

1. SCOPE

This product specification is applied to the magnetic switch AS-V20TA-R.

2. MURATA PART NUMBER

2-1 Part Description

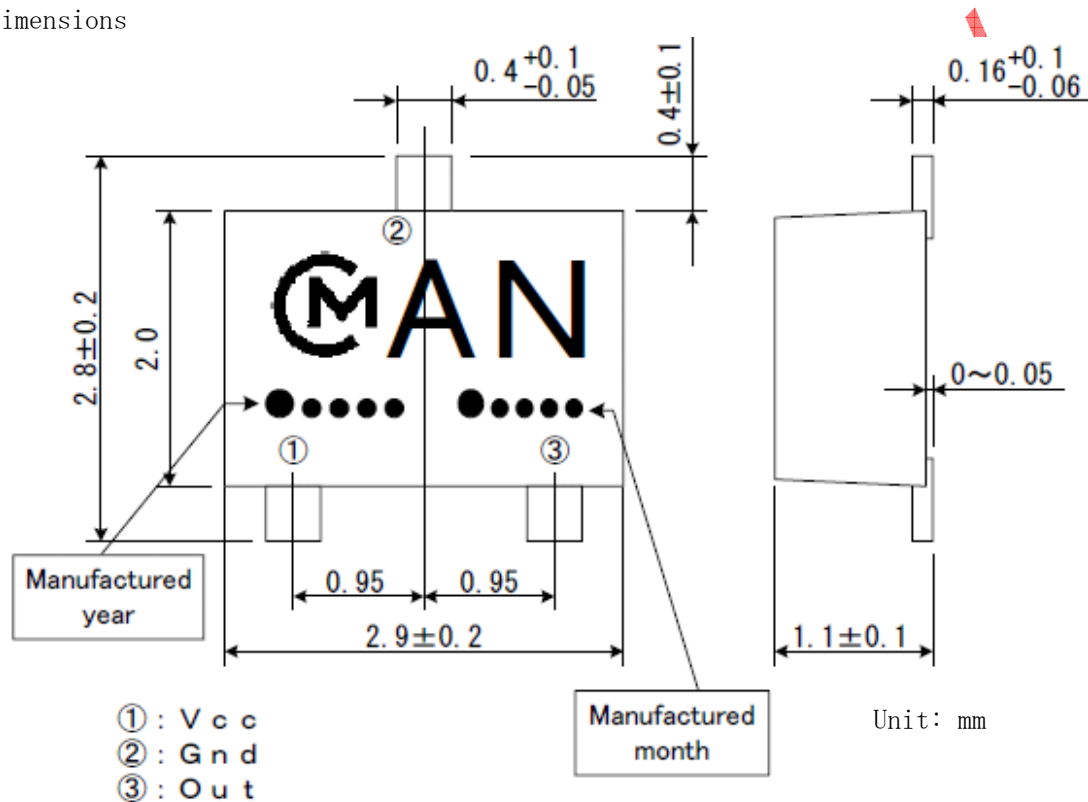
Magnetic Switch

2-2 Murata Part Number

AS-V20TA-R

3. DIMENSIONS AND SCEMATICS

3-1 Dimensions



*Coplanarity: 0.1 mm or less (flatness applies to reflow process as well)

Fig.1 Dimension

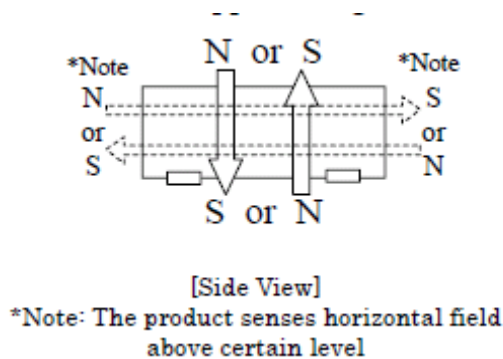


Fig.2 Direction of magnetic field

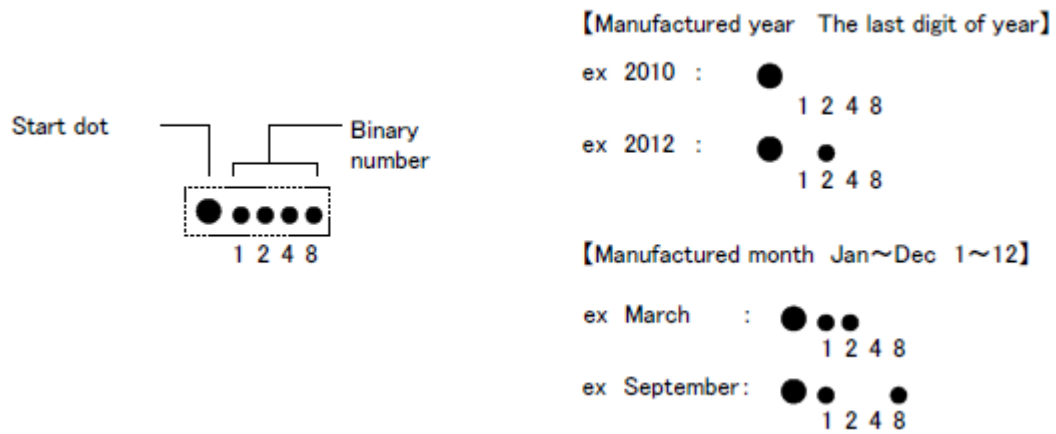


Fig.3 Marking

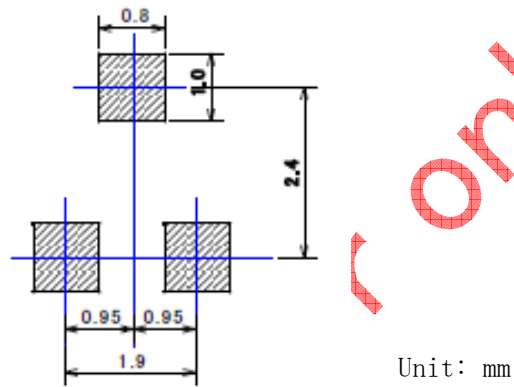
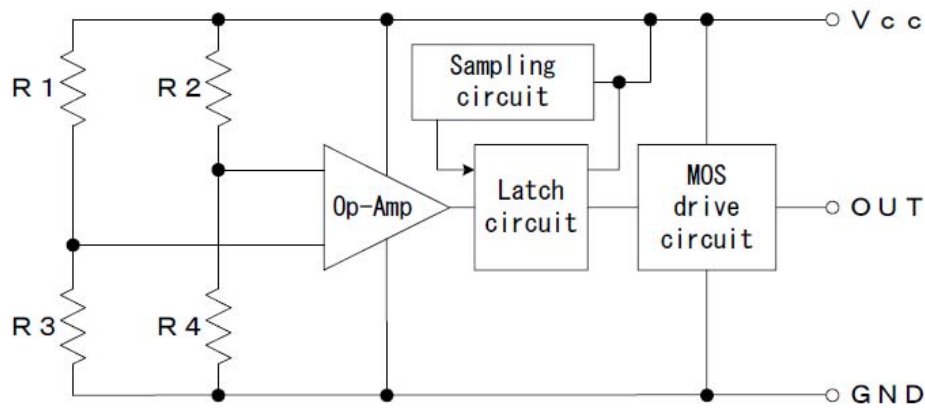
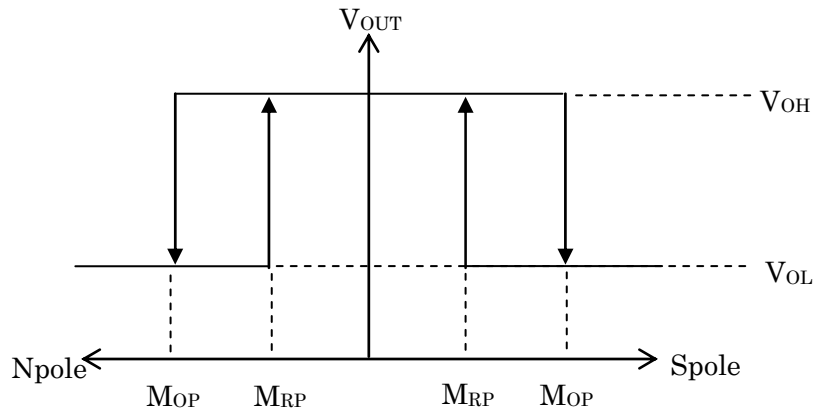


Fig.4 Mount pad for reference

3-2 Block wiring diagram



3-3 Magnetic electric conversion characteristic

3-4 Electric Characteristics / Absolute Maximum Rating ($T_a=25\pm3^{\circ}\text{C}$, $V_{CC}=3.0\text{V}$)

No.	Item	Sign	Conditions	Min.	Typ.	Max.	Unit
①	Supply voltage	V_{CC}	—	2.5	3.0	5.5	V
②	Absolute max. supply voltage	—	—	—	—	6.0	V
③	Current consumption	I_{AVE}	$V_{CC}=3.0\text{V}$	—	12	μA	
④	Operating magnetic field	M_{OP}	H→L $V_{CC}=3.0\text{V}$	—	—	4.0	mT
		M_{RP}	L→H $V_{CC}=3.0\text{V}$	0.8	—	—	mT
⑤	High level output	V_{OH}	$I_{out}=2\text{mA}$	2.7	—	—	V
⑥	Low level output	V_{OL}	$I_{out}=-2\text{mA}$	—	—	0.3	V
⑦	Operating temp.	—	—	-40	—	+85	$^{\circ}\text{C}$
⑧	Storage temp.	—	—	-40	—	+125	$^{\circ}\text{C}$

*1) Each item are specifications derived from individual testing.

*2) When you shift the sensor from H to L, please make sure to exceed the above operating magnetic field (M_{OP}) through your designing.

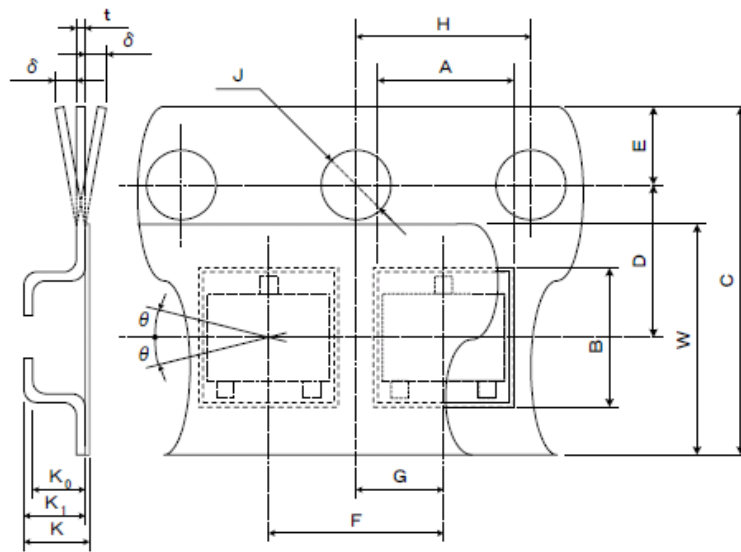
*3) When you shift the sensor from L to H, please make sure to exceed the above operating magnetic field (M_{RP}) through your designing.

3-5 Taping Method

Package	Reel	Quantity
Tape&Reel	180mm Embossed Tape	3000pcs

3-6 Taping Method

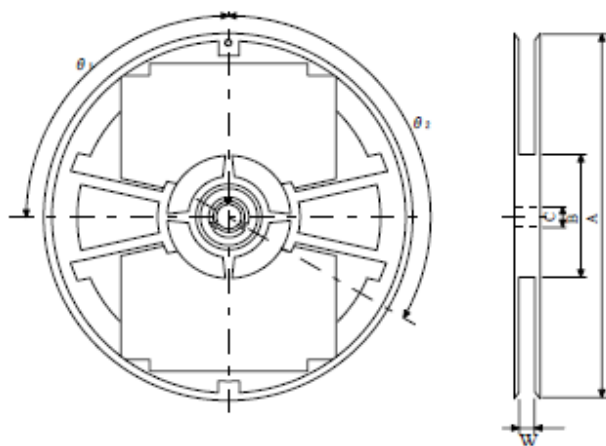
3-6-1 Taping



Unit: mm

Item		Symbol	SIZE	Item		Symbol	SIZE
Pocket	Length	A	3.2±0.1	Distance between Center-lines	Length direction	G	2.0±0.05
	Width	B	3.2±0.1		Width direction	D	3.5±0.05
	Depth	K ₀	1.2±0.1	Cover Tape	Width	W	5.5 ^{+0.3} ₋₀
	Pitch	F	4.0±0.1	Carrier Tape	Width	C	8.0±0.2
Perforation	Diameter	J	Φ1.55 ± 0.05		Thickness	t	0.2±0.05
	Pitch	H	4.0±0.1		Depth	K ₁	1.4±0.1
	Position	E	1.75±0.1	Device	Tilt	θ	30°MAX
Overall Thickness		K	1.45±0.1				

3-6-2 Taping Reel Size • • • Conformity : EIAJ RRV08B

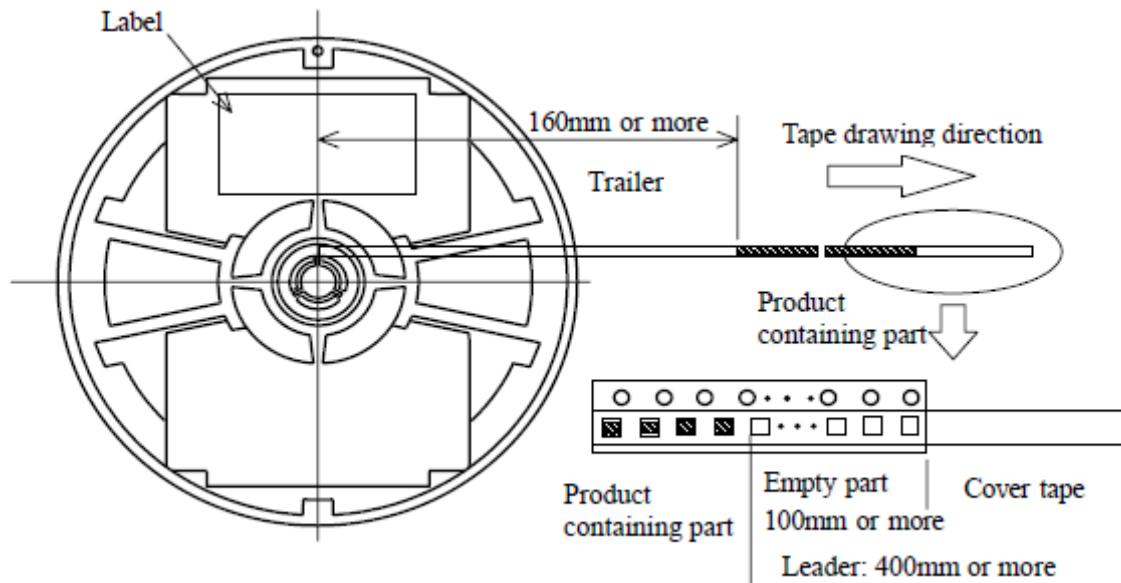


Unit: mm

ITEM	SYMBOL	SIZE
Flange	Diameter	A
	Space Between Flanges	W
Hub	Diameter	B
	Hub Slit Location	θ 1
	Spindle Hole Diameter	C
	Key Slit Location	θ 2
Marking		Labeled on one side of Flange

Quantity: 3000p / Reel

3-6-3 begin winding it up / finish winding it up

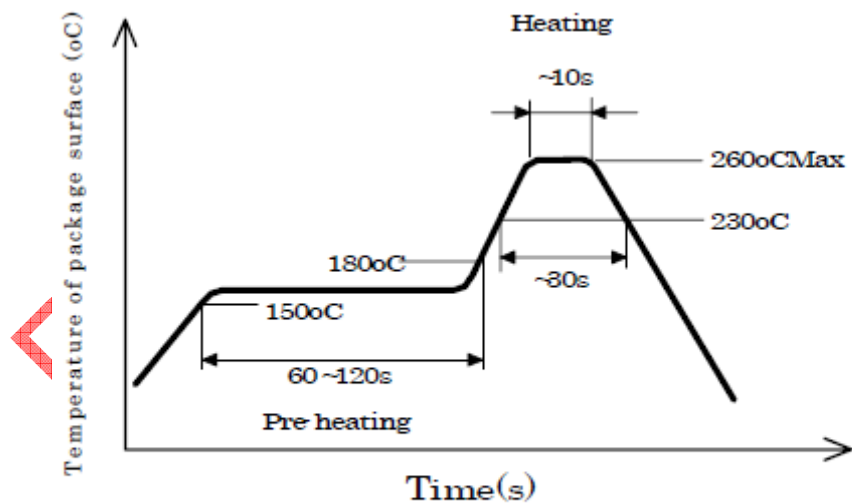


3-6-4 Other Notes

- (1) Continuously missing device shall not exceed 2 pieces.
- (2) Peeling strength of the cover tape: 0.1 to 0.7N

4. Standard Reflow Soldering Condition

4-1 Reflow Soldering Condition



Times of Reflow: 3 or less

Hand Soldering Condition: 350±5°C, 3 seconds or less/ each terminal

4-2 MSL

Moisture Sensitivity Level (MSL)··· equal to MSL 1

5. Reliability test

No.	Reliability test	Test conditions	Criteria
1	High Temperature	125°C×500 h	When satisfying the electrical condition of 3-4⑤⑥
2	Low Temperature	-40°C×500 h	
3	High Temperature and Humidity	85°C、85%RH×500h、V _{CC} =3V	
4	Vibration Examination	Fix the product on a vibrator and apply vibration (maximum amplitude:1.5mm, frequency: 10-55Hz, 1cycle minute) to X, Y, and Z direction for 2 h (in each direction).	
5	Thermal shock	-55°C/30min↔+125°C/30min 500Cycle(Gaseous)	
6	Solder Heat Resistance	Pre Treatment:: +85°C, 85%RH, 168h Reflow Condition: Max +260°C & 230°C, 30s Times of reflow: 3	
7	Solder ability	Solder temperature : 230°C Time : 3s Dipping	Above 90%
8	ESD	(MM) 200pF, 0Ω, ±200V (HBM) 100pF, 1.5kΩ, ±2kV	When satisfying the electrical condition of 3-4⑤⑥
9	Electrode Sticking Tendency	5N (510gf) to 4 directions.10s	When satisfying the electrical condition of 3-4⑤⑥ and no external abnormality should be found.
10	Drop Test	100g dummy load, 1.5m, on the concrete, 6 sides, 10times	When satisfying the electrical condition of 3-4⑤⑥
11	Impact Resistance	Mount the product on a shock tester and apply shock (1470m/s ²) 5 times to each of X, Y, and Z direction.	
12	Bending Cycle	Bending condition: Glass Epoxy PCB (FR-4), t=1.0, Speed 5mm/ min, 50mm span.	No terminal fracture, loosening found after 1500 cycle of 1mm bending to +side and - side.
13	Bending Limit	Bending condition: Glass Epoxy PCB (FR-4), t=1.0, 50mm span	No terminal fracture, loosening found after 7mm bending to +side and -side.

6. ⚠CAUTION

6-1 Limitation of Applications

Please avoid using this product for the applications listed below which require especially high reliability for the prevention of defects that might directly cause damage to the third party's life, body or property.

When this product is used for the applications listed below, we shall not be liable for any claims on the product.

- ① Aircraft equipment
- ② Aerospace equipment
- ③ Undersea equipment
- ④ Generating plant equipment
- ⑤ Medical equipment
- ⑥ Transportation equipment (vehicles, trains, ships, etc.)
- ⑦ Traffic signal equipment
- ⑧ Disaster prevention / crime prevention equipment
- ⑨ Data-processing equipment
- ⑩ Application of similar complexity and/or reliability requirements to the applications listed in the above.

6-2 FAIL-SAFE

Be sure to provide as appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

7. CAUTION FOR USE

7-1 HANDLING

- This product may be degraded by electrostatic discharge. It is necessary to take anti-static precautions when handling.

7-2 Design

- Please thoroughly evaluate this product for the magneto-variation of the magnet used along with this product, otherwise this product may result in the miss-operation or the non-operation.
- Please be careful about a magnetic body (Iron, Nickel, etc.) and a magnetic noise immunity that may affect the magnetism of a magnet.
- Please don't supply inverse voltage or excess voltage to this product. If applied, this product may be damaged and electrically destroyed.
- Please design your product not to be affected by stress of the resin due to heat shrink.

7-3 Mounting

- Please mount this product under our standard reflow condition. Otherwise this product may be damaged.
- Terminal should be avoided to apply excessive force or to bend.
- Please don't apply excessive bending stress to this product in the board otherwise this product may be damaged.

7-4 Storage condition

- We would suggest to store this product under the condition.
Temperature: +5 to +30°C
Humidity: 85%RH max
※Stored this product in desiccator or in N₂ atmosphere is recommended.
- Storage period is within 6 month under above mentioned the condition. Please mount it as soon as possible once unpacked because solder ability may be degraded.
- Please avoid the water, chemical solvent or oil.
- Please avoid the corrosive gas (Cl₂, H₂S, NH₃, NO₂, NO₃ etc.).
- Please avoid the strong vibration or shock.

8. NOTE

- Make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- Not to use our product deviating from the agreed specifications.
- We consider it not to appropriate to include any terms and conditions with regard to the business transaction in the product specifications, drawings or other technical documents. Therefore, if your technical documents as above include such terms and conditions such as warranty clause, product liability clause, or intellectual property infringement liability clause, they will be deemed to be invalid.