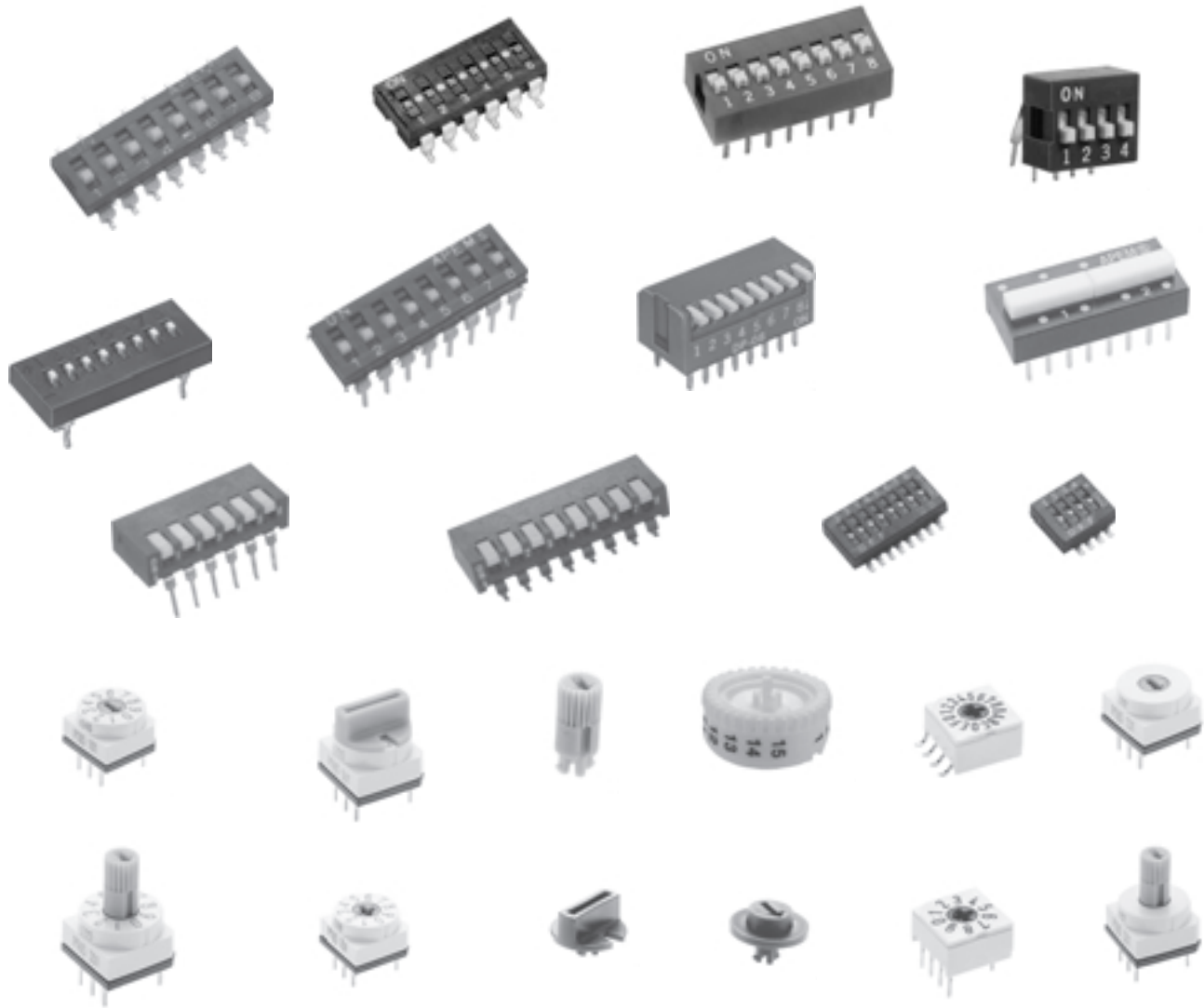


# DIP & ROTARY DIP SWITCHES

**DIP & ROTARY DIP SWITCH SELECTION GUIDE:** This catalog contains an extensive variety of DIP & rotary DIP switches with many options. To facilitate easy selection of the desired switch for your application, this guide lists the various Series with a brief description.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.



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| SERIES                  | DESCRIPTION                                                                              | PAGE(S) |
|-------------------------|------------------------------------------------------------------------------------------|---------|
| <b>IK</b>               | DIP switches, low profile, surface and through-hole mounting                             | G2-G3   |
| <b>DS, DA &amp; DP</b>  | DIP switches, vertical, right angle and piano styles, through-hole mounting              | G4-G6   |
| <b>DI &amp; DM</b>      | DIP switches, low profile, surface and through-hole mounting                             | G7-G8   |
| <b>PI &amp; PM</b>      | DIP switches, sealed piano style, low profile, surface and through-hole mounting         | G9-G10  |
| <b>DHS</b>              | DIP switches, ultra-compact 1/2 pitch, surface mounting                                  | G11     |
| <b>MPG</b>              | DIP switches, transfer style in 1, 2, 3 & 4 pole models, through-hole mounting           | G12-G13 |
| <b>TDS</b>              | DIP switches, 3 state (+, 0, -), through-hole mounting                                   | G14     |
| <b>P36 &amp; P36S</b>   | Rotary DIP switches, low profile, surface and through-hole mounting                      | G15-G16 |
| <b>PT65</b>             | Rotary DIP switches, through-hole mounting with extensive options                        | G17-G20 |
| <b>P60A &amp; P60AS</b> | Rotary DIP switches, low profile, surface and through-hole mounting, 4+1 terminal layout | G21-G22 |
| <b>PT65</b>             | Rotary DIP switches, pulse generator, through-hole mounting                              | G23-G24 |

# IK SERIES HIGH REL SPST SURFACE MOUNT DIP SWITCHES

## FEATURES

Ultra-compact size with very low-profile.  
Self-cleaning wiping contacts.  
Tin plated terminals.  
IR & vapor phase reflow solderable.  
Washable.  
Heavy gold plate.

## GENERAL SPECIFICATIONS

### ELECTRICALS

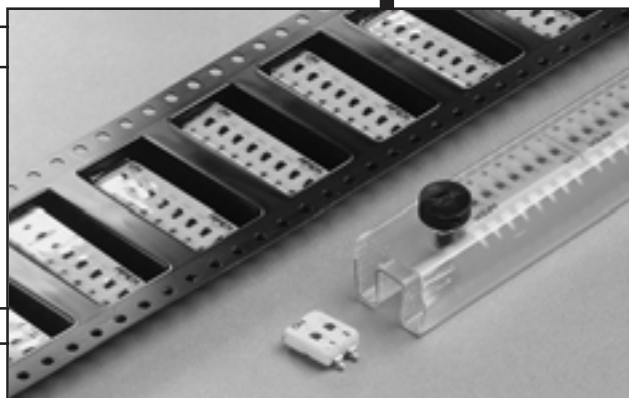
|                               |                                |
|-------------------------------|--------------------------------|
| Electrical life               | 2000 cycles minimum            |
| Contact rating, non-switching | 100 mA at 48 VDC               |
| Contact rating, switching     | 100 mA at 24 VDC               |
| Initial contact resistance    | 30 mΩ maximum                  |
|                               | after 2000 cycles: 100 mΩ max. |
| Insulation resistance         | 1000 MΩ min. at 500 VDC        |
| Dielectric strength           | 500 VAC minimum                |

### MECHANICALS, THERMALS

|                             |                 |
|-----------------------------|-----------------|
| Travel                      | .026" (0.67mm)  |
| Operating temperature range | -40°C to +100°C |
| Storage temperature range   | -40°C to +125°C |

### SOLDERING & CLEANING RECOMMENDATIONS

|                                       |                                                                                                  |
|---------------------------------------|--------------------------------------------------------------------------------------------------|
| Hand soldering                        | 330°C max. for 3 seconds max.(30 watt iron max.)                                                 |
| Reflow soldering                      | Set oven at 215°C max. for 90 seconds max.                                                       |
| Cleaning<br>(with standard tape seal) | 1-1-1 Trichloroethane, Freon TE, Isopropyl alcohol or aqueous cleaner for 2 minutes max. at 20°C |



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

## MATERIALS

|                    |                                |
|--------------------|--------------------------------|
| Case               | UL94-VO, thermoplastic, white  |
| Actuators          | UL94-VO, thermoplastic, black  |
| Stationary contact | Gold over nickel over bronze   |
| Moving contact     | Gold over beryllium copper     |
| Terminals          | Tin plated over nickel barrier |
| Tape seal          | Polyimide                      |

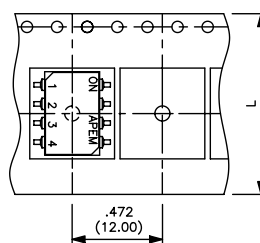
## ANTISTATIC PACKAGING

Standard packaging:

**Reels of 1,000 units** - Tape meeting IEC Standard - Publication 286-3 (EIA481A). Start leader: 15.7" (400mm) min. End leader: 6.3" (160mm) - see illustration.

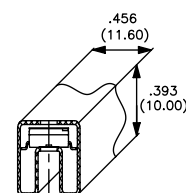
**IC tubes** - see illustration

## TAPE & REEL



| Pos. | Tape dim. 'L' |
|------|---------------|
| 2    | .629 (16mm)   |
| 4    | .944 (24mm)   |
| 6    | .944 (24mm)   |
| 8    | 1.259 (32mm)  |

## IC TUBES

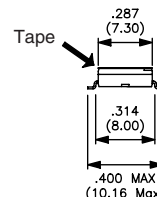
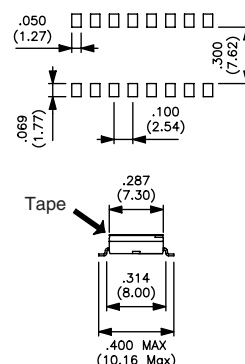
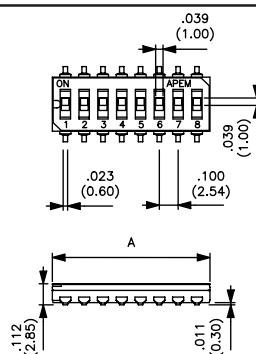


| Pos. | Qty per tube |
|------|--------------|
| 2    | 88           |
| 4    | 48           |
| 6    | 33           |
| 8    | 25           |

| Tape & reel<br>Model No. | IC tubes<br>Model No. | No of<br>pos. | Dimension 'A' |
|--------------------------|-----------------------|---------------|---------------|
| <b>IKN0204000</b>        | <b>IKN0203000</b>     | 2             | .236 (6mm)    |
| <b>IKN0404000</b>        | <b>IKN0403000</b>     | 4             | .437 (11.1mm) |
| <b>IKN0604000</b>        | <b>IKN0603000</b>     | 6             | .637 (16.2mm) |
| <b>IKN0804000</b>        | <b>IKN0803000</b>     | 8             | .838 (21.3mm) |

All switches are supplied in 'ON' position.

Dimensions shown in millimeters and inches (in parenthesis).



# IK SERIES HIGH REL SPST THROUGH-HOLE DIP SWITCHES

## FEATURES

Ultra-compact size with low-profile.  
Self-cleaning wiping contacts.  
Tin plated terminals.  
Wave solderable.  
Washable.  
Heavy gold plate.

## GENERAL SPECIFICATIONS

### ELECTRICALS

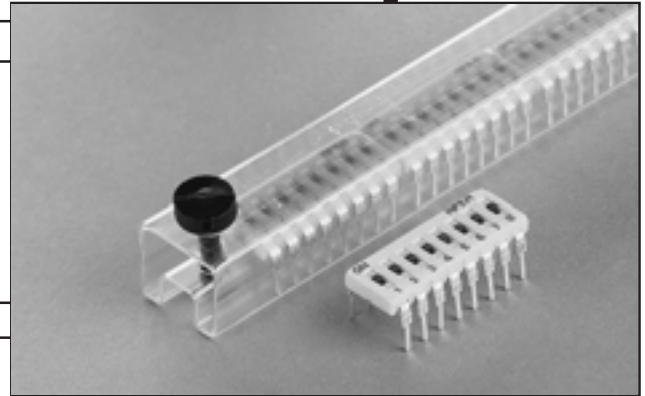
|                               |                                |
|-------------------------------|--------------------------------|
| Electrical life               | 2000 cycles minimum            |
| Contact rating, non-switching | 100 mA at 48 VDC               |
| Contact rating, switching     | 100 mA at 24 VDC               |
| Initial contact resistance    | 30 mΩ maximum                  |
|                               | after 2000 cycles: 100 mΩ max. |
| Insulation resistance         | 1000 MΩ min. at 500 VDC        |
| Dielectric strength           | 500 VAC minimum                |

### MECHANICALS, THERMALS

|                             |                 |
|-----------------------------|-----------------|
| Travel                      | .026" (0.67mm)  |
| Operating temperature range | -40°C to +100°C |
| Storage temperature range   | -40°C to +125°C |

### SOLDERING & CLEANING RECOMMENDATIONS

|                                       |                                                                                                  |
|---------------------------------------|--------------------------------------------------------------------------------------------------|
| Hand soldering                        | 330°C max. for 3 seconds max. (30 watt iron max.)                                                |
| Reflow soldering                      | Set oven at 215°C max. for 90 seconds max.                                                       |
| Cleaning<br>(with standard tape seal) | 1-1-1 Trichloroethane, Freon TE, Isopropyl alcohol or aqueous cleaner for 2 minutes max. at 20°C |



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

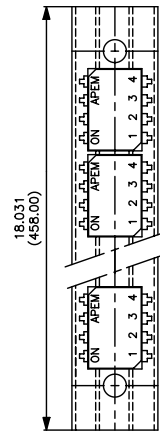
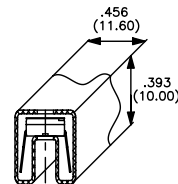
## MATERIALS

|                    |                                |
|--------------------|--------------------------------|
| Case               | UL94-VO, thermoplastic, white  |
| Actuators          | UL94-VO, thermoplastic, black  |
| Stationary contact | Gold over nickel over bronze   |
| Moving contact     | Gold over beryllium copper     |
| Terminals          | Tin plated over nickel barrier |
| Tape seal          | Polyimide                      |

## ANTISTATIC PACKAGING

Standard packaging:  
**IC tubes** - see illustration

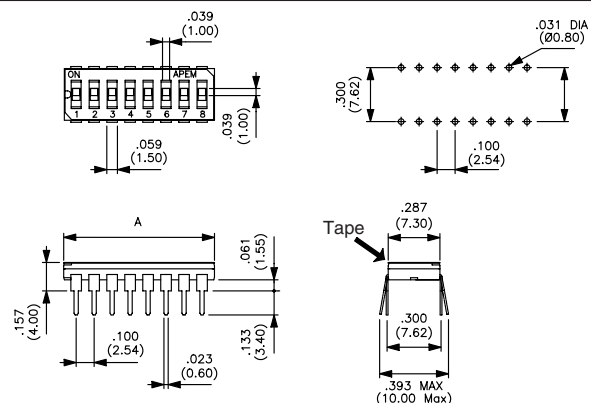
## IC TUBES



| Pos. | Qty per tube |
|------|--------------|
| 2    | 88           |
| 4    | 48           |
| 6    | 33           |
| 8    | 25           |

| Model Number      | No of pos. | Dimension 'A' Model No. |
|-------------------|------------|-------------------------|
| <b>IKN0200000</b> | 2          | .236 (6mm)              |
| <b>IKN0400000</b> | 4          | .437 (11.1mm)           |
| <b>IKN0600000</b> | 6          | .637 (16.2mm)           |
| <b>IKN0800000</b> | 8          | .838 (21.3mm)           |

All switches are supplied in 'ON' position.  
General dimensional tolerances are  $\pm .012$  (0.3mm)  
Dimensions shown in millimeters and inches (in parenthesis).



# DS, DA & DP SERIES SPST STANDARD DIP SWITCHES

## FEATURES

High reliability.  
Self-cleaning contacts.  
Multi- positions.  
Process compatible with tape seal.  
Dual in-line .100" x .300" term. spacing.

## GENERAL SPECIFICATIONS

### ELECTRICALS

|                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| Electrical life                      | 2000 cycles min. per switch @ 24 VDC, 25 mA      |
| Contact rating, non-switching        | 100 mA at 50 VDC                                 |
| Contact rating, switching            | 25 mA at 24 VDC                                  |
| Contact resistance at current 100 mA | 50 mΩ max. initial - 100 mΩ max. after life test |
| Insulation resistance at 500 VDC     | 100 MΩ minimum                                   |
| Dielectric strength                  | 500 VAC for 1 minute                             |
| Capacitance                          | 5 pf. max. between adjacent terminals            |

### MECHANICALS, THERMALS

|                             |                                                              |
|-----------------------------|--------------------------------------------------------------|
| Mechanical life             | 2000 cycles min. per switch                                  |
| Operating force             | 1000 grams max. (DP Series only - 400 grams max.)            |
| Vibration                   | 10-55 Hz.per MIL-STD-202F METHOD 201A                        |
| Shock                       | 50 G (peak value) for 11 msec. per MIL-STD-202F, METHOD 213B |
| Operating temperature range | -40°C to 85°C                                                |

### SOLDERING & CLEANING RECOMMENDATIONS\*

|                           |                                                  |
|---------------------------|--------------------------------------------------|
| Hand soldering            | 320°C max. for 2 seconds max.(30 watt iron max.) |
| Wave soldering            | 260°C max. for 5 seconds max.                    |
| Cleaning (with tape seal) | Spray wash from top side only.                   |

\* Note: keep switches in "OFF" position during soldering and cleaning for best results

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## MATERIALS

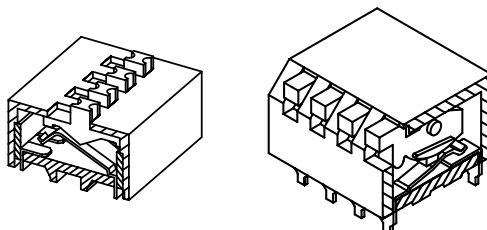
|                   |                                         |
|-------------------|-----------------------------------------|
| Base              | UL94V-O, glass fiber filled PBT, black  |
| Cover             | UL94V-O, glass fiber filled PBT, red    |
| Actuators         | UL94V-O, glass fiber filled PBT, white  |
| Contacts & Terms. | Gold over nickel plated phosphor bronze |
| Sealing           | Epoxy                                   |
| Tape seal         | Polyester film                          |

## PACKAGING

DIP switches are shipped in standard IC tubes with all actuators in the "OFF" position.

## SWITCH CROSS SECTIONS

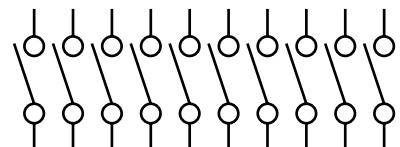
Normally open  
contact system



DS & DA

DP

## SCHEMATIC (TYPICAL)

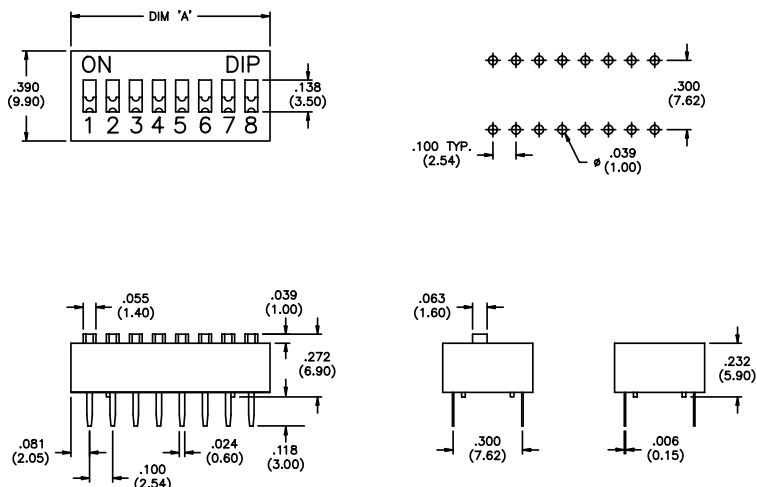
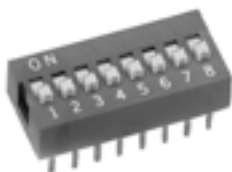


See tabulations on following pages for  
number of positions available (10 shown)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

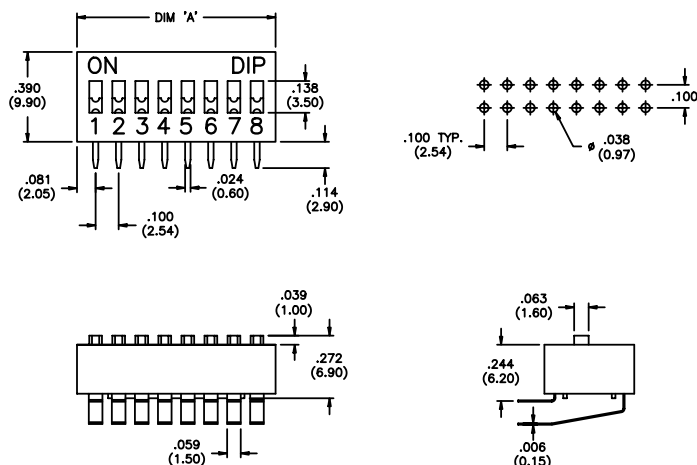
## DS Series Slides



| Actuator Style & Terminal Mat'l. | MODEL NO. with no tape seal | MODEL NO. with tape seal | No. of Pos. | 'A' Dimension +.008/-.000" (+0.2/-0.0mm) |
|----------------------------------|-----------------------------|--------------------------|-------------|------------------------------------------|
| Raised Actuator                  | DS02                        | DS02T                    | 2           | .254 (6,45)                              |
|                                  | DS03                        | DS03T                    | 3           | .354 (8,98)                              |
| Gold Terms.                      | DS04                        | DS04T                    | 4           | .454 (11,52)                             |
|                                  | DS05                        | DS05T                    | 5           | .554 (14,08)                             |
|                                  | DS06                        | DS06T                    | 6           | .654 (16,60)                             |
|                                  | DS07                        | DS07T                    | 7           | .754 (19,14)                             |
|                                  | DS08                        | DS08T                    | 8           | .854 (21,68)                             |
|                                  | DS09                        | DS09T                    | 9           | .954 (24,22)                             |
|                                  | DS10                        | DS10T                    | 10          | 1.054 (26,77)                            |
|                                  | DS12                        | DS12T                    | 12          | 1.254 (31,85)                            |
| Recessed Actuator                | n/a                         | DSR02T                   | 2           | .254 (6,45)                              |
|                                  | n/a                         | DSR03T                   | 3           | .354 (8,98)                              |
| Gold Terms.                      | n/a                         | DSR04T                   | 4           | .454 (11,52)                             |
|                                  | n/a                         | DSR05T                   | 5           | .554 (14,08)                             |
|                                  | n/a                         | DSR06T                   | 6           | .654 (16,60)                             |
|                                  | n/a                         | DSR07T                   | 7           | .754 (19,14)                             |
|                                  | n/a                         | DSR08T                   | 8           | .854 (21,68)                             |
|                                  | n/a                         | DSR09T                   | 9           | .954 (24,22)                             |
|                                  | n/a                         | DSR10T                   | 10          | 1.054 (26,77)                            |
|                                  | n/a                         | DSR12T                   | 12          | 1.254 (31,85)                            |

n/a = not available.

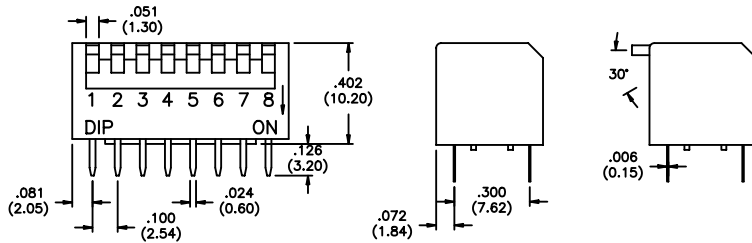
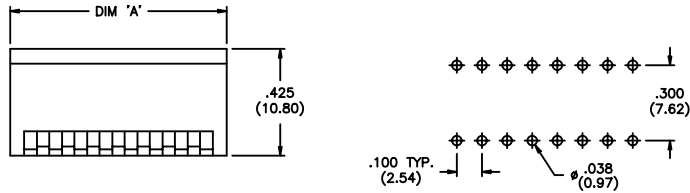
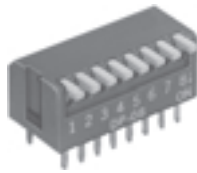
## DA Series Right angle



| Actuator Style  | MODEL NO. with no tape seal | MODEL NO. with tape seal | No. of Pos. | 'A' Dimension +.008/-.000" (+0.2/-0.0mm) |
|-----------------|-----------------------------|--------------------------|-------------|------------------------------------------|
| Raised Actuator | DA04                        | DA04T                    | 4           | .454 (11,52)                             |
|                 | DA05                        | DA05T                    | 5           | .554 (14,08)                             |
|                 | DA06                        | DA06T                    | 6           | .654 (16,60)                             |
|                 | DA07                        | DA07T                    | 7           | .754 (19,14)                             |
|                 | DA08                        | DA08T                    | 8           | .854 (21,68)                             |
|                 | DA09                        | DA09T                    | 9           | .954 (24,22)                             |
|                 | DA10                        | DA10T                    | 10          | 1.054 (26,77)                            |
|                 | DA12                        | DA12T                    | 12          | 1.254 (31,85)                            |

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## DP Series Piano

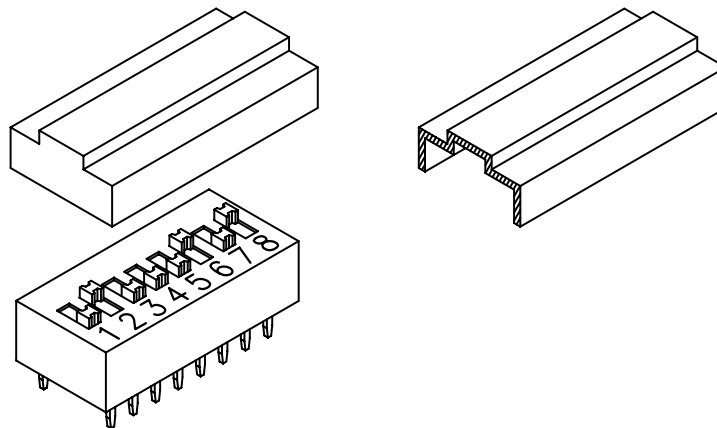


| Actuator Style    | MODEL NO. with no tape seal | MODEL NO. with tape seal | No. of Pos. | 'A' Dimension<br>+.008/-.000"<br>(+0.2/-0.0mm) |
|-------------------|-----------------------------|--------------------------|-------------|------------------------------------------------|
| Recessed Actuator | DP02                        | DP02T                    | 2           | .261 (6,64)                                    |
|                   | DP03                        | DP03T                    | 3           | .361 (9,18)                                    |
|                   | DP04                        | DP04T                    | 4           | .461 (11,72)                                   |
|                   | DP05                        | DP05T                    | 5           | .561 (14,25)                                   |
|                   | DP06                        | DP06T                    | 6           | .661 (16,80)                                   |
|                   | DP07                        | DP07T                    | 7           | .761 (19,34)                                   |
|                   | DP08                        | DP08T                    | 8           | .861 (21,88)                                   |
|                   | DP09                        | DP09T                    | 9           | .961 (24,42)                                   |
|                   | DP10                        | DP10T                    | 10          | 1.061 (26,96)                                  |
|                   | DP12                        | DP12T                    | 12          | 1.261 (32,04)                                  |
| Extended Actuator | DPL02                       | DPL02T                   | 2           | .261 (6,64)                                    |
|                   | DPL03                       | DPL03T                   | 3           | .361 (9,18)                                    |
|                   | DPL04                       | DPL04T                   | 4           | .461 (11,72)                                   |
|                   | DPL05                       | DPL05T                   | 5           | .561 (14,25)                                   |
|                   | DPL06                       | DPL06T                   | 6           | .661 (16,80)                                   |
|                   | DPL07                       | DPL07T                   | 7           | .761 (19,34)                                   |
|                   | DPL08                       | DPL08T                   | 8           | .8601 (21,88)                                  |
|                   | DPL09                       | DPL09T                   | 9           | .961 (24,42)                                   |
|                   | DPL10                       | DPL10T                   | 10          | 1.061 (26,96)                                  |
|                   | DPL12                       | DPL12T                   | 12          | 1.261 (32,04)                                  |

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Note: Push up for ON position is also available on special order - consult factory.

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### SPLASHPROOF COVER

Clear polyethylene snap-fit cover for models **DS08** and **DSR08**. Order part no. **C8**

# DI & DM SERIES SPST STANDARD DIP SWITCHES

## FEATURES

High reliability.  
Self-cleaning contacts.  
Multi- positions.  
Process compatible with tape seal.  
Dual in-line .100" x .300" term. spacing.

## GENERAL SPECIFICATIONS

### ELECTRICALS

|                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| Electrical life                      | 2000 cycles min. per switch @ 24 VDC, 25 mA      |
| Contact rating, non-switching        | 100 mA at 50 VDC                                 |
| Contact rating, switching            | 25 mA at 24 VDC                                  |
| Contact resistance at current 100 mA | 50 mΩ max. initial - 100 mΩ max. after life test |
| Insulation resistance at 100 VDC     | 100 MΩ minimum                                   |
| Dielectric strength                  | 500 VAC for 1 minute                             |
| Capacitance                          | 5 pf. max. between adjacent terminals            |

### MECHANICALS, THERMALS

|                             |                                                              |
|-----------------------------|--------------------------------------------------------------|
| Mechanical life             | 2000 cycles min. per switch                                  |
| Operating force             | 1000 grams max.                                              |
| Vibration                   | 10-55 Hz.per MIL-STD-202F METHOD 201A                        |
| Shock                       | 50 G (peak value) for 11 msec. per MIL-STD-202F, METHOD 213B |
| Operating temperature range | -40°C to 85°C                                                |

### SOLDERING & CLEANING RECOMMENDATIONS\*

|                           |                                                  |
|---------------------------|--------------------------------------------------|
| Hand soldering            | 320°C max. for 2 seconds max.(30 watt iron max.) |
| Wave soldering            | 260°C max. for 5 seconds max.                    |
| Cleaning (with tape seal) | Spray wash from top side only.                   |

\* Note: keep switches in "OFF" position during soldering and cleaning for best results

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

## MATERIALS

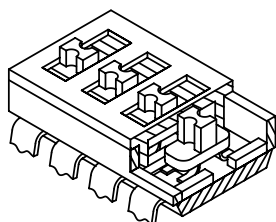
|               |                                                                                          |
|---------------|------------------------------------------------------------------------------------------|
| Base & Cover  | DI: UL94V-O, glass fiber filled PBT, black<br>DM: UL94V-O, glass fiber filled PPS, black |
| Actuators     | UL94V-O, Nylon, white                                                                    |
| Contacts      | Gold over nickel plated copper alloy                                                     |
| Terminals     | DI: Tin/lead plated brass. DM: Gold over nickel plated copper alloy.                     |
| Term. Sealing | Molded-in                                                                                |
| Tape seal     | Kapton                                                                                   |

## PACKAGING

DIP switches are shipped in standard IC tubes with all actuators in the "OFF" position.  
Tape & reel packaging per EIA available for DMR models (see next page).

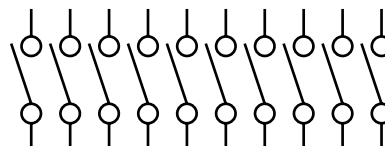
## SWITCH CROSS SECTIONS

Double  
contact system



DI & DM

## SCHEMATIC (TYPICAL)

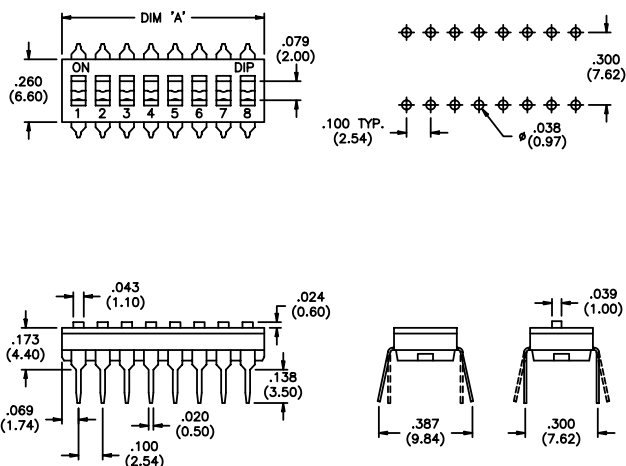


See tabulations on following pages for  
number of positions available (10 shown)

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## DI Series Machine Insertable \*



## Tin/lead plated brass terminals

Gold plated terminals available on request

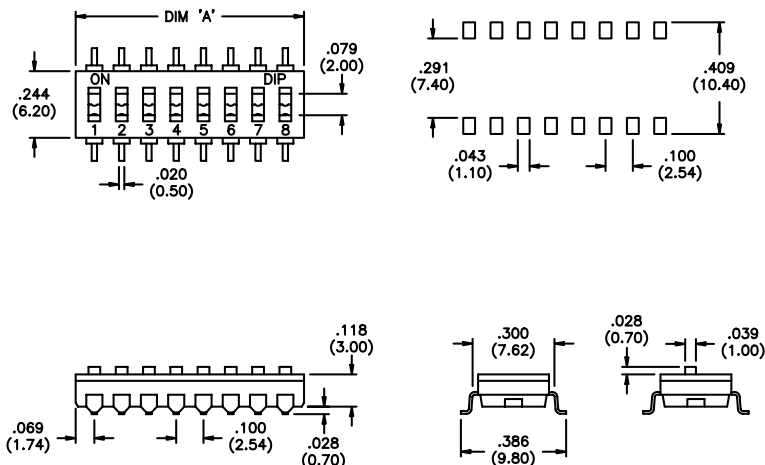
| Actuator | Squared terminals           |                          | Spread terminals            |                          | No. of Pos. | 'A' Dim. +.008/-.000" (+0.2/-0.0mm) |
|----------|-----------------------------|--------------------------|-----------------------------|--------------------------|-------------|-------------------------------------|
|          | MODEL NO. with no tape seal | MODEL NO. with tape seal | MODEL NO. with no tape seal | MODEL NO. with tape seal |             |                                     |
| Raised   | DI01H                       | n/a                      | DI01S                       | n/a                      | 1           | .137 (3,48)                         |
|          | DI02H                       | n/a                      | DI02S                       | n/a                      | 2           | .237 (6,02)                         |
|          | DI04H                       | n/a                      | DI04S                       | n/a                      | 4           | .437 (11,10)                        |
|          | DI06H                       | n/a                      | DI06S                       | n/a                      | 6           | .637 (16,18)                        |
|          | DI08H                       | n/a                      | DI08S                       | n/a                      | 8           | .837 (21,26)                        |
|          | DI10H                       | n/a                      | DI10S                       | n/a                      | 10          | 1.037 (26,34)                       |
| Recessed | DIR01H                      | n/a                      | DIR01S                      | DIR01ST                  | 1           | .137 (3,48)                         |
|          | DIR02H                      | DIR02HT                  | DIR02S                      | DIR02ST                  | 2           | .237 (6,02)                         |
|          | DIR04H                      | DIR04HT                  | DIR04S                      | DIR04ST                  | 4           | .437 (11,10)                        |
|          | DIR06H                      | DIR06HT                  | DIR06S                      | DIR06ST                  | 6           | .637 (16,18)                        |
|          | DIR08H                      | DIR08HT                  | DIR08S                      | DIR08ST                  | 8           | .837 (21,26)                        |
|          | DIR10H                      | DIR10HT                  | DIR10S                      | DIR10ST                  | 10          | 1.037 (26,34)                       |

\* Auto-insertable using equipment from Amistar, Dynapert, Panasert, Northeastern Tool, Universal and others.

n/a = not available.

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## DM Series Surface Mount \*



| Actuator Style    | MODEL NO. with no tape seal | MODEL NO. with tape seal | No. of Pos. | 'A' Dimension +.008/-.000" (+0.2/-0.0mm) |
|-------------------|-----------------------------|--------------------------|-------------|------------------------------------------|
| Raised Actuator   | DM01                        | n/a                      | 1           | .137 (3,48)                              |
|                   | DM02                        | n/a                      | 2           | .237 (6,02)                              |
|                   | DM03                        | n/a                      | 3           | .337 (8,56)                              |
|                   | DM04                        | n/a                      | 4           | .437 (11,10)                             |
|                   | DM05                        | n/a                      | 5           | .537 (13,64)                             |
|                   | DM06                        | n/a                      | 6           | .637 (16,18)                             |
|                   | DM07                        | n/a                      | 7           | .737 (18,72)                             |
|                   | DM08                        | n/a                      | 8           | .837 (21,26)                             |
|                   | DM09                        | n/a                      | 9           | .937 (23,80)                             |
|                   | DM10                        | n/a                      | 10          | 1.037 (26,34)                            |
|                   | DM12                        | n/a                      | 12          | 1.237 (31,42)                            |
| Recessed Actuator | DMR01                       | n/a                      | 1           | .137 (3,48)                              |
|                   | DMR02                       | DMR02T                   | 2           | .237 (6,02)                              |
|                   | DMR03                       | DMR03T                   | 3           | .337 (8,56)                              |
|                   | DMR04                       | DMR04T                   | 4           | .437 (11,10)                             |
|                   | DMR05                       | DMR05T                   | 5           | .537 (13,64)                             |
|                   | DMR06                       | DMR06T                   | 6           | .637 (16,18)                             |
|                   | DMR07                       | DMR07T                   | 7           | .737 (18,72)                             |
|                   | DMR08                       | DMR08T                   | 8           | .837 (21,26)                             |
|                   | DMR09                       | DMR09T                   | 9           | .937 (23,80)                             |
|                   | DMR10                       | DMR10T                   | 10          | 1.037 (26,34)                            |
|                   | DMR12                       | DMR12T                   | 12          | 1.237 (31,42)                            |

For tape & reel packaging on DMR models only, add 'TR' to model number - example: DMR08TTR. Note- tape & reel packaging is available only with tape seal models. 900 switches per reel.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.



# PI & PM SERIES SPST SEALED PIANO DIP SWITCHES

## FEATURES

Built-in seal for process compatibility.  
High reliability.  
Splayed thru-hole or SMT terminals.  
2, 4, 6, 8 & 10 positions.  
Piano style actuators.  
Dual in-line .100" x .300" term. spacing.

## GENERAL SPECIFICATIONS

### ELECTRICALS

|                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| Electrical life                      | 200 cycles min. per switch @ 24 VDC, 25 mA       |
| Contact rating, non-switching        | 100 mA at 50 VDC                                 |
| Contact rating, switching            | 25 mA at 24 VDC                                  |
| Contact resistance at current 100 mA | 50 mΩ max. initial - 100 mΩ max. after life test |
| Insulation resistance at 500 VDC     | 100 MΩ minimum                                   |
| Dielectric strength                  | 300 VAC for 1 minute                             |
| Capacitance                          | 5 pf. max. between adjacent terminals            |

### MECHANICALS, THERMALS

|                             |                                                              |
|-----------------------------|--------------------------------------------------------------|
| Mechanical life             | 500 cycles min. per switch                                   |
| Operating force             | 800 grams max.                                               |
| Vibration                   | 10-55 Hz.per MIL-STD-202F METHOD 201A                        |
| Shock                       | 50 G (peak value) for 11 msec. per MIL-STD-202F, METHOD 213B |
| Operating temperature range | -40°C to 85°C                                                |

### SOLDERING & CLEANING RECOMMENDATIONS\*

|                                                            |                                                                                                                                                       |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hand soldering                                             | 320°C max. for 2 seconds max.(30 watt iron max.)                                                                                                      |
| Wave soldering                                             | 260°C max. for 5 seconds max. Note PM Series is vapor phase or IR reflow solderable.                                                                  |
| Force rinse, high agitation or triple bath cleaning method | Sealed construction permits washing with freons, alcohol, water and steam. When vapor methods are used, do not subject switch to solvents above 51°C. |

\* Note: keep switches in "ON" position during soldering and cleaning for best results

## MATERIALS

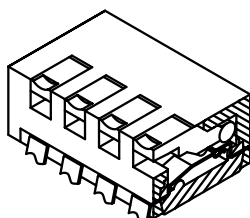
|               |                                                          |
|---------------|----------------------------------------------------------|
| Base & Cover  | UL94V-O, high temperature thermoplastic, color black     |
| Actuators     | UL94V-O, high temperature thermoplastic, color .01*white |
| Contacts      | Gold over nickel plated copper alloy or brass            |
| Terminals     | Tin/lead (90/10 solder) plated copper alloy or brass     |
| Term. Sealing | Molded-in                                                |
| Tape seal     | High temperature modulus Teflon internal seal            |

## PACKAGING

DIP switches are shipped in standard IC tubes with all actuators in the "ON" position.  
Tape & reel packaging per EIA available for PM models - consult factory.

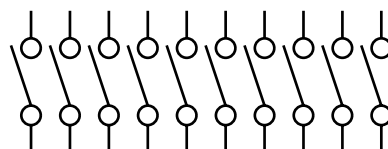
## SWITCH CROSS SECTION

Double  
contact system



PI & PM

## SCHEMATIC (TYPICAL)

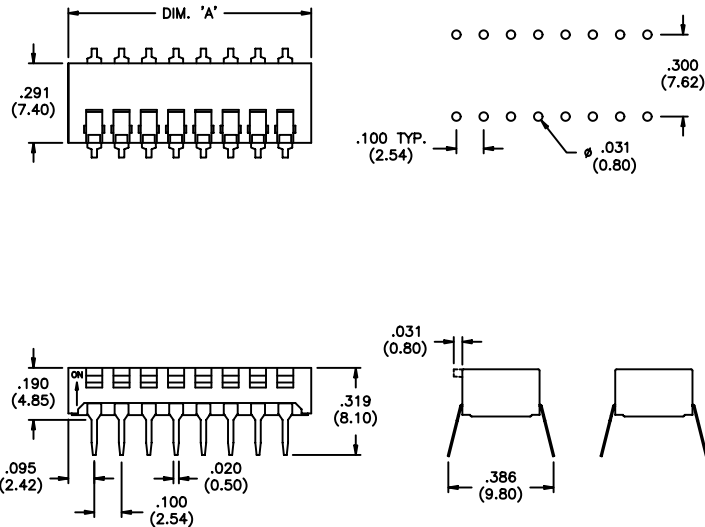


See tabulations on following page for  
number of positions available (10 shown)

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PI and PM  
models feature  
a uniquely  
designed  
internal seal!

## PI Series Piano ★



| Actuator Style | MODEL NO. (internally sealed) | No. of Pos. | 'A' Dimension ±.012 (0,30mm) |         |
|----------------|-------------------------------|-------------|------------------------------|---------|
| Flush          | PI02090                       | 2           | .290                         | (7,37)  |
|                | PI04090                       | 4           | .490                         | (12,45) |
|                | PI06090                       | 6           | .690                         | (17,53) |
|                | PI08090                       | 8           | .890                         | (22,61) |
| Extended       | PI10090                       | 10          | 1.090                        | (27,69) |
|                | PI02190                       | 2           | .290                         | (7,37)  |
|                | PI04190                       | 4           | .490                         | (12,45) |
|                | PI06190                       | 6           | .690                         | (17,53) |
|                | PI08190                       | 8           | .890                         | (22,61) |
|                | PI10190                       | 10          | 1.090                        | (27,69) |

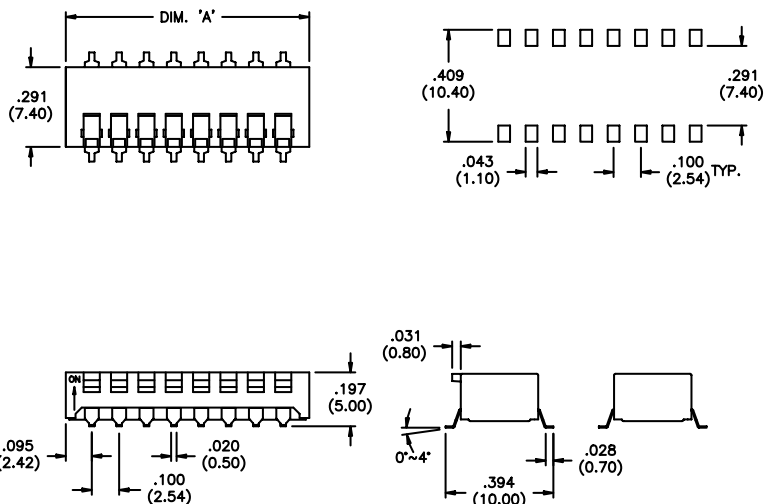
★ Auto-insertable using equipment from Amistar, Dynapert, Panasert, Northeastern Tool, Universal and others.

**PI and PM models listed feature a uniquely designed internal seal!**

Non-sealed versions are also available. To order the non-sealed model, replace the '0' at the end of the model number with '1'.

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## PM Series Piano ★



| Actuator Style | MODEL NO. (internally sealed) | No. of Pos. | 'A' Dimension ±.012 (0,30mm) |         |
|----------------|-------------------------------|-------------|------------------------------|---------|
| Flush          | PM02090                       | 2           | .290                         | (7,37)  |
|                | PM04090                       | 4           | .490                         | (12,45) |
|                | PM06090                       | 6           | .690                         | (17,53) |
|                | PM08090                       | 8           | .890                         | (22,61) |
| Extended       | PM10090                       | 10          | 1.090                        | (27,69) |
|                | PM02190                       | 2           | .290                         | (7,37)  |
|                | PM04190                       | 4           | .490                         | (12,45) |
|                | PM06190                       | 6           | .690                         | (17,53) |
|                | PM08190                       | 8           | .890                         | (22,61) |
|                | PM10190                       | 10          | 1.090                        | (27,69) |

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

# DHS SERIES 1/2 PITCH SPST SURFACE MOUNT DIP SWITCHES

## FEATURES

Ultra-compact low-profile size.  
.050" (1.27mm) terminal spacing.  
Self-cleaning twin point contacts.  
Auto-insertable and reflow solderable.  
Process compatible with std'd. tape seal.

## GENERAL SPECIFICATIONS

### ELECTRICALS

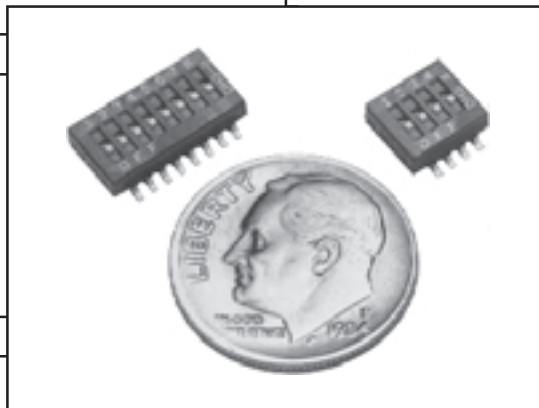
|                               |                                                           |
|-------------------------------|-----------------------------------------------------------|
| Electrical life               | 1000 cycles minimum                                       |
| Contact rating, non-switching | 100 mA at 50 VDC                                          |
| Contact rating, switching     | 100 mA at 6 VDC                                           |
| Contact resistance            | 100 mΩ maximum                                            |
| Insulation resistance         | 100 MΩ minimum                                            |
| Dielectric strength           | 250 VDC for 1 min. between adjacent or opposite terminals |
| Capacitance                   | 5 pf. max. between adjacent or opposite terminals         |

### MECHANICALS, THERMALS

|                             |                                                              |
|-----------------------------|--------------------------------------------------------------|
| Operating force             | 400 grams maximum                                            |
| Vibration                   | 10-55 Hz. per MIL-STD-202F, METHOD 201A                      |
| Shock                       | 50 g (peak value) for 11 msec. per MIL-STD-202F, METHOD 213B |
| Operating temperature range | -40°C to +80°C                                               |

### SOLDERING & CLEANING RECOMMENDATIONS

|                                                |                                                                                                  |
|------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Hand soldering                                 | 330°C max. for 3 seconds max.(30 watt iron max.)                                                 |
| Reflow soldering                               | Set oven at 215°C max. for 90 seconds max.                                                       |
| Cleaning<br>(with standard tape seal in place) | 1-1-1 Trichloroethane, Freon TE, Isopropyl alcohol or aqueous cleaner for 2 minutes max. at 20°C |



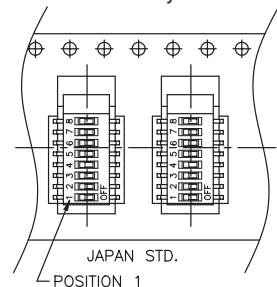
## MATERIALS

|               |                                        |
|---------------|----------------------------------------|
| Base          | UL94V-O, glass fiber filled PPS, black |
| Cover         | UL94V-O, glass fiber filled PPS, black |
| Actuators     | UL94V-O, Polyamide, yellow             |
| Contacts      | Gold plated beryllium copper           |
| Terminals     | Gold plated copper alloy               |
| Terminal seal | Epoxy                                  |
| Tape seal     | Polyimide                              |

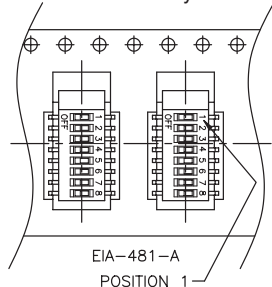
## PACKAGING

Supplied in tape & reel packaging.  
Reel & tape meets the requirements of EIA-481-A.

### S Style



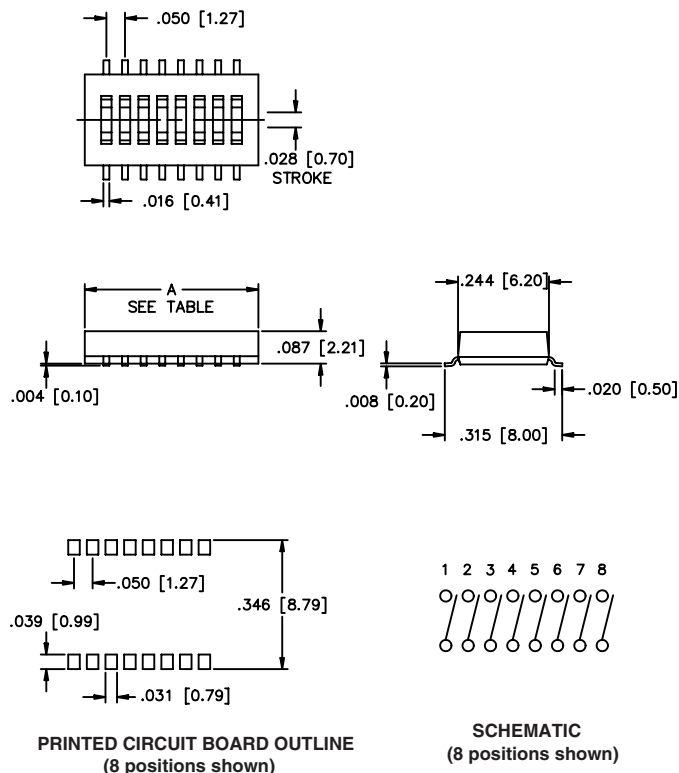
### SR/TC Style



| MODEL<br>NUMBER | NO. OF<br>POS. | A DIMENSION |           |
|-----------------|----------------|-------------|-----------|
|                 |                | IN(±.012)   | MM(±0.30) |
| DHS4S           | 4              | .268        | 6.81      |
| DHS6S           | 6              | .368        | 9.35      |
| DHS8S           | 8              | .468        | 11.89     |
| DHS10S          | 10             | .568        | 14.43     |

Note: S at end of model no. indicates **S** style packaging. Substitute SR/TC for S for **SR/TC** packaging.

## MECHANICAL OUTLINE



# MDG & MPG SERIES TRANSFER DIP SWITCHES SPDT & DPDT MODELS

## FEATURES

Gold plated contacts.  
Self-cleaning contacts.  
UL94V-O materials used throughout.  
Process compatible with tape seal.  
Dual in-line .100" x .300" term. spacing.

## GENERAL SPECIFICATIONS

### ELECTRICALS

|                                  |                                                  |
|----------------------------------|--------------------------------------------------|
| Electrical life                  | 2000 cycles minimum                              |
| Contact rating, non-switching    | 100 mA at 50 VDC                                 |
| Contact rating, switching        | 25 mA at 24 VDC                                  |
| Contact resistance               | 50 mΩ max. initial - 100 mΩ max. after life test |
| Insulation resistance at 100 VDC | 1000 MΩ minimum                                  |
| Dielectric strength              | 500 VDC for 1 minute                             |
| Capacitance                      | 5 pf. max. between adjacent terminals            |

### MECHANICALS, THERMALS

|                   |                                                            |
|-------------------|------------------------------------------------------------|
| Mechanical life   | 3000 cycles minimum                                        |
| Operating force   | MDG; 800 grmas max. per pole MPG; 400 grams max. per pole. |
| Vibration         | Per MIL-STD-202, METHOD 204B                               |
| Humidity          | 95% relative humidity, 40°C for 96 hours                   |
| Temperature range | Operating: -25°C to 70°C Storage: -40°C to 85°C            |

### SOLDERING & CLEANING RECOMMENDATIONS

|                           |                                                  |
|---------------------------|--------------------------------------------------|
| Hand soldering            | 320°C max. for 2 seconds max.(30 watt iron max.) |
| Wave soldering            | 230°C max. for 3 seconds max.                    |
| Cleaning (with tape seal) | Spray wash from top side only                    |

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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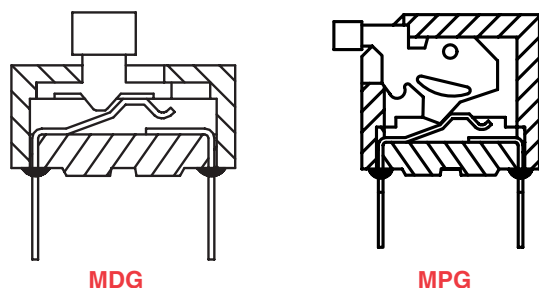
## MATERIALS

|                      |                                   |
|----------------------|-----------------------------------|
| Cover                | UL94V-O, Polyamide                |
| Actuators            | UL94V-O, Polyamide                |
| Contacts & Terminals | Gold over nickel plate over brass |
| Sealing              | Epoxy                             |
| Tape seal            | Polyester film                    |

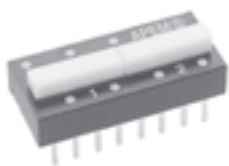
## PACKAGING

DIP switches are shipped in standard IC tubes with all actuators in the "OFF" position

## SWITCH CROSS SECTION

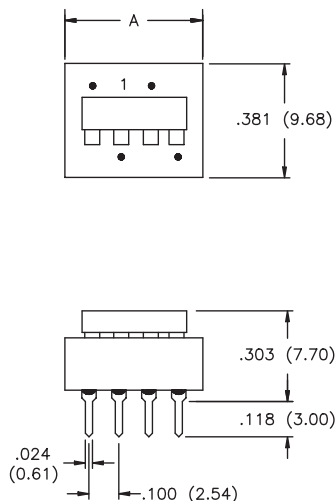


## MDG Series Slides DPDT



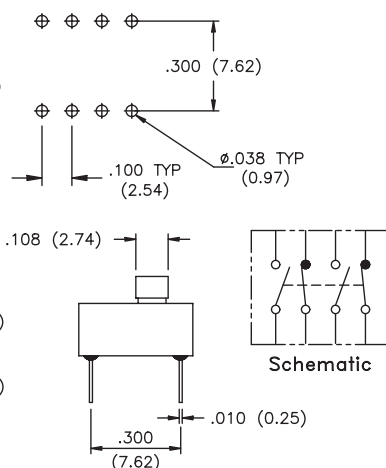
**MDG602S**

### Mechanical Outline



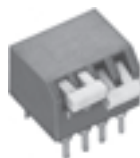
### Printed circuit board layout

Hole size and layout tolerance  
 $\pm .005$  (0.12) non-cumulative



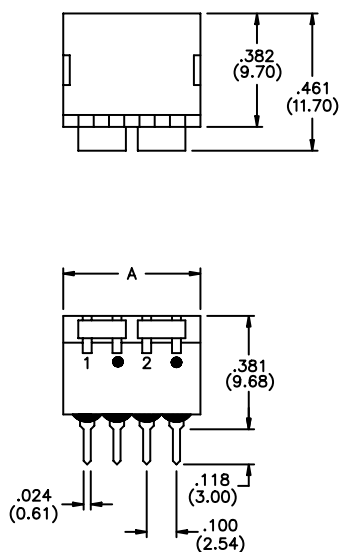
| Actuator Style & Contact Material | MODEL NO. with no tape seal | MODEL NO. with tape seal | No. of Pos. | 'A' Dimension $\pm .012$ (0,30mm) |
|-----------------------------------|-----------------------------|--------------------------|-------------|-----------------------------------|
| Std'd Act. Gold Cont.             | MDG601S MDG602S             | MDG601ST MDG602ST        | 1 2         | .461 (11,7) .854 (21,7)           |

## MPG Series Piano SPDT



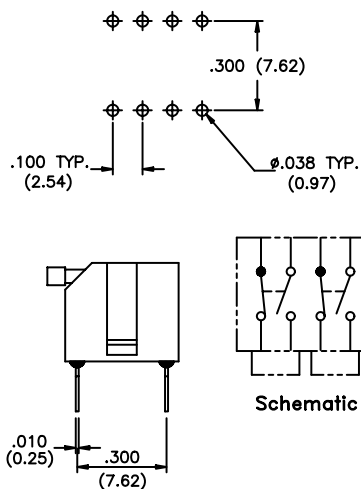
**MPG302B**

### Mechanical Outline



### Printed circuit board layout

Hole size and layout tolerance  
 $\pm .002$  (0.05) non-cumulative



| Actuator Style & Contact Material | MODEL NO. with no tape seal | MODEL NO. with tape seal | No. of Pos. | 'A' Dimension $\pm .012$ (0,30mm) |
|-----------------------------------|-----------------------------|--------------------------|-------------|-----------------------------------|
| Piano                             | MPG301B                     | MPG301BT                 | 1           | .264 (6,7)                        |
|                                   | MPG302B                     | MPG302BT                 | 2           | .461 (11,7)                       |
|                                   | MPG303B                     | MPG303BT                 | 3           | .657 (16,7)                       |
|                                   | MPG304B                     | MPG304BT                 | 4           | .854 (21,7)                       |
| Gold Contacts                     | MPG305B                     | MPG305BT                 | 5           | 1.050 (26,7)                      |
|                                   | MPG306B                     | MPG306BT                 | 6           | 1.250 (31,8)                      |

# TDS SERIES SP 3 POSITION 3 STATE (+,0,-) DIP SWITCHES

## FEATURES

3 code functions per position (n).  
Self-cleaning twin point contacts.  
UL94V-O materials used throughout.  
Process compatible.  
Crimped terminals for positive p.c.  
board retention during installation.

## GENERAL SPECIFICATIONS

### ELECTRICALS

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| Electrical life               | 2000 operations minimum per switch                    |
| Contact rating, non-switching | 100 mA at 50 VDC                                      |
| Contact rating, switching     | 25 mA at 24 VDC                                       |
| Contact resistance            | Initial:50 mΩ max. After 2000 operations: 100 mΩ max. |
| Insulation resistance         | 100 MΩ minimum between adjacent terms.at 500 VDC      |
| Dielectric strength           | 500 VDC for 1 minute                                  |
| Capacitance                   | 5 pf. maximum                                         |

### MECHANICALS, THERMALS

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| Mechanical life   | 2000 operations minimum per switch                           |
| Operating force   | 1000 grams maximum                                           |
| Vibration         | 10-55-10 Hz./1 min. (3 planes) per MIL-STD-202F, METHOD 201A |
| Shock             | 50 G (peak value) for 11 msec. per MIL-STD-202F, METHOD 213B |
| Temperature range | Operating and storage: -40°C to +85°C                        |

### SOLDERING RECOMMENDATIONS\*

|                |                                                  |
|----------------|--------------------------------------------------|
| Hand soldering | 320°C max. for 2 seconds max.(30 watt iron max.) |
| Wave soldering | 260°C max. for 5 seconds                         |

\*For best results, keep actuator in 'O' position during soldering.



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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## MATERIALS

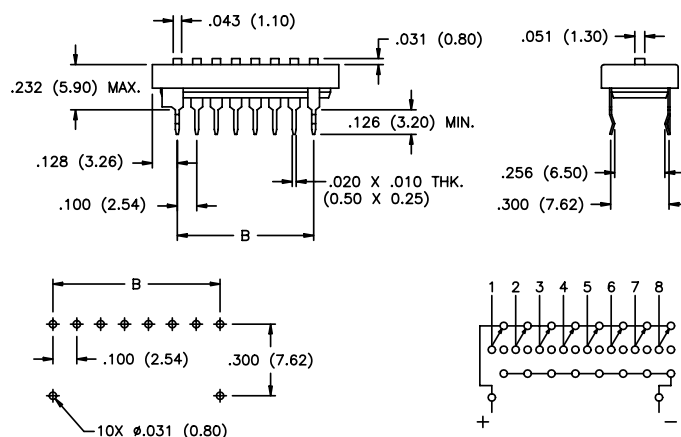
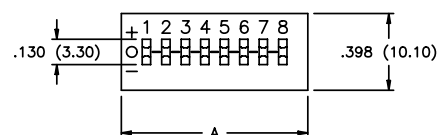
|           |                                          |
|-----------|------------------------------------------|
| Base      | UL94V-O, glass fiber filled PBT, black   |
| Cover     | UL94V-O, glass fiber filled PBT, black   |
| Actuators | UL94V-O, glass fiber filled Nylon, white |
| Contacts  | Gold over nickel over brass              |
| Terminals | 90/10 Solder plate over brass            |

## PACKAGING

Normally supplied in standard IC tubes with all actuators in the 'O' position

| MODEL  | NO. OF   | A DIM. (MAX) |       | B DIMENSION |       |
|--------|----------|--------------|-------|-------------|-------|
| NUMBER | POS. (n) | INCHES       | MM    | INCHES      | MM    |
| TDS04  | 4        | .557         | 14.14 | .300        | 7.62  |
| TDS08  | 8        | .957         | 24.3  | .700        | 17.78 |
| TDS09  | 9        | 1.057        | 26.84 | .800        | 20.32 |
| TDS10  | 10       | 1.157        | 29.39 | .900        | 22.86 |

## MECHANICAL OUTLINE



PRINTED CIRCUIT BOARD OUTLINE  
(8 POSITIONS SHOWN)

SCHEMATIC  
(8 POSITIONS SHOWN)

# P36 & P36S SERIES ROTARY DIP SWITCHES

## FEATURES

- 3 + 3 terminal layout.
- Completely sealed for process compatibility.
- Ultra-compact size with 10 or 16 positions.
- Precision designed detent action.
- Thru-hole (P36 Series) & SMT (P36S Series) models.
- High reliability & long life.
- Clockwise or counterclockwise settable.
- Solder coated terminals.



## GENERAL SPECIFICATIONS

### ELECTRICALS

|                            |                  |
|----------------------------|------------------|
| Operating voltage          | 24 VDC max.      |
| Contact rating, static     | 400 mA max.      |
| Contact rating, dynamic    | 100 mA max.      |
| Test voltage               | 250V 50Hz/1 min. |
| Initial contact resistance | < 100 milliohms  |
| Insulation resistance      | > 100 megohms    |

### MECHANICALS, THERMALS

|                             |                                   |
|-----------------------------|-----------------------------------|
| Torque                      | 0.98 inch-oz. min. (0.7 Ncm min.) |
| Expected life               | 10,000 switching operations       |
| Contact force               | 15 grams min.                     |
| Operating temperature range | -30°C to 90°C                     |

### SOLDERING RECOMMENDATIONS

|                        |                                                         |
|------------------------|---------------------------------------------------------|
| Hand soldering         | 340°C max. for 2 seconds max.<br>(40 watt iron max.)    |
| Wave soldering         | 260°C max. for 10 seconds max.                          |
| Reflow soldering (SMT) | 215°C max. for 40 seconds max.                          |
| Solvent washing        | Freons or alcohol. (Do not use<br>chlorinated solvents) |
| Aqueous cleaning       | Deionized water preferred                               |

## MATERIALS

|                  |                                            |
|------------------|--------------------------------------------|
| Base             | UL94V-O,<br>high temperature thermoplastic |
| Cover            | Stainless steel                            |
| Actuator         | UL94V-O,<br>high temperature thermoplastic |
| Contacts         | Gold over nickel plated<br>stainless steel |
| Terminals        | Solder coated brass                        |
| Terminal sealing | Molded-in                                  |
| Actuator seal    | 'O'-ring                                   |

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## Thru-hole and SMT Printed Circuit Models

Code (see truth tables pg. G16)

Positions

Model No.  
Thru-hole  
Mounting  
(see fig. 1)

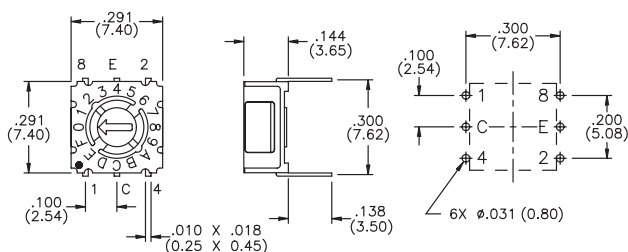
Model No.  
Surface  
Mounting  
(see fig. 2)

|                          |    |
|--------------------------|----|
| Binary Coded Decimal     | 10 |
| Complement of BCD        | 10 |
| Binary Coded Hexadecimal | 16 |
| Complement of BCH        | 16 |

|        |
|--------|
| P36101 |
| P36102 |
| P36103 |
| P36106 |

|         |
|---------|
| P36S101 |
| P36S102 |
| P36S103 |
| P36S106 |

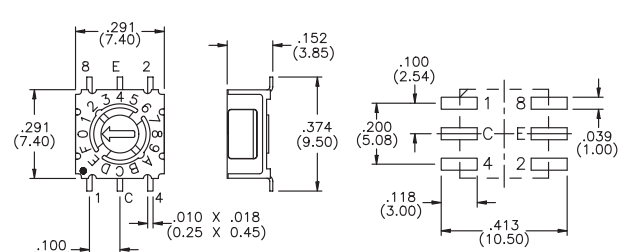
Figure 1



Mechanical outline

P.C. hole pattern

Figure 2



Mechanical outline

P.C. pad layout



## STANDARD OPTIONS BY SERIES:

| Series                             | P36 | P36S |
|------------------------------------|-----|------|
| <b>Actuators</b>                   |     |      |
| <b>1</b> Arrow shaped slot         | X   | X    |
| <b>3</b> Spindle                   | X   | X    |
| <b>8</b> Slotted spindle           | X   | X    |
| <b>Codes</b>                       |     |      |
| <b>01</b> BCD                      | X   | X    |
| <b>02</b> BCD complement           | X   | X    |
| <b>03</b> Hexadecimal              | X   | X    |
| <b>06</b> Hexadecimal Comp.        | X   | X    |
| <b>Terminals</b>                   |     |      |
| <b>None</b> Straight               | X   |      |
| <b>V</b> Crimped                   | X   |      |
| <b>L254</b> Rt. angle 2.54 (.100") | X   |      |
| <b>None</b> SMT                    |     | X    |

## ORDER GUIDE:

Make selections from the above table in sequence to specify a complete model number.

Note that 'None' indicates that no option suffix is required.

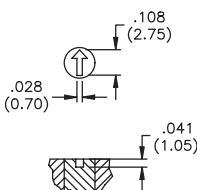
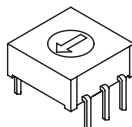
Example;

Series **P36101V** Terminals  
Actuator Code

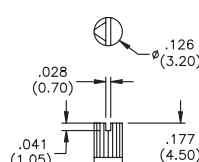
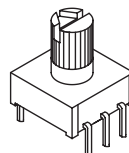
## P36 & P36S SERIES

### ACTUATORS

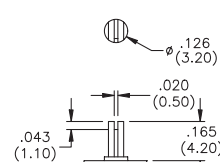
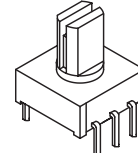
**1** Arrow shaped slot



**3** Spindle



**8** Slotted spindle\*



\* Slotted spindle actuator is color coded to truth table code selection as follows: BCD - red, BCD complement - Orange, Hexadecimal - gray, Hexadecimal complement - white.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

## CODES

NOTE: For each dial position in tables, Common terminals (C) are connected to terminal number(s) indicated - i.e. - none or combinations of 1, 2, 4 or 8. Each model in this series has 2 Common terminals.

| BINARY CODED DECIMAL (01) |   |   |   |   |  |
|---------------------------|---|---|---|---|--|
| 10 Positions              |   |   |   |   |  |
| Dial No.                  | 1 | 2 | 4 | 8 |  |
| 0                         |   |   |   |   |  |
| 1                         | ● |   |   |   |  |
| 2                         |   | ● |   |   |  |
| 3                         | ● | ● |   |   |  |
| 4                         |   |   | ● |   |  |
| 5                         | ● |   | ● |   |  |
| 6                         |   | ● | ● |   |  |
| 7                         | ● | ● | ● |   |  |
| 8                         |   |   |   | ● |  |
| 9                         | ● |   |   | ● |  |

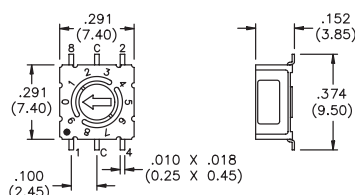
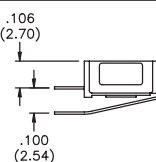
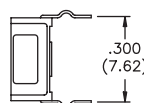
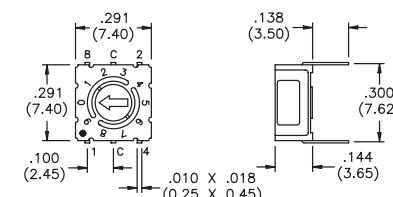
| COMP. OF BINARY CODED DECIMAL (02) |   |   |   |   |  |
|------------------------------------|---|---|---|---|--|
| 10 Positions                       |   |   |   |   |  |
| Dial No.                           | 1 | 2 | 4 | 8 |  |
| 0                                  | ● | ● | ● | ● |  |
| 1                                  |   | ● | ● | ● |  |
| 2                                  | ● |   | ● | ● |  |
| 3                                  |   | ● | ● | ● |  |
| 4                                  | ● | ● |   | ● |  |
| 5                                  |   | ● | ● |   |  |
| 6                                  | ● |   | ● | ● |  |
| 7                                  |   | ● | ● | ● |  |
| 8                                  | ● | ● | ● |   |  |
| 9                                  |   | ● | ● | ● |  |

| BINARY CODED HEXADECIMAL (03) |   |   |   |   |  |
|-------------------------------|---|---|---|---|--|
| 16 Positions                  |   |   |   |   |  |
| Dial No.                      | 1 | 2 | 4 | 8 |  |
| 0                             |   |   |   |   |  |
| 1                             | ● |   |   |   |  |
| 2                             |   | ● |   |   |  |
| 3                             | ● | ● |   |   |  |
| 4                             |   |   | ● |   |  |
| 5                             | ● |   | ● |   |  |
| 6                             |   | ● | ● |   |  |
| 7                             | ● | ● | ● |   |  |
| 8                             |   |   |   | ● |  |
| 9                             | ● |   |   | ● |  |
| A                             |   | ● |   | ● |  |
| B                             | ● | ● |   | ● |  |
| C                             |   |   | ● | ● |  |
| D                             | ● |   | ● | ● |  |
| E                             |   | ● | ● | ● |  |
| F                             | ● | ● | ● | ● |  |

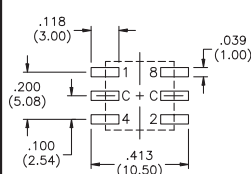
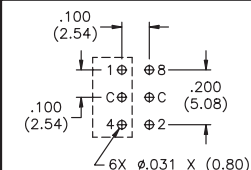
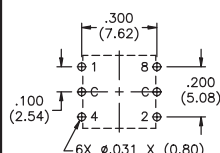
| COMP. OF BINARY CODED HEXADEC. (06) |   |   |   |   |  |
|-------------------------------------|---|---|---|---|--|
| 16 Positions                        |   |   |   |   |  |
| Dial No.                            | 1 | 2 | 4 | 8 |  |
| 0                                   | ● | ● | ● | ● |  |
| 1                                   |   | ● | ● | ● |  |
| 2                                   | ● |   | ● | ● |  |
| 3                                   |   | ● | ● | ● |  |
| 4                                   | ● | ● |   | ● |  |
| 5                                   |   | ● | ● |   |  |
| 6                                   | ● |   | ● | ● |  |
| 7                                   |   | ● | ● | ● |  |
| 8                                   | ● | ● | ● |   |  |
| 9                                   |   | ● | ● | ● |  |
| A                                   | ● |   | ● |   |  |
| B                                   |   | ● | ● |   |  |
| C                                   | ● | ● |   |   |  |
| D                                   |   | ● |   |   |  |
| E                                   | ● |   |   |   |  |
| F                                   |   |   |   |   |  |

## MECHANICAL OUTLINES

### Terminal option suffix\*:



### Mtg. hole pattern:



\* 'None' indicates no option suffix is required.

# PT65 SERIES ROTARY DIP SWITCHES

## FEATURES

- 3 + 3 terminal layout.
- Completely sealed for process compatibility.
- 4, 6, 8, 10 or 16 positions w/extensive codings.
- Precision designed detent action.
- Compact size.
- High reliability & long life.
- Clockwise or counterclockwise settable.
- Solder coated terminals.



## GENERAL SPECIFICATIONS

### ELECTRICALS

|                            |                |
|----------------------------|----------------|
| Operating voltage          | 24 VDC max.    |
| Contact rating, static     | 400 mA max.    |
| Contact rating, dynamic    | 150 mA max.    |
| Switching capacity         | 1.5 VA max.    |
| Initial contact resistance | < 80 milliohms |
| Insulation resistance      | > 100 megohms  |

### MECHANICALS, THERMALS

|                             |                                  |
|-----------------------------|----------------------------------|
| Torque                      | 7.0 inch-oz. min. (0.7 Ncm min.) |
| Expected life               | 10,000 switching operations      |
| Contact force               | 15 grams min.                    |
| Operating temperature range | -20°C to 70°C                    |

### SOLDERING RECOMMENDATIONS

|                  |                                                      |
|------------------|------------------------------------------------------|
| Hand soldering   | 340°C max. for 2 seconds max. (40 watt iron max.)    |
| Wave soldering   | 260°C max. for 10 seconds max.                       |
| Solvent washing  | Freons or alcohol. (Do not use chlorinated solvents) |
| Aqueous cleaning | Deionized water preferred                            |

## MATERIALS

|                  |                                         |
|------------------|-----------------------------------------|
| Base             | UL94V-O, high temperature thermoplastic |
| Cover            | UL94V-O, high temperature thermoplastic |
| Actuator         | POM                                     |
| Contacts         | Gold over nickel plated bronze          |
| Terminals        | Gold over nickel plated bronze          |
| Terminal sealing | Molded-in                               |
| Actuator seal    | 'O'-ring                                |

## CODE 05 GRAY CODE

### 16 Positions

| Dial No. | 1 | 2 | 4 | 8 |
|----------|---|---|---|---|
| 0        |   |   |   |   |
| 1        | ● |   |   |   |
| 2        | ● | ● |   |   |
| 3        |   | ● |   |   |
| 4        |   | ● | ● |   |
| 5        | ● | ● | ● |   |
| 6        | ● |   |   |   |
| 7        |   |   | ● |   |
| 8        |   |   | ● | ● |
| 9        | ● |   | ● | ● |
| A        | ● | ● | ● | ● |
| B        |   | ● | ● | ● |
| C        |   | ● |   | ● |
| D        | ● | ● |   |   |
| E        | ● |   |   | ● |
| F        |   |   |   | ● |

## CODES

NOTE: For each dial position in tables, Common terminal(s) (C) are connected to terminal number(s) indicated - i.e. - none or combinations of 1, 2, 3, 4 or 8. Each model in this series has 2 Common terminals except codes 11 and 24 which have one.

## CODE 11 ON/OFF

| 4 Positions |   |
|-------------|---|
| Dial No.    | 1 |
| 0           |   |
| 1           | ● |
| 0           |   |
| 1           | ● |

## CODE 12 BCD

| 4 Positions |   |   |
|-------------|---|---|
| Dial No.    | 1 | 2 |
| 0           |   |   |
| 1           | ● |   |
| 2           |   | ● |
| 3           | ● | ● |

## CODE 21 DECIMAL

| 4 Positions |   |   |   |   |
|-------------|---|---|---|---|
| Dial No.    | 1 | 2 | 3 | 4 |
| 1           | ● |   |   |   |
| 2           |   | ● |   |   |
| 3           |   |   | ● |   |
| 0           |   |   |   | ● |

## CODES 24 & 25 BCD

| 6 Positions |   |   |   |  |  |
|-------------|---|---|---|--|--|
| Dial No.    | 1 | 2 | 4 |  |  |
| 0           |   |   |   |  |  |
| 1           | ● |   |   |  |  |
| 2           |   | ● |   |  |  |
| 3           | ● | ● |   |  |  |
| 4           |   |   | ● |  |  |
| 5           | ● |   | ● |  |  |

## CODE 26 OCTAL

| 8 Positions |   |   |   |  |  |
|-------------|---|---|---|--|--|
| Dial No.    | 1 | 2 | 4 |  |  |
| 0           |   |   |   |  |  |
| 1           | ● |   |   |  |  |
| 2           |   | ● |   |  |  |
| 3           | ● | ● |   |  |  |
| 4           |   |   | ● |  |  |
| 5           | ● |   | ● |  |  |
| 6           |   | ● | ● |  |  |
| 7           | ● | ● | ● |  |  |

## CODE 27 OCTAL COMPLEMENT

| 8 Positions |   |   |   |   |   |
|-------------|---|---|---|---|---|
| Dial No.    | 1 | 2 | 4 | 8 |   |
| 0           | ● | ● | ● | ● |   |
| 1           |   | ● | ● | ● | ● |
| 2           | ● |   | ● | ● | ● |
| 3           |   | ● |   | ● | ● |
| 4           | ● | ● |   | ● | ● |
| 5           |   | ● | ● |   | ● |
| 6           | ● |   | ● |   | ● |
| 7           |   |   |   | ● | ● |

## BINARY CODED DECIMAL (01)

| 10 Positions |   |   |   |   |  |
|--------------|---|---|---|---|--|
| Dial No.     | 1 | 2 | 4 | 8 |  |
| 0            |   |   |   |   |  |
| 1            | ● |   |   |   |  |
| 2            |   | ● |   |   |  |
| 3            | ● | ● |   |   |  |
| 4            |   |   | ● |   |  |
| 5            | ● |   | ● |   |  |
| 6            |   | ● | ● |   |  |
| 7            | ● | ● | ● |   |  |
| 8            |   |   |   | ● |  |
| 9            | ● |   |   | ● |  |

## COMP. OF BINARY CODED DECIMAL (02)

| 10 Positions |   |   |   |   |   |
|--------------|---|---|---|---|---|
| Dial No.     | 1 | 2 | 4 | 8 |   |
| 0            | ● | ● | ● | ● |   |
| 1            |   | ● | ● | ● | ● |
| 2            | ● |   | ● | ● | ● |
| 3            |   | ● |   | ● | ● |
| 4            | ● | ● |   | ● | ● |
| 5            |   | ● | ● |   | ● |
| 6            | ● |   | ● |   | ● |
| 7            |   | ● | ● |   | ● |
| 8            | ● | ● | ● |   | ● |
| 9            |   | ● | ● |   | ● |

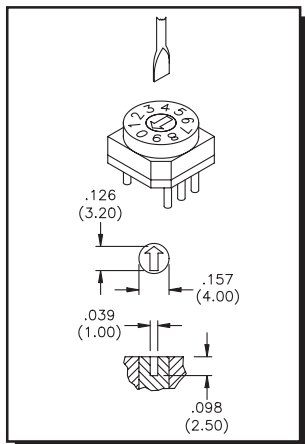
## BINARY CODED HEXADECIMAL (03)

| 16 Positions |   |   |   |   |  |
|--------------|---|---|---|---|--|
| Dial No.     | 1 | 2 | 4 | 8 |  |
| 0            |   |   |   |   |  |
| 1            | ● |   |   |   |  |
| 2            |   | ● |   |   |  |
| 3            | ● | ● |   |   |  |
| 4            |   |   | ● |   |  |
| 5            | ● |   | ● |   |  |
| 6            |   | ● | ● |   |  |
| 7            | ● | ● | ● |   |  |
| 8            |   |   |   | ● |  |
| 9            | ● |   |   | ● |  |
| A            |   | ● |   | ● |  |
| B            | ● |   |   | ● |  |
| C            |   | ● | ● |   |  |
| D            | ● |   | ● |   |  |
| E            |   | ● | ● |   |  |
| F            | ● | ● | ● |   |  |

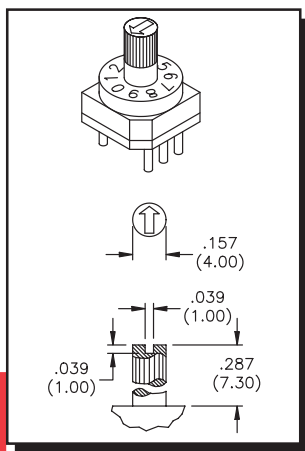
## COMP. OF BINARY CODED HEXADEC. (06)

| 16 Positions |   |   |   |   |   |
|--------------|---|---|---|---|---|
| Dial No.     | 1 | 2 | 4 | 8 |   |
| 0            | ● | ● | ● | ● |   |
| 1            |   | ● | ● | ● | ● |
| 2            | ● |   | ● | ● | ● |
| 3            |   | ● |   | ● | ● |
| 4            | ● | ● |   | ● | ● |
| 5            |   | ● | ● |   | ● |
| 6            | ● |   | ● |   | ● |
| 7            |   | ● | ● |   | ● |
| 8            | ● | ● | ● |   | ● |
| 9            |   | ● | ● |   | ● |
| A            | ● |   | ● |   | ● |
| B            |   | ● |   | ● |   |
| C            | ● | ● |   |   |   |
| D            |   | ● |   |   |   |
| E            | ● |   |   |   |   |
| F            |   |   |   |   |   |

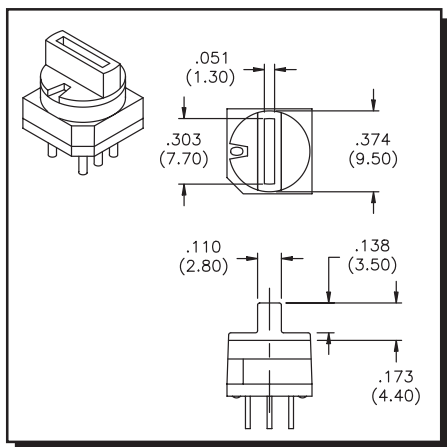
## PT65 SERIES



| Arrow shaped slot<br>Actuator Models |           | Complete Model No. by Terminal Style |              |              |
|--------------------------------------|-----------|--------------------------------------|--------------|--------------|
|                                      |           | Straight                             | Right Angle  |              |
|                                      |           |                                      | Pitch        |              |
| Code (see truth tables)              | Positions |                                      | .100" (2,54) | .200" (5,08) |
| Binary Coded Decimal                 | 10        | PT65101                              | PT65101L254  | PT65101L508  |
| Comp. of Binary Coded Dec.           | 10        | PT65102                              | PT65102L254  | PT65102L508  |
| Binary Coded Hexadecimal             | 16        | PT65103                              | PT65103L254  | PT65103L508  |
| Code 05, Gray Code                   | 16        | PT65105                              | PT65105L254  | PT65105L508  |
| Comp. of Binary Coded Hex.           | 16        | PT65106                              | PT65106L254  | PT65106L508  |
| Code 11, ON/OFF                      | 4         | PT65111                              | PT65111L254  | PT65111L508  |
| Code 12, Binary Coded Dec.           | 4         | PT65112                              | PT65112L254  | PT65112L508  |
| Code 21, Decimal                     | 4         | PT65121                              | PT65121L254  | PT65121L508  |
| Code 24, Binary Coded Dec.           | 6         | PT65124                              | PT65124L254  | PT65124L508  |
| Code 25, Binary Coded Dec.           | 6         | PT65125                              | PT65125L254  | PT65125L508  |
| Code 26, Octal                       | 8         | PT65126                              | PT65126L254  | PT65126L508  |
| Code 27, Octal complement            | 8         | PT65127                              | PT65127L254  | PT65127L508  |



| Spindle<br>Actuator Models |           | Complete Model No. by Terminal Style |              |              |
|----------------------------|-----------|--------------------------------------|--------------|--------------|
|                            |           | Straight                             | Right Angle  |              |
|                            |           |                                      | Pitch        |              |
| Code (see truth tables)    | Positions |                                      | .100" (2,54) | .200" (5,08) |
| Binary Coded Decimal       | 10        | PT65301                              | PT65301L254  | PT65301L508  |
| Comp. of Binary Coded Dec. | 10        | PT65302                              | PT65302L254  | PT65302L508  |
| Binary Coded Hexadecimal   | 16        | PT65303                              | PT65303L254  | PT65303L508  |
| Code 05, Gray Code         | 16        | PT65305                              | PT65305L254  | PT65305L508  |
| Comp. of Binary Coded Hex. | 16        | PT65306                              | PT65306L254  | PT65306L508  |
| Code 11, ON/OFF            | 4         | PT65311                              | PT65311L254  | PT65311L508  |
| Code 12, Binary Coded Dec. | 4         | PT65312                              | PT65312L254  | PT65312L508  |
| Code 21, Decimal           | 4         | PT65321                              | PT65321L254  | PT65321L508  |
| Code 24, Binary Coded Dec. | 6         | PT65324                              | PT65324L254  | PT65324L508  |
| Code 25, Binary Coded Dec. | 6         | PT65325                              | PT65325L254  | PT65325L508  |
| Code 26, Octal             | 8         | PT65326                              | PT65326L254  | PT65326L508  |
| Code 27, Octal complement  | 8         | PT65327                              | PT65327L254  | PT65327L508  |



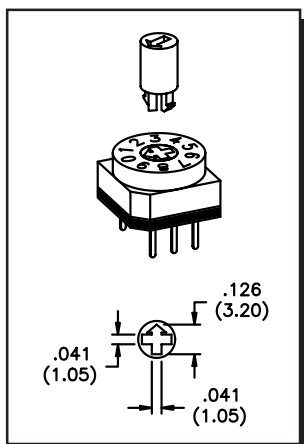
| Segment Wheel<br>Actuator Models |           | Complete Model No. by Terminal Style |              |              |
|----------------------------------|-----------|--------------------------------------|--------------|--------------|
|                                  |           | Straight                             | Right Angle  |              |
|                                  |           |                                      | Pitch        |              |
| Code (see truth tables)          | Positions |                                      | .100" (2,54) | .200" (5,08) |
| Binary Coded Decimal             | 10        | PT65501                              | PT65501L254  | PT65501L508  |
| Comp. of Binary Coded Dec.       | 10        | PT65502                              | PT65502L254  | PT65502L508  |
| Binary Coded Hexadecimal         | 16        | PT65503                              | PT65503L254  | PT65503L508  |
| Code 05, Gray Code               | 16        | PT65505                              | PT65505L254  | PT65505L508  |
| Comp. of Binary Coded Hex.       | 16        | PT65506                              | PT65506L254  | PT65506L508  |
| Code 11, ON/OFF                  | 4         | PT65511                              | PT65511L254  | PT65511L508  |
| Code 12, Binary Coded Dec.       | 4         | PT65512                              | PT65512L254  | PT65512L508  |
| Code 21, Decimal                 | 4         | PT65521                              | PT65521L254  | PT65521L508  |
| Code 24, Binary Coded Dec.       | 6         | PT65524                              | PT65524L254  | PT65524L508  |
| Code 25, Binary Coded Dec.       | 6         | PT65525                              | PT65525L254  | PT65525L508  |
| Code 26, Octal                   | 8         | PT65526                              | PT65526L254  | PT65526L508  |
| Code 27, Octal complement        | 8         | PT65527                              | PT65527L254  | PT65527L508  |

All models listed on this page have 2 Common terminals except Code 11 and Code 24 which have one.

Other codes are available - consult factory.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

## PT65 SERIES



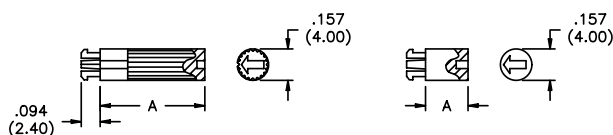
| Cross shaped slot<br>Actuator Models |           | Complete Model No. by Terminal Style |              |              |
|--------------------------------------|-----------|--------------------------------------|--------------|--------------|
|                                      |           | Straight                             | Right Angle  |              |
|                                      |           |                                      | Pitch        |              |
| Code (see truth tables)              | Positions |                                      | .100" (2,54) | .200" (5,08) |
| Binary Coded Decimal                 | 10        | PT65701                              | PT65701L254  | PT65701L508  |
| Comp. of Binary Coded Dec.           | 10        | PT65702                              | PT65702L254  | PT65702L508  |
| Binary Coded Hexadecimal             | 16        | PT65703                              | PT65703L254  | PT65703L508  |
| Code 05, Gray Code                   | 16        | PT65705                              | PT65705L254  | PT65705L508  |
| Comp. of Binary Coded Hex.           | 16        | PT65706                              | PT65706L254  | PT65706L508  |
| Code 11, ON/OFF                      | 4         | PT65711                              | PT65711L254  | PT65711L508  |
| Code 12, Hexadecimal                 | 4         | PT65712                              | PT65712L254  | PT65712L508  |
| Code 21, Decimal                     | 4         | PT65721                              | PT65721L254  | PT65721L508  |
| Code 24, Binary Coded Dec.           | 6         | PT65724                              | PT65724L254  | PT65724L508  |
| Code 25, Binary Coded Dec.           | 6         | PT65725                              | PT65725L254  | PT65725L508  |
| Code 26, Octal                       | 8         | PT65726                              | PT65726L254  | PT65726L508  |
| Code 27, Octal complement            | 8         | PT65727                              | PT65727L254  | PT65727L508  |

**Operating Elements** snap-fit securely into PT65 (& P60A) Series switch models with cross shaped slot actuators. Order separately by Model number shown below and indicate color.



**Spindle** colors: red, gray or black

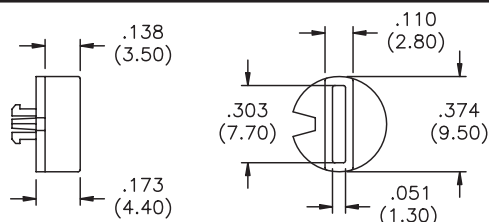
| Model No.  | Dim. A |
|------------|--------|
| SAPT65473  | .287   |
| SAPT654116 | .457   |
| SAPT654133 | .524   |



Short spindle above applies to model SAPT65473 only

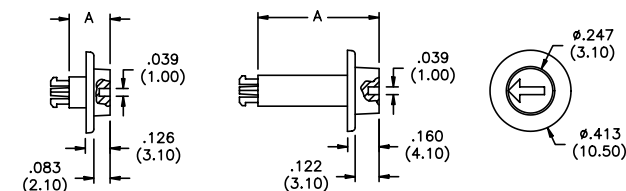
**Segment wheel**  
colors: yellow, red, green, blue, gray or black

| Model No.  |
|------------|
| SRPT659544 |



**Knob** color: red

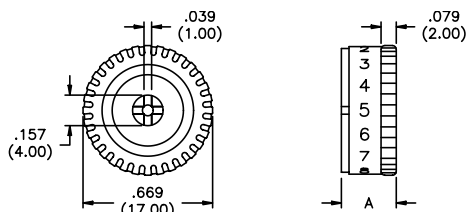
| Model No.    | Dim. A |
|--------------|--------|
| DKPT6510553  | .209   |
| DKPT65105157 | .618   |
| DKPT65105291 | 1.146  |
| DKPT65105344 | 1.354  |



Short knob above applies to model DKPT6510553 only

**Wheel** color: white

| Model No.  | Dim. A |
|------------|--------|
| DRPT651772 | .283   |



consult factory for printing  
(fits PT65 models only)

## PT65 SERIES

### PT65 SERIES STANDARD OPTIONS :

#### Actuators

- 1 Arrow shaped slot
- 3 Spindle
- 5 Segment wheel
- 7 Cross shaped slot

#### Codes

- 01 BCD
- 02 BCD complement
- 03 Hexadecimal
- 06 Hexadecimal Comp.

See other available codes on page G17

#### Terminals

- None Straight
- V Crimped
- L254 Rt. angle 2.54 (.100")
- L508 Rt. angle 5.08 (.200")

#### ORDER GUIDE:

Make selections from the above table in sequence to specify a complete model number.

Note that 'None' indicates that no option suffix is required.

Example;

**PT65101V**  
 Series Actuator Terminals  
 Code

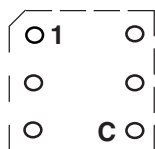
| MECHANICAL OUTLINES                      |                    |
|------------------------------------------|--------------------|
| Terminal option suffix*:                 | Mtg. hole pattern: |
| <b>NONE</b><br>Straight terminals<br>    |                    |
| <b>V</b><br>Crimped terminals<br>        |                    |
| <b>L254</b><br>Right angle terminals<br> |                    |
| <b>L508</b><br>Right angle terminals<br> |                    |

\* 'None' indicates no option suffix is required.

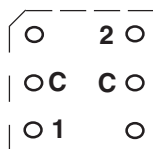
### TERMINAL IDENTIFICATION FOR ALL MODELS

(viewed from top of switch inserted into printed circuit board).

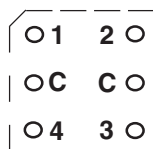
Refer to TRUTH TABLES on page G17.



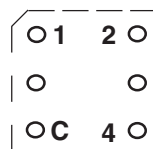
Code 11



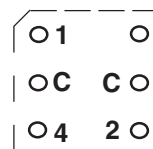
Code 12



Code 21



Code 24



Codes 25 & 26



Code 27 and  
10 & 16 pos. models

# P60A & P60AS SERIES ROTARY DIP SWITCHES

**New!**

## FEATURES

- New 4 + 1 terminal layout.
- Completely sealed for process compatibility.
- Ultra-compact size with 10 or 16 positions.
- Precision designed detent action.
- Thru-hole (P60A Series) & SMT (P60AS Series) models.
- High reliability & long life.
- Clockwise or counterclockwise settable.
- Solder coated terminals.



## GENERAL SPECIFICATIONS

### ELECTRICALS

|                            |                  |
|----------------------------|------------------|
| Operating voltage          | 24 VDC max.      |
| Contact rating, static     | 400 mA max.      |
| Contact rating, dynamic    | 150 mA max.      |
| Test voltage               | 250V 50Hz/1 min. |
| Initial contact resistance | < 100 milliohms  |
| Insulation resistance      | > 100 megohms    |

### MECHANICALS, THERMALS

|                             |                                   |
|-----------------------------|-----------------------------------|
| Torque                      | 0.98 inch-oz. min. (0.7 Ncm min.) |
| Expected life               | 10,000 switching operations       |
| Contact force               | 15 grams min.                     |
| Operating temperature range | -20°C to 85°C                     |

### SOLDERING RECOMMENDATIONS

|                        |                                                         |
|------------------------|---------------------------------------------------------|
| Hand soldering         | 340°C max. for 2 seconds max.<br>(40 watt iron max.)    |
| Wave soldering         | 260°C max. for 10 seconds max.                          |
| Reflow soldering (SMT) | 215°C max. for 40 seconds max.                          |
| Solvent washing        | Freons or alcohol. (Do not use<br>chlorinated solvents) |
| Aqueous cleaning       | Deionized water preferred                               |

## MATERIALS

|                  |                                            |
|------------------|--------------------------------------------|
| Base             | UL94V-O,<br>high temperature thermoplastic |
| Cover            | UL94V-O,<br>high temperature thermoplastic |
| Actuator         | Nylon                                      |
| Contacts         | Gold over nickel plated<br>stainless steel |
| Terminals        | Solder coated copper                       |
| Terminal sealing | Molded-in                                  |
| Actuator seal    | 'O'-ring                                   |

**G**

## Thru-hole and SMT Printed Circuit Models

### Code (see truth tables pg. G22)

### Positions

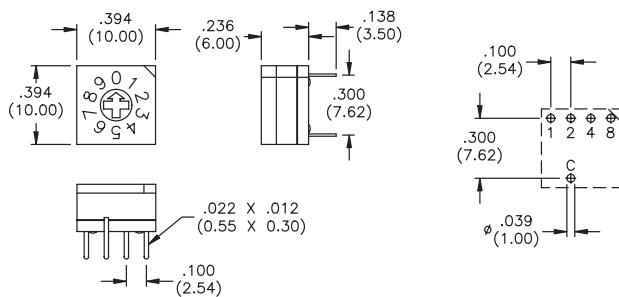
### Model No. Thru-hole Mounting (see fig. 1)

### Model No. Surface Mounting (see fig. 2)

|                          |    |
|--------------------------|----|
| Binary Coded Decimal     | 10 |
| Complement of BCD        | 10 |
| Binary Coded Hexadecimal | 16 |
| Complement of BCH        | 16 |

|                |                 |
|----------------|-----------------|
| <b>P60A701</b> | <b>P60AS701</b> |
| <b>P60A702</b> | <b>P60AS702</b> |
| <b>P60A703</b> | <b>P60AS703</b> |
| <b>P60A706</b> | <b>P60AS706</b> |

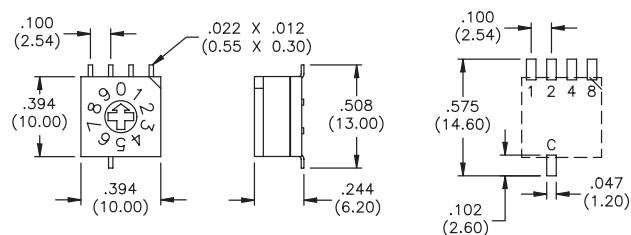
Figure 1



Mechanical outline

P.C. hole pattern

Figure 2



Mechanical outline

P.C. pad layout

## STANDARD OPTIONS BY SERIES:

| Series                      | P60A | P60AS |
|-----------------------------|------|-------|
| <b>Actuators</b>            |      |       |
| <b>3</b> Spindle            | X    | X*    |
| <b>5</b> Segment wheel      | X    | X*    |
| <b>7</b> Cross shaped slot  | X    | X     |
| <b>Codes</b>                |      |       |
| <b>01</b> BCD               | X    | X     |
| <b>02</b> BCD complement    | X    | X     |
| <b>03</b> Hexadecimal       | X    | X     |
| <b>06</b> Hexadecimal Comp. | X    | X     |

## Terminals

|                                    |   |   |
|------------------------------------|---|---|
| <b>None</b> Straight               | X |   |
| <b>V</b> Crimped                   | X |   |
| <b>L508</b> Rt. angle 5.08 (.200") | X |   |
| <b>None</b> SMT                    |   | X |

\* - Assemble after soldering process.

## ORDER GUIDE:

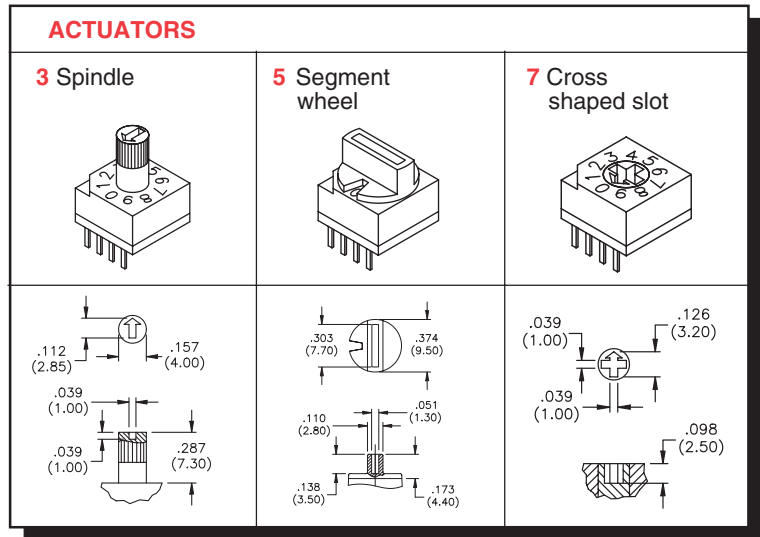
Make selections from the above table in sequence to specify a complete model number.

Note that 'None' indicates that no option suffix is required.

Example; **P60A301V**  
 Series Actuator Terminals  
 Code

**New!**

## P60A & P60AS SERIES



See page G19 for optional Operating Elements.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

## CODES

NOTE: For each dial position in tables, Common terminals (C) are connected to terminal number(s) indicated - i.e. - none or combinations of 1, 2, 4 or 8. Each model in this series has 2 Common terminals.

| BINARY CODED DECIMAL (01) |   |   |   |   |  |
|---------------------------|---|---|---|---|--|
| 10 Positions              |   |   |   |   |  |
| Dial No.                  | 1 | 2 | 4 | 8 |  |
| 0                         |   |   |   |   |  |
| 1                         | • |   |   |   |  |
| 2                         |   | • |   |   |  |
| 3                         | • | • |   |   |  |
| 4                         |   |   | • |   |  |
| 5                         | • |   | • |   |  |
| 6                         |   | • | • |   |  |
| 7                         | • | • | • |   |  |
| 8                         |   |   |   | • |  |
| 9                         | • |   |   | • |  |

| COMP. OF BINARY CODED DECIMAL (02) |   |   |   |   |  |
|------------------------------------|---|---|---|---|--|
| 10 Positions                       |   |   |   |   |  |
| Dial No.                           | 1 | 2 | 4 | 8 |  |
| 0                                  | • | • | • | • |  |
| 1                                  |   | • | • | • |  |
| 2                                  | • |   | • | • |  |
| 3                                  |   |   | • | • |  |
| 4                                  | • | • |   | • |  |
| 5                                  |   | • |   | • |  |
| 6                                  | • |   |   | • |  |
| 7                                  |   |   |   | • |  |
| 8                                  | • | • | • |   |  |
| 9                                  |   | • | • |   |  |

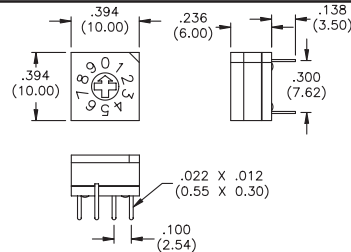
| BINARY CODED HEXADECIMAL (03) |   |   |   |   |  |
|-------------------------------|---|---|---|---|--|
| 16 Positions                  |   |   |   |   |  |
| Dial No.                      | 1 | 2 | 4 | 8 |  |
| 0                             |   |   |   |   |  |
| 1                             | • |   |   |   |  |
| 2                             |   | • |   |   |  |
| 3                             | • | • |   |   |  |
| 4                             |   |   | • |   |  |
| 5                             | • |   | • |   |  |
| 6                             |   | • | • |   |  |
| 7                             | • | • | • |   |  |
| 8                             |   |   |   | • |  |
| 9                             | • |   |   | • |  |
| A                             |   | • |   | • |  |
| B                             | • | • |   | • |  |
| C                             |   |   | • | • |  |
| D                             | • |   | • | • |  |
| E                             |   | • | • | • |  |
| F                             | • | • | • | • |  |

| COMP. OF BINARY CODED HEXADEC. (06) |   |   |   |   |  |
|-------------------------------------|---|---|---|---|--|
| 16 Positions                        |   |   |   |   |  |
| Dial No.                            | 1 | 2 | 4 | 8 |  |
| 0                                   | • | • | • | • |  |
| 1                                   |   | • | • | • |  |
| 2                                   | • |   | • | • |  |
| 3                                   |   |   | • | • |  |
| 4                                   | • | • |   | • |  |
| 5                                   |   | • |   | • |  |
| 6                                   | • |   |   | • |  |
| 7                                   |   |   |   | • |  |
| 8                                   | • | • | • |   |  |
| 9                                   |   | • | • |   |  |
| A                                   | • |   | • |   |  |
| B                                   |   | • |   | • |  |
| C                                   | • | • |   |   |  |
| D                                   |   | • |   |   |  |
| E                                   | • |   |   |   |  |
| F                                   |   |   |   |   |  |

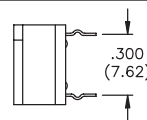
## MECHANICAL OUTLINES

### Terminal option suffix\*:

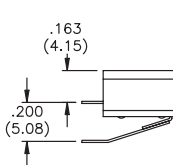
**NONE**  
Straight terminals



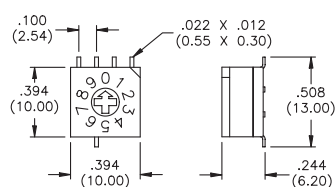
**V**  
Crimped terminals



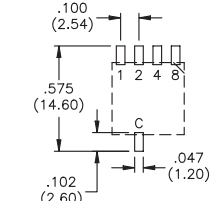
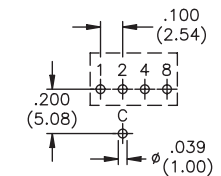
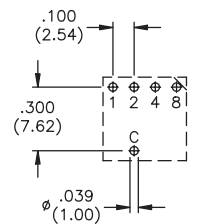
**L508**  
Right angle terminals



**NONE**  
SMT terminals



### Mtg. hole pattern:



\* 'None' indicates no option suffix is required.



# PT65 SERIES PULSE GENERATORS

## FEATURES

- 3 + 3 terminal layout.
- 10 positions.
- Completely sealed for process compatibility.
- Precision designed detent action.
- Compact size.
- High reliability & long life.
- Clockwise or counterclockwise settable.
- Solder coated terminals.



The pulse generator is a mechanical rotary switch connecting input C to outputs 1 and 2 in a time delayed sequence. Typical applications include dimmer and volume control, where adding or subtracting instructions are read into digital electronics.

**Code 31:** The connections between input C and terminals 1 and 2 occur only for the duration of the pulses, after which they are disconnected (set back to 0).

Contact bounce pulse duration (at 15 rpm):

C+Pin 1 > 50 ms  
C+Pin 1+Pin 2 > 100 ms  
C+Pin 2 > 50 ms

## MATERIALS

|                  |                                         |
|------------------|-----------------------------------------|
| Base             | UL94V-O, high temperature thermoplastic |
| Cover            | UL94V-O, high temperature thermoplastic |
| Actuator         | POM                                     |
| Contacts         | Gold over nickel plated bronze          |
| Terminals        | Gold over nickel plated bronze          |
| Terminal sealing | Molded-in                               |
| Actuator seal    | 'O'-ring                                |

## GENERAL SPECIFICATIONS

### ELECTRICALS

|                            |                    |
|----------------------------|--------------------|
| Operating voltage          | 12 VDC max.        |
| Contact rating, static     | 400 mA max.        |
| Contact rating, dynamic    | 150 mA max.        |
| Test voltage               | 250 V for 1 minute |
| Initial contact resistance | < 80 milliohms     |
| Contact bounce             | < 10 milliseconds  |
| Pulse durations            | See graphs below   |

### MECHANICALS, THERMALS

|                             |                                      |
|-----------------------------|--------------------------------------|
| Torque                      | 0.98 inch-oz. min.<br>(0.7 Ncm min.) |
| Expected life               | 10,000 switching<br>operations       |
| Contact force               | 15 grams min.                        |
| Positions per rotation      | 10                                   |
| Rotation speed              | 50 rpm (Max.)                        |
| Vibration resistance        | 10g                                  |
| Operating temperature range | -20°C to 70°C                        |

### SOLDERING RECOMMENDATIONS

|                  |                                                         |
|------------------|---------------------------------------------------------|
| Hand soldering   | 340°C max. for 2 seconds<br>max. (40 watt iron max.)    |
| Wave soldering   | 260°C max. for 10 seconds<br>max.                       |
| Solvent washing  | Freons or alcohol. (Do not<br>use chlorinated solvents) |
| Aqueous cleaning | Deionized water preferred                               |

## Refer to Actuator drawings shown

| Code    | Actuator         | Complete Model No. by Terminal Style |              |              |
|---------|------------------|--------------------------------------|--------------|--------------|
|         |                  | Straight                             | Right Angle  |              |
|         |                  |                                      | Pitch        |              |
|         |                  |                                      | .100" (2,54) | .200" (5,08) |
| Code 31 | Arrow shpd. slot | PT65131                              | PT65131L254  | PT65131L508  |
| Code 31 | Spindle          | PT65331                              | PT65331L254  | PT65331L508  |

## PT65 SERIES PULSE GENERATORS

### PT65 SERIES STANDARD OPTIONS :

#### Actuators

- 1 Arrow shaped slot
- 3 Spindle
- 5 Segment wheel
- 7 Cross shaped slot

#### Codes

- 31 10 position pulse generator

#### Terminals

- None Straight
- V Crimped
- L254 Rt. angle 2.54 (.100")
- L508 Rt. angle 5.08 (.200")

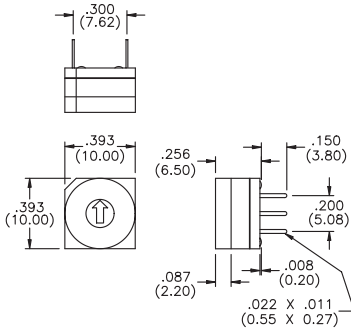
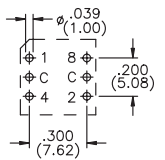
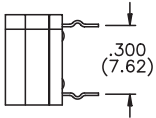
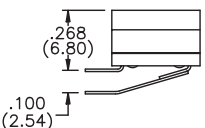
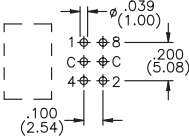
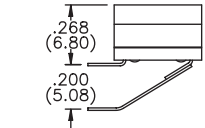
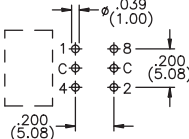
#### ORDER GUIDE:

Make selections from the above table in sequence to specify a complete model number.

Note that 'None' indicates that no option suffix is required.

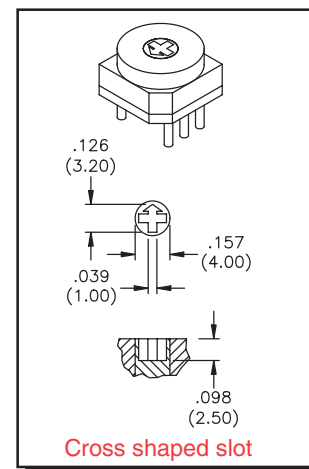
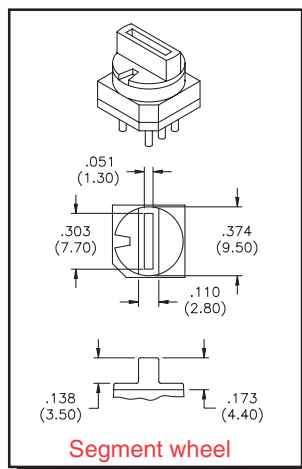
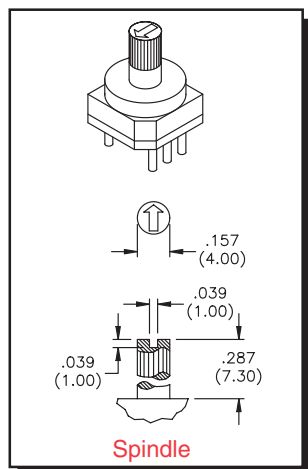
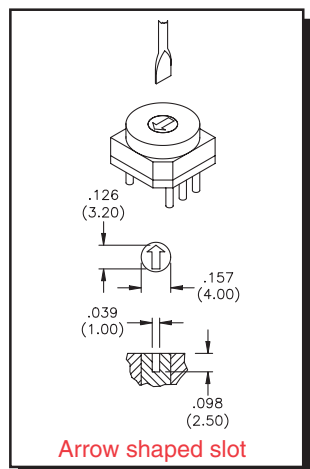
Example;

Series **PT65131V** Terminals  
Actuator Code

| MECHANICAL OUTLINES                                                                                                      |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Terminal option suffix*:                                                                                                 | Mtg. hole pattern:                                                                  |
| <b>NONE</b><br>Straight terminals       |    |
| <b>V</b><br>Crimped terminals           |                                                                                     |
| <b>L254</b><br>Right angle terminals   |   |
| <b>L508</b><br>Right angle terminals  |  |

\* 'None' indicates no option suffix is required.

### ACTUATORS



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.