

## Displacement Sensor, Ultra Flat



### FEATURES

- Sealed
- Infinite resolution
- High integration capacity
- Durability
- Rectilinear: UFPMA type
- Circular: UFPMC type
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### LINKS TO ADDITIONAL RESOURCES



### QUICK REFERENCE DATA

Sensor type	LINEAR or ROTATIONAL, conductive plastic
Output type	Output by wires or connector
Market appliance	Industrial, avionics
Dimensions	4 mm (thickness max.)

### ELECTRICAL SPECIFICATIONS

PARAMETER	UFPMA	UFPMC
Total resistance ( $R_n$ )	4.7 k $\Omega$	
Tolerance on $R_n$	$\pm 20\%$	
Dissipation	$\leq 0.1 \text{ W/cm of travel}^{(1)}$	$\leq 1 \text{ W to } 70^\circ\text{C}$
Theoretical electrical travel (TET)	20 mm to 250 mm <sup>(1)</sup>	270°
Tolerance on TET	$\pm 1 \text{ mm}$	$\pm 3^\circ$
Electrical continuity travel	TET + 4 mm	310°
Linearity	$\pm 2\%$	$\pm 1.5\%$
Temperature coefficient	-300 ppm/°C $\pm 300 \text{ ppm/}^\circ\text{C}$	
Collector / track current ( $I_c$ )	$\leq 1 \text{ mA}$	
Recommended current $I_c$	$\leq 100 \mu\text{A}$	
Recommended load impedance	$\geq 100 R_n$	
Output smoothness	< 0.1 % (NFC 93 255)	

#### Note

<sup>(1)</sup> See "Specific UFPMA Characteristics" table

### MECHANICAL SPECIFICATIONS

PARAMETER	UFPMA	UFPMC
Design	Flexible insulating films	Flexible insulating films on FR4 substrate
Mechanical travel	= Electrical continuity travel	= Electrical continuity travel (customer stops)
Backlash	< 0.1 mm	< 0.3°
Mounting	With double-sided adhesive on flat, clean, and dry support	
Speed displacement	$\leq 1.5 \text{ m/s}$	
Drive	Force $\geq 0.3 \text{ N}$	Torque $\geq 1 \text{ N cm}$
Protection class (NFC 20 010)		IP 66
Maximum alignment fault	$\pm 1 \text{ mm}$	-

### PERFORMANCE

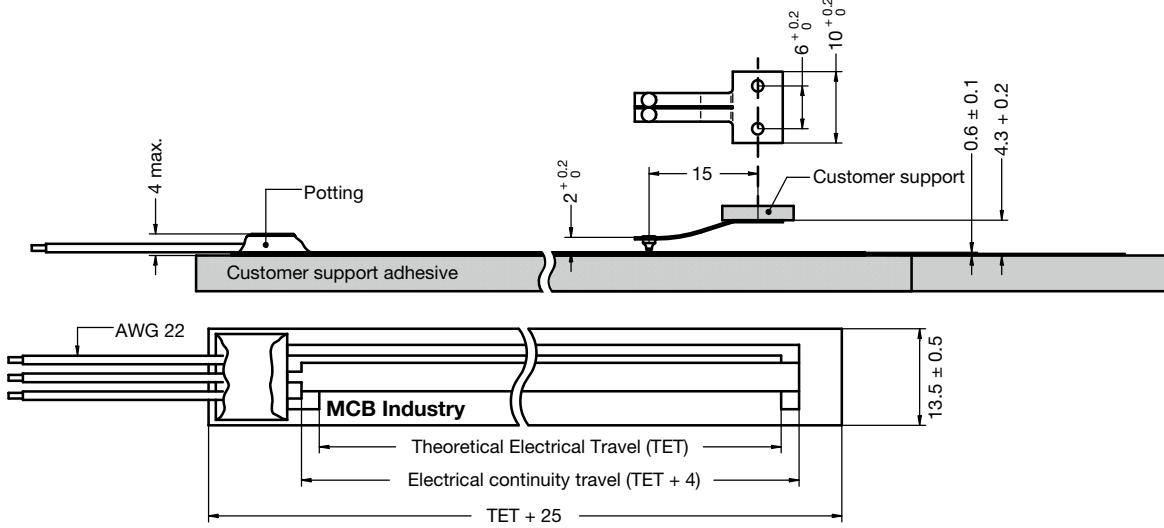
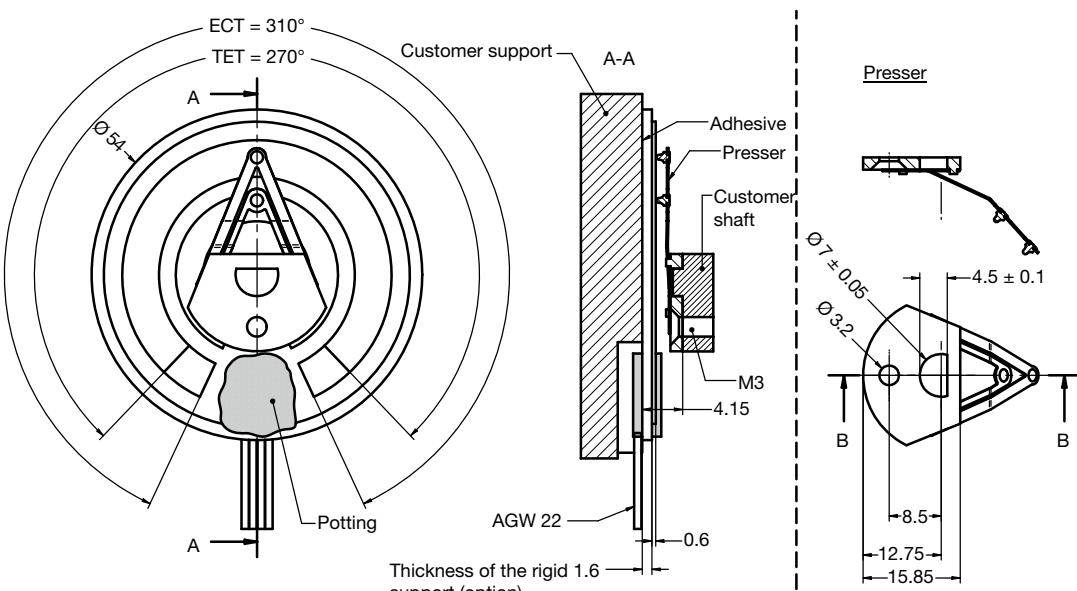
PARAMETER	UFPMA	UFPMC
Life	25M operations for TET < 200 mm 15M operations for TET $\geq 200 \text{ mm}$	> 10M cycles
Operating temperature range	-30 °C to +80 °C	
Storage temperature range	-40 °C to +90 °C	
Support	Flat, clean, and dry	

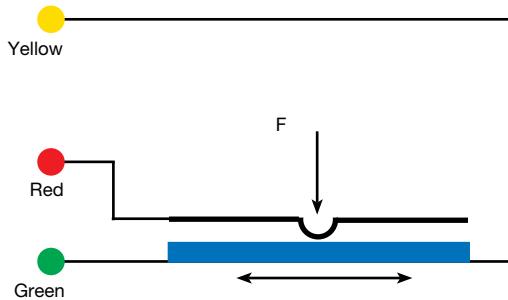
#### Note

- Nothing stated herein shall be construed as a guarantee of quality or durability

<b>SAP PART NUMBERING GUIDELINES - UFPMA</b>							
MODEL	TYPE	THEORETICAL ELECTRICAL TRAVEL (mm)	TYPE	VALUE	LINEARITY	LEADS	PACKAGING
UFPMA	A = linear	060 100 150 200 250	A = aeronautic, off-road, or medical	472 = 4K7	X = $\pm 2\%$ (UFPMA)	W = wires	B = bulk

<b>CONNECTIONS</b>
3 x AWG 22 color wires length 300 mm

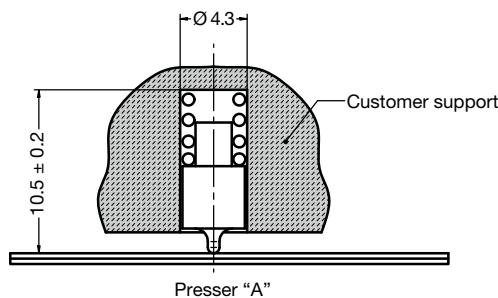
<b>DIMENSIONS</b> in millimeters
<b>UFPMA</b> 
<b>UFPMC (ON REQUEST)</b> 

**ELECTRICAL DIAGRAM**


The voltage varies according to the position of the presser on the deformable membrane.

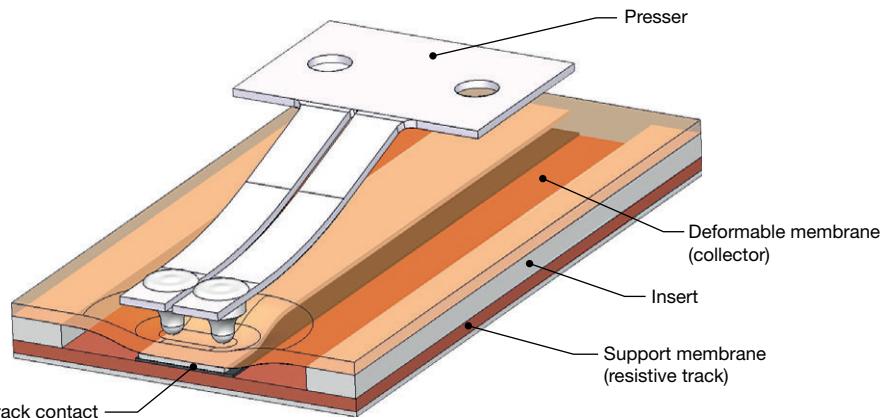
**OPTIONS (on request)**

- Other presser


**SPECIFIC VERSIONS (on request)**

- Other electrical or mechanical characteristics
- Other bases
- Integration in equipment
- Other versions: outdoor design, ...
- Integration in equipment (flat flex cable, contacts, connector, ...)

<b>SPECIFIC UFPMA CHARACTERISTICS</b>			
THEORETICAL ELECTRICAL TRAVEL (TET) (mm)	DISSIPATION AT +40 °C (W)	ELECTRICAL CONTINUITY TRAVEL (ECT) (mm)	FILM LENGTH (mm)
50	≤ 0.5	54	75
100	≤ 1.0	104	125
150	≤ 1.5	154	175
200	≤ 2.0	204	225
250	≤ 2.5	254	275

**OPERATING DESCRIPTION**


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