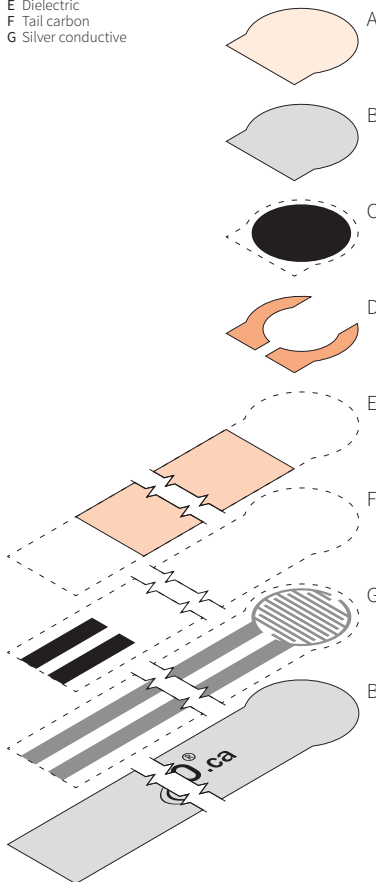
Mechanical data

Active area	ø5.60mm	Trace width	0.25mm
Thickness (inc. 0.05mm adhesive)	0.325 / 0.25mm	Trace pitch	0.50mm
Mode	Shunt	Spacer height	0.05mm
Overall diameter	7.62mm	Tail length	30.00mm
Sensor overall length	38.10mm	Tail width	6.35mm

Interconnect options and part numbers

Stacked view

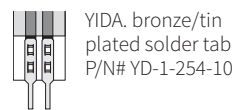
- A Adhesive
- B PET
- C FSR
- D Spacer
- E Dielectric
- F Tail carbon
- G Silver conductive



TPE-501A / TPE-501sA



TPE-501B / TPE-501sB



TPE-501C / TPE-501sC



Device characteristics

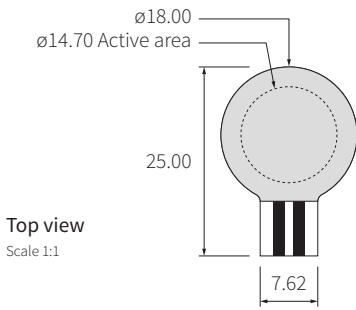
Characteristic	Description	Value	Notes
Actuation force	Force to reach 10MΩ	< 30g / < 10g	Average of 100 samples
Force range	linear region of log/log	Up to 5kg	Higher forces can be achieved with custom sensor and actuation methods
Long term drift	1kg for 48hrs	< 2%	Per log time
Single part repeatability	100 actuations of 1kg	2%	1 standard deviation/mean
Part to part repeatability	100 sensors same batch	+/- 4%	1 standard deviation/mean
Low temp. storage	-20°C for 250hrs	8%	Avg. change in resistance of 5 sensors
High temp. storage	+85°C for 250hrs	4%	Avg. change in resistance of 5 sensors
High humidity storage	+85°C/85%RH for 250hrs	8%	Avg. change in resistance of 5 sensors
Lifecycle durability (10M)	1kg force at 3Hz	7%	Avg. change in resistance of 4 sensors
Hysteresis	100 actuations of 1kg	5%	Avg. change in resistance of 100 samples
Operational temp. range	100 cycles at 0.5kg	-20 to +85°C	

Device characteristics and mechanical data stated in orange text refer to TPE-501s.
Note: All values typical, and quoted at 10N applied force unless otherwise stated. Force dependent on actuation interface, mechanics, and measurement electronics.

Standard Force Sensor

TPE-502

Mechanical data

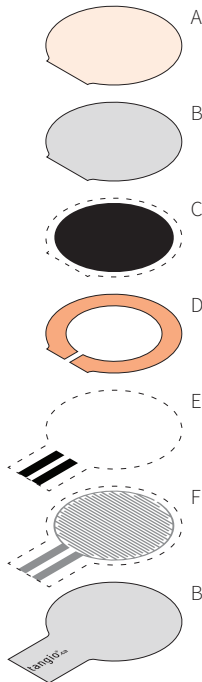


Active area	ø14.70mm	Trace width	0.25mm
Thickness (inc. 0.05mm adhesive)	0.375mm	Trace pitch	0.50mm
Mode	Shunt	Spacer height	0.05mm
Overall diameter	18.00mm	Tail length	9.00mm
Sensor overall length	25.00mm	Tail width	7.62mm

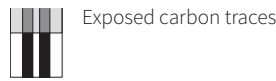
Interconnect options and part numbers

Stacked view

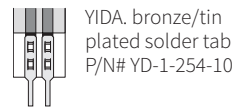
- A Adhesive
- B PET
- C FSR
- D Spacer
- E Tail carbon
- F Silver conductive



TPE-502A



TPE-502B



TPE-502C



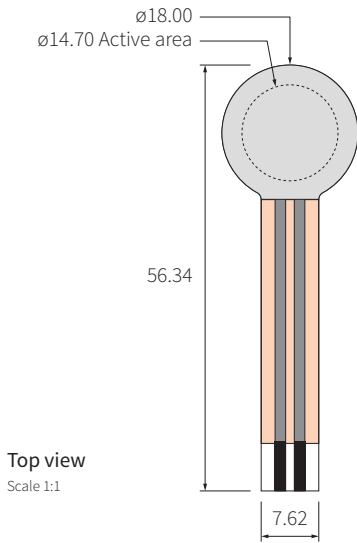
Device characteristics

Characteristic	Description	Value	Notes
Actuation force	Force to reach 10MΩ	< 15g	Average of 100 samples
Force range	linear region of log/log	Up to 5kg	Higher forces can be achieved with custom sensor and actuation methods
Long term drift	1kg for 48hrs	< 1%	Per log time
Single part repeatability	100 actuations of 1kg	2%	1 standard deviation/mean
Part to part repeatability	100 sensors same batch	+/- 4%	1 standard deviation/mean
Low temp. storage	-20°C for 250hrs	7%	Avg. change in resistance of 5 sensors
High temp. storage	+85°C for 250hrs	3%	Avg. change in resistance of 5 sensors
High humidity storage	+85°C/85%RH for 250hrs	12%	Avg. change in resistance of 5 sensors
Lifecycle durability (10M)	1kg force at 3Hz	3%	Avg. change in resistance of 4 sensors
Hysteresis	100 actuations of 1kg	5%	Avg. change in resistance of 100 samples
Operational temp. range	100 cycles at 0.5kg	-20 to +85°C	

Note: All values typical, and quoted at 10N applied force unless otherwise stated. Force dependent on actuation interface, mechanics, and measurement electronics.

Standard Force Sensor

TPE-503



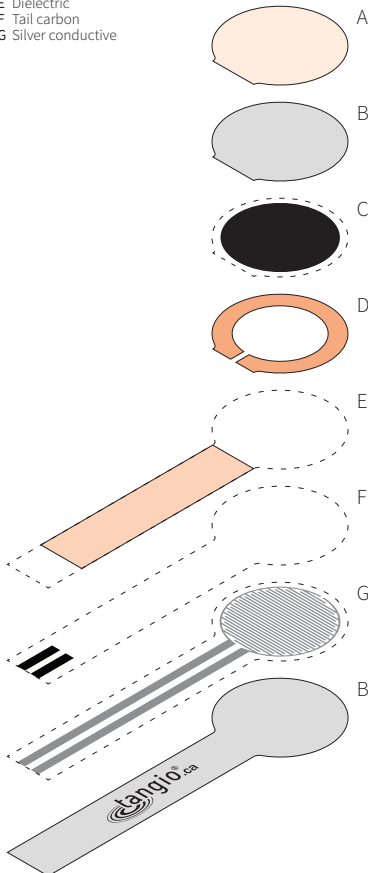
Mechanical data

Active area	14.70mm	Trace width	0.25mm
Thickness (inc. 0.05mm adhesive)	0.375mm	Trace pitch	0.50mm
Mode	Shunt	Spacer height	0.05mm
Overall diameter	18.00mm	Tail length	38.00mm
Sensor overall length	56.34mm	Tail width	7.62mm

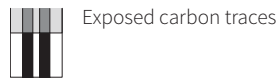
Interconnect options and part numbers

Stacked view

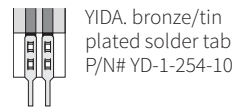
- A Adhesive
- B PET
- C FSR
- D Spacer
- E Dielectric
- F Tail carbon
- G Silver conductive



TPE-503A



TPE-503B



TPE-503C



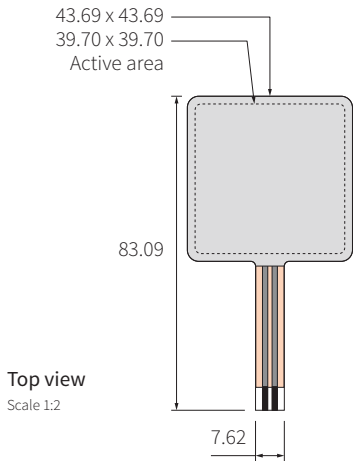
Device characteristics

Characteristic	Description	Value	Notes
Actuation force	Force to reach 10MΩ	< 15g	Average of 100 samples
Force range	linear region of log/log	Up to 5kg	Higher forces can be achieved with custom sensor and actuation methods
Long term drift	1kg for 48hrs	< 1%	Per log time
Single part repeatability	100 actuations of 1kg	2%	1 standard deviation/mean
Part to part repeatability	100 sensors same batch	+/- 4%	1 standard deviation/mean
Low temp. storage	-20°C for 250hrs	7%	Avg. change in resistance of 5 sensors
High temp. storage	+85°C for 250hrs	3%	Avg. change in resistance of 5 sensors
High humidity storage	+85°C/85%RH for 250hrs	12%	Avg. change in resistance of 5 sensors
Lifecycle durability (10M)	1kg force at 3Hz	3%	Avg. change in resistance of 4 sensors
Hysteresis	100 actuations of 1kg	5%	Avg. change in resistance of 100 samples
Operational temp. range	100 cycles at 0.5kg	-20 to +85°C	

Note: All values typical, and quoted at 10N applied force unless otherwise stated. Force dependent on actuation interface, mechanics, and measurement electronics.

Standard Force Sensor

TPE-506



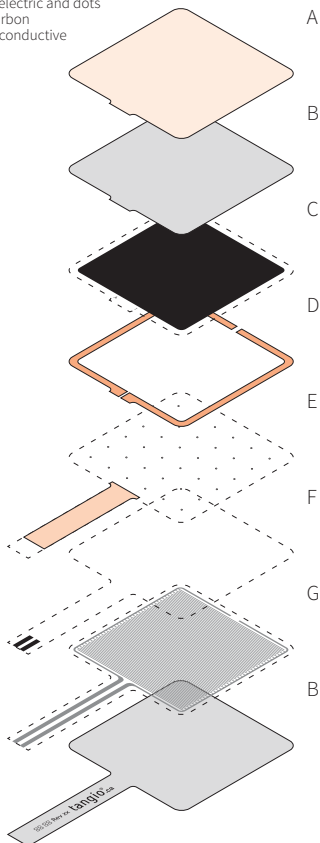
Mechanical data

Active area	39.70 x 39.70mm	Trace width	0.25mm
Thickness (inc. 0.05mm adhesive)	0.375mm	Trace pitch	0.50mm
Mode	Shunt	Spacer height	0.125mm
Overall area	43.69 x 43.69mm	Tail length	39.40mm
Sensor overall length	83.09mm	Tail width	7.62mm

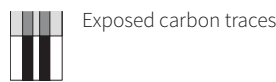
Interconnect options and part numbers

Stacked view

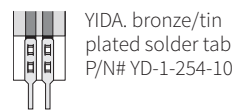
- A Adhesive
- B PET
- C FSR
- D Spacer
- E Tail dielectric and dots
- F Tail carbon
- G Silver conductive



TPE-506A



TPE-506B



TPE-506C



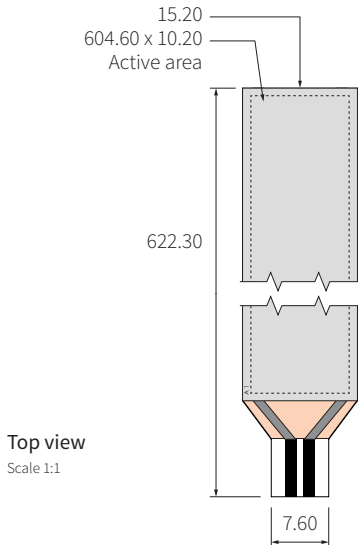
Device characteristics

Characteristic	Description	Value	Notes
Actuation force	Force to reach 10MΩ	< 20g	Average of 100 samples
Force range	linear region of log/log	Up to 5kg	Higher forces can be achieved with custom sensor and actuation methods
Long term drift	1kg for 48hrs	< 2%	Per log time
Single part repeatability	100 actuations of 1kg	2%	1 standard deviation/mean
Part to part repeatability	100 sensors same batch	+/- 4%	1 standard deviation/mean
Low temp. storage	-20°C for 250hrs	8%	Avg. change in resistance of 5 sensors
High temp. storage	+85°C for 250hrs	4%	Avg. change in resistance of 5 sensors
High humidity storage	+85°C/85%RH for 250hrs	8%	Avg. change in resistance of 5 sensors
Lifecycle durability (10M)	1kg force at 3Hz	7%	Avg. change in resistance of 4 sensors
Hysteresis	100 actuations of 1kg	5%	Avg. change in resistance of 100 samples
Operational temp. range	100 cycles at 0.5kg	-20 to +85°C	

Note: All values typical, and quoted at 10N applied force unless otherwise stated. Force dependant on actuation interface, mechanics, touch location, and measurement electronics.

Standard Force Sensor

TPE-508



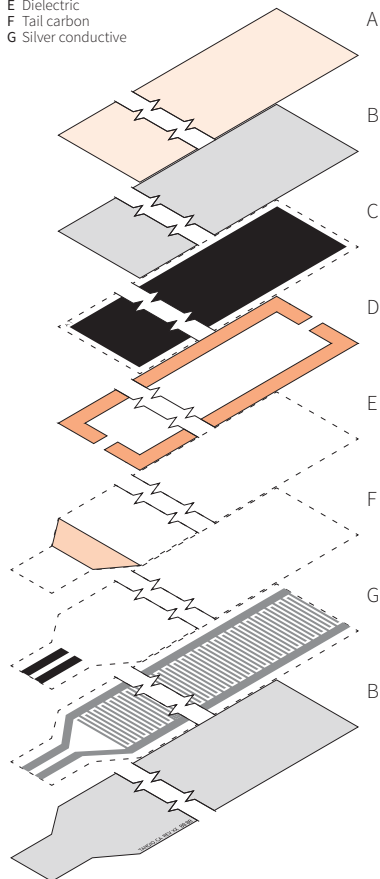
Mechanical data

Active area	604.60 x 10.20mm	Trace width	0.25mm
Thickness (inc. 0.05mm adhesive)	0.375mm	Trace pitch	0.50mm
Mode	Shunt	Spacer height	0.125mm
Sensor overall width	15.20mm	Tail length	12.70mm
Sensor overall length	622.30mm	Tail width	7.60mm

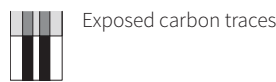
Interconnect options and part numbers

Stacked view

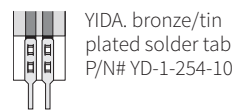
- A Adhesive
- B PET
- C FSR
- D Spacer
- E Dielectric
- F Tail carbon
- G Silver conductive



TPE-508A



TPE-508B



TPE-508C



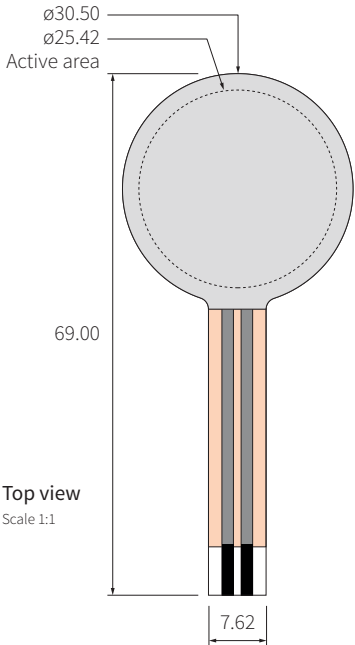
Device characteristics

Characteristic	Description	Value	Notes
Actuation force	Force to reach 10MΩ	< 20g	Average of 100 samples
Force range	linear region of log/log	Up to 5kg	Higher forces can be achieved with custom sensor and actuation methods
Long term drift	1kg for 48hrs	< 1%	Per log time
Single part repeatability	100 actuations of 1kg	2%	1 standard deviation/mean
Part to part repeatability	100 sensors same batch	+/- 4%	1 standard deviation/mean
Low temp. storage	-20°C for 250hrs	7%	Avg. change in resistance of 5 sensors
High temp. storage	+85°C for 250hrs	3%	Avg. change in resistance of 5 sensors
High humidity storage	+85°C/85%RH for 250hrs	12%	Avg. change in resistance of 5 sensors
Lifecycle durability (10M)	1kg force at 3Hz	3%	Avg. change in resistance of 4 sensors
Hysteresis	100 actuations of 1kg	5%	Avg. change in resistance of 100 samples
Operational temp. range	100 cycles at 0.5kg	-20 to +85°C	

Note: All values typical, and quoted at 10N applied force unless otherwise stated. Force dependent on actuation interface, mechanics, and measurement electronics.

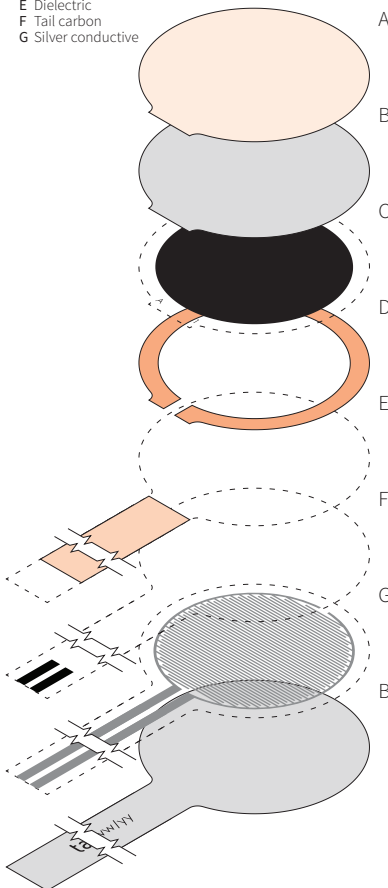
Standard Force Sensor

TPE-510



Stacked view

- A Adhesive
- B PET
- C FSR
- D Spacer
- E Dielectric
- F Tail carbon
- G Silver conductive

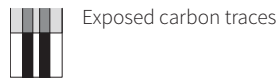


Mechanical data

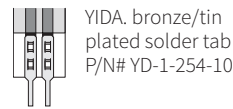
Active area	ø25.42mm	Trace width	0.25mm
Thickness (inc. 0.05mm adhesive)	0.425mm	Trace pitch	0.50mm
Mode	Shunt	Spacer height	0.125mm
Overall diameter	30.50mm	Tail length	38.00mm
Sensor overall length	69.00mm	Tail width	7.62mm

Interconnect options and part numbers

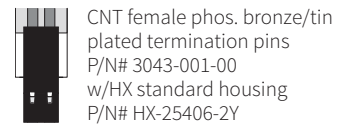
TPE-510A



TPE-510B



TPE-510C



Device characteristics

Characteristic	Description	Value	Notes
Actuation force	Force to reach 10MΩ	< 10g	Average of 100 samples
Force range	linear region of log/log	Up to 5kg	Higher forces can be achieved with custom sensor and actuation methods
Long term drift	1kg for 48hrs	< 1%	Per log time
Single part repeatability	100 actuations of 1kg	2%	1 standard deviation/mean
Part to part repeatability	100 sensors same batch	+/- 4%	1 standard deviation/mean
Low temp. storage	-20°C for 250hrs	7%	Avg. change in resistance of 5 sensors
High temp. storage	+85°C for 250hrs	3%	Avg. change in resistance of 5 sensors
High humidity storage	+85°C/85%RH for 250hrs	12%	Avg. change in resistance of 5 sensors
Lifecycle durability (10M)	1kg force at 3Hz	3%	Avg. change in resistance of 4 sensors
Hysteresis	100 actuations of 1kg	5%	Avg. change in resistance of 100 samples
Operational temp. range	100 cycles at 0.5kg	-20 to +85°C	

Note: All values typical, and quoted at 10N applied force unless otherwise stated. Force dependent on actuation interface, mechanics, and measurement electronics.

CONTACT

Tangio Printed Electronics

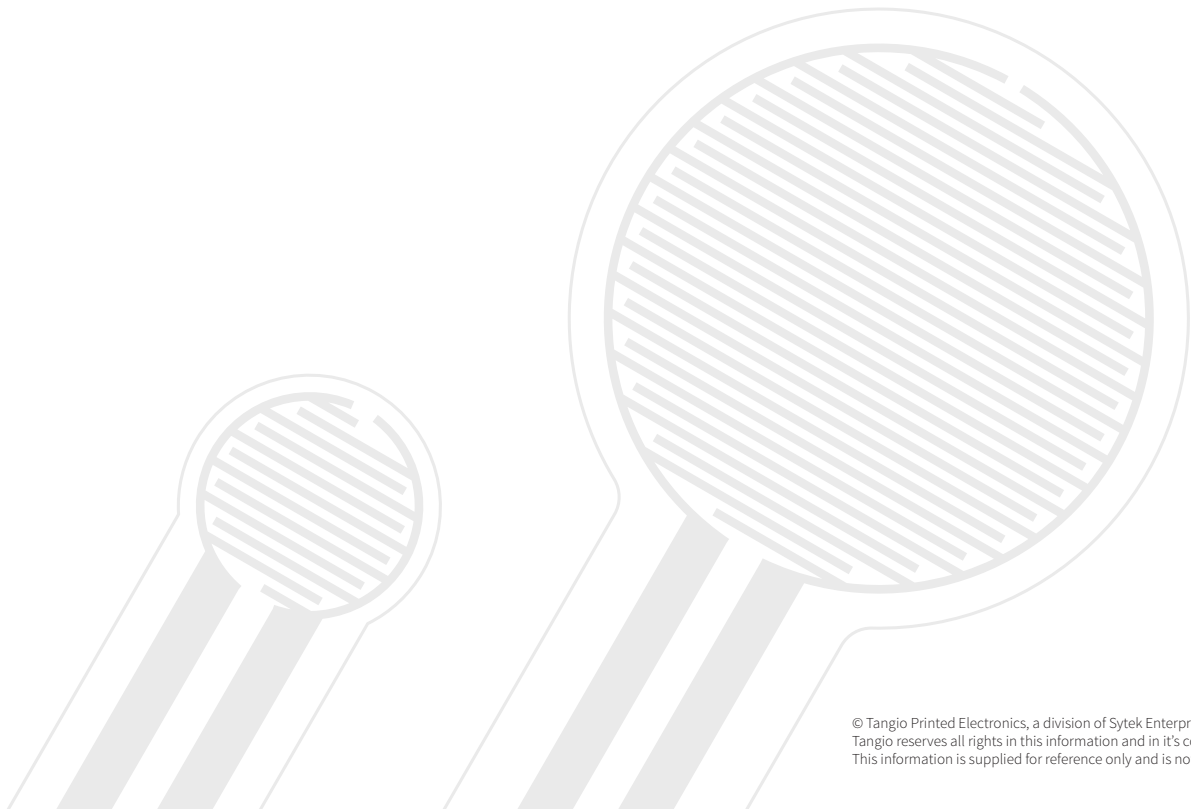
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