

GNSS SPD

Type **TVA-03V**

Hardware Specifications

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Revision History

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1 Outline

This document describes the specifications of GNSS SPD TVA-03V.

2 Hardware Specifications

2.1 Environmental Specifications

Items	Specifications
Installation category	Outdoor, Indoor (*1)
Operation temperature/ Storage temperature	-40 to +80°C
Operation humidity/ Storage humidity	5 to 96%RH (No condensation)
Connector type	N Type (J)
Recommended connector tightening torque (N type)	2.5 to 5.0 N·m
Recommended ground terminal tightening torque (M type)	1.5 to 1.6 N·m
Water proof	IEC 60529:2001 (JIS C 0290:2003) Equivalent to protection class (IPX5) by the outer shell of the electromechanical base (*1)
Vibration proof	JIS Z 0200:2013 Equivalent to random vibration test Level 1
Impact proof	JIS C 60068:2-27 Table A.2 Equivalent to testing parts used in non-portable products

(*1) Only when the connector part is drip-proofed

2.2 Electrical Specifications

Items	Specifications	
Insulation resistance Uc=6.0VDC charged	1kΩ or more	
Maximum allowable power	10W	
Characteristic impedance	50Ω	
Center Frequency	GPS (L1 band)	1575.42MHz
	GLONASS (G1 band)	1602MHz
Frequency band	GPS (L1 band)	1575.42MHz±5MHz
	GLONASS (G1 band)	1602MHz±9MHz
Insertion loss (within frequency band)	0.2dB or less	
VSWR (within frequency band)	1.2 or less	

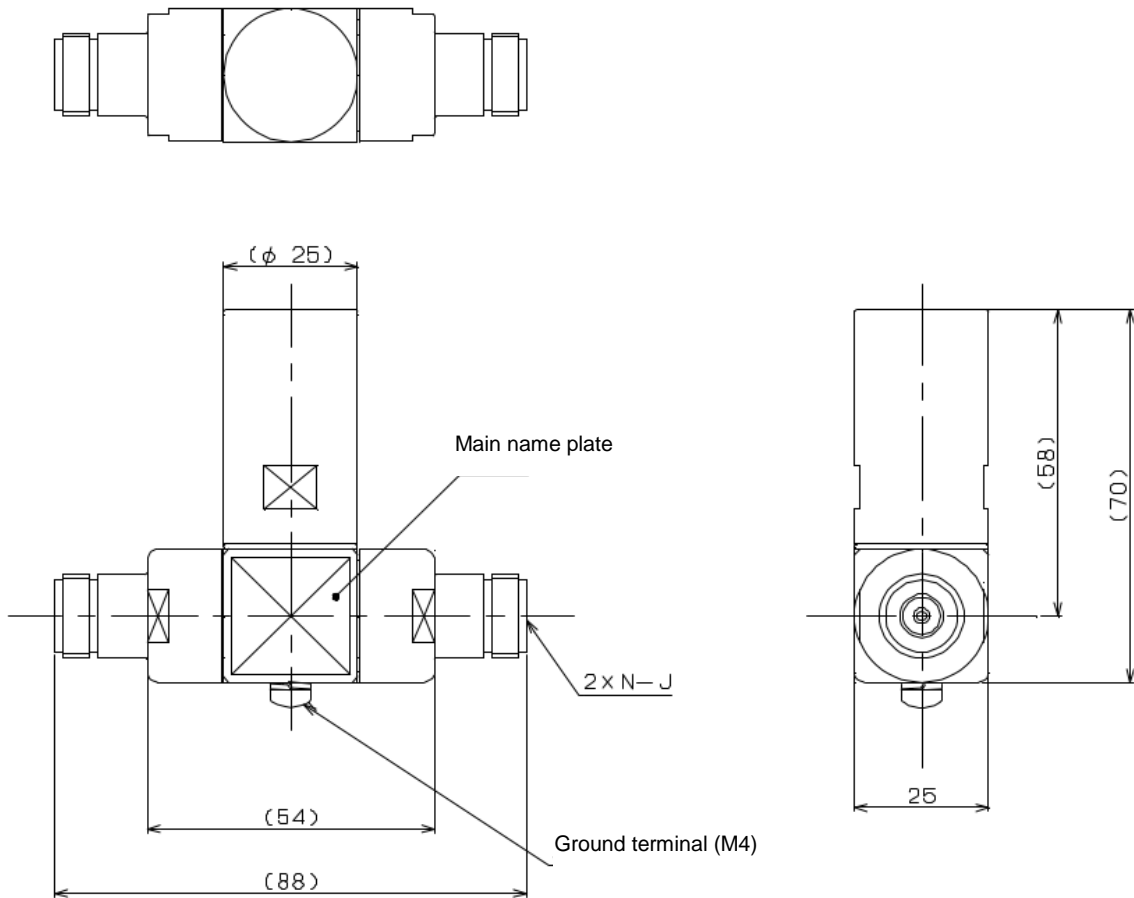
JIS C 5381-21 (IEC 61643-21)

Items	Specifications
IEC category	C2
Maximum continuous working voltage (Uc)	6.0VDC
Voltage protection level (Up)	10V or less
Open circuit voltage: 4kV (1.2/50 μs) charged	
AC durability	60Hz 0.5A 1sec 5 times
Impulse durability (Category C2) (*2) Open circuit voltage: 20kV (1.2/50 μs)、 Short circuit voltage: 10kA (8/20 μs) ((Positive and negative each 5 times))	10kA
Overload failure mode	mode2 (*3)

(*2) Category C2 extended value

(*3) mode2: A state in which the voltage limiting part is short-circuited due to a very low impedance inside the SPD.

3 Outline drawing



Dimensions without tolerances in accordance with JIS B0405-1991-m.

Material

Parts name	Material	Surface treatment
Contact	BeCuB	Ag
	PBB	Ag
Body	BsBM	CSZ
Insulator	PTFE	
O ling	Silicon rubber	-
Hexagon socket set screw	SUS	-
Sems screw	SUS	-
Main name plate	PET	-

Weight about 320g

4 Circuit diagram

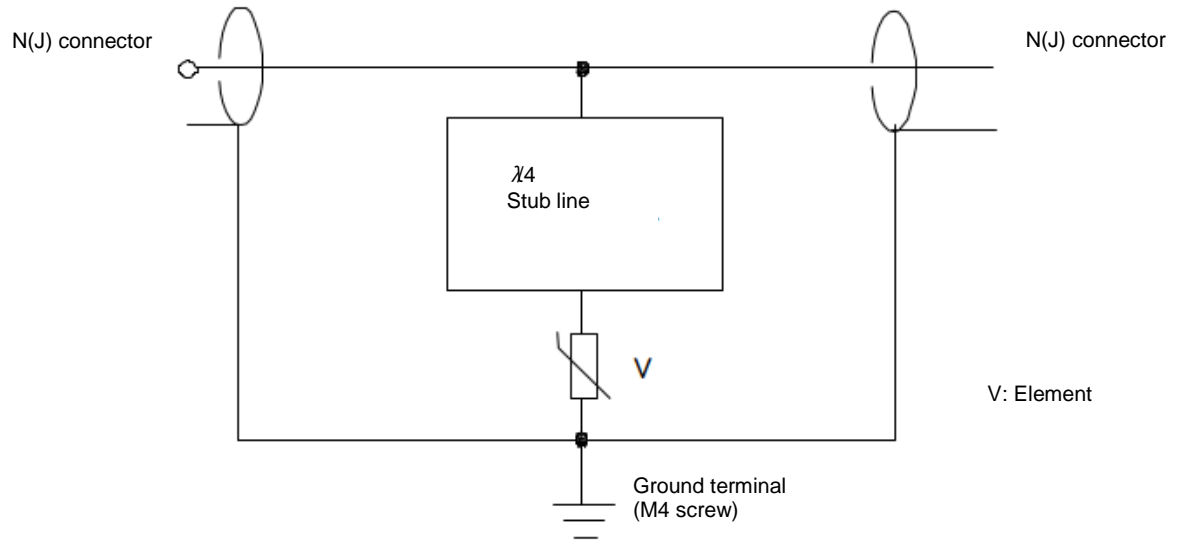


Figure 4.1 Circuit diagram




5 Package

Packing configuration

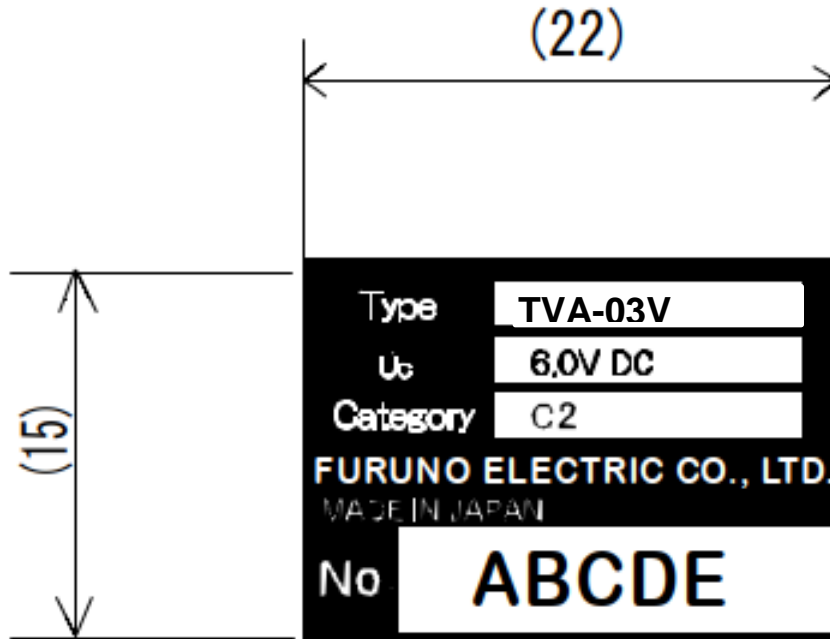
Configuration	Quantity
SPD	1
PE bag	1
N type poly cap	2
Individual box	1

Individual package specifications

Attached N-type poly caps to two places on the connector parts of one SPD, put it in a PE bag, and individually wrap it in a special individual packaging box.

1. Protective cap attachment and PE bagging	2. The SPD body packed in a PE bag is stored in a dedicated individual packaging box.
	
3. Close the lid of the individual packaging box	
	

6 Marking



The base is silver color
The value in brackets is a reference dimension.

Lot number

The lot number is printed at a predetermined position on the main name plate.

The lot number structure is "ABCDE".

A: Classification for internal management,

BC: Last two digits of the Christian era,

D: Production month (January to September: 1 to 9, October:X, November:Y, December:Z)

E: Serial number for each production model in the production month (alphabet display)

7 Drip-proof treatment of connector part

For drip-proof treatment of the connector, wrap both the plug side and the jack side.

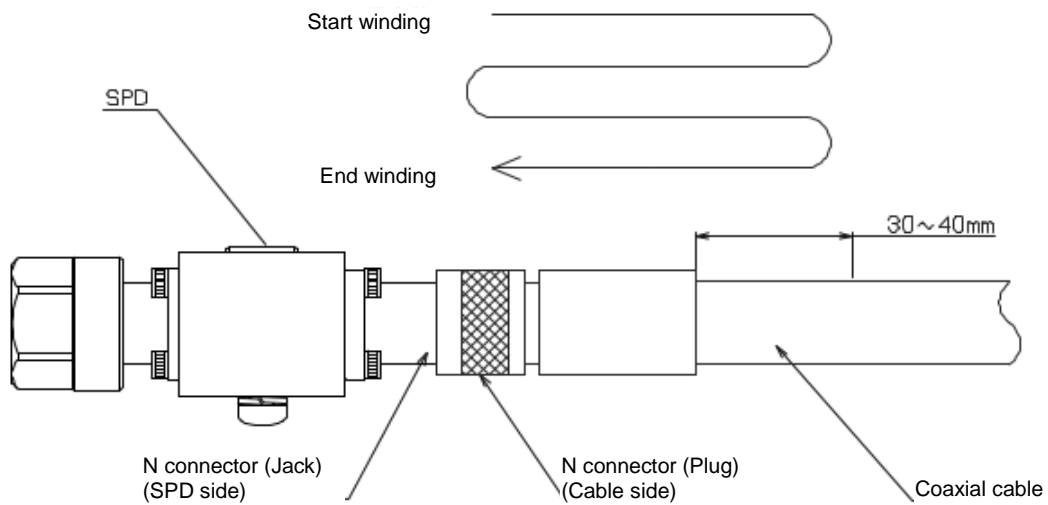
(1) Cleaning

Remove oil, water droplets, dust, etc. from the taping area.

(2) Wrapping self-bonding tape

While stretching the tape width from the base of the connector on the SPD side to about 3/4, wrap it two or more times toward the cable side so that about half of the tape width overlaps and there is no gap. At that time, also wrap the coaxial cable part by 30 to 40 mm.

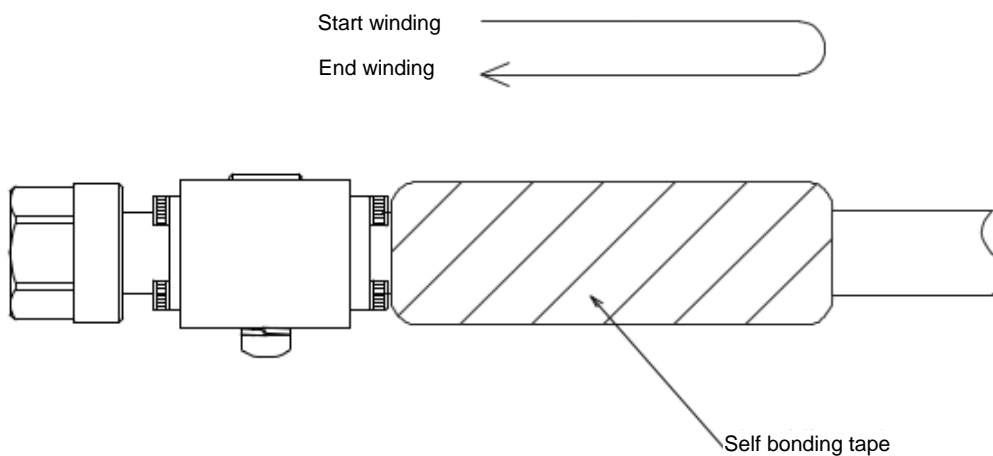
For self-bonding tape, use the equivalent of "F-CO TAPE NO. 1" manufactured by Furukawa Denki Kogyo Co., Ltd.



(3) Wrapping weather resistant vinyl tape

Wrap the vinyl tape one or more round trips over the self-bonding tape without any gaps. The winding direction should be opposite to the direction of the self-bonding tape.

For vinyl tape, use the equivalent of Vinyl tape for electrical insulation "No.22" manufactured by Nitto Denko Corporation.



8 Shipping inspection

Items	Method
Visual inspection	Inspect by visual touch. There should be no significant scratches, dirt, or damage on the surface.
Operation start voltage	Measure with a dedicated measuring instrument.
Insertion loss measurement	Measure the insertion loss from 1550MHz to 1620MHz with a network analyzer, and it should be 0.2 or less.
VSWR measurement	Measure VSWR from 1550MHz to 1620MHz with a network analyzer and it should be 1.2 or less.

9 Warranty

One-year warranty after the product is delivered.

10 Failure rate

383.8FIT

MTBF: 2.58×10^6 (H)

11 Special notes

This product is RoHS compliant.