

## New! TP SERIES - SMT WASHABLE TINY PUSHBUTTON SWITCHES

### DESIGNED EXCLUSIVELY FOR SURFACE MOUNTING

SMT TP Series switches incorporate many desirable features that include:

- **Tape & reel packaging**  
This type of packaging is recommended for:
  - economy
  - suitability for automated placement
  - handling of large quantities of components per packaging unit
  - positive component positioning
  - protection of terminals against damage during handling
  - high static resistance
- **Reflow solderable**
  - High temperature plastic materials
  - Tin plated grounding brackets
  - Tin-lead alloy over nickel terminal plating
  - Terminals turned outward to prevent the shadow effect in infrared soldering and to permit visual inspection of the solder joints
  - .021" (0.55mm) air gap between p.c. board and switch case
  - End stackable with .400" (10.16mm) pitch
  - Available with positioning pins to assure correct switch orientation during the reflow process and provide additional mechanical integrity
- **Protected against electrostatic discharges (ESD) up to 10 KV.**
- **Washable**  
Switches are designed to withstand cleaning processes, including hot water under pressure.

Surface mount devices (SMD) are subject to more stringent constraints of temperature, solderability, sealing and space savings than through-hole components.

To meet these requirements, APEM has designed a family of tiny surface mount switches that include TP Series pushbutton switches, TG Series slide switches and TL Series toggle switches. See Slide & Toggle switch sections of catalog for TG & TL Series respectively.



# New! TP SERIES - SMT WASHABLE TINY PUSHBUTTON SWITCHES

## ELECTRICAL SPECIFICATIONS

<b>Contact ratings (resistive lds.):</b>	0.4 VA at 20 V max. (AC or DC)
<b>Minimum load:</b>	10 mA at 50 mV or 10µA at 5 VD
<b>Initial contact resistance:</b>	50 milliohms maximum
<b>Insulation resistance:</b>	1000 MΩ min. at 500 VDC
<b>Dielectric strength:</b>	1000 V rms between terminals & frame. 500 V rms between terminals
<b>Electrical life (at full load):</b>	60,000 cycles
<b>Static resistance:</b>	10 KV (Schaffner equipment)

## GENERAL SPECIFICATIONS

<b>Travel:</b>	ON-MOM .039" (1mm), OFF-MOM. .031" (0.8mm)
<b>Operating temperature range:</b>	-40°C to +85°C
<b>Moisture resistance:</b>	21 days per IEC 512-6 test 11c
<b>Vibration resistance:</b>	10-500 Hz/10g per IEC 512-4 test 6d
<b>Shock resistance:</b>	50 g per IEC 512-4 test 6c

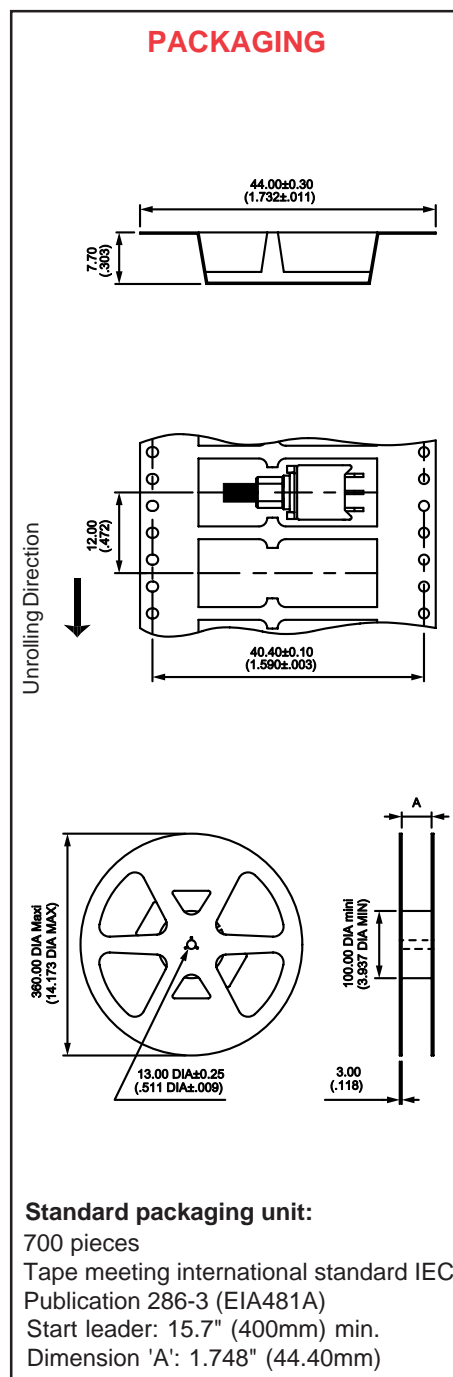
## MATERIALS

<b>Case:</b>	High temperature plastic UL94V-0
<b>Actuator:</b>	High temperature plastic UL94V-0
<b>Grounding brackets:</b>	Tin plated steel (includes positioning pins)
<b>Contacts:</b>	Gold plated brass
<b>Terminals:</b>	Brass with tin-lead alloy over nickel plate

## SOLDERING AND CLEANING

<b>Reflow soldering:</b>	Infrared, vapor phase and infrared convection
<b>Washable:</b>	Per IEA-RS448-2: water and detergent - preferred. Solvents.

## PACKAGING



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

C



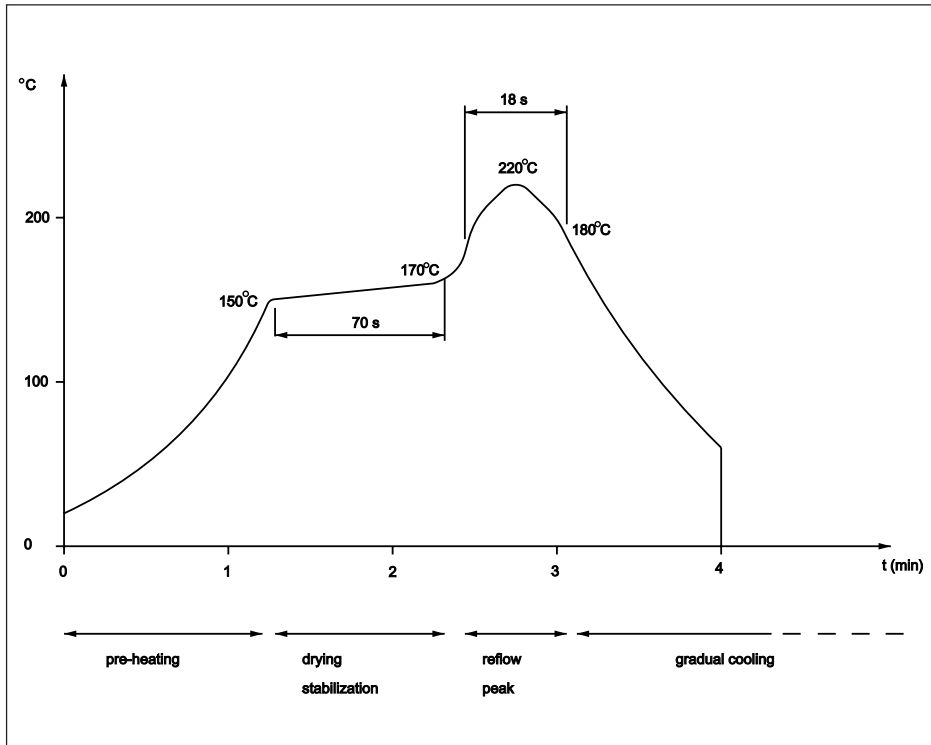
# New! TP SERIES - SMT WASHABLE TINY PUSHBUTTON SWITCHES

## REFLOW SOLDERING - STANDARD PROFILE

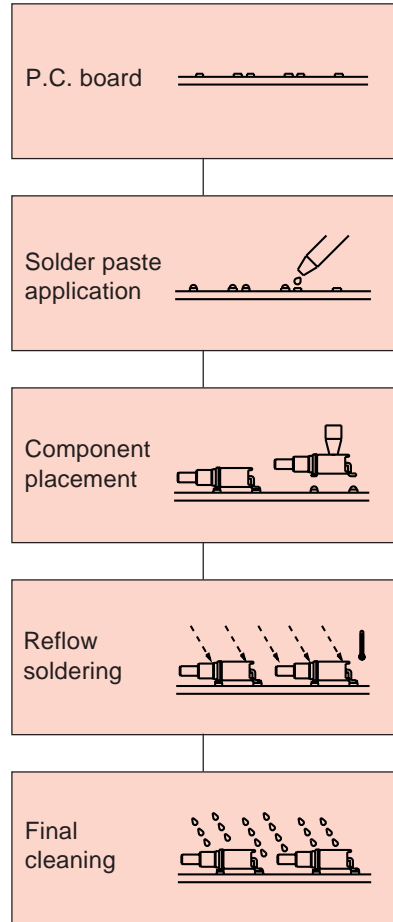
The printed circuit board, carried by a conveyor belt, travels through the reflow soldering oven and experiences the following programmed cycles:

- pre-heat to a maximum of 200°C for 30 seconds
- reflow at a maximum of 245°C for 10 seconds
- final cleaning

### TEMPERATURE/TIME PROFILE (typical)

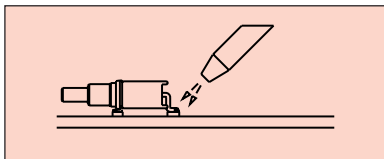


### PROCESSING STEPS



### P.C. BOARD REWORK RECOMMENDATIONS

Hot air reflow technique is preferred. Avoid the use of a soldering iron.



**Caution:** Excessive and/or repeated high temperature exposure may affect switch performance & reliability.