

# **SPECIFICATION**

**MODEL : SH-82A (Reverse Taping)**

**P/N : HE82A\*1D12 (\*:Rank)**

**Halogen Free**

## **HALL ELEMENT**

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## 1. Application

This specification sheet is applied to Hall sensor that NANOS supplies.

## 2. Electrical Characteristics

### 2.1 Maximum Ratings

(Ta : 25°C)

Parameter	Symbol	Rating	Unit
Maximum Input Current	I <sub>max</sub>	20 (at 25°C)	mA
Maximum Power Dissipation	P <sub>max</sub>	150 (at 25°C)	mW
Operating Temperature Range	T <sub>op</sub>	-40 ~ +120	°C
Storage Temperature Range	T <sub>st</sub>	-40 ~ +150	°C

### 2.2 Electrical Characteristics (Measured at 25°C)

Parameter	Symbol	Measurement Conditions	Min	Max	Unit
Output Hall Voltage	V <sub>H</sub>	V <sub>in</sub> =1V, B=50mT	196	320	mV
Input Resistance	R <sub>in</sub>	I=0.1mA	240	450	Ω
Output Resistance	R <sub>out</sub>	I=0.1mA	240	450	Ω
Offset Voltage	V <sub>O</sub>	V <sub>in</sub> =1V, B=0mT	-7	+7	mV
Temp. Coeff. of V <sub>H</sub>	α	Ta=0 ~ +40°C	—	-1.8	% /°C
Temp. Coeff. of R <sub>in</sub> , R <sub>out</sub>	β	Ta=0 ~ +40°C	—	-1.8	% /°C

※ V<sub>H</sub>=V<sub>HM</sub>-V<sub>O</sub> ( V<sub>HM</sub> : The output voltage measured at 50mT)

### 2.3 Rank Classification and Mark on Output Hall Voltage

Output Hall Voltage, V <sub>H</sub> (mV)	Rank	Mark	Measurement Conditions
196 ~ 236	D	•D	V <sub>in</sub> =1V, B=50mT (Constant Voltage)
228 ~ 274	E	•E	
266 ~ 320	F	•F	

### 3. Method for Mounting

#### 3.1 Lead Frame

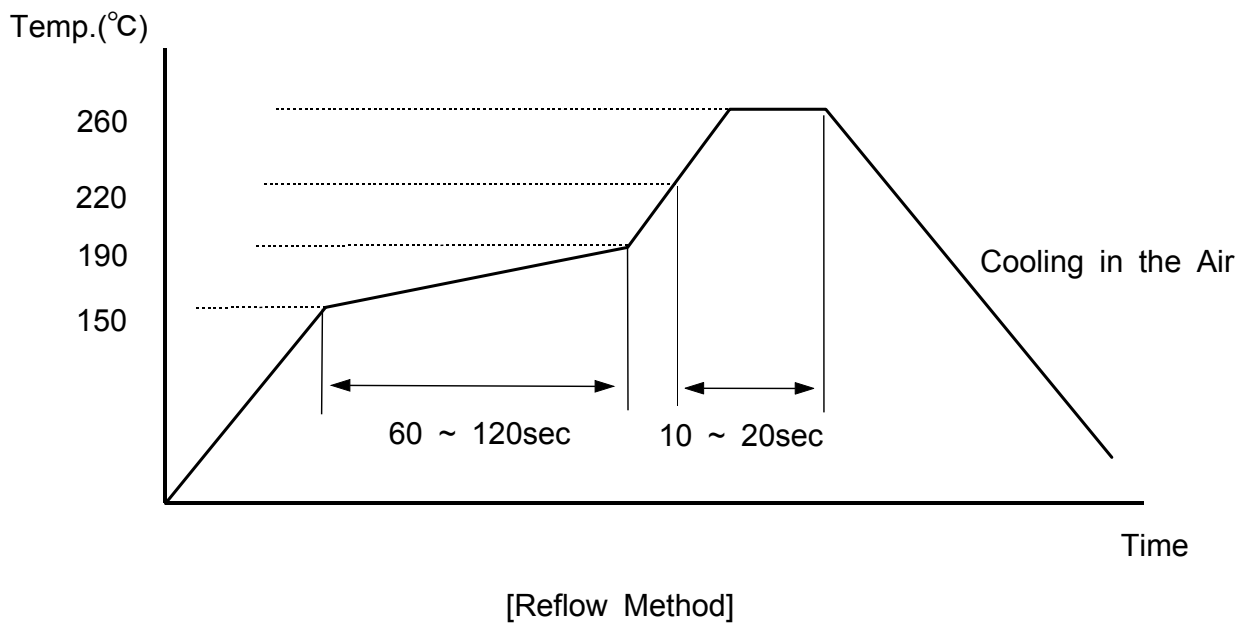
- 1) The material of lead frame is phosphor bronze alloy and the die bonded surface is plated by silver. The minimum thickness of plating is  $3.0\mu\text{m}$ .
- 2) Lead Frame is plated by pure Sn and the thickness is controlled by  $4\sim 12\mu\text{m}$ .

#### 3.2 Soldering Conditions on PCB

- 1) No rapid heating and cooling is desired.
- 2) Preheating is recommended for  $1\sim 2$ minutes at  $150\sim 190^\circ\text{C}$ .
- 3) Reflowing is recommended for  $10\sim 20$ seconds at  $220\sim 260^\circ\text{C}$ .

#### 3.3 Soldering Method and Temperature

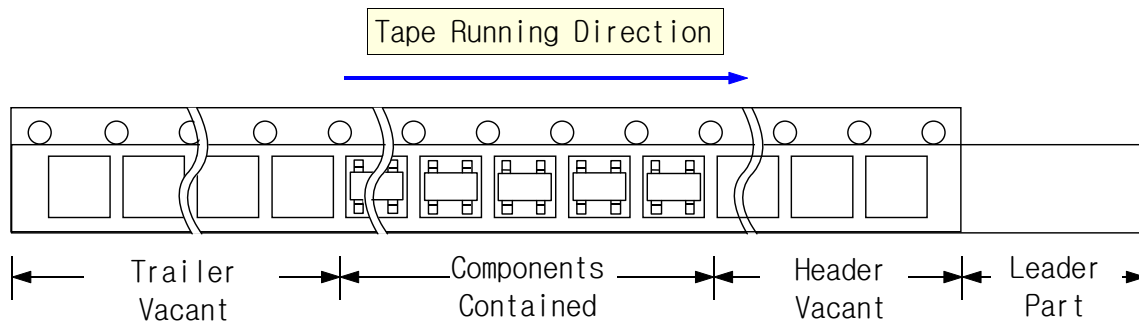
Items	Methods	Temperature
Reflow	Soldering by passing the heated zone	Max $260^\circ\text{C}$ in 10sec
Solder Iron	Soldering by solder-iron	Max $350^\circ\text{C}$ in 3sec



#### 4. Packaging

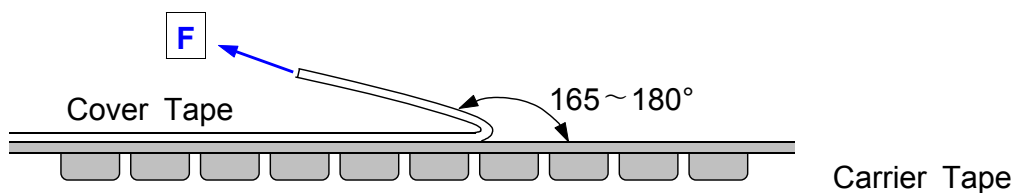
##### 4.1 Taping

- 1) SH-82A should be packed marking side to cover tape side and put long side to tape running direction. 180° rotation has no effect on the application.
- 2) At least, 40mm vacant parts are made both front and rear side of tape.



##### 4.2 Handling Methods of Tape

- 1) Pull Strength(F) = 20~70g



- 2) Devices should not run out of a pocket when tape is bent down 15mm curvature.
- 3) Devices should not stick to cover tape.
- 4) Devices should be kept below 40°C and below RH80% in the shade.
- 5) Tape has no joint.

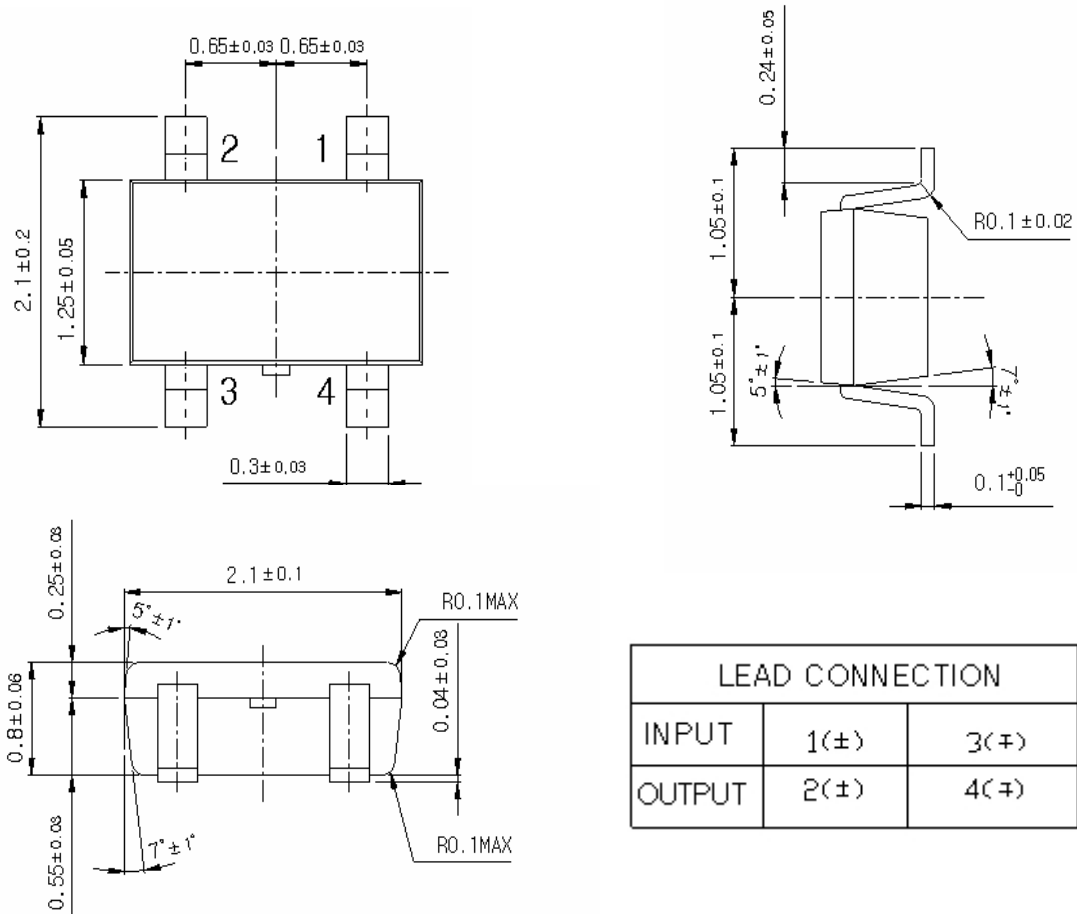
##### 4.3 Packing Unit

- 1) 4,000pcs of devices are packed in one reel.
- 2) Five reels are packed in one inner box.
- 3) Four inner boxes, 80,000pcs of devices, are packed in one outer box.
- 4) Dummy could be packed for safe dealing.

## 5. External Dimensions and Appearance

### 5.1 External Dimensions (Unit : mm)

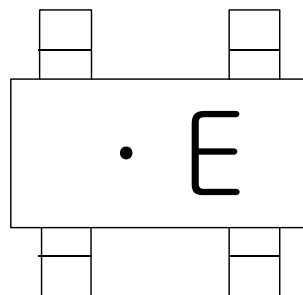
Four leads of input-output terminals are designed in the diagonally symmetric mode and are equal in dimensions. SH-82A could be used without considering on the rotation of 180°.



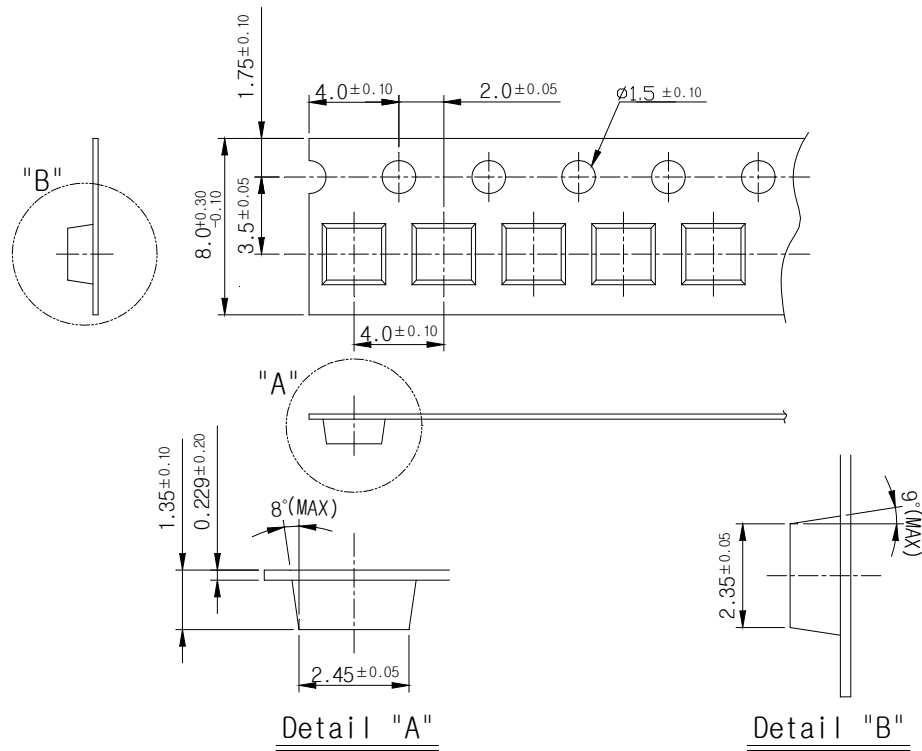
[Package Dimensions]

### 5.2 Marking Method

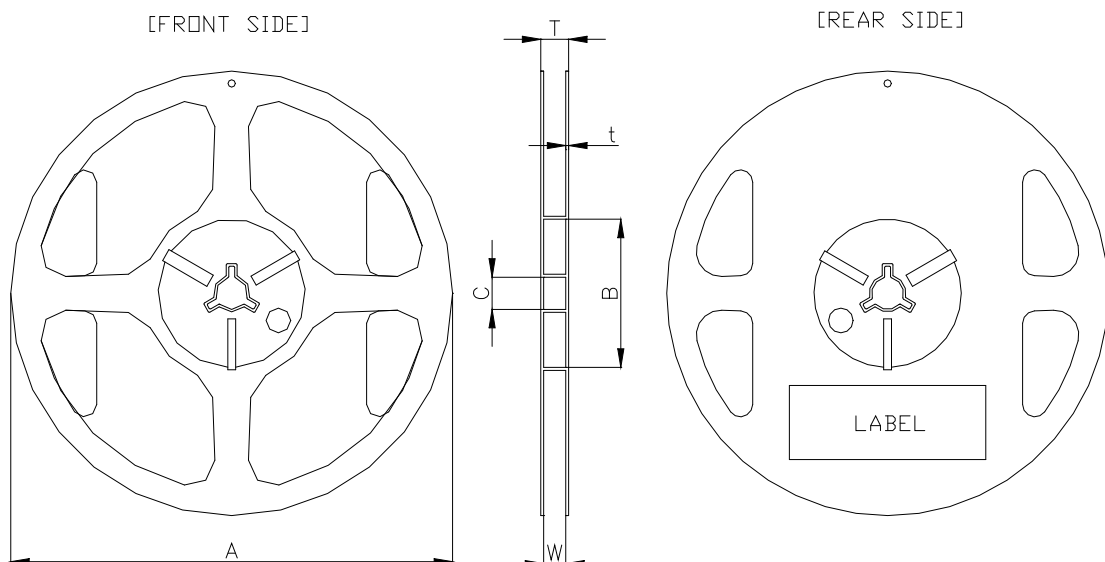
Devices should be marked by LASER beam in the form of '• + 'Rank'.



## 5.3 External Dimensions of Carrier Tape (Unit:mm)



## 5.4 External Dimensions of Reel (Unit:mm)



SYMBOL	A	B	C	W	T	t
Spec.	$\phi 180^{+0}_{-3}$	$\phi 60^{+1}_{-0}$	$\phi 13 \pm 0.3$	$9 \pm 0.3$	$11.4 \pm 1.0$	2.0 max.

※ The above reel is made of plastic and is recyclable.

### 5.5 Reel Packing Structure



Halogen Free Label

Manufacturing Lot Number

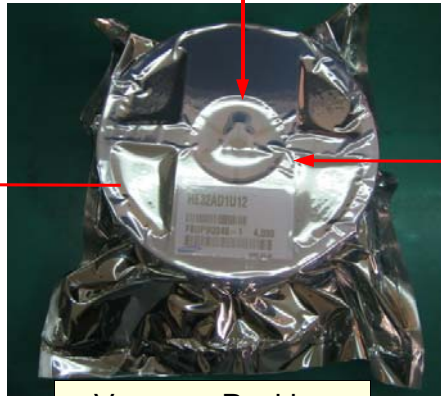


1Reel: 4,000EA  
Hall Sensor

DryPack



Inner Box :  
20,000EA Hall Sensor



Vacuum Packing



5 Reel

Inspection Sheet



Outer Box: 80,000EA Hall Sensor



Packing finished

## 6. RELIABILITY

### 6.1 TEST Item and Condition

No	TEST Item	TEST Condition
1	HIGH TEMP. STORAGE	Ta=150°C,t=1000HR
2	HIGH TEMP. OPERATION	Ta=120°C,Iopr=10mA,t=1000HR
3	LOW TEMP. OPERATION	Ta=-40°C,Iopr=6mA,t=1000HR
4	HIGH TEMP. HIGH HUMIDITY OPERATION	Ta=85°C,HR=85%,Iopr=9mA,t=1000HR
5	PCT	Ta=121°C,HR=100%,Pv=2atm,t=24HR
6	THERMAL SHOCK	T(L)=-55°C,T(H)=150°C,t=(L,H)=30min,M=30CYCLE
7	HIGH HUMIDITY TEMPERATURE CYCLE	T(L)=-20°C,T(H)=85°C,t(L,H)=30min,HR=95%,M=40CYCLE
8	SOLDERING HEAT RESISTANCE	Peak Temp=260°C,t=10sec,REFLOW
9	ESD(MM)	V=500V,C=200pF,R=0Ω(EIAJ TEST CONDITION)

### 6.2 Criterion For Judging

After each reliability test, samples should be during at least 24 hrs in room temp. & humidity, and then measure. The change rates should be in the values as below.

Item	OK Spec.	NG/OK
Rin	Under Initial±20%	OK (Spec. Satisfying)
Rout		
VH		
Vo	Max. ±15mV	



#### 7. Caution on treating

On surface mounting, please keep the statements written by mounting conditions.

Safekeeping Period is 6 month at room temperature in condition of being packed

#### 8. The Analysis of RoHS(Restriction of Hazardous Substances)

It is guaranteed that there are no RoHS materials in Hall Sensor by specific analysis results

- References : RoHs 6 Materials

- 1) Cadmium(Cd)
- 2) Lead(Pb)
- 3) Mercury(Hg)
- 4) Hexavalent Chromium(CrVI)
- 5) PBBs(Polybrominated Biphenyls)
- 6) PBDEs(Polybrominated Diphenyl Ethers)

#### 9. Halogen Free

NANOS Hall sensor guarantees that it contains no Halogenated materials.

That is Halogen Free product and is confirmed by specific analysis results.

- References : Halogen materials

- 1) Fluorine(F)
- 2) Chlorine(Cl)
- 3) Bromine(Br)
- 4) Iodine (I)