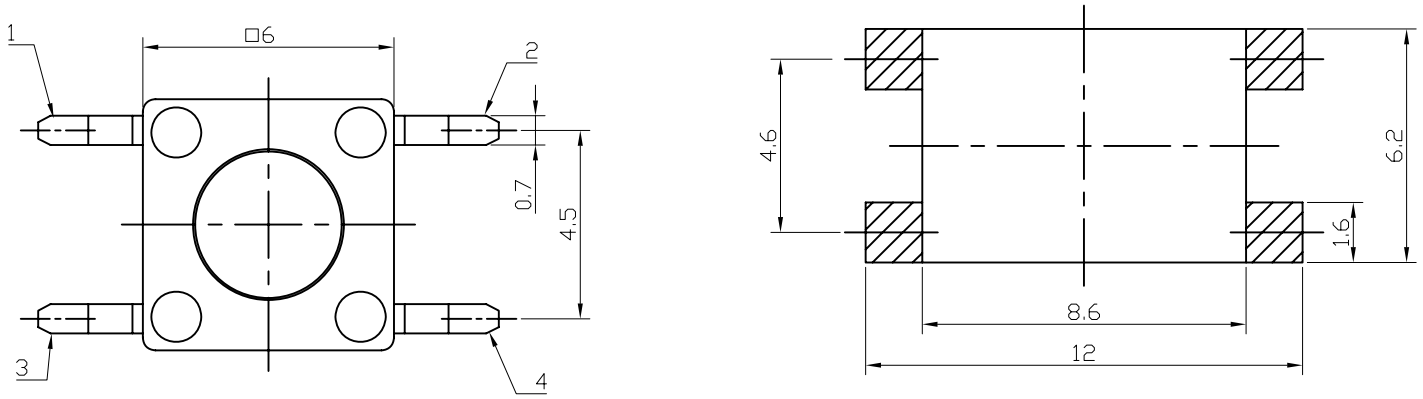
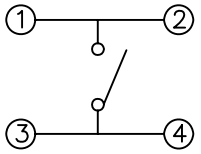
DWG. NO. SW-3645-F REV. "-"

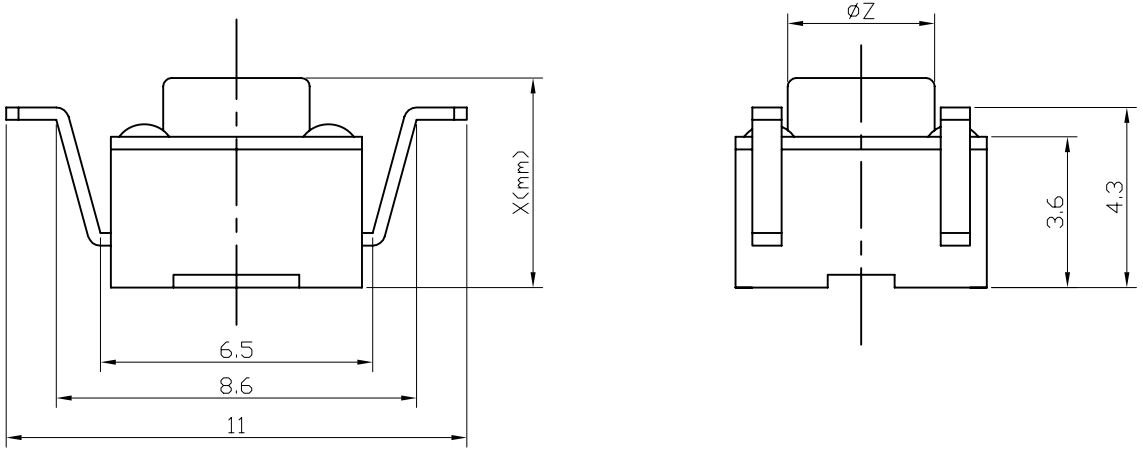
PART NO. RTS-1147-X-Y-Z-NL

SMD REFLOW PATTERN



CIRCUIT DIAGRAM





ORDERING CHART:

RDI P/N: RTS-1147 - X - Y - Z - NL
1 2 3

1. X=TOTAL HEIGHT ACTUATOR
   - A = 4.3mm
   - B = 5.0mm
   - C = 7.0mm
   - D = 7.3mm
2. Y=Operating Force
   - L=160GF±30gf
   - S=250GF±30g
3. Z=Actuator Width
   - 4.3mm (Actuator width 3.5mm)
   - 5.0mm (Actuator width 3.3mm)
   - 7.0mm (Actuator width 3.3mm)
   - 7.3mm (Actuator width 3.3mm)

SPECIFICATIONS

RATING	DC 12V 50mA
CONTACT RESISTANCE	100mOhm MAX.
TRAVEL	0.25±0.1mm
OPERATING FORCE	160±30gf, 250±50gf
OPERATING LIFE	100,000 CYCLES

MATERIAL

No.	PART NAME	MATERIAL	SPECS	REMARK
1	CASE	ARLEN(C230)	PA6T	
2	COVER	SPEC		Sn-PLATED
3	STEM	ARLEN(C230)	PA6T	
4	TERMINAL	BRASS	C2680	
5	CONTACT	PHOSPHOR BRONZ	Ag-C5210	

NOTE: ALL DIMS ARE IN mm

PROJECTION

SCALE N/A

TOLERANCE EXCEPT AS NOTED

DEC. MILLIMETERS

up to 10:±0.3

above 10 to 100:±0.5

ANG. ±3°

RDI Research Develop Innovate

RDI, Inc. 333 North Bedford Road, Suite 135, Mount Kisco,NY 10549

TITLE: SMT TACT SWITCH /INVERTED ACUATOR-RoHS COMPLIANT

DR.	DATE	REF.	SHEET
Jin	07/02/09	P/N: RTS-1147-X-Y-Z-NL	1 OF 5

CK.	PRE-	DRAWING NO.	SIZE	REV.
GM	SW	3645	F	-

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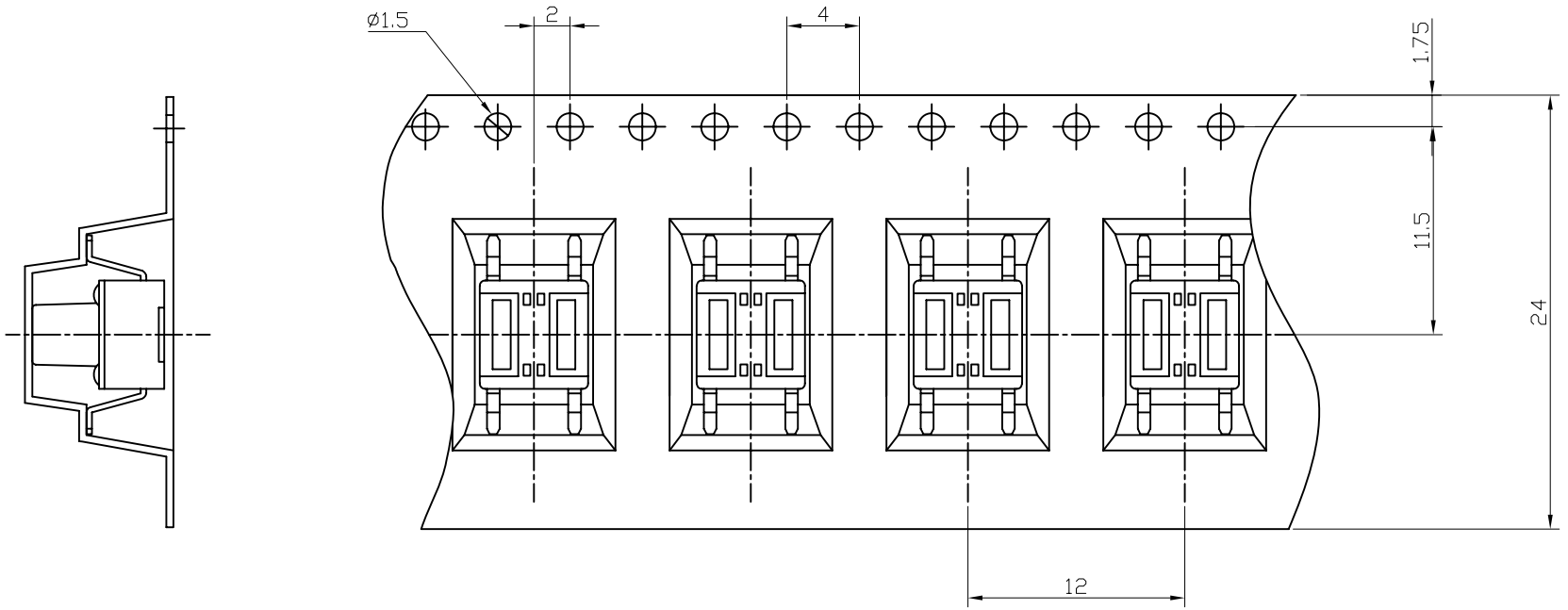
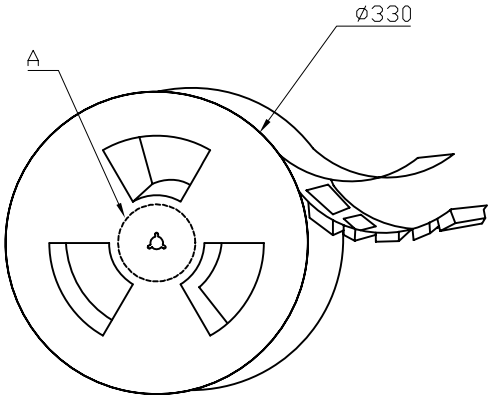
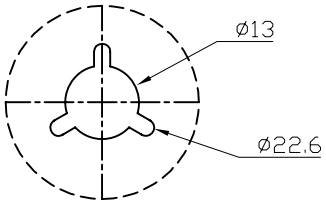




DETAIL A" (N/S)



SPECIFICATIONS

PRODCUT HIGHT	4.3~7.5mm T STEM TYPE
SIZE	Ø330
REEL TYPE	PLASTIC
SPQ	TAPE & REEL QTY 1K

NOTE: ALL DIMS ARE IN mm

PROJECTION	RDI Research Develop Innovate RDI, Inc. 333 North Bedford Road, Suite 135, Mount Kisco,NY 10549			
SCALE N/A	TITLE SMT TACT SWITCH /INVERTED ACUATOR-RoHS COMPLIANT			
TOLERANCE EXCEPT AS NOTED	DR. Jin	DATE 07/02/09	REF. P/N: RTS-1147-X-Y-Z-NL	SHEET 2 OF 5
DEC. MILLIMETERS N/A	CK. GM	PRE- SW	DRAWING NO. 3645	SIZE F
DEC. INCHES N/A				REV. -
ANG. N/A	THIS DOCUMENT IS OWNED BY, AND THE INFORMATION CONTAINED IN IT IS PROPRIETARY TO, RDI, BY RECEIPT HEREOF THE HOLDER AGREES NOT TO USE THE INFORMATION AND NOT TO DISCLOSE IT TO ANY THIRD PARTY, NOR REPRODUCE THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF RDI, AND AGREES TO RETURN THIS DOCUMENT FORTHWITH UPON REQUEST.			

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DWG. NO. SW-3645-F REV. "-"

PART NO. RTS-1147-X-Y-Z-NL

1. GENERAL

1.1 APPLICATION: THIS SPECIFICATION IS APPLIED TO TACT SWITCHES WHICH HAVE NO KEYTOP

1.2 OPERATION TEMPERATURE RANGE: -20°C~70°C(NORMAL HUMIDITY, NORMAL AIR PRESSURE)

1.3 STORAGE TEMPERATURE RANGE: -30~80°C(NORMAL HUMIDITY, NORMAL AIR PRESSURE)

1.4 TEST CONDITIONS

1.4.1 UNLESS OTHERWISE SPECIFIED, THE ATMOSPHERIC CONDITIONS FOR MARKING MEASUREMENTS AND TESTS ARE AS FOLLOWS.

1.4.1.1 NORMAL TEMPERATURE: (TEMPERATURE: 5~35°C)

1.4.1.2 NORMAL HUMIDITY: (RELATIVE HUMIDITY: 25~85%)

1.4.1.3 NORMAL AIR PRESSURE: (AIR PRESSURE: 86~106KPa)

1.4.2 IF ANY DOUBT ARISE FROM JUDGEMENT, TESTS SHALL BE CONDUCTED AT THE FOLLOWING CONDITIONS

1.4.2.1 AMBIENT TEMPERATURE: 20±2°C

1.4.2.2 RELATIVE HUMIDITY: 60~70%

1.4.2.3 AIR PRESSURE: 86~106KPa

2. APPEARANCE, STYLE AND DIMENSIONS

2.1 APPEARANCE: THERE SHALL BE NO DEFECTS THAT AFFECT THE SERVICEABILITY OF THE PRODUCT.

2.2 STYLE&DIMENSIONS: REFER TO THE ASSEMBLY DRAWING

3. TYPE OF ACTUATING: TACTILE FEEDBACK

4. CONTACT ARRANGEMENT: 1 POLE 1 THROW

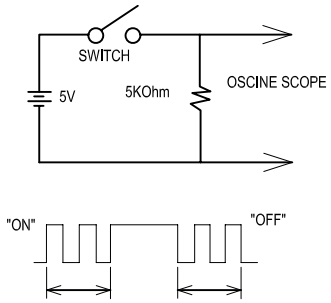
(DETAILS OF CONTACT ARRANGEMENT ARE GIVEN IN THE ASSEMBLY DRAWINGS)

5. RATING:

5.1 MAXIMUM RATINGS: 12V DC 50mA

5.2 MINIMUM RATINGS: 1V DC 10uA

6. ELECTRICAL SPECIFICATION

No	ITEM	TEST CONDITIONS	PERFORMANCE
6.1	CONTACT RESISTANCE	APPLYING A BLOW STATIC LOAD TO THE CENTER OF THE STEM, MEASUREMENTS SHALL BE MADE (1) DEPRESSION: 520gf(5.096N) (2) MEASURING METHOD: 1KHz SMALL-CURRENT CONTACT RESISTANCE METER OR VOLTAGE DROP METHOD AT 5V DC 10mA	100mOhm MAX.
6.2	INSULATION RESISTANCE	MEASUREMENTS SHALL BE MADE FOLLOWING THE TEST SET FORTH BELOW: (1) TEST VOLTAGE: 100V DC FOR 1 MIN. (2) APPLIED POSITION: BETWEEN ALL TERMINALS, AND IF THERE IS A METAL FRAME, BETWEEN TERMINALS AND GROUND(FRAME)	100MOhm MIN
6.3	VOLTAGE PROOF	MEASUREMENTS SHALL BE MADE FOLLOWING THE TEST SET FORTH BELOW: (1) TEST VOLTAGE: 100V AC (50~60Hz). (2) DURATION: 1 MIN. (2) APPLIED POSITION: BETWEEN ALL TERMINALS, AND IF THERE IS A METAL FRAME, BETWEEN TERMINALS AND GROUND(FRAME)	THERE SHALL BE NO BREAKDOWN
6.4	BOUNCE	LIGHTLY STRIKING THE CENTER OF THE STEM AT A RATE ENCOUNTERED IN NORMAL USE(3 TO 4 OPERATIONS PER SEC.) BOUNCE SHALL BE TESTED AT ON' AND OFF' 	NO BOUNCE: 10ms MAX. OFF BOUNCE: 10ms MAX.

7. MECHANICAL SPECIFICATION

7.1	OPERATING FORCE	PLACING THE SWITCH SUCH THAT THE DIRECTION OF SWITCH OPERATION IS VERTICAL AND THEN GRADUALLY INCREASING THE LOAD APPLIED TO THE CENTER OF THE STEM, THE MAXIMUM LOAD REQUIRED FOR THE SWITCH TO COME TO A STOP SHALL BE MEASURED	160±30gf 250±50gf
7.2	TRAVEL	PLACING THE SWITCH SUCH THAT THE DIRECTION OF SWITCH OPERATION IS VERTICAL AND THEN APPLYING STATIC LOAD TO THE CENTER OF THE STEM, THE TRAVEL DISTANCE F THE SWITCH TO COME TO A MASKE "ON" SHALL BE MEASURED	0.25±0.1mm
7.3	RETURN FORCE	THE SAMPLE SWITCH IS INSTALLED SUCH THAT THE DIRECTION OF SWITCH OPERATION IS VERTICAL AND UPON DEPRESSION OF THE STEM IN ITS CENTER THE TRAVEL DISTANCE, THE FORCE OF THE STEM TO RETURN TO ITS FREE POSITION SHALL BE MEASURED	40gf MIN. (0.39N MIN.)

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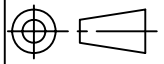
PROJECTION



SCALE N/A

TOLERANCE EXCEPT AS NOTED

DEC. MILLIMETERS N/A

DEC. INCHES N/A

ANG. N/A

RDI Research Develop Innovate

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TITLE: SMT TACT SWITCH /INVERTED ACUATOR-RoHS COMPLIANT

DR.	DATE	REF.	SHEET
Jin	07/02/09	P/N: RTS-1147-X-Y-Z-NL	3 OF 5

CK.	PRE-	DRAWING NO.	SIZE	REV.
GM	SW	3645	F	-

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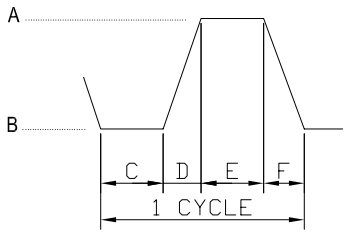
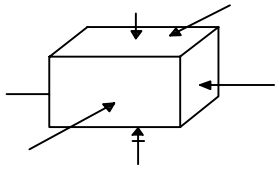
No	ITEM	TEST CONDITIONS	PERFORMANCE
7.4	STOP STRENGTH	PLACING THE SWITCH SUCH THAT THE DIRECTION OF SWITCH OPERATION IS VERTICAL AND THEN A BELOW STATIC LOAD SHALL BE APPLIED IN THE DIRECTION OF STEM OPERATION (1) DEPRESSION: 3Kgf(29.4N) (2) DURATION: 3s	THERE SHALL BE NO SIGN OF DAMAGE MECHANICALLY AND ELECTRICALLY
8. ENVIRONMENTAL SPECIFICATION			
8.1	RESISTANCE TO TEMPERA-TRUES	FOLLOWING THE TEST SET FORTH BELOW THE SAMPLE SHALL BE LEFT IN NORMAL TEMPERATURE AND HUMIDITY CONDITIONS FOR 1 HOUR BEFORE MEASUREMENTS ARE MADE (1) TEMPERATURE: -30±2°C. (2) TIME: 96h (3) WATERDROPS SHALL BE REMOVED	ITEM 6 ITEM 7.1 ITEM 7.2
8.2	HEAT RESISTANCE	FOLLOWING THE TEST SET FORTH BELOW THE SAMPLE SHALL BE LEFT IN NORMAL TEMPERATURE AND HUMIDITY CONDITIONS FOR 1 HOUR BEFORE MEASUREMENTS ARE MADE (1) TEMPERATURE: -80±2°C. (2) TIME: 96h	ITEM 6 ITEM 7.1 ITEM 7.2
8.3	MOISTURE RESISTANCE	FOLLOWING THE TEST SET FORTH BELOW THE SAMPLE SHALL BE LEFT IN NORMAL TEMPERATURE AND HUMIDITY CONDITIONS FOR 1 HOUR BEFORE MEASUREMENTS ARE MADE (1) TEMPERATURE: 60±2°C. (2) TIME: 96h (3) RELATIVE HUMIDITY: 90~95% (4) WATERDROPS SHALL BE REMOVED	CONTACT RESISTANCE(ITEM 6.1): 200mOhm MAX. INSULATION RESISTANCE(ITEM 6.2): 10MOhm Min. BOUNCE (ITEM 6.4) : ON BOUNCE 20ms MAX. :OFF BOUNCE 20ms MAX. ITEM 6.3, 7.2, 7.1
8.4	CHANGE OF TEMPERA-TRUE	AFTER THE TEST BY FOLLOWING CONDITIONS, THE SWITCH SHALL BE ALLOWED TO STAND UNDER NORMAL ROOM TEMPERATURE AND HUMIDITY CONDITIONS FOR 1 HOUR, AND MEASUREMENT SHALL BE MADE. WATER DROPS SHALL BE REMOVED (1) TIMES OF CYCLES: 5 ITMES  A=60°C B=-10°C C=2h D=1h E=2h F=1h	ITEM 6 ITEM 7.1 ITEM 7.2

9. ENDURANCE SPECIFICATION

No	ITEM	TEST CONDITIONS	PERFORMANCE
9.1	OPERATING LIFE	MEASUREMENTS SHALL BE MADE FOLLOWING THE TEST SET FORTH BELOW: (1) 5V DC 5mA RESISTIVE LOAD (2) RATE OF OPERATION: 2 TO 3 OPERATIONS PER SEC. (3) DEPRESSION: THE MAX. LOAD OF A SPECIFICATION OF THE OPERATING FORCE (4) CYCLES OF OPERATION: 100,000 CYCLES	CONTACT RESISTANCE(ITEM 6.1): 200mOhm MAX. INSULATION RESISTANCE(ITEM 6.2): 10MOhm Min. BOUNCE (ITEM 6.4) : ON BOUNCE 20ms MAX. :OFF BOUNCE 20ms OPERATING FORCE(ITEM 7.1) : ±30% OF INITIAL FORCE ITEM 6.3, 7.2
9.2	VIBRATION RESISTANCE	MEASUREMENTS SHALL BE MADE FOLLOWING THE TEST SET FORTH BELOW: (1) VIBRATION FREQUENCY RANGE: 10~55Hz (2) TOTAL AMPLITUDE: 1.5mm (3) SWEEP RATION: 10_55-10Hz APPROX. 1 MIN (4) METHOD OF CHANGING THE SWEEP VIBRATION FREQUENCY: LOGARITHMIC OR UNIFORM (5) DURATION: 2h EACH	ITEM 6 ITEM 7.1 ITEM 7.2
9.3	SHOCK	MEASUREMENTS SHALL BE MADE FOLLOWING THE TEST SET FORTH BELOW: (1) ACCELERATION: 784m/s (2) TEST DIRECTION: 6 DIRECTION: 6 DIRECTIONS (3) NUMBER OF SHOCKS: 3 TIMES PER DIRECTION (18 TIMES IN TOTAL) 	ITEM 6 ITEM 7.1 ITEM 7.2

ECN#	DATE	SYM	REVISION RECORD	AUTH	BY

PROJECTION

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RDI, Inc. 333 North Bedford Road, Suite 135, Mount Kisco,NY 10549

SCALE N/A

TITLE SMT TACT SWITCH /INVERTED ACUATOR-RoHS COMPLIANT

TOLERANCE EXCEPT AS NOTED

DR. Jin | DATE 07/02/09 | REF. P/N: RTS-1147-X-Y-Z-NL | SHEET 4 OF 5

DEC. MILLIMETERS N/A

CK. GM | PRE- SW | DRAWING NO. 3645 | SIZE F | REV. -

DEC. INCHES N/A

ANG. N/A

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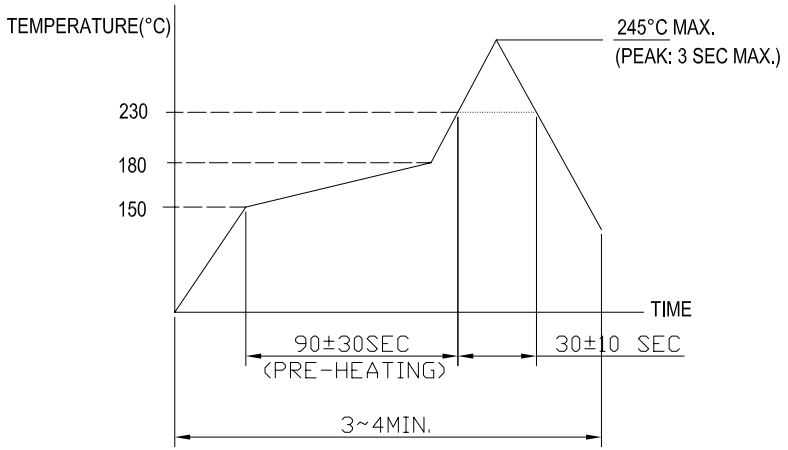
10. SOLDERING CONDITIONS

No	ITEM	TEST CONDITIONS
10.1	HAND SOLDERING	PLEASE PRACTICE ACCORDING TO BELOW CONDITIONS (1) SOLDERING TEMPERATURE: 350°C MAX. (2) CONTINUOS SOLDERING TIME: 3 SECONDS MAX. (3) EXCESSIVE PRESSURE SHALL NOT BE APPLIED TO THE TERMINAL
10.2	REFLOW SOLDERING	PLEASE PRACTICE ACCORDING TO BELOW CONDITIONS (1) PREHEAT: TEMPERATURE ON THE COPPER FOIL SURFACE SHOULD REACH 180°C, 2±0.3 MINUTES AFTER THE PCB ENTERED INTO THE SOLDERING EQUIPMENT (2) SOLDERING HEAT: TEMPERATURE ON THE COPPER FOIL SURFACE SHOULD REACH THE PEAK TEMPERATURE OF 245°C WITHIN 30 SECONDS AFTER THE PCB ENTERED INTO SOLDERING HEAT ZONE.



TIME INSIDE SOLDERING EQUIPMENT

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SCALE N/A	TITLE SMT TACT SWITCH /INVERTED ACUATOR-RoHS COMPLIANT			
TOLERANCE EXCEPT AS NOTED	DR. Jin	DATE 07/02/09	REF. P/N: RTS-1147-X-Y-Z-NL	SHEET 5 OF 5
DEC. MILLIMETERS N/A	CK. GM	PRE- SW	DRAWING NO. 3645 / SIZE F	REV. -
DEC. INCHES N/A				
ANG. N/A				

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