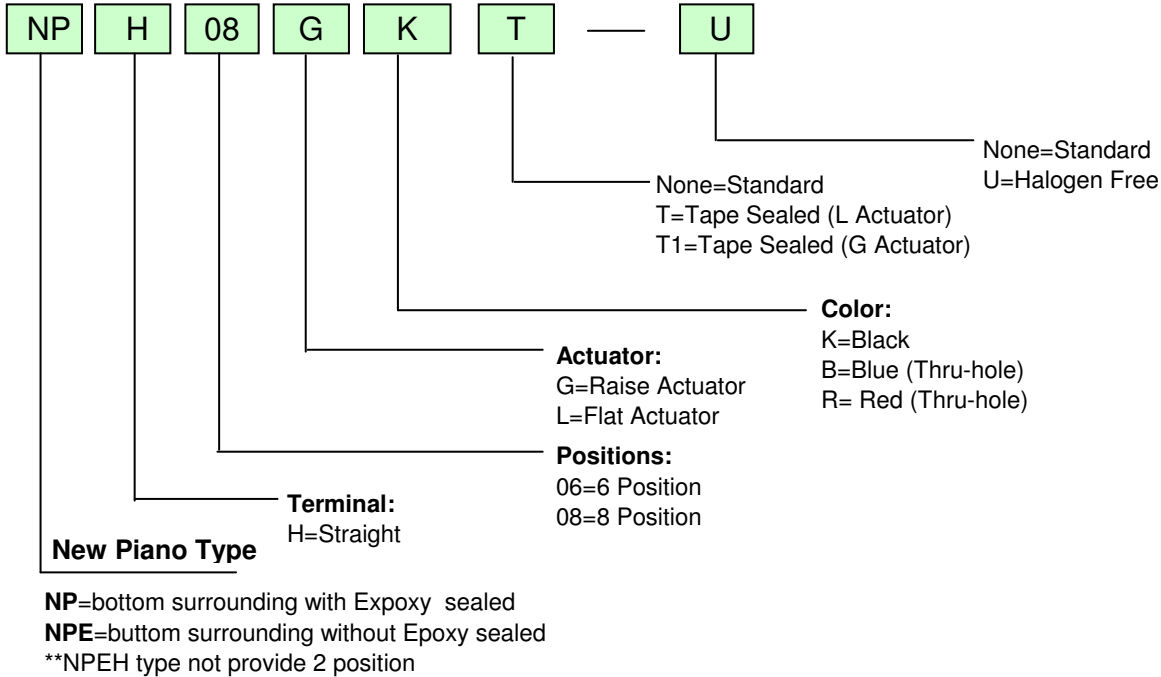


<b>MODEL</b>	<b>SPECIFICATION</b>		Page
<b>NPH/NPEH series</b> <b>New Piano Type</b>	<b>DIP SWITCH</b> <b>RoHS&amp;REACH Compliant / Halogen Free</b>	SP-001	1/5

**Order Information**



**Specifications**

◆ Contact Rating	Switching.....	25mA,24VDC
	Non-Switching.....	100mA,50VDC
◆ Contact Resistance	Initial.....	50mΩ/Max
	After Reliability Test.....	100mΩ/Max
◆ Insulation Resistance	.....	100MΩ/Min. at 500 VDC
◆ Dielectric Strength	.....	500VDC/ 1 mintue
◆ Operating Force	.....	1,000g/max
◆ Mechanical Life	.....	5,000 cycles (Min.)
◆ Electrical Life	.....	2,000 cycles /25mA,24VDC
◆ Operating Temperature	THR.....	-40℃ ~ +105℃
	THT.....	-40℃ ~ +85℃
◆ Storage Temperature	.....	-40℃ ~ +85℃

**Soldering Information**

- ◆ **Hand Soldering**  
Soldering iron of 30W or under at 350℃ for 3 sec. max. or at 270℃ for 5 sec. max.
- ◆ **Reflow Soldering:**  
Only for THR type which allows 1-time reflow soldering.  
The peak temperature of the oven should be 250℃ max.
- ◆ **Wave Soldering**  
For lead free wave solder simulation of typical components, the solder bath temperature shall be maintained at 270℃ max./ 5~10 seconds.
- ◆ **Keep all actuators in "OFF" position during soldering and cleaning process.**

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### Classification Reflow Profiles

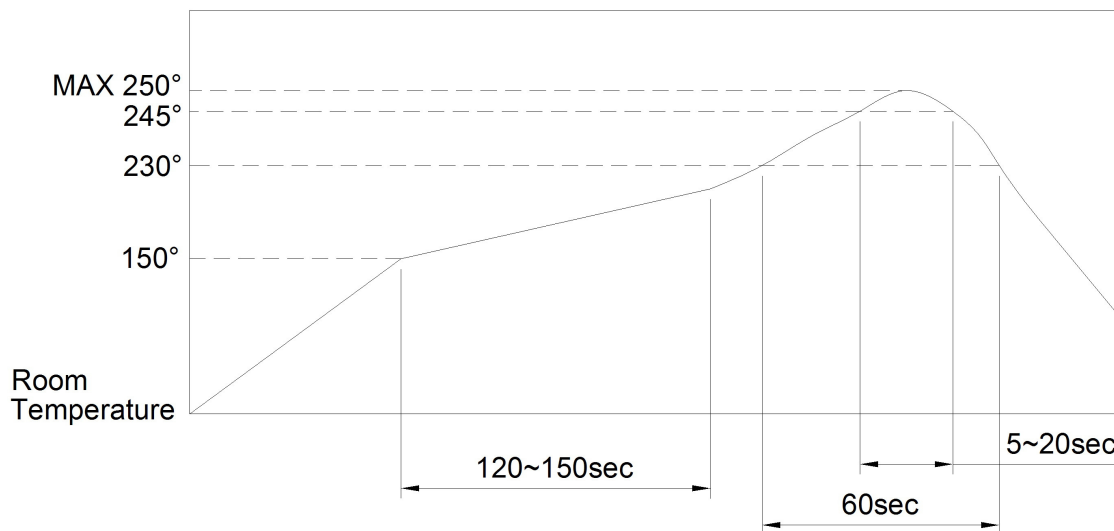
Profile Feature	Pb-Free Assembly
<b>Preheat / Soak</b>	
Temperature Min ( $T_{Smin}$ )	150°C
Temperature Max ( $T_{Smax}$ )	200°C
Time(ts) from ( $T_{Smin}$ to $T_{Smax}$ )	60 ~120 seconds
Ramp-up Rate ( $T_L$ to $T_p$ )	3°C/second max
Liquidous temperature ( $T_L$ )	217°C
Time ( $t_L$ ) maintained above to $T_L$	60 ~ 150 seconds
Peak package body temperature ( $T_p$ )	For users $T_p$ must not exceed the Classification temp:250°C (Package Thickness>2.5mm) For suppliers $T_p$ must equal or exceed the Classification temp:250°C (Package Thickness>2.5mm)
Time ( $t_p$ ) within 5°C of specified classification Temperature ( $T_c$ )	30 seconds
Ramp-Down Rate ( $T_p$ to $T_L$ )	6°C/second max
Time 25°C to Peak Temperature	8 minutes max
* Tolerance for peak profile temperature( $T_p$ ) is defined as a supplier minimum and a user maximum	

**Note 1:** All temperatures refer to topside of the package, measured on the package body surface.

**Note 2:** Time within 5 °C of actual peak temperature ( $t_p$ ) specified for the reflow profiles is a “supplier” minimum and “user” maximum.

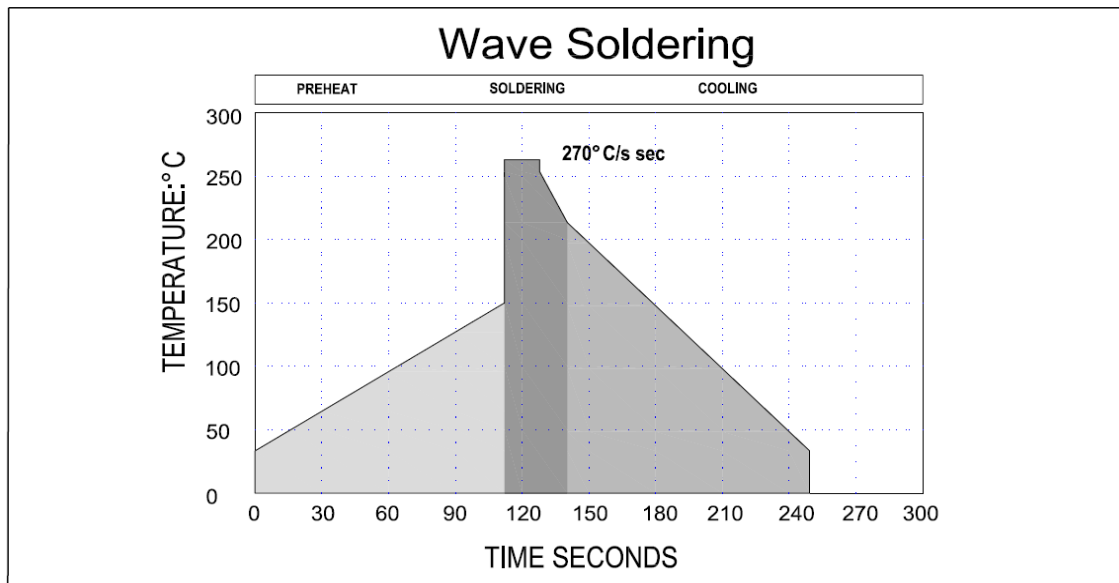
Source: IPC/JEDEC J-STD-020D.1

### Recommended Reflow Soldering



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### Recommended Wave Soldering Profiles



**Maximum dwell time in the solder wave (270°C) shall not exceed 10 seconds.**

#### Switch Operation and Taping

- (1) Use tweezers for operation.
- (2) Flux cleaning should be done without removing the Tape.
- (3) If the tape is removed, it adheres less than before when it is placed back on, possibly causing flux inflow.
- (4) Do Not Remove Tape sealed before Reflow processing.
- (5) Ultrasonic cleaning not recommended without Tape sealed.

※ All switches must set in OFF position when through Soldering process.

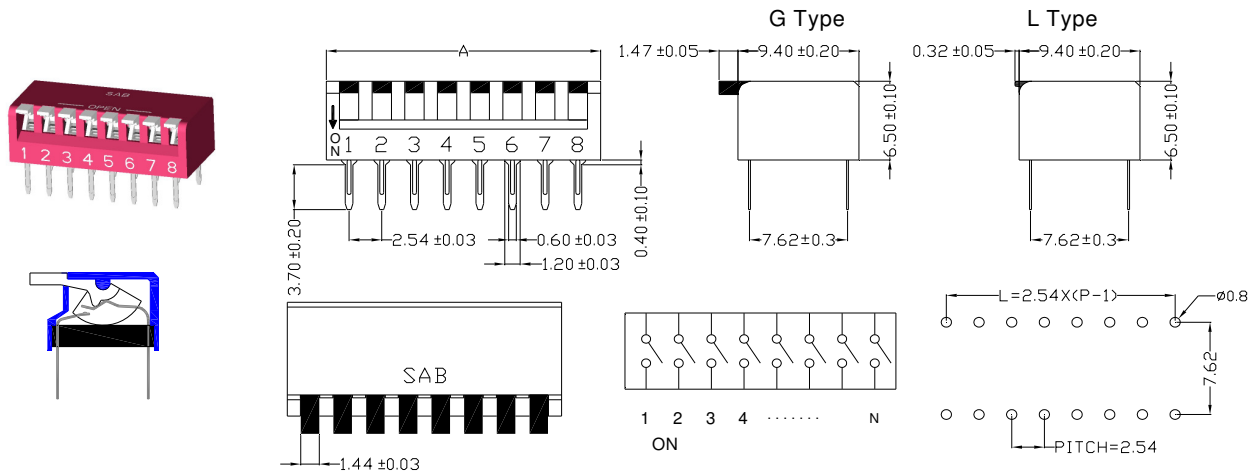
※ Any flux enters the switch may influence contact function.

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**Materials:**

◆ Cover	RoHS&REACH Compliant..... Thermoplastic UL 94V-0, Red/ Blue/ Black(THR) Halogen Free..... Thermoplastic UL 94-HB, Red/ Blue Halogen Free..... Thermoplastic UL 94V-0, Black(THR)
◆ Base	..... Thermoplastic UL 94V-0, Black/ Black(THR)
◆ Actuator	..... Thermoplastic UL 94V-HB, White/ White(THR)
◆ Contact	..... 40u" +/-10u" Nickel Cover 1u" Gold-Plated
◆ Terminal	Standard..... 40u" +/-10u" Nickel Cover (Pure) Tin-Plated
◆ Tape	..... Polyimide Film

**NPH/NPEH**



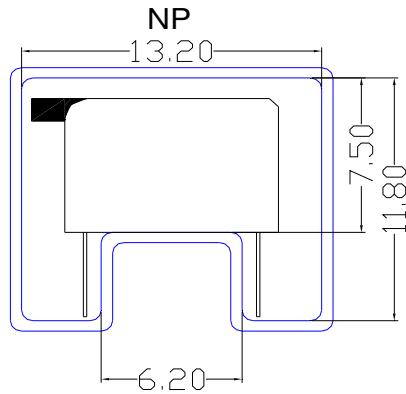
**Part Number Table**

No. Pos.	Dim. "A"	Raise Actuator NPEH Red Color Tube Package	Flat Actuator NPH Blue Color Tube Package	Raise Actuator NPH Red Color Tube Package
2	6.08		NPH02LB	NPH02GR
3	8.62	NPEH03GR	NPH03LB	NPH03GR
4	11.16	NPEH04GR	NPH04LB	NPH04GR
5	13.70	NPEH05GR	NPH05LB	NPH05GR
6	16.24	NPEH06GR	NPH06LB	NPH06GR
7	18.78	NPEH07GR	NPH07LB	NPH07GR
8	21.32	NPEH08GR	NPH08LB	NPH08GR
10	26.40	NPEH10GR	NPH10LB	NPH10GR
12	31.48	NPEH12GR	NPH12LB	NPH12GR

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**Tube Package:**

<b>POLE</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>12</b>
<b>TUBE</b>	<b>85</b>	<b>61</b>	<b>47</b>	<b>38</b>	<b>32</b>	<b>28</b>	<b>24</b>	<b>20</b>	<b>16</b>
<b>BOX</b>	<b>4760</b>	<b>3416</b>	<b>2632</b>	<b>2128</b>	<b>1792</b>	<b>1568</b>	<b>1344</b>	<b>1120</b>	<b>896</b>
<b>CTN 1</b>	<b>9520</b>	<b>6832</b>	<b>5264</b>	<b>4256</b>	<b>3584</b>	<b>3136</b>	<b>2688</b>	<b>2240</b>	<b>1792</b>
<b>CTN 2</b>	<b>19040</b>	<b>13664</b>	<b>10528</b>	<b>8512</b>	<b>7168</b>	<b>6272</b>	<b>5376</b>	<b>4480</b>	<b>3584</b>



**Box Dimension:**

◆ Tube ..... 57.0cm x 13.0cm x 12.5cm

**Carton Dimension:**

◆ Tube  
 2 Boxes..... 58.5cm x 29.0cm x 15.0cm  
 4 Boxes..... 58.5cm x 28.0cm x 27.0cm