



# Series 204

## Surface Mount Multi-Functional DIP Switch

- Coplanarity: 0.1mm/.004" maximum
- Enclosed actuators shield contacts from foreign particles throughout life of switch
- Available with SPST, SPDT, DPST, 3PST circuitry choices
- Optional top tape seal for board spray washing



### Description

Integral terminal and contact molded into thermoset base provides electrostatic discharge protection rated to 22KV. Optimized gold plated contact design incorporates a dimple wiping interface for long-term contact corrosion resistance.

### Ordering Information

| Series | Number of Poles | Number of Throws | Number of Switch Positions | Actuator Height | Bottom Epoxy Seal | Top Tape Seal | Tape and Reel | Actuation Preset |
|--------|-----------------|------------------|----------------------------|-----------------|-------------------|---------------|---------------|------------------|
| 204-   | 1               | 2                | 1                          | E               | S                 | T             | R             | N                |

| Code  | No. of poles |
|-------|--------------|
| Blank | For SPST     |
| 1     | Single pole  |
| 2     | Double poles |
| 3     | 3 poles      |
| 4     | 4 poles      |

| Code  | Spec.         |
|-------|---------------|
| Blank | For SPST      |
| 1     | Single throw  |
| 2     | Double throws |

| Code | No. of switch positions |
|------|-------------------------|
| 1    | 1 position              |
| 2    | 2 positions             |
| 3    | 3 positions             |
| 4    | 4 positions             |
| 5    | 5 positions             |
| 6    | 6 positions             |
| 7    | 7 positions             |
| 8    | 8 positions             |
| 9    | 9 positions             |
| 10   | 10 positions            |
| 12   | 12 positions            |

| Code  | Spec.                                |
|-------|--------------------------------------|
| Blank | Standard (0.89mm/.035")              |
| E     | Extended (3.43mm/.135") (SPST only)  |
| LP    | Low profile (Flush) (SPST&SPDT only) |

| Code  | Bottom epoxy seal |
|-------|-------------------|
| Blank | No epoxy seal     |
| S     | Epoxy seal        |

| Code  | Spec.                                       |
|-------|---|
| Blank | Ship at OFF position                        |
| N     | Ship at ON position ( SPST, DPST&3PST only) |

| Code  | Spec.   |
|-------|---|
| Blank | Anti-static tube packaging                      |
| R     | Tape and reel packaging ( SPST, DPST&3PST only) |

| Code  | Top tape seal  |
|-------|--|
| Blank | No top tape seal   |
| T     | Top tape seal (Not available for 7-position SPST DIP switch) |

Notes: Contact CTS for other common features not listed.

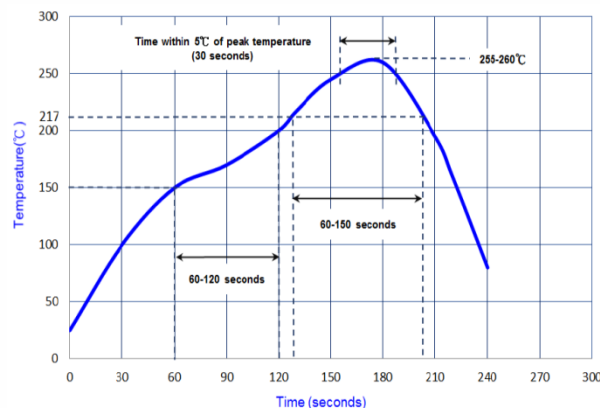
### Electrical Specifications

| Parameter             | Conditions & Remarks              | Min  | Max   | Unit      |
|-----------------------|-----------------------------------|------|-------|-----------|
| Circuit               | SPST                              | 2    | 12    | positions |
|                       | SPDT                              | 1    | 6     |           |
|                       | DPST                              | 1    | 6     |           |
|                       | 3PST                              | 1    | 4     |           |
| Contact Resistance    | Initial                           |      | 50    | milliohms |
|                       | At end of life                    |      | 100   |           |
| Insulation Resistance | Between insulated terminals       | 1000 |       | megohms   |
| Dielectric Strength   | 500 VAC between adjacent switches |      | 1     | minute    |
| Actuation Life        | 50mA @ 24 VDC                     |      | 5,000 | cycles    |
| Switch Capacitance    | Between adjacent closed switches  |      | 5.0   | pF        |
| Nonswitching Rating   |                                   |      | 100   | mA        |
|                       |                                   |      | 50    | VDC       |
| Coplanarity           |                                   |      | 0.1   | mm        |
|                       |                                   |      | 0.004 | inch      |

### Mechanical and Environmental

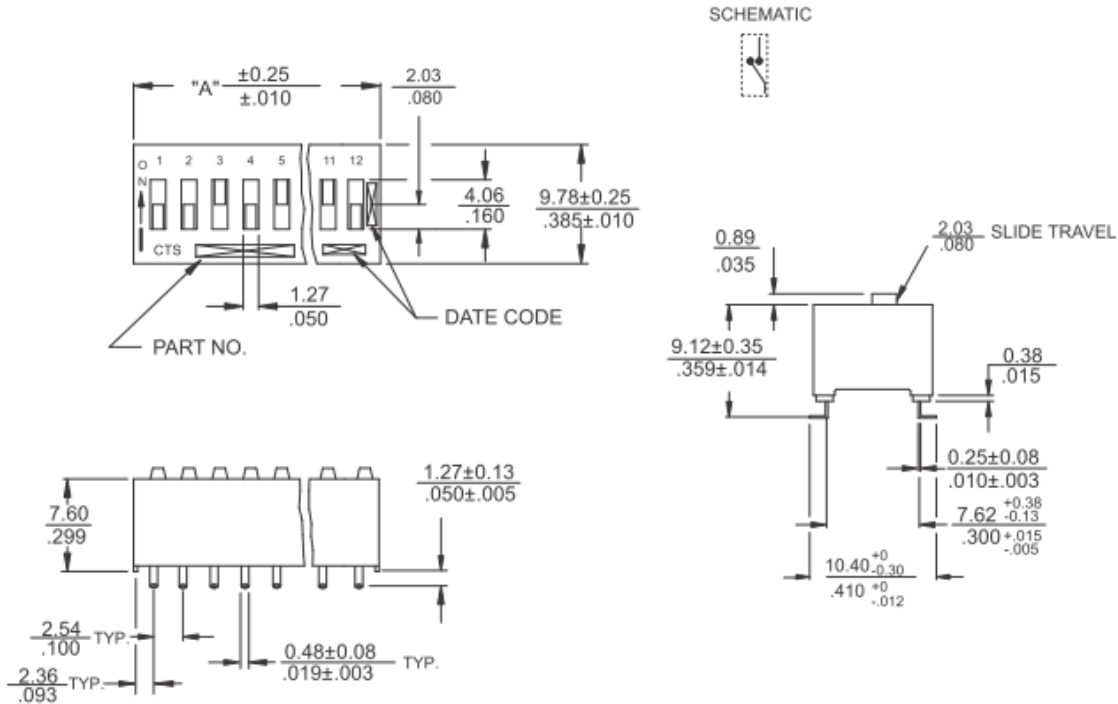
|                             |   |
|-----------------------------|---|
| Soldering                   | Maximum reflow temperature, 250°C for 30 seconds  |
| MSL                         | Level 1   |
| RoHS                        | Lead-Free. Fully compliant to RoHS Directive 2011/65/EU   |
| Shock                       | Per MIL-STD-202F, method 213B, condition A ( 50G's) with no contact inconsistencies greater than 1 microsecond                                |
| Vibration                   | Per MIL-STD-202F, method 204D, condition B ( .06" or 15G's between 10 HZ to 2K HZ) with no contact inconsistencies greater than 1 microsecond |
| Seal                        | Bottom epoxy seal<br>Top tape seal optional   |
| Marking                     | Special side or top marking available-consult CTS   |
| Packaging:                  | Standard anti-static tube packaging, optional tape and reel packaging   |
| Operating Temperature Range | -40°C to +85°C  |
| Storage Temperature Range   | -55°C to +85°C  |

### Soldering Profile



### Mechanical Specifications

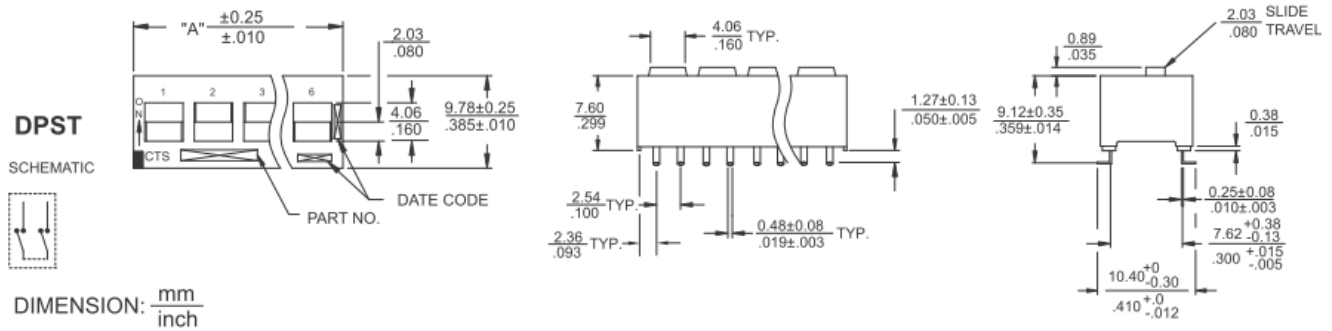
Figure 1 - SPST



DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

| "A" Overall Dimension | No. of Switch Positions | Part No. |
|-----------------------|-------------------------|----------|
| 7.26 / .286           | 2                       | 204-2    |
| 9.80 / .386           | 3                       | 204-3    |
| 12.34 / .486          | 4                       | 204-4    |
| 14.88 / .586          | 5                       | 204-5    |
| 17.42 / .686          | 6                       | 204-6    |
| 19.96 / .786          | 7                       | 204-7    |
| 22.50 / .886          | 8                       | 204-8    |
| 25.04 / .986          | 9                       | 204-9    |
| 27.58 / 1.086         | 10                      | 204-10   |
| 32.66 / 1.286         | 12                      | 204-12   |

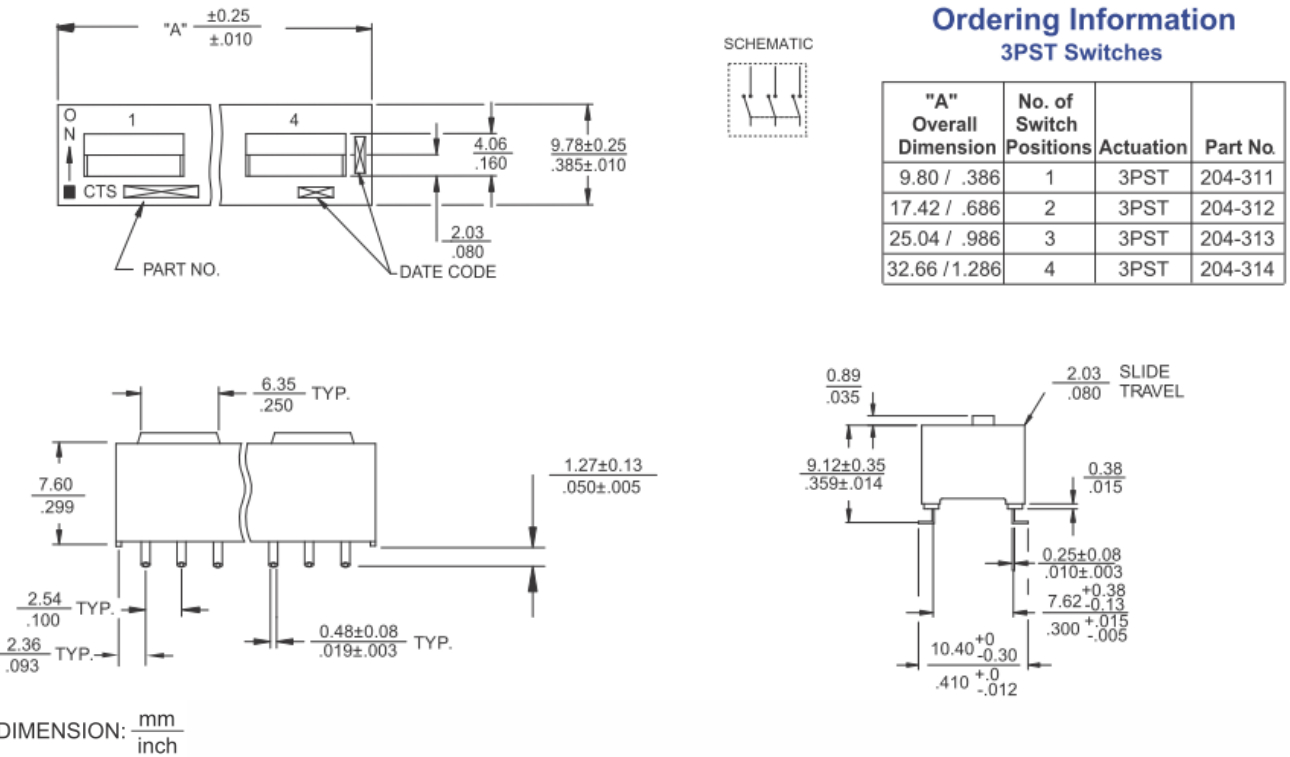
Figure 2 – SPDT/DPST



**Ordering Information**  
SPDT/DPST Switches

| "A" Overall Dimension | Number of Switch Positions | Actuation | Part No.        |
|-----------------------|----------------------------|-----------|-----------------|
| 7.26 / .286           | 1                          | SPDT/DPST | 204-121/204-211 |
| 12.34 / .486          | 2                          | SPDT/DPST | 204-122/204-212 |
| 17.42 / .686          | 3                          | SPDT/DPST | 204-123/204-213 |
| 22.50 / .886          | 4                          | SPDT/DPST | 204-124/204-214 |
| 27.58 / 1.086         | 5                          | SPDT/DPST | 204-125/204-215 |
| 32.66 / 1.286         | 6                          | SPDT/DPST | 204-126/204-216 |

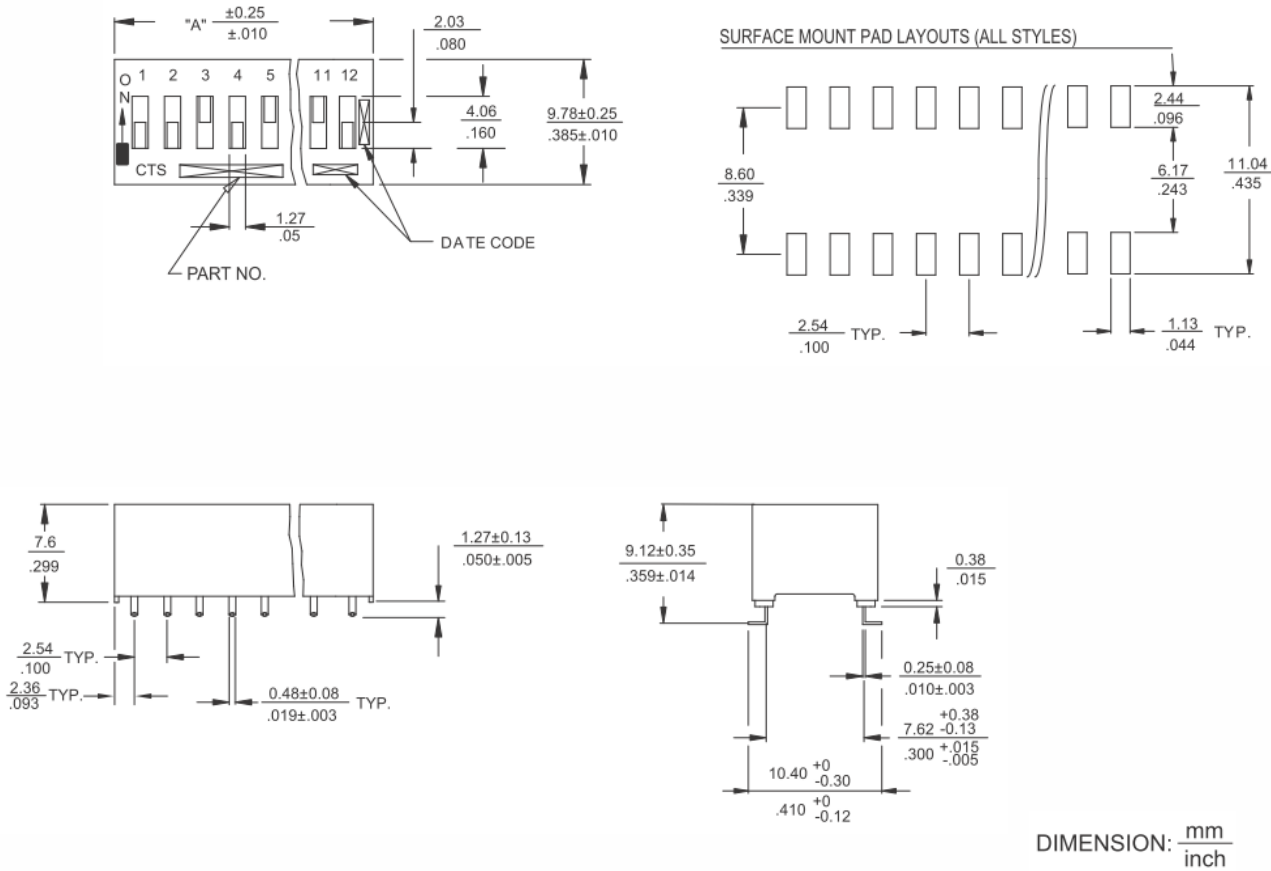
Figure 3 - 3PST



**Ordering Information**  
3PST Switches

| "A" Overall Dimension | No. of Switch Positions | Actuation | Part No. |
|-----------------------|-------------------------|-----------|----------|
| 9.80 / .386           | 1                       | 3PST      | 204-311  |
| 17.42 / .686          | 2                       | 3PST      | 204-312  |
| 25.04 / .986          | 3                       | 3PST      | 204-313  |
| 32.66 / 1.286         | 4                       | 3PST      | 204-314  |

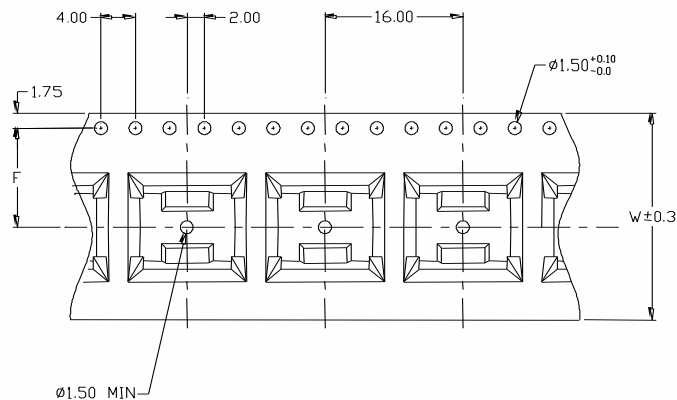
Figure 4 – Low Profile Actuators (SPST&SPDT only)



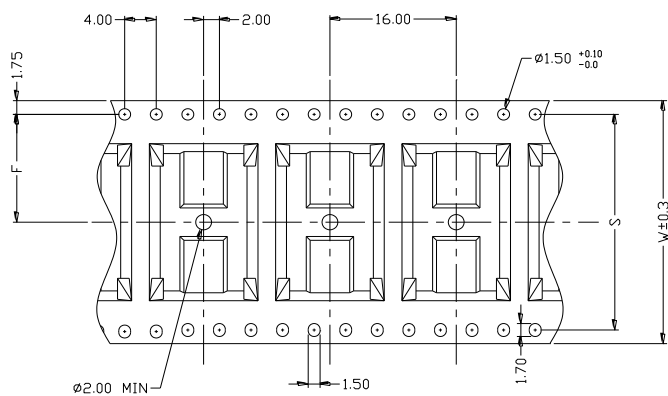
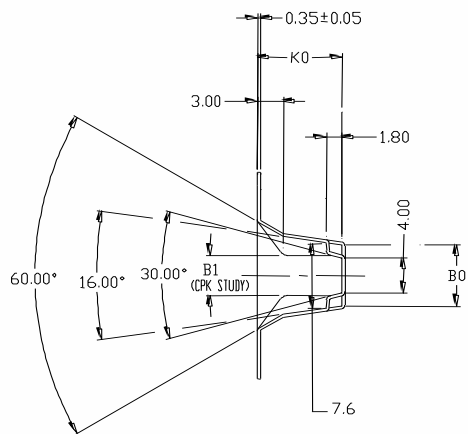
### Packing: Tape and Reel

Unit: mm

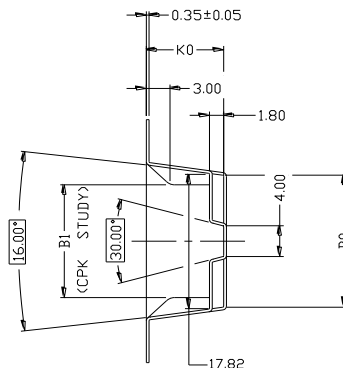
| SW Section | Fig | Bo    | W    | F     | S    |
|------------|-----|-------|------|-------|------|
| 2          | I   | 7.15  | 24.0 | 11.50 | -    |
| 3          | I   | 9.69  | 24.0 | 11.50 | -    |
| 4          | I   | 12.23 | 24.0 | 11.50 | -    |
| 5          | II  | 14.81 | 32.0 | 14.20 | 28.4 |
| 6          | II  | 17.35 | 32.0 | 14.20 | 28.4 |
| 8          | II  | 22.40 | 44.0 | 20.20 | 40.4 |
| 12         | II  | 32.56 | 44.0 | 20.20 | 40.4 |



**FIG I**



**FIG II**

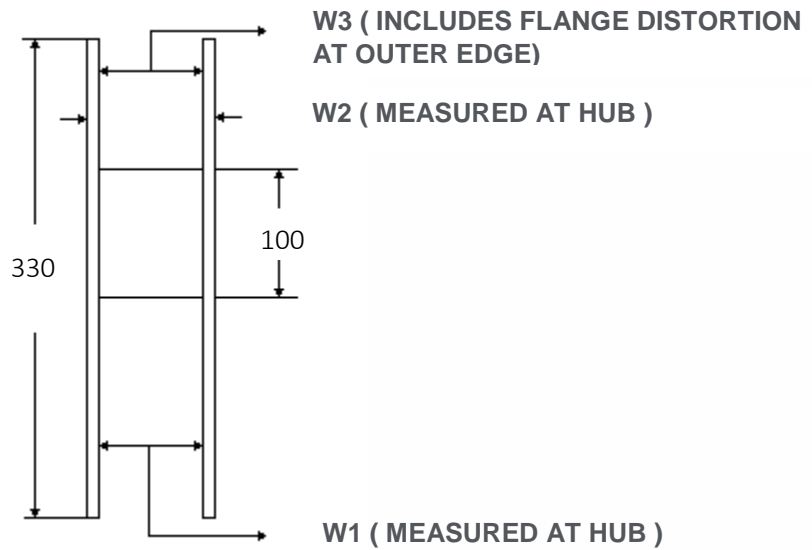


**SPECIFIED REEL PARTS DIMENSIONS:**

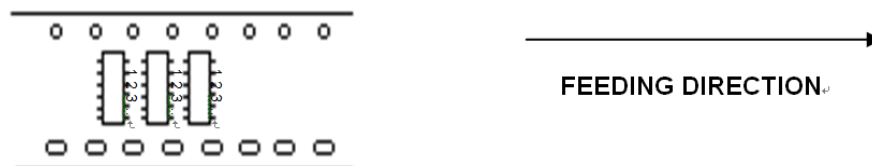
Unit: mm

| SW Section | W1   | W2        | W3                  |
|------------|------|-----------|---------------------|
| 2~4        | 24.4 | 30.4 MAX. | 23.9 MIN./27.4 MAX. |
| 5~6        | 32.4 | 38.4 MAX. | 31.9 MIN./35.4 MAX. |
| 8          | 44.4 | 50.4 MAX. | 43.9 MIN./47.4 MAX. |
| 12         | 44.4 | 50.4 MAX. | 43.9 MIN./47.4 MAX. |

(SEE PICTURE FIG)

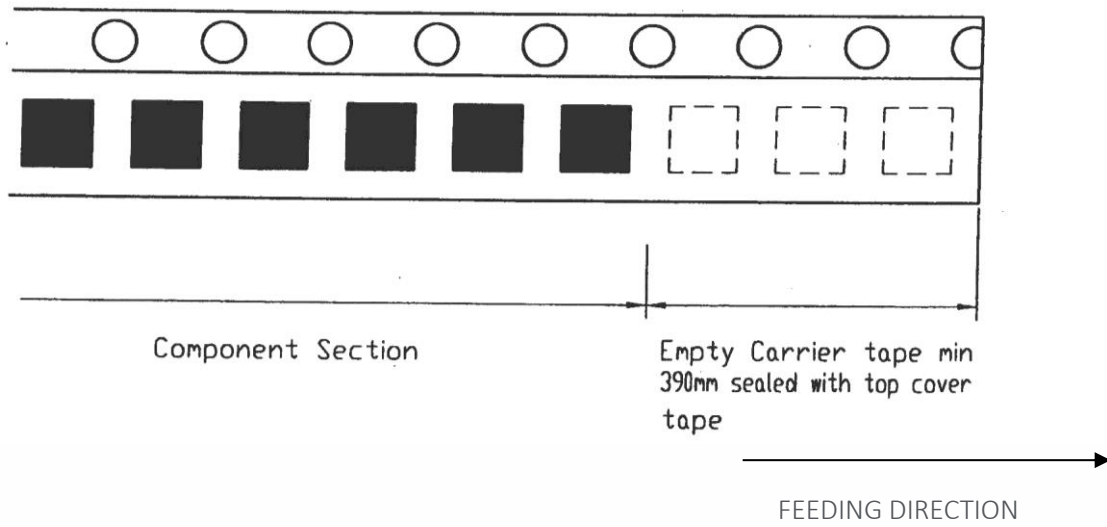
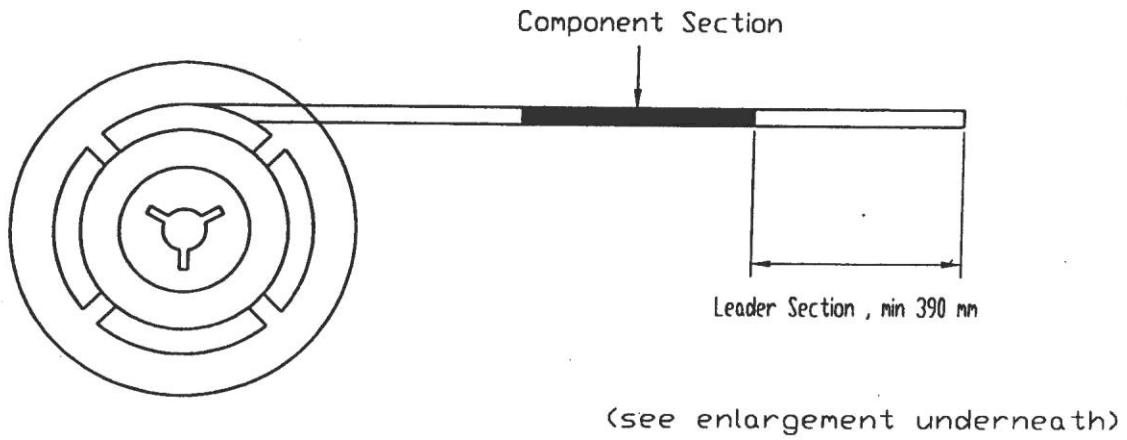


1. TAPE SPROCKET HOLE PITCH :  $4.0 \pm 0.1\text{MM}$
  2. ALL SMT ASSEMBLING MACHINES WILL PICK-UP THE COMPONENT FROM THE POINT, WHICH
  3. IS LOCATED IN THE CENTRE OF TWO ADJACENT SPROCKET HOLES IN FEEDING DIRECTION. THIS MUST BE TAKEK INTO ACCOUNT WHEN DESIGNING THE LOCATION OF THE COMPONENT IN T&R POCKET.
  4. RECOMMENDED PART ORIENTATION IN TAPE & REEL POCKET.
- ORIENT SWITCH TERMINAL #1 TO THE SIDE OF ROUND SPROCKET HOLES, SEE PICTURE BELOW.



LENGTH OF TAPE

5. THERE SHALL BE A LEADER OF 390mm MINIMUM WHICH IS SEALED ONTO EMPTY CARRIER TAPE, SEE PICTURE BELOW.





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