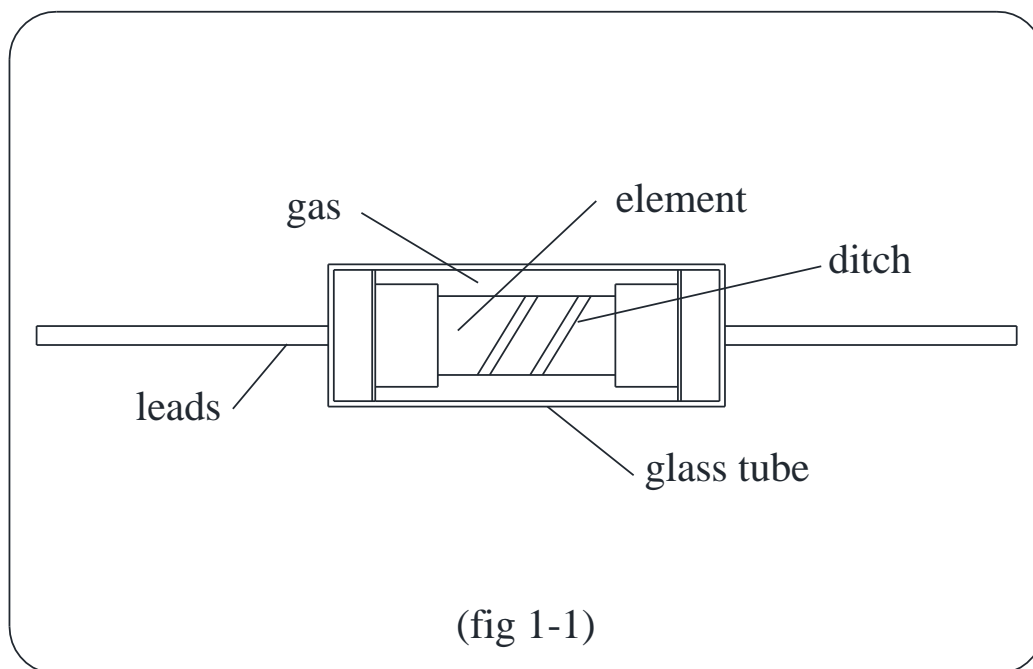


Gas-Discharge components

The functions of Gas-Discharge components are effected by many parameters; such as gas type, pressure of gas and humidity etc. especially, the pollution (particles) leads an abnormal reaction. We take a proven technique to make sure the working condition is "close and isolated" - hermetic sealing of discharge space.

**CNR (CeNtRa Science Corp.,) Spark Gap Protectors :**

Cut-Ditch type - Spark Gap Protector : CSP series; fig 1-1

**Agency Approvals**

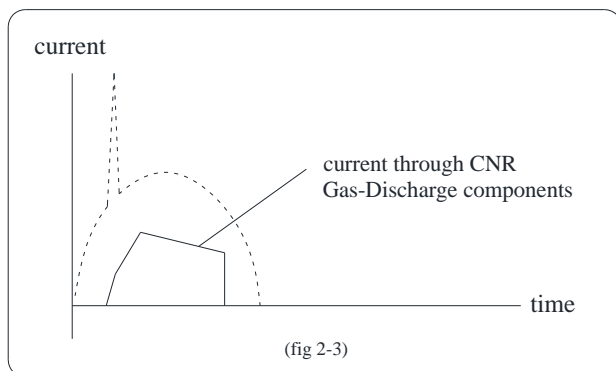
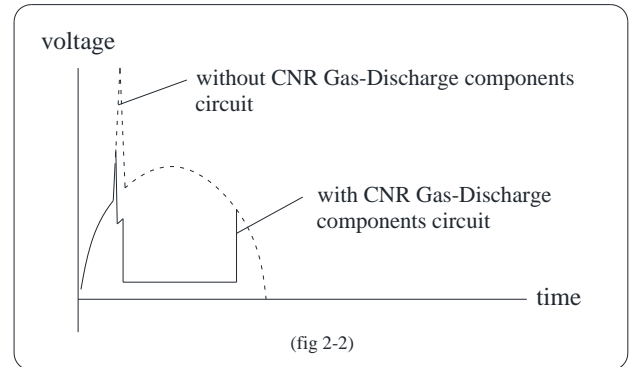
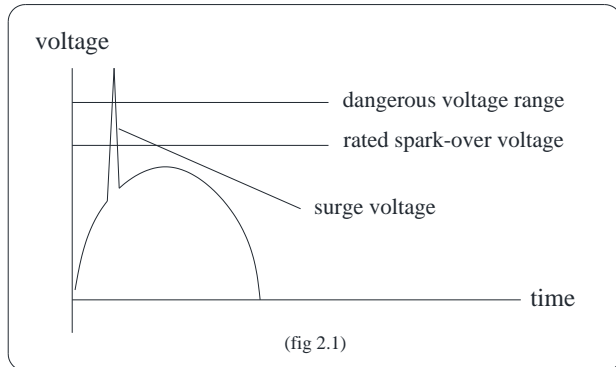
CNR-CSP series : UL 497B (Protector for data communication and fire alarm circuit)
E220380 : Section 2

NOTE : All specification subject to change without notice.

Protection principle of Gas-Discharge components

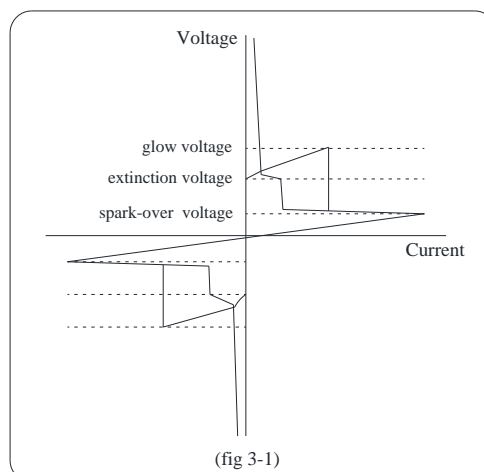
Generally, Gas-Discharge components work whenever a surge (voltage) exceeds the rated-working-voltage of Gas-Discharge components. As the arc with high current (because of low impedance of Gas-Discharge components) is ignited, Gas-Discharge components can prevent a further rise of surge voltage.

(Approximately some 10 volts)



Operating mode of Gas-Discharge components

A simplified Gas-Discharge components could be compared with a symmetrical switch (with very low capacitance) whose resistance may change from several G-ohms (normal operation) to <1 ohm (ignited by surge voltage). Gas-Discharge components will automatically return to its original state (high impedance) as the surge has subsided.



NOTE : All specification subject to change without notice.

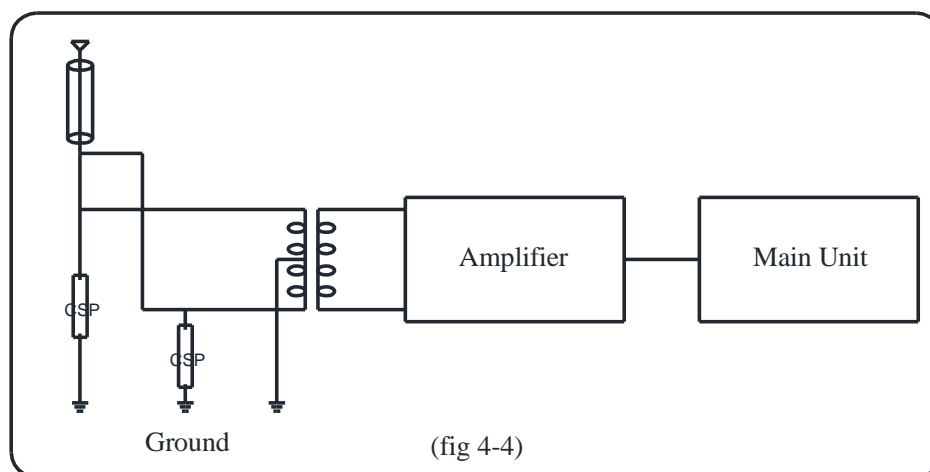
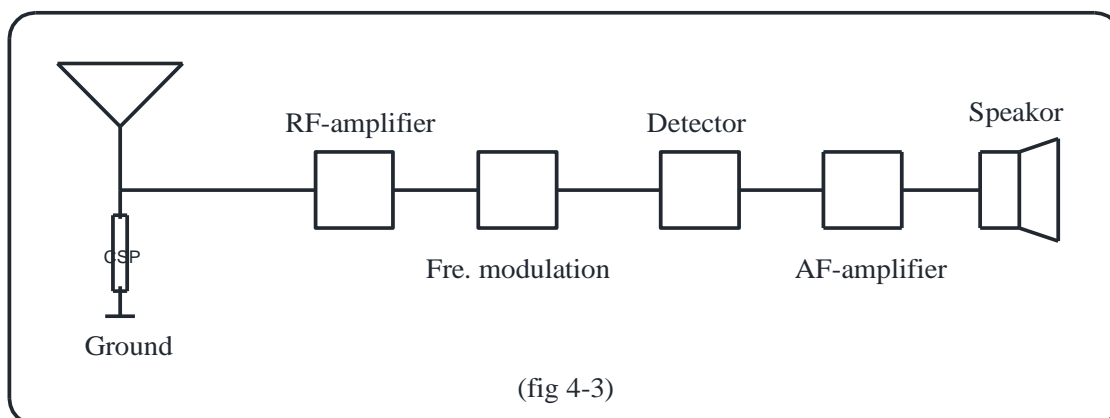
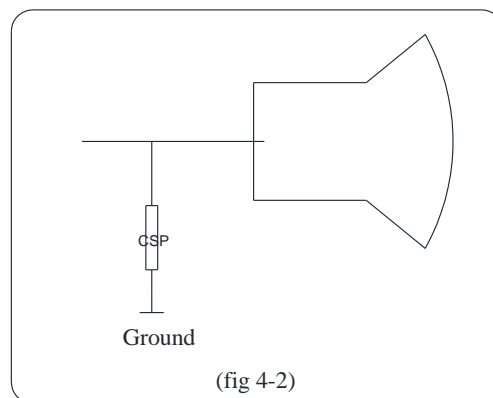
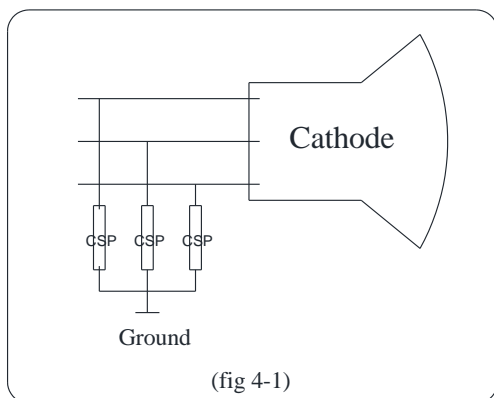
CNR Spark Gap Protectors : CSP series

Features

- Fast response
- Low capacitance
- Good withstanding ability to surge
- Symmetry in both direction

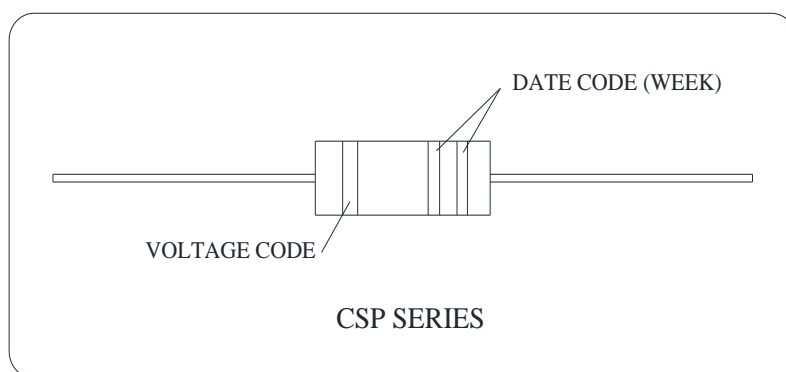
Applications

- XDSL (fig 4-1,fig 4-2)
- XDSL,Splitter
- Car radio/Radio cassette/Wireless equipment (fig 4-3)
- Satellite bread casting and TV equipment (fig 4-4)



NOTE : All specification subject to change without notice.

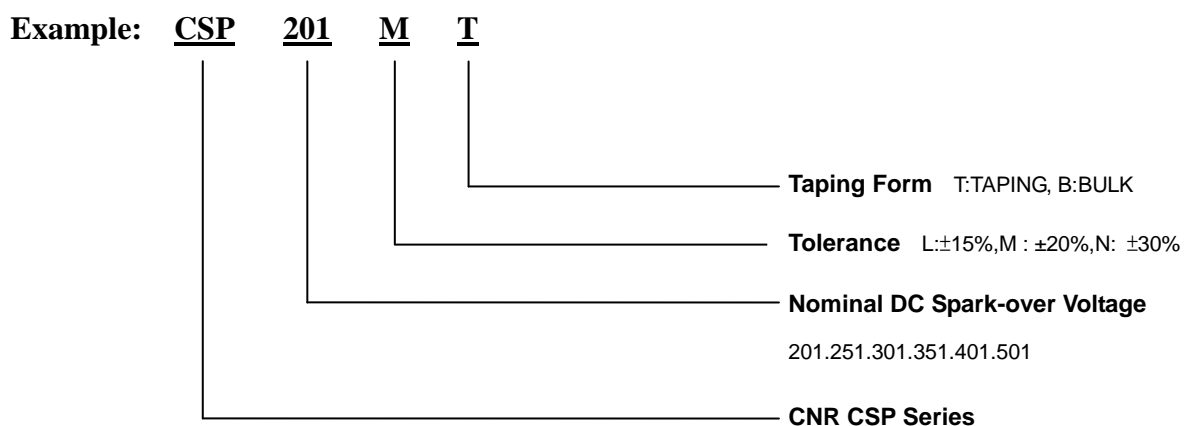
Designation System



Voltage Code
1st color band
201 - Red
251 - Red
301 - Orange
351 - Orange
401 - Yellow
501 - Green

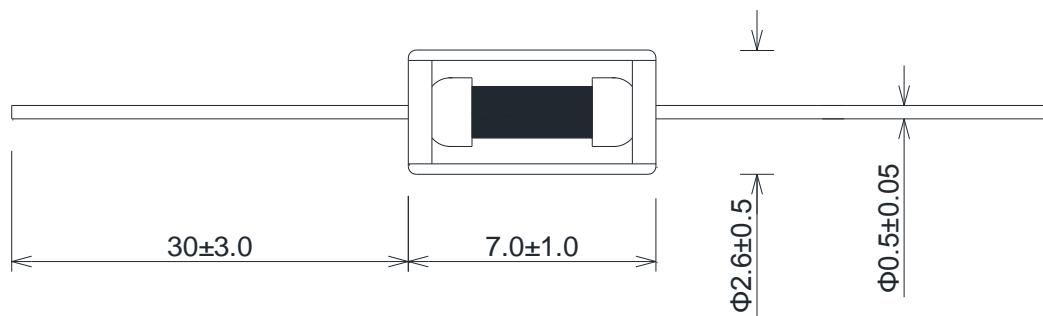
Date Code (week)			
2nd color band		3rd color band	
Black	0	Black	0
Brown	1	Brown	1
Red	2	Red	2
Orange	3	Orange	3
Yellow	4	Yellow	4
Green	5	Green	5
Blue	6	Blue	6
Purple	7	Purple	7
Gray	8	Gray	8
White	9	White	9

Explanation of Part Numbers



NOTE : All specification subject to change without notice.

DIMENSION



Rating (Initial Characteristics)

CNR	DC Spark-Over Voltage			Insulation Resistance		Capacitance		Surge Life Test
P/N	Vs (V) 100V/sec			Ri (Ω)		C (pF)		Surge Current Capacity (8/20us)
				Min	@	1KHz	@	
	Min	Typical	Max	Ohm	Vdc	Max	V	A
CSP201M	160	200	240	100M	100	1	6	500
CSP251M	200	250	300	100M	100	1	6	500
CSP301M	240	300	360	100M	100	1	6	500
CSP351M	280	350	420	100M	100	1	6	500
CSP401M	320	400	480	100M	100	1	6	500
CSP501M	400	500	600	100M	100	1	6	500

NOTE : All specification subject to change without notice.

Packaging

This specification covers the packaging of the CNR CSP Series.

(1) Axial Taping

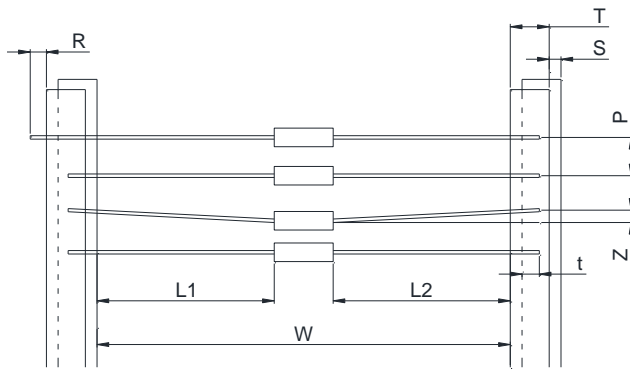


Fig -1 Axial Taping

Symbol	Dimension (mm)
W	52.0 ± 1.5
P	5.0 ± 0.5
L1 / L2	1.0 max
T	6.0 ± 1.0
Z	1.2 max
R	Terminal must not project from the tape.
t	3.2 min
s	0.8 max

(2) Flat Pack

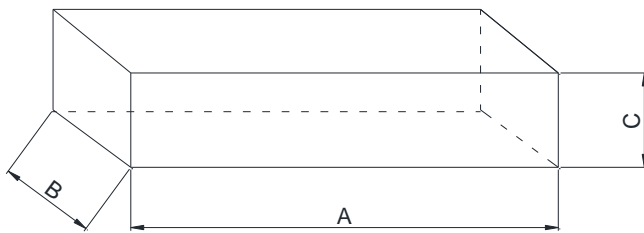


Fig -2 Flat Box

Item	Contents
Size	A = 255 mm
	B = 75 mm
	C = 68 mm
Quantity	2,000 pcs.

(3) Packaging for Shipment

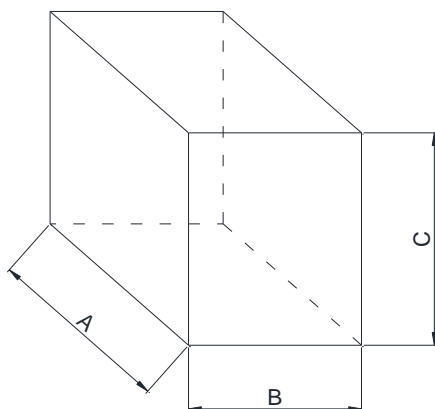


Fig -3 Carton Box

Item	Contents
Size	A = 310 mm
	B = 290 mm
	C = 380 mm
Quantity	40,000 pcs.

NOTE : All specification subject to change without notice.

TEST METHODS AND RESULTS

Items	Test Methods	Standard												
Dc spark-over voltage	Measure starting discharge voltage (Vs) by gradually increasing applies DC voltage. Test current is 1mA max. And test period is one second max.	Meet specified value												
Insulation resistance	Measure the insulation resistance across the terminal at regulated voltage.	100 MΩ or more												
Electrostatic capacitance	Measure the electrostatic capacitance by applying a voltage of less than 6V (at 1KHz) between terminals.	1pF or less												
Cold resistance	The specimen shall be subjected to $-40\pm 3^{\circ}\text{C}$ for 1000 hours without load and then stored at room temperature and humidity for 4 hours. Thereafter, the characteristics shall be measured. (in accordance with JISC 0020)	Meet specified value												
Heat resistance	The specimen shall be subjected to $125\pm 2^{\circ}\text{C}$ for 1000 hours without load then stored at room temperature, the characteristics shall be measured. (in accordance with JISC 0021)	Meet specified value												
Temperature cycle	<p>Repeat the temperature cycle shown below 25 times then store parts at room temperature and humidity for 4 hours. Thereafter, the characteristics shall be measured. (in accordance with JISC 0025)</p> <table border="1"> <thead> <tr> <th>STEP</th><th>Temperature</th><th>Period</th></tr> </thead> <tbody> <tr> <td>1</td><td>$-40\pm 3^{\circ}\text{C}$</td><td>30 minutes</td></tr> <tr> <td>2</td><td>room temp</td><td>3 minutes</td></tr> <tr> <td>3</td><td>$125\pm 2^{\circ}\text{C}$</td><td>30 minutes</td></tr> </tbody> </table>	STEP	Temperature	Period	1	$-40\pm 3^{\circ}\text{C}$	30 minutes	2	room temp	3 minutes	3	$125\pm 2^{\circ}\text{C}$	30 minutes	Meet specified value
STEP	Temperature	Period												
1	$-40\pm 3^{\circ}\text{C}$	30 minutes												
2	room temp	3 minutes												
3	$125\pm 2^{\circ}\text{C}$	30 minutes												
Lead wire pull strength	After gradually applying a 0.51 kgf load, keep the unit fixed for 10 ± 1 seconds. Thereafter, the characteristics shall be measured. (in accordance with JIS 0051)	Meet specified value												
Lead wire bending strength.	The unit shall be secured with its lead wire kept vertical and a 0.25 kgf weight applied below in the axial direction. The lead wire shall gradually be bent to 90° in one direction at point of 2 mm form the body along the radius of curvature (0.75–0.80mm) and again back to the original position. This shall be repeated 2 times. Thereafter, the characteristics shall be measured. (in accordance with JISC 0051)	Meet specified value												
Solder ability	After dipping the lead wire within 2mm of the body in $245\pm 3^{\circ}\text{C}$ solder for 5 ± 0.5 seconds, the lead wire shall be visually examined. (in accordance with SS-00254-1)	Lead wire is almost evenly covered with solder. (covered 90%)												
Resistance to soldering heat	After dipping the lead wire within 2mm of the body in $260\pm 5^{\circ}\text{C}$ solder for 10 ± 1 seconds, the characteristics shall be measured. (in accordance with JISC 0050)	Meet specified value												

NOTE : All specification subject to change without notice.

Surge life test	Charge a 1500pF capacitor up to DC 10KV and apply it to the sample through a 20 Ω resistance. Do this 200 times at 10 seconds intervals. Thereafter, the characteristics shall be measured.	$\Delta V_s / V_s \leq \pm 30\%$ characteristics meet specified value
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