DSS series; RoHS directive conformable Specification			Drawing No.	Page
			RD-AP-0298E	1/3
Type	DSS series	Date	September 14, 2006	

1. Scope

This specification covers the DSS series; RoHS directive conformable.

2. Type designation

2-1. Formation of type designation

Example) D S S – 3 0 1 L – S 0 0 B – S C 0 4 1 1
① ② ③ ④ ⑤ ⑥ ⑦

2-2. Symbols

①Series name

Symbol	DSS
Series name	Dia surge suppressor

②Nominal DC sparkover voltage

The symbol denoting nominal DC sparkover voltage shall be expressed by three numerals. The first and second numerals shall represent the significant figures of nominal DC sparkover voltage in volts (V), and the third numeral shall represent the number of zeros following the significant figures.

Example) 3 0 1 → 3 0 × 10^1 = 3 0 0

③Tolerances on DC sparkover voltage

Symbol	L	M
Tolerances	± 15%	± 20%

④Taping form

Symbol	S	A	C
Form	No taping	Axial taping	Radial taping (Body center)

⑤Taping dimensions

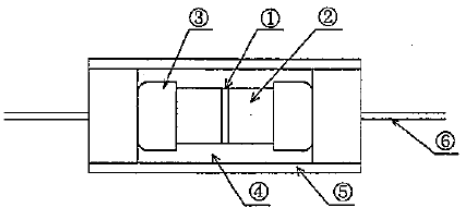
Symbol	0	1	2	4
Spacing between tapes	Radial taping or no taping	26mm	52mm	–
Pitch	No taping	5mm	10mm	12.7mm

⑥Packaging style

Symbol	B	F	R
Packaging style	Bulk pack	Flat pack taping	Reel pack taping

⑦ Registeration Code: Option

3. Structure



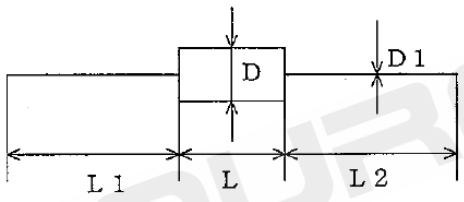
No.	Parts name
①	Micro gap
②	Element (Conductive film coating)
③	Electrode cap
④	Gas
⑤	Glass
⑥	Lead wire (Sn-3.0Ag-0.5Cu) coating

4. Temperature range

1) Operating temperature range : −40～+85℃

2) Storage temperature range : −55～+125℃

5. Dimension



Symbol	Dimension(mm)
D 1)	φ3.3 ± 0.4
D1	φ0.50 ± 0.05
L 2)	7.0 ± 1.0
L1	30.0 ± 3.0
L2	30.0 ± 3.0

Notes 1) Measurement position shall be the maximum diameter.

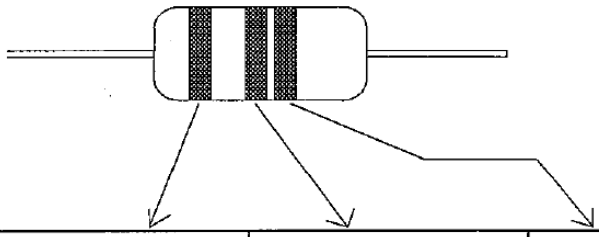
2) Measurement position shall be edge of glass or edge of stud whichever is the larger.

6. Rating (Initial characteristics)

Part number	DC sparkover voltage Vs(V)	Insulation resistance		Capacitance	Related standard
		IR(MΩ)	Applied voltage	C(pF)	UL
DSS-201M-□□□□SC0411	160 ～ 240	≧ 100	DC 100V	≦ 1	○
DSS-301L -□□□□SC0411	255 ～ 345	≧ 100	DC 100V	≦ 1	○
DSS-351M-□□□□SC0411	280 ～ 420	≧ 100	DC 250V	≦ 1	−
DSS-401M-□□□□SC0411	320 ～ 480	≧ 100	DC 250V	≦ 1	○
DSS-601M-□□□□SC0411	480 ～ 720	≧ 100	DC 250V	≦ 1	○

7. Marking

DSS marking shows type designation and manufacturing lot number with three color bands.
Distance between first color band and second color band is wider than that between second and third color band.



Color code	First color band	Second color band	Third color band
	Part number	The tens digit of lot number	The units digit of lot number
black		0	0
brown		1	1
red	DSS-201M-□□□□SC0411	2	2
orange	DSS-301L-□□□□SC0411	3	3
yellow	DSS-401M-□□□□SC0411	4	4
green		5	5
blue	DSS-601M-□□□□SC0411	6	6
purple		7	7
gray	DSS-351M-□□□□SC0411	8	8
white		9	9

8. Related standards

UL recognized

	Content
Standard No.	UL497B
Title	Protectors for Data Communication and Fire Alarm Circuits
File No.	E175280

DSS series; RoHS directive conformable Characteristic Specification			Drawing No.	Page
			RD-AQ-0106E	1/3
Type	DSS series	Date	September 14, 2006	

1. Scope

This specification covers the DSS series; RoHS directive conformable.

2. Appearance

Item	Testing method	Performance
Appearance	Outer appearance shall be visually examined.	No visual damage.

3. Electrical performance

Item	Testing method	Performance
DC sparkover voltage (Vs)	Measure starting discharge voltage (Vs) by gradually increasing applied DC voltage. Test current is 1mA max, and test period is 1-second max.	Meet specified value.
Insulation resistance(IR)	Measure the insulation resistance (IR) applying regulated voltage across the terminals.	100MΩ or over
Capacitance(C)	Measure the electrostatic capacitance(C) by applying a voltage of less than 6V (at 1kHz) across the terminals.	1pF or less

4. Mechanical performance

Item	Testing method	Performance
Lead wire pull strength	(In accordance with JIS C 60068-2-21) After gradually applying a 5N (0.51kgf) load, keep the unit fixed for 30 seconds. Thereafter, the characteristics of items Vs, IR and C shall be measured.	No lead omission or disconnection. Vs, IR, C are satisfied; 3.Electrical performance.
Lead wire bending strength	(In accordance with JIS C 60068-2-21) The unit shall be secured with its lead wire kept vertical and a 2.5N (0.25kgf) weight applied below in the axial direction. The lead wire shall gradually be bent to 90° in one direction at a point of 3mm from the body along the radius of curvature (0.75 to 0.80mm), and again back to the original position. This shall be repeated 2 times. Thereafter, the characteristics of items Vs, IR and C shall be measured.	Vs, IR, C are satisfied; 3.Electrical performance.
Vibration	(In accordance with JIS C 60068-2-6) The specimen shall be vibrated by its lead wires with total amplitude of 1.5mm and a varying frequency of 10Hz to 55Hz to 10Hz (each 1 minute) for a period of 60 minutes respectively in each X, Y and Z directions. Thereafter, the characteristics of items Vs, IR and C shall be measured.	Vs, IR, C are satisfied; 3.Electrical performance.

5. Reliability performance

Item	Testing method	Performance
Resistance to cold	(In accordance with JIS C 60068-2-1) The specimen shall be subjected to −55±3℃ for 1,000 hours without load and then stored at room temperature and humidity for 4 hours. Thereafter, the characteristics of items Vs, IR and C shall be measured.	Vs, IR, C are satisfied; 3.Electrical performance.
Resistance to heat	(In accordance with JIS C 60068-2-2) The specimen shall be subjected to 125±2℃ for 1,000 hours without load and then stored at room temperature and humidity for 4 hours. Thereafter, the characteristics of items Vs, IR and C shall be measured.	Vs, IR, C are satisfied; 3.Electrical performance.
Resistance to humidity	(in accordance with JIS C 60068-2-3) The specimen shall be subjected to 85±2℃ 85% RH for 1,000 hours without load and then stored at room temperature and humidity for 4 hours. Thereafter, the characteristics of items Vs, IR and C shall be measured.	Vs, IR, C are satisfied; 3.Electrical performance.
Heat cycle	(In accordance with JIS C 0025) Repeat the temperature cycle shown below 25 times then store parts at room temperature and humidity for 4 hours. Thereafter, the characteristics of items Vs, IR and C shall be measured.	Vs, IR, C are satisfied; 3.Electrical performance.
Surge life	Apply a impulse voltage (10/1000 1000V) for 6 times at 30 seconds interval across the terminals. Then change the polarity of the surge and apply the impulse again for another 6 times. And similarly, apply a impulse voltage (100/1000 1000V). Total number of impulse voltage applied is 24 times. Thereafter, the characteristics of items Vs, IR and C shall be measured.	Vs: |△Vs/Vs| ≦30%, IR, C are satisfied; 3.Electrical performance.
Surge current capacity	The impulse current (8/20 500A) for specified current applied 3 times at 5 minute intervals. Thereafter, outer appearance shall be visually examined.	No visual damage.

Step	Temperature	Period
1	−55±3℃	30min
2	Room Temp.	3min
3	125±2℃	30min
4	Room Temp.	3min

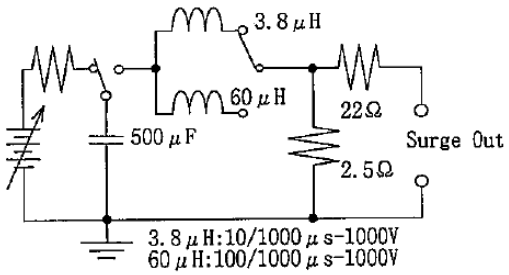


Fig. circuit of surge generator (surge life)

6. Mountability

Item	Testing method	Performance
Solderability	(In accordance with JIS C 60068-2-20) After dipping the lead wire within 3mm of the body in 235 ±5℃ solder for 5±0.5 seconds, the lead wire shall be visually examined.	Lead wire is almost evenly covered with solder.
	After dipping the lead wire within 3mm of the body in 245 ±5℃ solder(Sn/3.0Ag/0.5Cu) for 5±0.5 seconds, the lead wire shall be visually examined.	
Resistance to soldering heat	(In accordance with JIS C 60068-2-20) After dipping the lead wire within 3mm of the body in 350 ±10℃ solder for 3±1 seconds, the characteristics of items Vs, IR and C shall be measured.	Vs, IR, C are satisfied; 3.Electrical performance.
	After dipping the lead wire within 3mm of the body in350 ±10℃ solder(Sn/3.0Ag/0.5Cu) for 3±1 seconds, the characteristics of items Vs, IR and C shall be measured.	

Note; The flux to be used shall consist of 25% by mass of resin (colophony:JIS K 5902) in 75% by mass of 2-propanol(isopropanol) of JIS K 8839 or of ethyl alcohol 99.5 of JIS K 8101. (In accordance with JIS C 60068-2-20)