


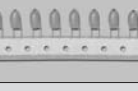




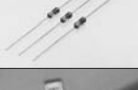


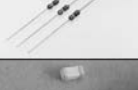

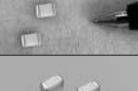







## 产品系列

## Products Line up

	形状 Style	系列 Series	直流放电开始电压 DC Spark-over voltage	规格 standard	用途 Applications	页码 Page	
电源线用 For power Lines	导线型 Lead type	DA53		700~7,800V	UL CSA EN	2	
		DA38		1,000~6,200V	UL CSA EN	3	
		DSA		300~7,500V	UL CSA EN	4	
		DB60		2,700~4,500V	UL EN	5	
	复合型 Combination type	DSAHR		500~800V	-	SW电源、变频器电源、OA设备及家用电器的电源 SW power supply, Inverter power supply, Power supply of office and home appliance	6
		DSANR		500~4,500V	UL EN		7
		DSAZR		500~4,500V	UL CSA EN		8
通信线路用 For Communication Lines	导线型 Lead type	DE37		300~4,500V	UL EN ITU-T (400V)	9	
		DSS		200~3,000V	UL CSA EN	10~14	
	贴片型 Chip type	CDA70		3,000V	UL EN	15	
		CSA70		300~600V	UL ITU-T (400V)	16,17	
防静电用 For ESD	导线型 Lead type	DSP		140~3,000V	-	天线、显示器、监视器等 Antenna, CRT display, Monitor TV etc	18~21
	贴片型 Chip type	CSA30		140~400V	IEC61000-4-2	车载导航器、车用音响等 Car navigation, Car audio etc	22
		CSA20		140~400V	IEC61000-4-2		23
		CSA10		140V	IEC61000-4-2	24	
		CSZ30		200V	ISO10605	车辆ECU Automotive ECU	25
		CSZ20		200V	ISO10605		26
其他 Others	配电盘用 For Switch board	DLSP		-	控制柜等 Control box, etc	27	
	压敏电阻 Ring Varistor	DRV		13~55V	消除各种小型直流电机的火花及防止噪声 Spark elimination and noise protection of various compact DC motors	28	

DA53是利用微隙进行电场放电的浪涌保护元件。浪涌响应性好，可适应各种AC耐压试验，是需要较大浪涌耐量的电源线防浪涌的理想浪涌吸收元件。

DA53 has a micro gap cut to an accuracy of several tens of microns in width for rapid response against induced lightning and electrostatic discharges. Allows performing the AC withstanding voltage test. This series are ideal for protecting power supplies against surge voltage.

■特点

- 结构极其小巧。(直径5.3mm, 长度10mm)
- 可适应各种AC耐压电压试验。
- 浪涌耐量大, 3000A。
- 浪涌响应性好, 限制电压低。
- 静电容量小, 绝缘性优异。
- 可稳定应对反复浪涌及环境变化。
- 无极性。
- 无明显暗场所的特性差异。
- DA53系列可在各种电源电路中与压敏电阻组合使用。

■Features

- Small size. (ø5.3mm Length 10mm)
- Allows performing the AC withstanding voltage test.
- Used to protect power supplies.
- Quick response for surge voltage, and low limiting voltage.
- Small capacitance and excellent insulation resistance.
- Stable for repeated discharge test conditions and environmental fluctuation.
- No polarity.
- No dark effect.
- DA53 Series combined with varistor can be used as surge-protecting elements in power supplies.

■型号构成 Part number system

DA53 - 622 M F - M E15E

系列名 Series      直流放电开始电压(Vs) DC Spark-over voltage (Vs)      直流放电开始电压容许偏差 DC Spark-over voltage tolerance      包装形式 Packing form      特殊记号 Special code

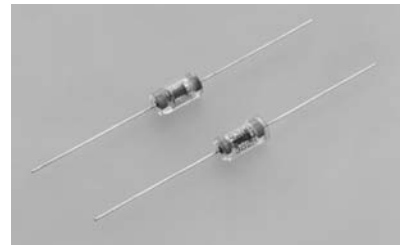
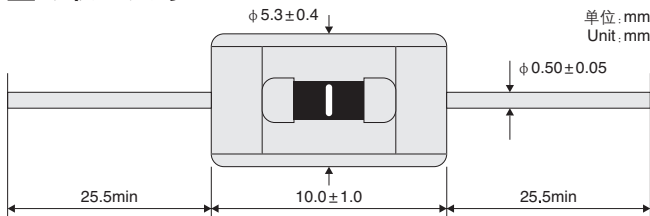
前2位数字表示电压值的有效数字, 第3位数字表示乘幂。  
The first two digits are significant, and the third is number of zeros.  
例) 622表示:  
Ex.) 622 means:  
62 × 10<sup>2</sup> = 6200v

M ±20%

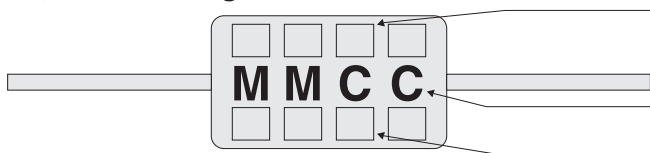
B	散装 Bulk pack
F	整体成形包装 Bulk Forming pack

记号 Code	说明 Description
无 None	包装形式为B Bulk pack
E15E	包装形式为F(成形形状为E), 导线间距15mm Bulk forming, Lead pitch 15mm
E25E	包装形式为F(成形形状为E), 导线间距25mm Bulk forming, Lead pitch 25mm

■形状·尺寸 Dimensions



■标记 Marking



- ① 批号(最多4位英文字母及数字) Lot No. (Number with four digits maximum)
- ② 商标 Trade mark
- ③ 型号略符(最多4位英文字母及数字) Part number (Number with four digits maximum)

■特性 Characteristics

型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR	静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test	AC耐压 AC withstanding voltage	UL规格认证产品 UL recognized		CSA规格认证产品 CSA recognized		EN规格认证产品 EN recognized		
							5) UL1414	6) UL1449	7) C22.2 No.1	8) C22.2 No.60065	9) EN60065 EN60950-1		
DA53-701M	700V (560~840)	100MΩmin.	1pF max.	8/20μsec. 3,000A	8/20μsec. 100A 300times	-	-	○2)	-	-	-		
DA53-272M	2,700V (2,160~3,240)					DC 250V	AC1,000V-1min. AC1,200V-3sec.	○1)	○2)	○2)	-	-	-
DA53-302M	3,000V (2,400~3,600)					DC 500V	AC1,500V-1min.	○1)	○2)	○2)	-	-	○4)
DA53-362M	3,600V (2,880~4,320)					DC 1,000V	AC1,800V-3sec.	○1)	○2)	○2)	-	-	○4)
DA53-622M	6,200V (4,960~7,440)						AC3,000V-3sec.	○1)	-	○2)	○3)	○4)	○4)
DA53-752M	7,500V (6,000~9,000)						AC3,600V-3sec.	○1)	-	○2)	○3)	○4)	○4)
DA53-782M	7,800V (6,240~9,360)	AC4,000V-1min.	○1)	-	-		-	○4)	○4)				

- 与压敏电阻(AC125V: V1mA ≥ 270V, 8 Joule Min at 2ms. AC250V: V1mA ≥ 470V, 8 Joule Min at 2ms)电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (AC125V: V1mA ≥ 270V, 8 Joule Min at 2ms. AC250V: V1mA ≥ 470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 与压敏电阻(AC125V: V1mA ≥ 270V, D ≥ ø5mm. AC250V: V1mA ≥ 470V, D ≥ ø5mm)电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (AC125V: V1mA ≥ 270V, D ≥ ø5mm. AC250V: V1mA ≥ 470V, D ≥ ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 与压敏电阻(AC125V: V1mA ≥ 270V, D ≥ ø14mm. AC250V: V1mA ≥ 470V, D ≥ ø14mm)电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (AC125V: V1mA ≥ 270V, D ≥ ø14mm. AC250V: V1mA ≥ 470V, D ≥ ø14mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 与压敏电阻(V1mA ≥ 470V, D ≥ ø5mm)电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (V1mA ≥ 470V, D ≥ ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- UL Standard UL 1414 File No. E89615
- UL Standard UL 1449 File No. E318314
- CSA Standard C22.2 No.1 File No. CA111411
- CSA Standard C22.2 No.60065 File No. CA111411
- DA53 has received recognition to EN60065, EN60950-1 through TÜV. Report No. J9851289 (DA53-752M,782M), J9850855 (DA53-302M,362M,622M)

DA38是利用微隙进行电场放电的浪涌保护元件。浪涌响应性好，可适应各种AC耐电压试验，是需要较大浪涌耐量的电源线防浪涌的理想浪涌吸收元件。

DA38 has a micro gap cut to an accuracy of several tens of microns in width for rapid response against induced lightning and electrostatic discharges. Allows performing the AC withstanding voltage test. This series are ideal for protecting power supplies against surge voltage.

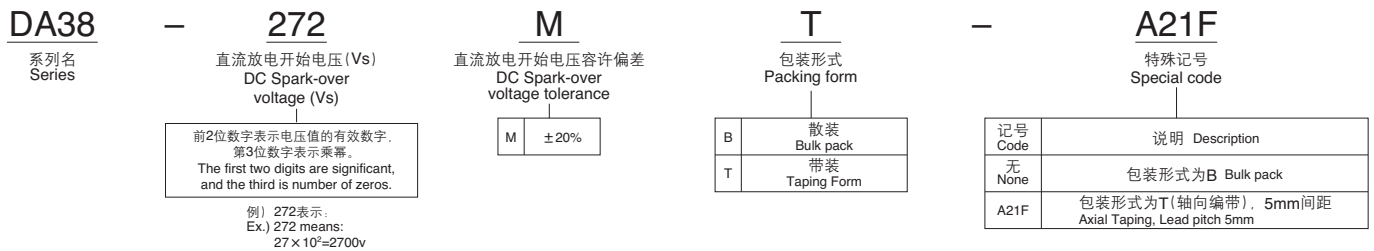
## ■特点

- 结构极其小巧。(直径3.8mm, 长度10mm)
- 可适应各种AC耐电压试验。
- 浪涌响应性好, 限制电压低。
- 静电容量小, 绝缘性优异。
- 可稳定应对反复浪涌及环境变化。
- 可以轴向编带包装。
- 无极性。
- 无明暗场所的特性差异。
- DA38系列可在各种电源电路中与压敏电阻组合使用。

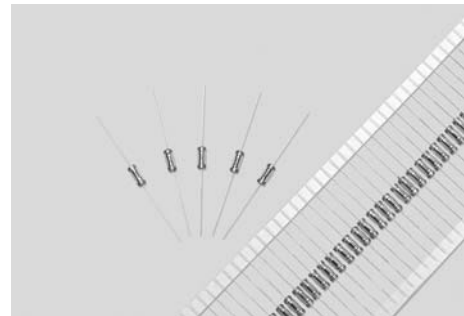
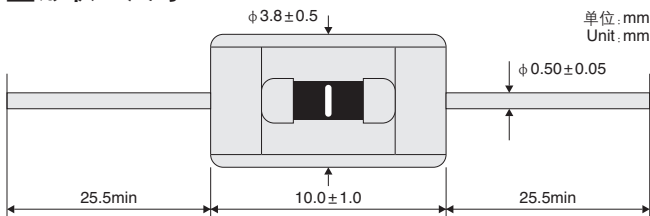
## ■Features

- Small size. (ø3.8mm Length 10mm)
- Allows performing the AC withstanding voltage test.
- Quick response for surge voltage, and low limiting voltage.
- Small capacitance and excellent insulation resistance.
- Stable for repeated discharge test conditions and environmental fluctuation.
- Axial taping available.
- No polarity.
- No dark effect.
- DA38 Series combined with varistor can be used as surge-protecting elements in power supplies.

## ■型号构成 Part number system



## ■形状・尺寸 Dimensions



## ■特性 Characteristics

型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacity 1kHz-6V max.	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test	AC耐电压 AC withstanding voltage	UL规格认证产品 UL recognized		CSA规格认证产品 CSA recognized	EN规格认证产品 EN recognized
		5) UL1414	6) UL1449					7) CSA C22.2	8) EN60065 EN60950-1		
DA38-102M	1,000V (800~1,200)	100MΩmin.	DC 500V	1pF max.	8/20μsec. 2,000A	8/20μsec. 100A 300times	-	-	○3)	-	-
DA38-152M	1,500V (1,200~1,800)						-	-	○3)	-	-
DA38-272M	2,700V (2,160~3,240)						○1)	○3)	○3)	-	-
DA38-302M	3,000V (2,400~3,600)						○1)	○3)	○3)	○4)	-
DA38-362M	3,600V (2,880~4,320)						○1)	○3)	○3)	○4)	-
DA38-452M	4,500V (3,600~5,400)	DC 1000V	DC 1000V	1500A	200times	AC1,000V-1min. AC1,200V-3sec.	○2)	-	-	-	
DA38-622M	6,200V (4,960~7,440)					AC1,500V-1min. AC1,800V-3sec. AC2,000V-1min. AC3,000V-1min.	○2)	-	-	-	

- 与压敏电阻 (AC125V : V1mA ≥ 270V, 8 Joule Min at 2ms. AC250V : V1mA ≥ 470V, 8 Joule Min at 2ms) 电气串接 (导线绕焊、压接、焊接等) 即可被认证。  
Approved if used together with a varistor (AC125V : V1mA ≥ 270V, 8 Joule Min at 2ms. AC250V : V1mA ≥ 470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 与压敏电阻 (V1mA ≥ 470V, 8 Joule Min at 2ms) 电气串接 (导线绕焊、压接、焊接等) 即可被认证。  
Approved if used together with a varistor (V1mA ≥ 470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 与压敏电阻 (AC125V : V1mA ≥ 270V, D ≥ ø5mm. AC250V : V1mA ≥ 470V, D ≥ ø5mm) 电气串接 (导线绕焊、压接、焊接等) 即可被认证。  
Approved if used together with a varistor (AC125V : V1mA ≥ 270V, D ≥ ø5mm. AC250V : V1mA ≥ 470V, D ≥ ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 与压敏电阻 (V1mA ≥ 470V, D ≥ ø5mm) 电气串接 (导线绕焊、压接、焊接等) 即可被认证。  
Approved if used together with a varistor (V1mA ≥ 470V, D ≥ ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- UL Standard UL1414 File No.E89615
- UL Standard UL1449 File No.E318314
- CSA Standard C22.2 No1 File No. CA111411
- DA38 has received recognition to EN60065, EN60950-1 through TÜV. Report No. J9950875  
特殊规格另请商洽。  
Please consult us for available

■特点

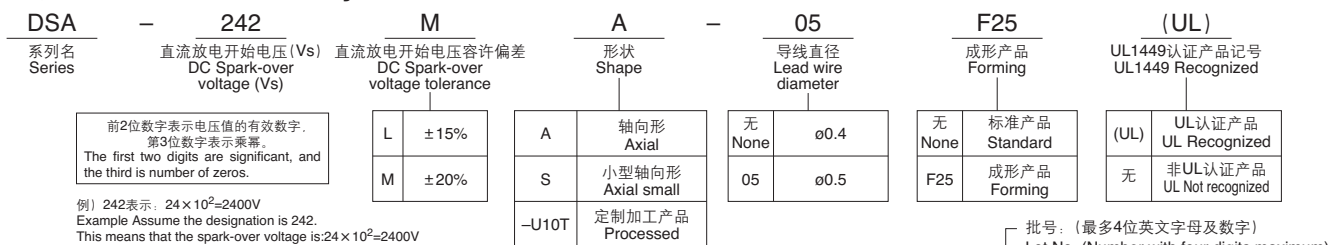
- 可广泛用于通信设备、传感线路等低电压低电流电路。
- 静电容量小，可用于信号线。
- DSA-A型可在各种电源电路中与压敏电阻或指定的陶瓷电阻组合使用。
- 在电源电路中，无需拆下浪涌吸收器即可进行AC耐电压试验。(2,400V以上)
- DSA-A型与UL认证压敏电阻或指定的陶瓷电阻(RGBS5L-30K)组合后，可作为UL规格认证产品使用。(UL1449文件号E318314)

★部分型号已获得CSA、TÜV认证。详情请垂询本公司。

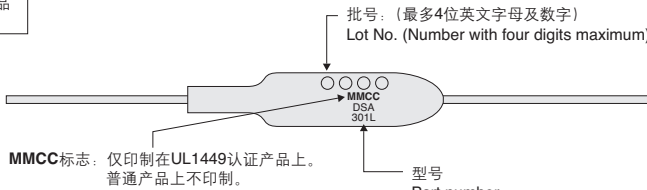
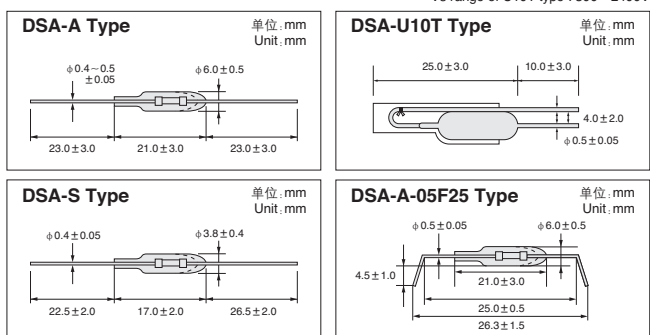
■Features

- The Models of this series are extensively used as surge-protecting elements for electronic equipment in low-voltage and low-current circuits such as telecommunication equipment and sensor lines.
- Excellent for protecting signal lines that require low capacitance.
- The DSA-A-type combined with varistor or a cement resistor can be used as surge-protecting elements in power supplies.
- Allows performing the AC withstanding voltage test without removal of the surge absorber.
- DSA A-type series displaying the "MMCC" trademark (except 402MA, 452MA) are UL-recognized protectors when connected to the appropriate varistor (UL recognized) or a cement resistor (RGBS5 30K) in-series. (UL1449 File No.E318314)
- ★Some models are approved by CSA, TÜV. Please contact us for details.

■型号构成 Part number system



■形状·尺寸 Dimensions



■特性 Characteristics

形状 Shape	型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 (Insulation resistance IR	静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test.	AC耐电压 Withstanding voltage	UL规格认证产品 UL recognized			CSA认证 8) CSA approved 8)	EN认证 9) EN approved 9)		
								5) UL1414	6) UL1449	7) UL1497B				
A-type	※DSA-301LA	300V(255~345)	100MΩmin.	2pF max.	导线直径 Lead wire diameter $\phi 0.4mm$ :1500A	8/20μsec. 100A 300times	-	-	○2)	○	-	-		
	※DSA-501MA	500V(400~600)					DC100V	-	-	○2)	○	-	-	
	※DSA-701MA	700V(560~840)					DC250V	-	-	○2)	○	-	-	
	※DSA-102MA	1,000V(800~1,200)					DC500V	-	-	○2)	-	-	-	
	※DSA-152MA	1,500V(1,200~1,800)						-	-	○2)	-	-	-	
	※DSA-242MA	2,400V(1,920~2,880)						-	-	○1)	○2)	-	○3)	-
	DSA-282MA	2,800V(2,240~3,360)						-	-	○1)	○2)	-	○3)	-
	DSA-302MA	3,000V(2,400~3,600)						-	-	○1)	○2)	-	○3)	○4)
	DSA-332MA	3,300V(2,640~3,960)						-	-	○1)	○2)	-	○3)	○4)
	DSA-362MA	3,600V(2,880~4,320)						-	-	○1)	○2)	-	○3)	○4)
	DSA-402MA	4,000V(3,200~4,800)						-	-	○1)	-	-	○3)	○4)
	DSA-452MA	4,500V(3,600~5,400)						-	-	○1)	-	-	○3)	○4)
	DSA-622MA	6,200V(4,960~7,440)					DC1000V	-	-	○1)	-	○3)	○4)	
DSA-752MA	7,500V(6,000~9,000)	-	-	○1)	-	-	○3)	○4)						
S-type	DSA-301LS	300V(255~345)	DC100V	导线直径 $\phi 0.4mm$ :1000A	-	-	-	-	-	-	-			
	DSA-501MS	500V(400~600)	DC250V		-	-	-	-	-	-				
	DSA-701MS	700V(560~840)	DC500V		-	-	-	-	-	-				
	DSA-102MS	1,000V(800~1,200)	-		-	-	-	-	-	-				

- 1) 与压敏电阻(AC125V: V1mA $\geq$ 270V, 8 Joule Min at 2ms. AC250V: V1mA $\geq$ 470V, 8 Joule Min at 2ms) 电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (AC125V: V1mA $\geq$ 270V, 8 Joule Min at 2ms. AC250V: V1mA $\geq$ 470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
  - 2) 与本公司指定的陶瓷电阻(AC125V RGBS5L-30K)电气串接(导线绕焊、压接、焊接等)即可被认证。包括UL认证压敏电阻(AC125V: V1mA $\geq$ 270V, D $\geq$ 05mm), AC250V: V1mA $\geq$ 470V, D $\geq$ 05mm), Approved if used together with a resistor (AC125V: RGBS5L-30K) or a UL approved varistor (AC125V: V1mA $\geq$ 270V, D $\geq$ 05mm. AC250V: V1mA $\geq$ 470V, D $\geq$ 05mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
  - 3) 与压敏电阻(AC125V: V1mA $\geq$ 270V, D $\geq$ 05mm. AC250V: V1mA $\geq$ 470V, D $\geq$ 05mm) 电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (AC125V: V1mA $\geq$ 270V, D $\geq$ 05mm. AC250V: V1mA $\geq$ 470V, D $\geq$ 05mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
  - 4) 与压敏电阻(压敏电阻电压(V1mA): 470V以上, 尺寸:  $\phi 10mm$ 以上) 电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (V1mA $\geq$ 470V, D $\geq$ 10mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
  - 5) UL Standard UL 1414 File No. E89615
  - 6) UL Standard UL 1449 File No. E318314
  - 7) UL Standard UL497B File No. E175280 DC spark-over voltage is described as break down voltage in the UL report.
  - 8) CSA Standard C22.2 No.1 File No. CA111411
  - 9) DSA has received recognition to EN60065, EN60950-1 through TÜV. Report No. J9851289(DSA-752MA), J9251508(除DSA-752MA以外的品种)。
- ※: 可提供U10T型 U10T type can be provided

DB60是采用微隙方式的放电管型电源用浪涌吸收器。引脚间距仅为5mm，结构小巧，贴装面积小。

The DB60 are designed specifically for power supplies using microgap technology to discharge surges.

With a 5mm pitch and a small body size, the part takes up very little space on the board.

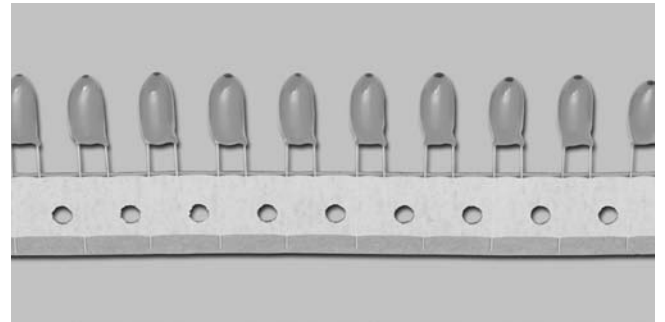
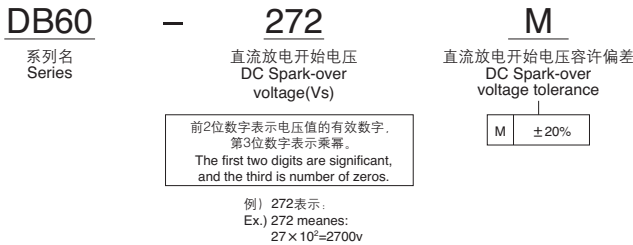
■特点

- 引脚间距为5mm的径向带带形状，适合自动插装。
- 采用微隙方式，具有优异的浪涌响应效果。
- 100MΩ以上的高绝缘阻抗特性。
- DB60系列可在各种电源电路中与压敏电阻组合使用。

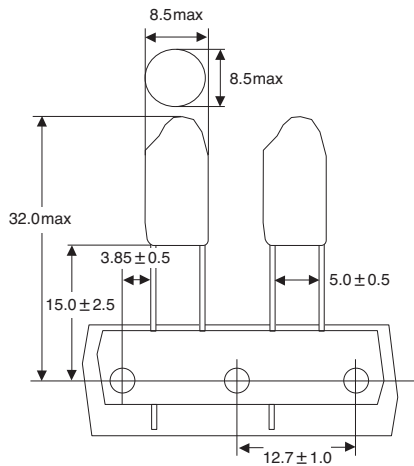
■Features

- The 5mm pitch; radial taped parts can be mounted using automatic insertion equipment.
- Superior surge response characteristics due to microgap technology.
- High insulation resistance of over 100MΩ.
- DB60 series combined with varistor can be used as surge-protecting elements in power supplies.

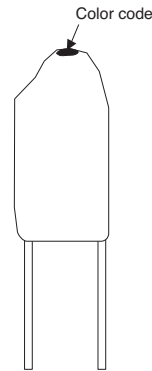
■型号构成 Part number system



■形状・尺寸 Dimensions



■标记 Marking



颜色代码 Color code	型 号 Part No.
黑 Black	
褐 Brown	
红 Red	DB60-272M
橙 Orange	
黄 Yellow	
绿 Green	DB60-302M
蓝 Blue	DB60-362M
紫 Purple	DB60-452M
灰 Gray	
白 White	

■特性 Characteristics

型 号 Part No.	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test	AC耐电压 AC Withstanding Voltage	UL规格认证产品 UL recognized		EN规格认证产品 EN recognized
		100MΩ min.	DC500V					4) UL1414	5) UL1449	6) EN60065 EN60950-1
DB60-272M	2,700V (2,160~3,240)			100MΩ min.	DC500V	1pF max.	8/20μsec. 1500A	8/20μsec. 100A 200times	AC1,000V-1min. AC1,200V-3sec.	○1)
DB60-302M	3,000V (2,400~3,600)	AC1,500V-1min.	○1)						○2)	○3)
DB60-362M	3,600V (2,880~4,320)	AC1,800V-3sec.	○1)						○2)	○3)
DB60-452M	4,500V (3,600~5,400)	DC1000V	AC2,000V-1min.						○1)	-

- 1): 与压敏电阻 (AC125V : V1mA ≥ 270V, 8 Joule Min at 2ms. AC250V : V1mA ≥ 470V, 8 Joule Min at 2ms) 电气串接 (导线绕焊、压接、焊接等) 即可被认证。  
Approved if used together with a varistor (AC125V : V1mA ≥ 270V, 8 Joule Min at 2ms. AC250V : V1mA ≥ 470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 2): 与压敏电阻 (AC125V : V1mA ≥ 270V, D ≥ 5mm. AC250V : V1mA ≥ 470V, D ≥ 5mm) 电气串接 (导线绕焊、压接、焊接等) 即可被认证。  
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- 3): 与压敏电阻 (V1mA ≥ 470V, D ≥ 5mm) 电气串接 (导线绕焊、压接、焊接等) 即可被认证。  
Approved if used together with a varistor (V1mA ≥ 470V, D ≥ 5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 4): UL Standard UL1414 File No.E89615
- 5): UL Standard UL1449 File No.E318314
- 6): DB60 has received recognition to EN60065, EN60950-1 through TÜV. Report No.J50164463

DSAHR

■特点

●用于需要较大浪涌耐量的电路的防浪涌。

DSAHR

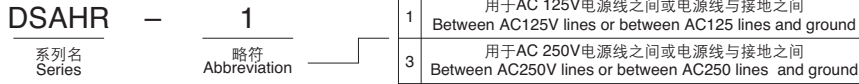
■Features

●Used to protect power supplies.

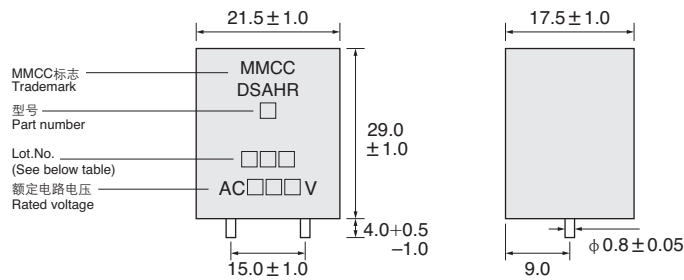


浪涌吸收器  
SURGE ABSORBER

■型号构成 Part number system



■形状尺寸 Dimensions



■特性 Characteristics

额定电压 Rated voltage	型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test
AC125V	DSAHR-1	500V(400~600)	100MΩmin	DC100V	5pF max.	5000A	8/20μsec. 100A 300times
AC250V	DSAHR-3	800V(640~960)		DC250V			

■ DSAZR, DSANR, DSAHR  
批号表示方法 Lot No. system

批号表示方法 Lot No. system

印记:白色 Marking color:white (DSAZR:gray)

批号左起第1个字符:表示生产地点的英文字母  
Lot No. first character:factory

批号左起第2个字符:生产年份的最后一位  
Lot No. second character:manufactured year(Last one digit)

批号左起第3个字符:生产月份(参见下表)  
Lot No. third character:manufactured month(See table below)

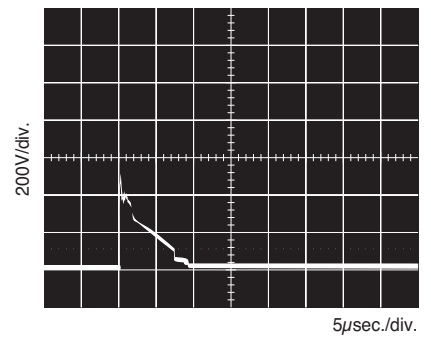
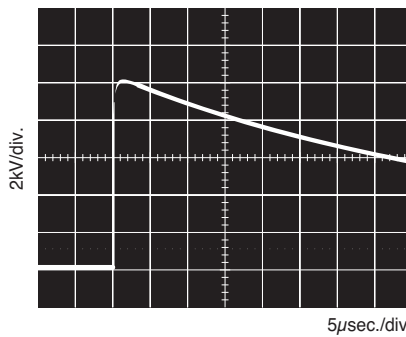
月份 month	1	2	3	4	5	6	7	8	9	10	11	12
略符 Code	A	B	C	D	E	F	G	H	J	K	L	M

例: E5D 1995年4月生产  
Example: E5D manufactured April, 1995

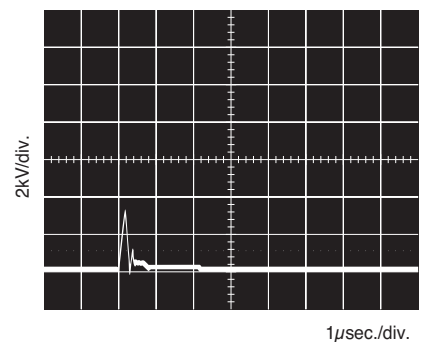
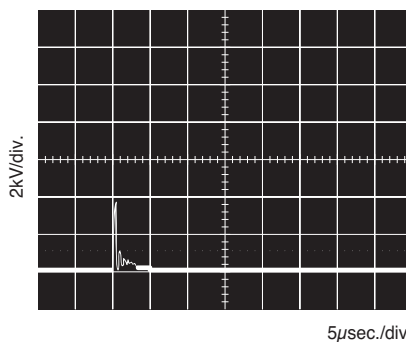
■浪涌响应特性(参考值) Surge response characteristics(Reference)

浪涌原波形 Original waveform  
1.2/50μsec. 10kV

DSA-301LA 响应波形 Response waveform



DSA-242MA 响应波形 Response waveform



DSANR

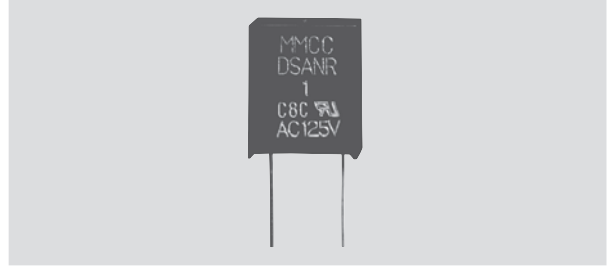
■特点

- 可在各种电源电路中使用。
- 部分型号已获得UL、TÜV认证。

DSANR

■Features

- Used to protect power supplies.
- Some models are recognized by UL, TÜV.

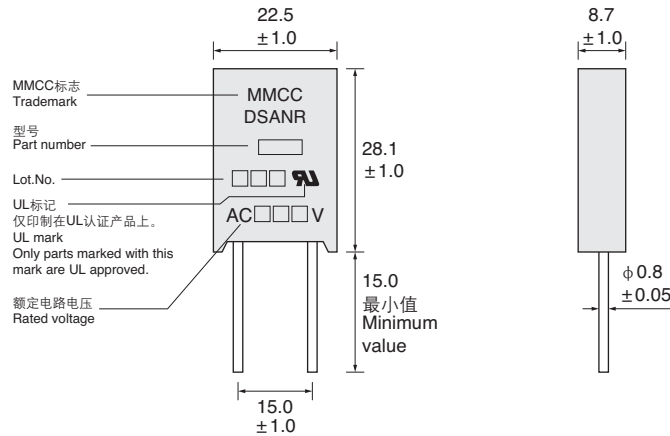


■型号构成 Part number system



1	用于AC125V电源线之间 Between AC125V lines	4	用于AC125V电源线与接地之间 (用于AC1200V绝缘耐压试验) Between AC125V lines and ground (For AC 1200V withstanding voltage test)	6 A	用于AC250V电源线与接地之间 (用于AC1800V绝缘耐压试验) Between AC250V lines and ground (For AC 1800V withstanding voltage test)	10 B	用于AC250V电源线与接地之间 (用于AC2000V绝缘耐压试验) Between AC250V lines and ground (For AC 2000V withstanding voltage test)	(UL)	UL认证产品 UL Recognized
2	用于AC125V电源线与接地之间 Between AC125V lines and ground							无 None	非UL 认证产品 UL not Recognized
3	用于AC250V电源线之间或 电源线与接地之间 Between AC250V lines or between AC250 lines and ground	5	用于AC250V电源线与接地之间 (用于AC1500V绝缘耐压试验) Between AC250V lines and ground (For AC 1500V withstanding voltage test)	9	用于AC250V电源线与接地之间 (用于AC2000V绝缘耐压试验) Between AC250V lines and ground (For AC 2000V withstanding voltage test)				

■形状尺寸 Dimensions



■特性 Characteristics

额定电压 Rated voltage	型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 1kHz-6V max. Electrostatic capacitance 1kHz-6V max. C	浪涌耐量 8/20μsec. Surge current capacity 8/20μsec.	浪涌寿命 Surge life test.	AC耐电压 Withstanding voltage	UL规格认证产品 UL approved		EN认证 EN approved 3)
			100MΩmin.	2pF max.					1000A	8/20μsec. 100A 500 times	
AC125V	DSANR-1	500V(400~600)			100MΩmin.	DC100V	2pF max.	1000A			8/20μsec. 100A 500 times
	DSANR-2	600V(480~720)	DC250V	-		-			○	-	
	DSANR-2A	800V(640~960)	DC500V	-		-			-	-	
	DSANR-2B	1,100V(880~1,320)		-		-			-	-	
	DSANR-4	2,400V(1,920~2,880)		AC1,000V-1min. AC1,200V-3sec.		○			-	-	
	DSANR-6	3,600V(2,880~4,320)		AC1,800V-3sec.		-			-	-	
AC250V	DSANR-3	800V(640~960)	DC250V	-	-	○	-				
	DSANR-3A	1,400V(1,120~1,680)	DC500V	-	-	-	-				
	DSANR-5	3,000V(2,400~3,600)	DC500V	AC1,500V-1min.	○	-	○				
	DSANR-6A	3,600V(2,880~4,320)		AC1,800V-3sec.	-	-	○				
	DSANR-9	4,000V(3,200~4,800)		AC2,000V-1min.	-	-	○				
	DSANR-10B	4,500V(3,600~5,400)		AC2,000V-1min.	-	-	○				

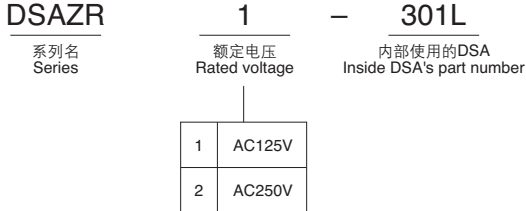
1): UL Standard UL 1414 File No. E89615  
2): UL Standard UL 1449 File No. E318314  
3): DSANR has received recognition to EN60065, EN60950-1 through TÜV. Report No. J9251508

DSAZR

■特点

- 可在各种电源电路中使用。
- 可用于电视机天线输入电路的防浪涌。
- 部分型号已获得UL、CSA、TÜV认证。

■型号构成 Part number system



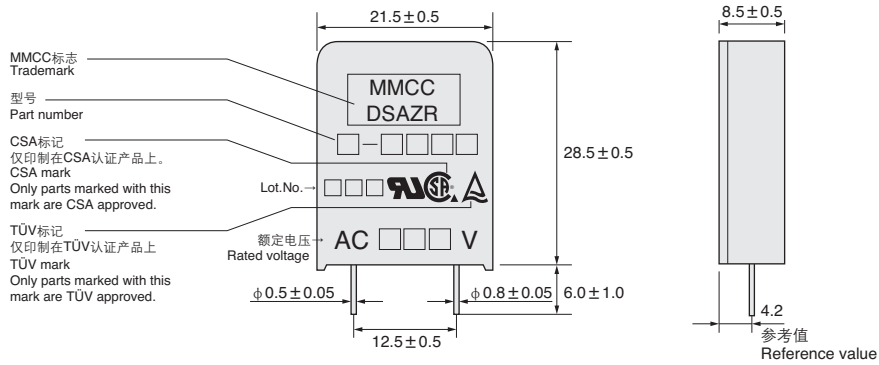
DSAZR

■Features

- Used to protect power supplies.
- Excellent for protecting TV-tuner circuits.
- Some models are recognized by UL, CSA and TÜV.



■形状尺寸 Dimensions



■特性 Characteristics

额定电压 Rated voltage	型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR	静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test.	AC耐电压 Withstanding voltage	UL规格认证产品 UL recognized		CSA规格 认证产品 CSA approved 3)	EN认证 EN approved 4)	
								1) UL1414	2) UL1449			
AC125V	DSAZR1-301L	500V(400~600)	100MΩmin.	DC100V	2pF max.	1000A	8/20μsec. 100A 300 times	-	-	○	-	-
	DSAZR1-501M	600V(480~720)		DC250V				-	-	○	-	-
	DSAZR1-102M	1,100V(880~1,320)		DC500V				-	-	-	-	-
	DSAZR1-242M	2,400V(1,920~2,880)						AC1,000V-1min. AC1,200V-3sec.	○	○	○	-
	DSAZR1-282M	2,800V(2,240~3,360)						AC1,250V-3sec.	○	○	○	-
	DSAZR1-302M	3,000V(2,400~3,600)						AC1,500V-1min.	○	○	○	-
	DSAZR1-362M	3,600V(2,880~4,320)						AC1,800V-3sec.	○	○	○	-
	DSAZR1-402M	4,000V(3,200~4,800)						AC2,000V-1min.	○	○	○	-
DSAZR1-452M	4,500V(3,600~5,400)	DC1000V	○	-	○	-						
AC250V	DSAZR2-501M	800V(640~960)	DC250V	-	-	-	-					
	DSAZR2-102M	1,400V(1,120~1,680)	DC500V	-	-	○	-					
	DSAZR2-242M	2,400V(1,920~2,880)		AC1,000V-1min. AC1,200V-3sec.	○	○	-					
	DSAZR2-302M	3,000V(2,400~3,600)		AC1,500V-1min.	○	○	○					
	DSAZR2-362M	3,600V(2,880~4,320)		AC1,800V-3sec.	○	○	○					
	DSAZR2-402M	4,000V(3,200~4,800)		AC2,000V-1min.	○	○	○					
	DSAZR2-452M	4,500V(3,600~5,400)		DC1000V	○	-	○					

1): UL Standard UL 1414 File No. E89615  
 2): UL Standard UL 1449 File No. E318314  
 3): CSA Standard C22.2 No. 1 File No. CA87070  
 4): DSAZR has received recognition to EN60065, EN60950-1 through TÜV. Report No. J9251508

DE37是符合5mm引脚间距插装的电源线、通信线路用浪涌吸收器。该系列结构小巧，浪涌耐量达1500A(8/20μsec.)，动作电压范围为300~4500V。其中400V的产品符合ADSL POTS\*分路器用规格：ITU-T(国际电信联盟 试验规格)K.20或K.21的Basic Test Condition(基本试验条件)，被日本国内许多用户用于局用或家用ADSL分路器，并获得一致好评。  
※POTS: Plain Old Telephone Service

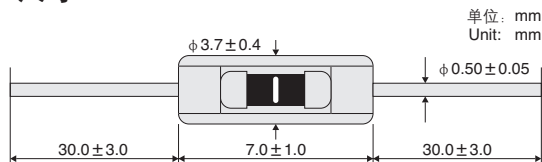
### ■特点

- 采用5mm引脚间距的径向编带形状，适合自动插装(元件高度控制在15.5mm以下)。(2700V以上的品种除外)
- 可选用轴向编带(玻璃放电管平放时也可实现自动插装)。
- 1pF以下的低静电容量，不会阻碍兆级的高速通信信号。
- 采用微隙方式，具有优异的浪涌响应效果。
- 具有100MΩ以上的高绝缘阻抗特性。

### ■型号构成 Part number system

<b>DE37</b>	<b>—</b>	<b>401</b>	<b>—</b>	<b>W</b>	<b>—</b>	<b>S</b>	<b>—</b>	<b>00</b>	<b>—</b>	<b>B</b>
系列名 Series		直流放电开始电压 (Vs) DC Spark-over voltage(Vs)		直流放电开始电压容许偏差 DC Spark-over voltage tolerance		编带形式 Taping form		编带尺寸 Taping dimensions		包装形式 Packing form
		前2位数字表示电压值的有效数字。 第3位数字表示零数。 The first two digits are significant, and the third is number of zeros. 例) 401表示: 40 × 10 <sup>1</sup> = 400V Ex.) 401 means: 40 × 10 <sup>1</sup> = 400V		L ±15% M ±20% W +20% -15%		A 轴向(卧式)编带 Axial taping D 径向(立式)编带 Radial taping S 无编带 No taping		单位: mm Unit:mm 记号 Symbol 04 径向(立式)编带 Radial taping 12 26 10 22 52 10 00 无编带 No taping		B 散装 Bulk pack F 扁平带装 Flat pack taping

### ■形状・尺寸 Dimensions



### ■特性 Characteristics

型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity 8/20μsec.	寿命测试 Surge life test	AC耐电压 Withstanding Voltage	UL规格认证产品 UL recognized			EN规格认证产品 EN recognized
		100MΩ2min.						UL 497B 5)	UL 1414 6)	UL 1449 7)	
DE37-301L	300V (255~345)	100MΩ2min.	DC 100V	1pF max.	1500A (8/20μsec.)	8/20 μsec. 100A 300times	AC1,000V-1min. AC1,200V-3sec.	○			EN60065 8) EN60950-1
DE37-351M	350V (280~420)		DC 250V					○			
DE37-401W	400V (340~480)							○			
DE37-501M	500V (400~600)		DC 500V			○					
DE37-272M	2,700V (2,160~3,240)					8/20 μsec. 100A 200times		—	○ 1)	○ 3)	
DE37-302M	3,000V (2,400~3,600)							AC1,500V-1min.	—	○ 1)	
DE37-362M	3,600V (2,880~4,320)	AC1,800V-3sec.		—	○ 1)	○ 3)	○ 4)				
DE37-452M	4,500V (3,600~5,400)	DC 1000V	—	○ 2)	—	○ 4)					

- 1): 若与压敏电阻(AC125V : V1mA ≥ 270V, 8 Joule Min at 2ms, AC250V : V1mA ≥ 470V, 8 Joule Min at 2ms)电气串接(导线绕焊、压接、焊接等)即被认可。  
Approved if used together with a varistor (AC125V : V1mA ≥ 270V, 8 Joule Min at 2ms, AC250V : V1mA ≥ 470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 2): 若与压敏电阻(V1mA ≥ 470V, 8 Joule Min at 2ms)电气串接(导线绕焊、压接、焊接等)即被认可。  
Approved if used together with a varistor (V1mA ≥ 470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 3): 若与压敏电阻(AC125V : V1mA ≥ 270V, D ≥ ø5mm, AC250V : V1mA ≥ 470V, D ≥ ø5mm)电气串接(导线绕焊、压接、焊接等)即被认可。  
Approved if used together with a varistor (AC125V : V1mA ≥ 270V, D ≥ ø5mm, AC250V : V1mA ≥ 470V, D ≥ ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 4): 若与压敏电阻(V1mA ≥ 470V, D ≥ ø5mm)电气串接(导线绕焊、压接、焊接等)即被认可。  
Approved if used together with a varistor (V1mA ≥ 470V, D ≥ ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 5): UL Standard UL 497B File No. E175280 DC spark-over voltage is described as break down voltage in the UL report.
- 6): UL Standard UL 1414 File No. E89615
- 7): UL Standard UL 1449 File No. E70785 or E318314
- 8): DE37 has received recognition to EN60065, EN60950-1 through TÜV. Report No.J50164439

### ■ITU-T K.20 Basic Test Condition(基本试验条件)

- 浪涌试验  
10/700 μsec 1.5kV/4kV(25Ω) ±5次
- AC感应试验  
AC600V(600Ω) 1sec. 5次
- AC交叉试验  
AC230V(10~1000Ω) 15min  
但外加AC230V时, DE37-401W未响应。

### ■Features

- The 5mm pitch; radial taped parts can be mounted using automatic insertion equipment (the part is lower than 15.5mm). (except the item of over 2700V)
- Also available in axial taping (the glass tube can be mounted flat using automatic insertion equipment).
- Can be used on megabit class high speed without attenuation of signal due a capacitance value of less than 1pF.
- Superior surge response characteristics due to microgap technology.
- High insulation resistance of over 100MΩ.

### ■Basic Conditions for ITU-T K.20

- Surge Test: 10/700μsec, 1.5kV/4kV (25Ω), 5 times.
- AC Induced Test : AC600V (600Ω), 1sec., 5 times.
- AC Cross Test: AC230V(10~1000Ω), 15min.  
(however, AC230V is too low for the DE37-401W to react)

■特点

- 用于电话机、调制解调器、传真机等电话线路连接设备的防浪涌。
- 用于电脑等通信线路连接设备的防浪涌。
- 部分型号已获得UL规格认证。

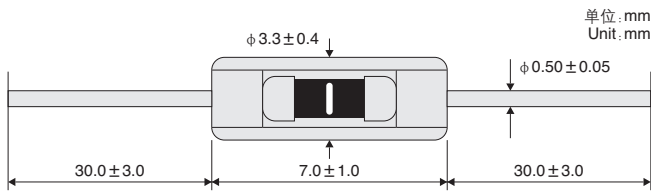
■Features

- Surge protection for telephone lines.(telephone, modem, facsimile etc.)
- Surge protection for telecommunication lines.(computer etc.)
- Some models are recognized by UL.

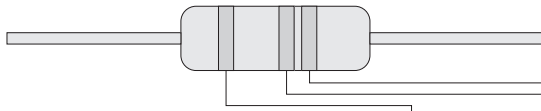
■型号构成 Part number system

<b>DSS</b> 系列名 Series	<b>301</b> 直流放电开始电压 (Vs) DC Spark-over voltage(Vs)  前2位数字表示电压值的有效数字。 第3位数字表示零。 The first two digits are significant, and the third is number of zeros.  例) 301表示: 30 × 10 <sup>1</sup> = 300v Ex.) 301 means: 30 × 10 <sup>1</sup> = 300v	<b>L</b> 直流放电开始电压容许偏差 DC Spark-over voltage tolerance  L ±15% M ±20%	<b>S</b> 编带形式 Taping form  A 轴向(卧式)编带 Axial taping C 径向(立式)编带 Radial taping S 无编带 No taping	<b>00</b> 编带尺寸 Taping dimensions  单位: mm Unit:mm 记号 Symbol 编带内侧宽度 Taping width (径向编带) (Radial taping) 间距 Pitch 04 12 22 00 26 10 10 52 10 无编带 No taping	<b>B</b> 包装形式 Packing form  B 散装 Bulk pack F 扁平带装 Flat pack taping R 卷盘带装 Reel taping
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■形状·尺寸 Dimensions



■标记 Marking



颜色代码 Color code	Color code	第一色带 First color band	第二色带 Second color band	第三色带 Third color band
		型号 Part number	生产批号十位数 The tens digit of product Lot No.	生产批号个位数 The unit digit of product Lot No.
黑	Black		0	0
褐	Brown		1	1
红	Red	201M	2	2
橙	Orange	301L	3	3
黄	Yellow	401M	4	4
绿	Green		5	5
蓝	Blue	601M	6	6
紫	Purple		7	7
灰	Gray	351M	8	8
白	White		9	9

■特性

型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test	UL规格认证产品 UL recognized
DSS-201M	200V(160~240)	100MΩmin.	DC 100V	1pF max.	500A	DOC单循环1) DOC 1cycle	UL 497B 2)
DSS-301L	300V(255~345)		DC 250V				○
DSS-351M	350V(280~420)						-
DSS-401M	400V(320~480)						○
DSS-601M	600V(480~720)		○				

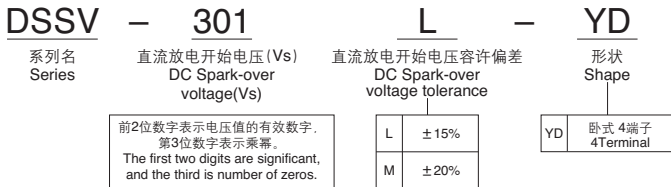
1). DOC 1cycle 10/1000μsec. 1KV-12times, 100/1000μsec. 1KV-12times respectively.  
2). UL Standard UL 497B File No. E175280 DC spark-over voltage is described as break down voltage in the UL report.

DSSV

■特点

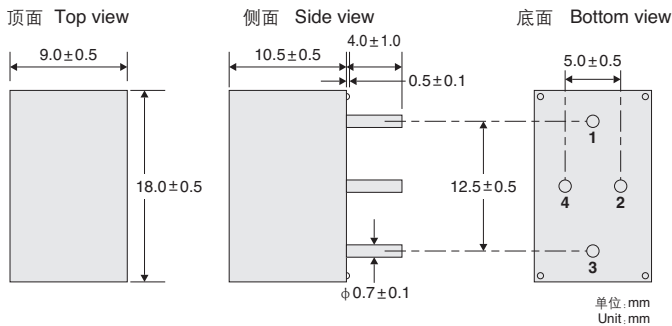
- 用于电话机、调制解调器、传真机等电话线路连接设备的防浪涌以及防过电压 (UL1459、CSA-22.2 No.225-M90)。

■型号构成 Part number system



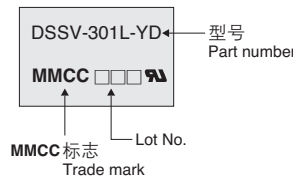
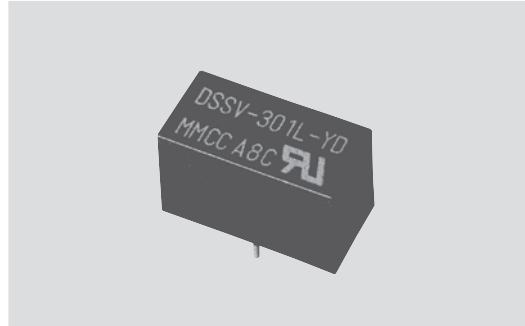
■形状・尺寸 Dimensions

DSSV-YD Type



■Features

- Protects telephone line equipment (telephone, modem, facsimile etc.) against surge and overvoltage (UL1459, CSA-22.2 No. 225-M90).



■特性 Characteristics

型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌耐量 Surge current capacity 8/20μsec.	浪涌寿命 Surge life test	UL规格认证产品 UL recognized
		100MΩmin.	DC 100V DC 250V				UL 497A 3)
DSSV-201M-YD	200V(160~240)	100MΩmin.	DC 100V	2pF max.	400A	FCC循环1) FCC cycle 1)	○
DSSV-301L-YD	300V(255~345)		DC 250V			DOC单循环2) DOC 1cycle 2)	○
DSSV-401M-YD	400V(320~480)						

1). FCC10/560μsec. 100A ±3times, 10/160μsec. 200A ±3times  
2). DOC 1cycle 10/1000μsec. 1KV-12times, 100/1000μsec. 1KV-12times respectively.  
3). UL Standard UL 497A File No. E131010

■DSSV型过电压截止特性 Overvoltage cut off properties of DSSV type

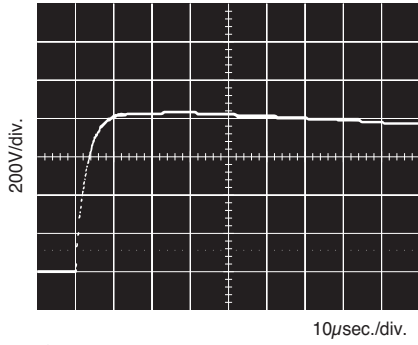
型号 Part number	DSSV-301L-YD, DSSV-401M-YD		
外加条件 Applied conditions	AC600V-40A-1.50sec.	AC600V-7A-5sec.	AC600V-2.2A-30min.
着火率 Rate of ignition n=100	0	0	0

在电话机的安全标准、UL60950、CSA-C22.2 No.225-M90中，有对电话机的通信线路外加上述过电压的试验。对于上述过电压，DSSV系列将快速作出响应，阻断流入通信线路或浪涌吸收器的过电压。

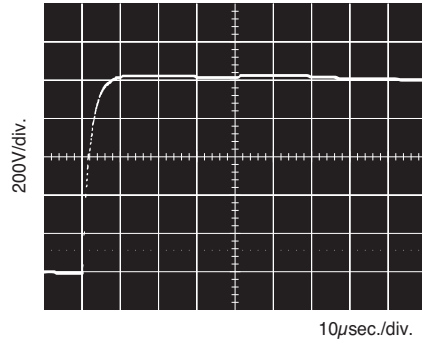
Overvoltage testing is required in both UL60950 and CSA-C22.2 No.225-M90. The DSSV is effective in protecting against these overvoltage conditions by opening the circuit.

■ 浪涌响应特性(参考值) Surge Response characteristics (Reference)

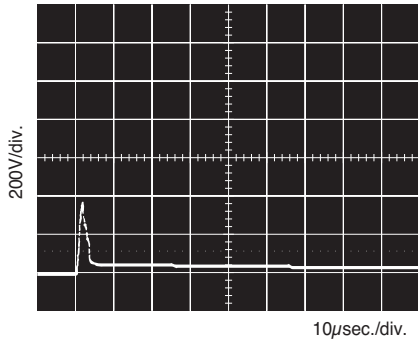
浪涌原波形 Original waveform  
FCC 10/560 $\mu$ sec. 800V



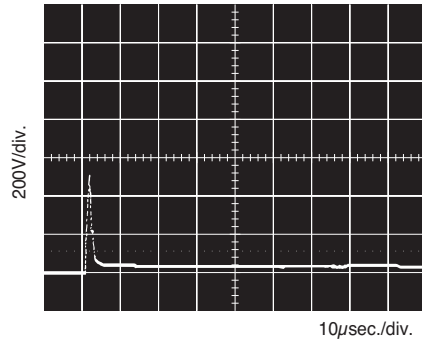
DOC 10/1000 $\mu$ sec. 1000V



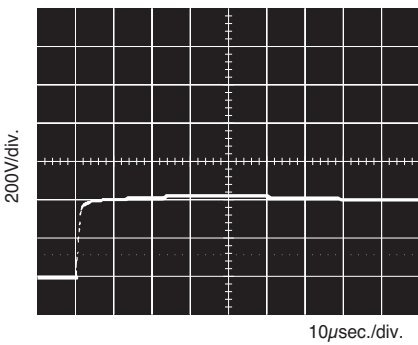
响应波形 Response waveform  
DSS-301L, DSSV-301L-YD  
FCC 10/560 $\mu$ sec. 800V外加



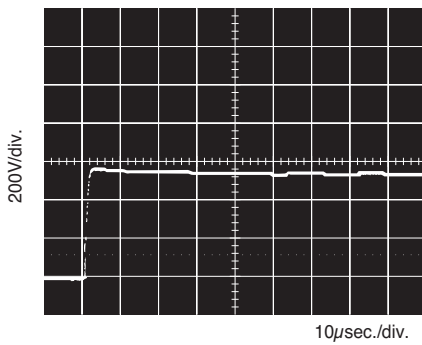
DSS-401L, DSSV-401M-YD  
DOC 10/1000 $\mu$ sec. 1000V外加



压敏电阻 Varistor 270V



压敏电阻 Varistor 390V



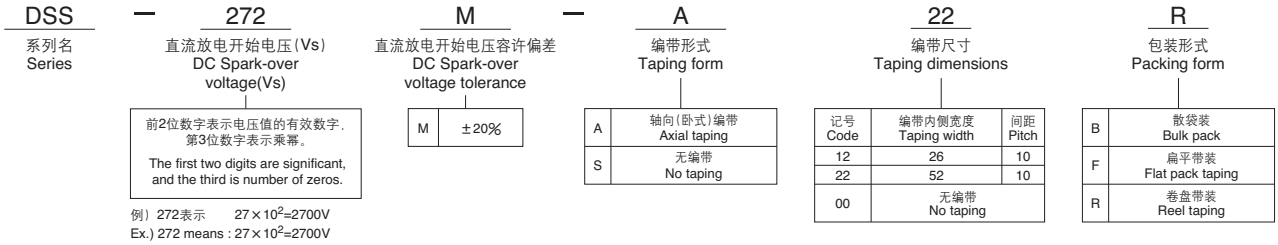
■特点

- 结构极其小巧，且放电开始电压为高电压。(备有2700、3000V共2个品种)
- DSS-272M可适应AC1200V-3秒或AC1000V-1分钟、DSS-302M可适应AC1500V-1分钟的AC耐压试验。
- 浪涌吸收性好，限制电压低。
- 静电容量小，绝缘性(100MΩ以上)优异。
- 可稳定应对反复浪涌及环境变化。
- 无极性。
- 无明暗效应。
- 本系列已获得UL1414、UL1449、CSA、TÜV认证。

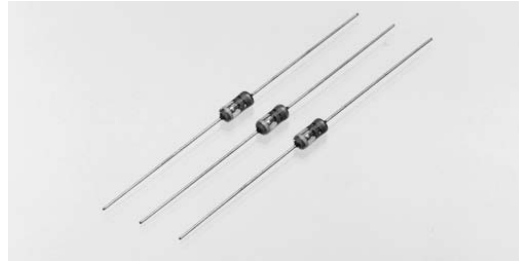
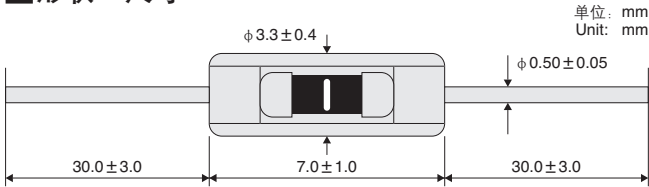
■Features

- High DC spark-over voltage in spite of compact size (2types; 2700, 3000V).
- DSS-272M and DSS-302M each correspond to 1200volts rms 3seconds or 1000volts rms 1minute and 1500volts rms 1minute AC withstanding voltage tests respectively.
- Quick response for surge voltage and low limiting voltage.
- Small capacitance and excellent insulation resistance (100MΩmin)
- Stable for repeated discharge test conditions and environmental fluctuation.
- No polarity.
- No dark effect.
- This series are recognized under UL 1414, UL1449, CSA and TÜV.

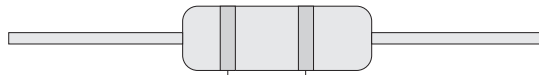
■型号构成 Part number system



■形状·尺寸 Dimensions



■标记 Marking



颜色代码 Color code	Color code	第一色带 First color band	第二色带 Second color band
		型号 Part number	生产批号个位数 The unit digit of lot number
黑	Black		0
茶	Brown		1
红	Red	272M	2
橙	Orange	302M	3
黄	Yellow		4
绿	Green		5
蓝	Blue		6
紫	Purple		7
灰	Gray		8
白	White		9

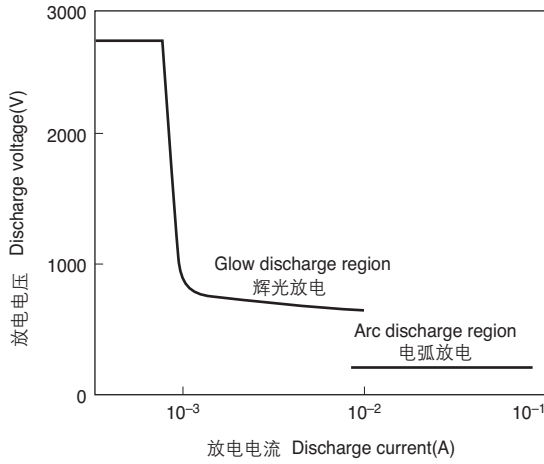
■特性 Characteristics

型号 Part number	直流通电开始电压 DC spark-over voltage Vs(V)	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity	浪涌寿命 Surge life test	AC耐压 AC withstanding voltage	UL规格认证产品 UL approved		CSA规格 CSA approved (7)	EN认证 EN approved (8)
		100MΩmin.	DC500V					5) UL1414	6) UL1449		
DSS-272M	2,700V(2,160~3,240)	100MΩmin.	DC500V	1pF max.	8/20μsec-500A	8/20μsec50A 300次 300 times	AC1,200V-3sec. AC1,000V-1min.	○1) ○2)	○3)	-	
DSS-302M	3,000V(2,400~3,600)						AC1,500V-1min.	○1) ○2)	○3)	○4)	

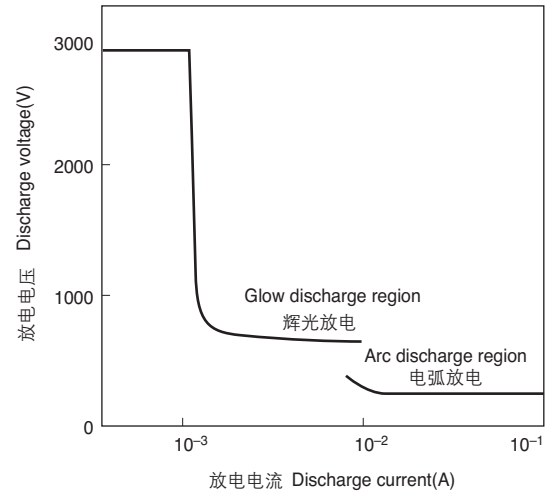
- 1) 与UL认证压敏电阻(AC125V : V1mA≥270V, 8 Joule Min at 2ms, AC250V : V1mA≥470V, 8 Joule Min at 2ms) 电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with an UL approved varistor (AC125V : V1mA≥270V, 8 Joule Min at 2ms, AC250V : V1mA≥470V, 8 Joule Min at 2ms), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 2) 与UL认证压敏电阻(V1mA≥270V, D≥ø5mm) 电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with an UL approved varistor (V1mA≥270V, D≥ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 3) 与压敏电阻(AC125V : V1mA≥270V, D≥ø5mm. AC250V : V1mA≥470V, D≥ø5mm) 电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (AC125V : V1mA≥270V, D≥ø5mm. AC250V : V1mA≥470V, D≥ø5mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 4) 与压敏电阻(V1mA≥470V, D≥ø10mm) 电气串接(导线绕焊、压接、焊接等)即可被认证。  
Approved if used together with a varistor (V1mA≥470V, D≥ø10mm), electrically connected in series by means such as twist and soldering, staking, welding etc.
- 5) UL Standard UL1414 File No.E89615
- 6) UL Standard UL1449 File No.E70785 or E318314
- 7) CSA Standard C22.2 No1 File No. CA111411
- 8) DSS-302M has received recognition to EN60065, EN60950-1 through TÜV. Report No J9750615.

■ V—I特性(参考值) Characteristics (Reference)

DSS-272M

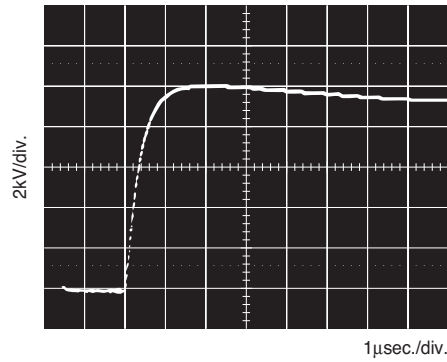


DSS-302M

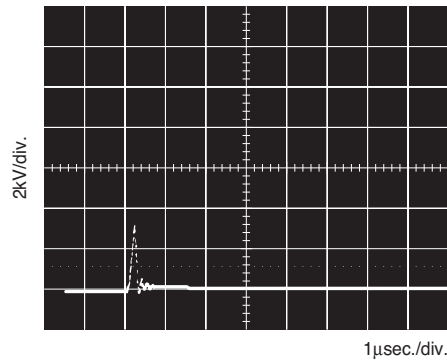


■ 浪涌响应特性(参考值) Surge Response characteristics (Reference)

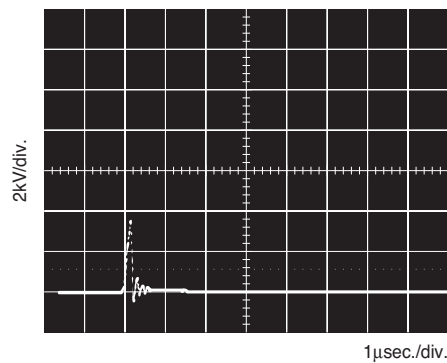
浪涌原波形  
Original waveform  
1.2/50μsec.10kV



DSS-272M响应波形  
DSS-272M Response waveform



DSS-302M响应波形  
DSS-302M Response waveform



CDA70是芯片型通讯线路用电压吸收器  
实现高质冲击响应特性和0.6pF以下低静电容量。  
虽然是4032形状的小型低背芯片，但是，具备8/20 μs-2,000A型的抗冲击破坏力。

CDA70 is a chip type surge absorber for protecting communication networks with excellent surge protection characteristics and low capacitance less than 0.6pF. Even with its small package design, it is easily able to withstand 2,000A (8/20μsec.) surge.

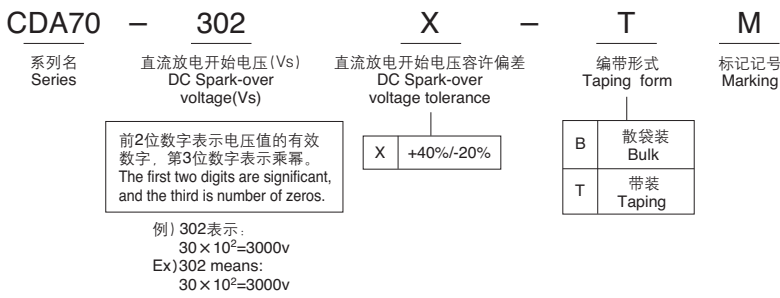
■特点

- 以4032形状的小型芯片应对自动安装
- 应对正流、回流钎焊
- 高质响应性
- 最适用于高频电路使用
- 0.6pF以下的低静电容量
- 超100MΩ以上的强绝缘电阻特性
- 已通过UL1449标准
- RoHS适应品

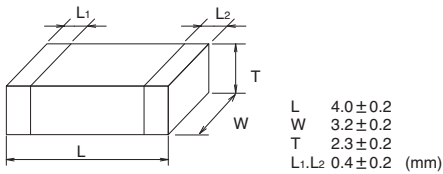
■Features

- Standard small chip package; EIA 1612, height; 2.3 ± 0.2mm using automatic equipment
- Can be used with flow or reflow solder
- Low capacitance of less than 0.6pF means no appreciable attenuation on high-speed, megabit class communication signals.
- Excellent insulation resistance over 100Mohm
- Recognized UL1449
- RoHS directive conformable

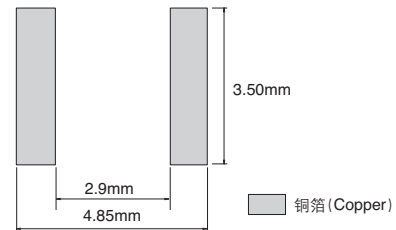
■型号构成 Part number system



■形状・尺寸(mm) Dimensions (mm)



■推荐焊盘布局 Recommended Land Pattern



■特性 Characteristics

型号 Part number	直流放电开始电压 DC Spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌耐量 Surge current capacity	浪涌寿命 Surge life test	AC耐电压 withstanding voltage	UL规格认证产品 UL recognized	EN规格认证产品 EN recognized
		100MΩmin.	DC 500V					UL 1449 1)	EN60065 2) EN60950-1
CDA70-302X	3,000V(2,400~4,200)	100MΩmin.	DC 500V	0.6pF max.	2000A (8/20μsec)	100A 300 times (8/20μsec)	AC1500V-1min.	○	○

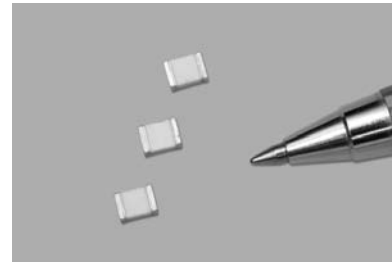
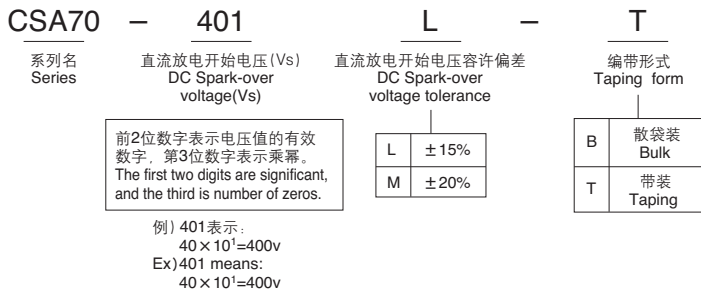
1): UL Standard UL 1449 File No. E318314  
2): CDA 70 has received recognition to EN60065, EN60950-1 through TÜV. Report No.J50164470

CSA70是贴片式通信线路用浪涌吸收器。采用本公司历经多年研发的微隙方式，实现了优异的浪涌响应特性和0.6pF以下的低静电容量。本产品结构小巧，浪涌耐量达1,500A(8/20 $\mu$ sec.)。其中400V的产品符合ADSL POTS\*分路器用规格：ITU-T(国际电信联盟-试验规格)K.20或K.21的Basic Test Condition(基本试验条件)。

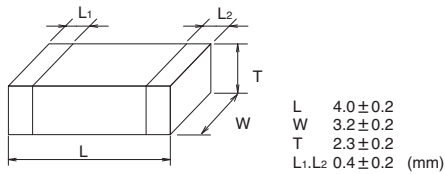
■特点

- 使用4032形状的小型芯片，适合自动插装、流动及回流焊接。
- 采用微隙方式，具有优异的浪涌响应效果。
- 0.6pF以下的低静电容量，不会阻碍兆级的高速通信信号。
- 100M $\Omega$ 以上的高绝缘阻抗特性。
- 端子电极采用镀锡，是完全无铅产品。
- 已获得UL497B认证。

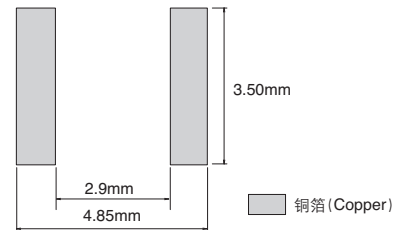
■型号构成 Part number system



■形状・尺寸(mm) Dimensions (mm)



■推荐焊盘布局 Recommended Land Pattern



■特性 Characteristics

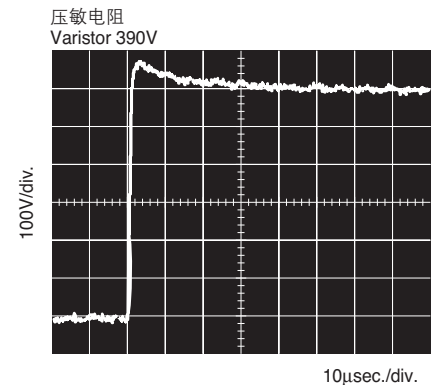
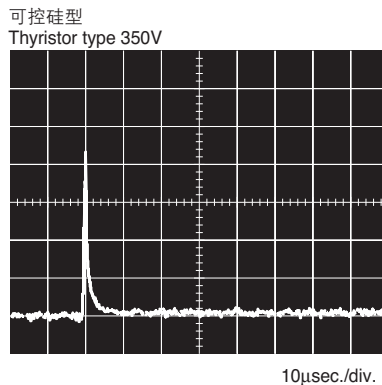
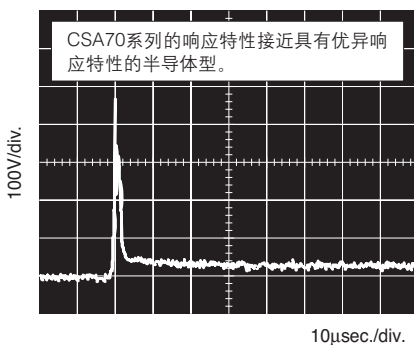
型号 Part number	直流放电开始电压 DC Spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌耐量 Surge current capacity	浪涌寿命 Surge life test	UL规格认证产品 UL recognized
		DC 100V	DC 250V				UL 497B 1)
CSA70-301L	300V(255~345)	100M $\Omega$ min.	DC 100V	0.6pF max.	8/20 $\mu$ sec-1500A	8/20 $\mu$ sec-50A 300 times	○
CSA70-401L	300V(340~460)		DC 250V				○
CSA70-601M	300V(480~720)		○				

1): UL Standard UL 497B File No. E175280

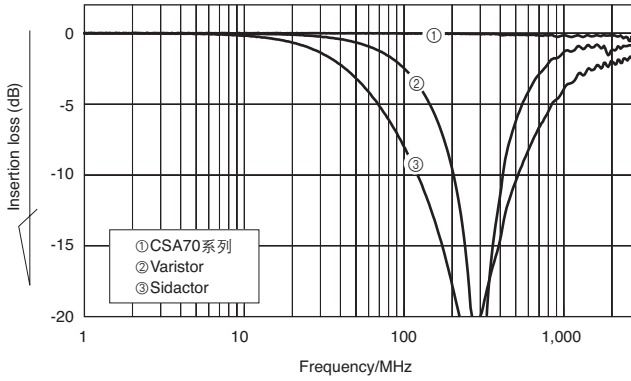
■浪涌响应特性(参考值) Surge Response Characteristics (Reference)

对10/700 $\mu$ sec. 4kV浪涌的响应波形  
Response waveform against 10/700 $\mu$ sec. 4kV

CSA70-401L



插入损失特性(参考值) Insertion loss properties (Reference)



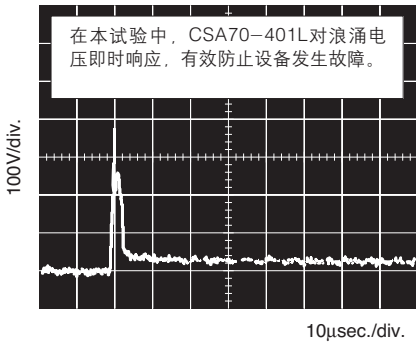
如左图所示, CSA70系列具有0.6pF以下的低静电容量, 因此不会阻碍兆位级的高速通信信号。

As can be seen in the figure on the left, the CSA70 series can be used on megabit class lines without in bibiting the high-speed signals due to a low capacitance of less than 0.6pF.

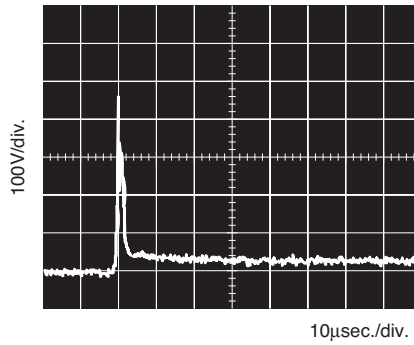
CSA70-401L的ITU-T K.20或K21的基本试验条件(参考)

浪涌试验: 10/700μsec. 1.5kV/4kV (25Ω) ±5次  
Surge Test

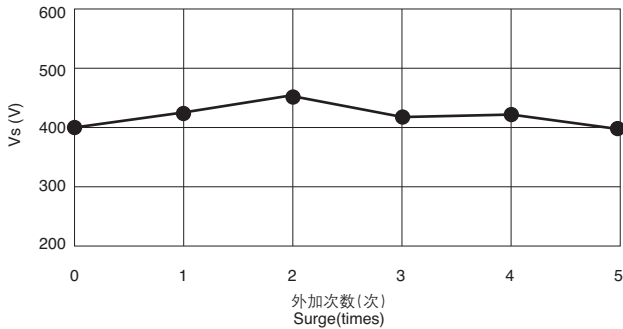
响应波形 Response waveform  
10/700μsec. 1.5kV



响应波形 Response waveform  
10/700μsec. 4kV



AC感应试验: AC600V (600Ω) 1sec. 5次  
Power induction Test



如左图所示, 在本试验中, CSA70-401L的放电开始电压未下降。同时, 绝缘阻抗、静电容量也未变化。

As seen in the figure on the left, through out the test, the breakdown voltage never decreases, Furthermore, there is no charge in the insulation resistance or capacitance of the part.

AC交叉试验: AC230V (10~1000Ω) 15min.  
Power cross Test

但外加AC230V时, CSA70-401L未响应。  
However, AC230V is too low for CSA70-401L to react.

如上所示, CSA70-401L符合ADSL POTS\*分路器用规格: ITU-T (国际电信联盟 试验规格) K.20或K.21的基本试验条件(基本试验条件)。

As mentioned above, CSA70-401L correspond to ITU-T (International / Telecommunication Union Test Standard) K.20 or K.21 Basic Test Conditions for the ADSL POTS\* splitter standard

焊接条件请参见第92页。 Please refer to page 92 for soldering conditions.

■特点

- 可用于车载音响、无线电设备、VTR、BS调谐器等天线的防静电。
- 可用于显示装置、监视器的防管内放电(DSP-141N型除外)。
- 可用于其他防静电。

■Features

- Car radio, radio cassette, wireless, new media.
- Protection from electrostatic discharge in a CRT display or monitor TV. (Except DSP-141N)
- Protection against electrostatic discharge.

■型号构成 Part number system

DSP - 301 - N - S - 00 - B

系列名 Series

直流放电开始电压(Vs)  
DC Spark-over voltage(Vs)

直流放电开始电压容许偏差  
DC Spark-over voltage tolerance

编带形式  
Taping form

编带尺寸  
Taping dimensions

包装形式  
Packing form

前2位数字表示电压值的有效数字。  
第3位数字表示乘幂。  
The first two digits are significant,  
and the third is number of zeros.

例) 301表示:  
30 × 10<sup>1</sup> = 300v  
Ex.) 301 means:  
30 × 10<sup>1</sup> = 300v

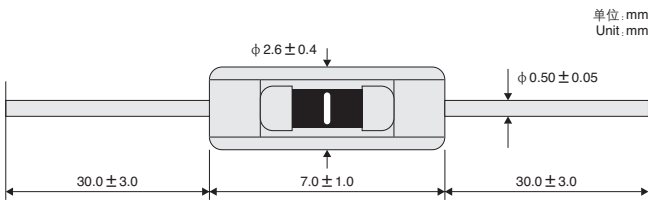
M	±20%
N	±30%

A	轴向(卧式)编带 Axial taping
C	径向(立式)编带 Radial taping
S	无编带 No taping

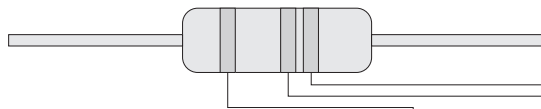
记号 Code	编带内倒宽度 Taping width (径向编带) (Radial taping)	间距 Pitch
04		12.7
11	26	5
21	52	5
00	无编带 No taping	

B	散袋装 Bulk pack
F	扁平包装 Flat pack taping
R	带盘包装 Reel taping

■形状·尺寸 Dimensions



■标记 Marking

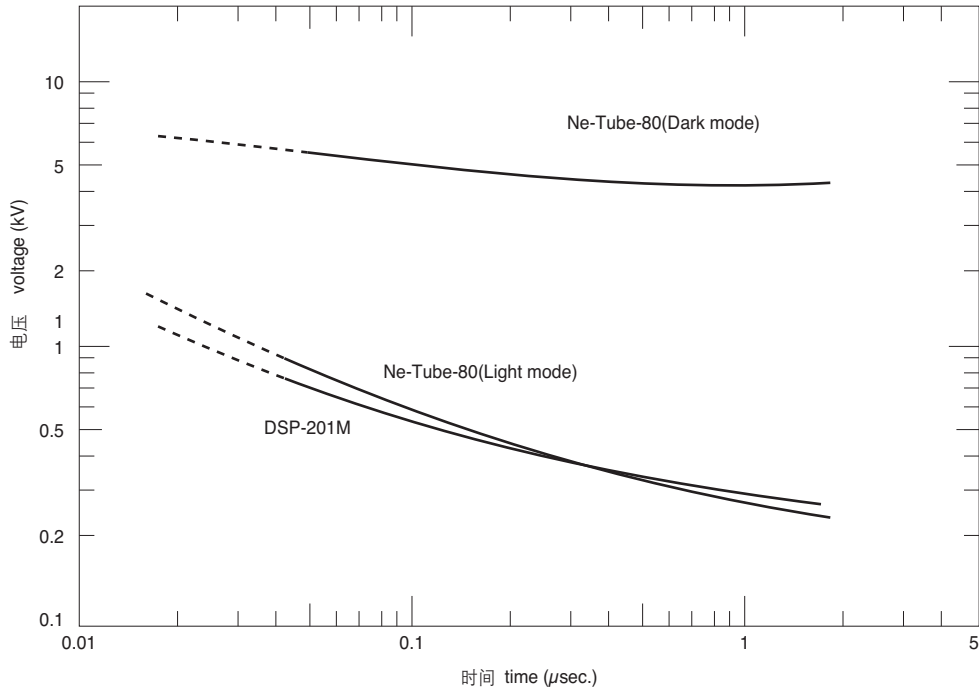


颜色代码 Color code	第一色带 First color band		第二色带 Second color band		第三色带 Third color band	
	型号 Part number	生产批号十位数 The tens digit of product Lot No.	生产批号十位数 The tens digit of product Lot No.	生产批号个位数 The unit digit of product Lot No.	生产批号个位数 The unit digit of product Lot No.	
黑 Black		0	0	0	0	
褐 Brown		1	1	1	1	
红 Red	201M	2	2	2	2	
橙 Orange	301N	3	3	3	3	
黄 Yellow		4	4	4	4	
绿 Green	501N	5	5	5	5	
蓝 Blue		6	6	6	6	
紫 Purple	751N	7	7	7	7	
灰 Gray		8	8	8	8	
白 White	141N	9	9	9	9	

■特性 Characteristics

型号 Part number	直流放电开始电压 DC spark-over voltage Vs	绝缘阻抗 Insulation resistance IR	静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌寿命 Surge life test
DSP-141N	140V (98 ~ 182)	100MΩmin.	1pF max.	1500pF-0Ω-10kV 200 times
DSP-201M	200V (160 ~ 240)			
DSP-301N	300V (210 ~ 390)			
DSP-501N	500V (350 ~ 650)			
DSP-751N	750V (525 ~ 975)			

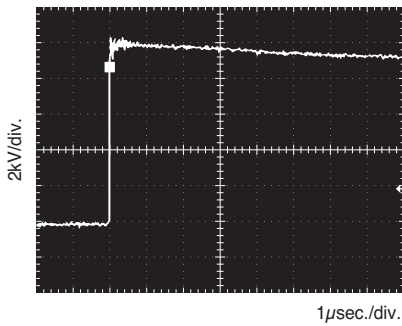
■ V—t特性(参考值) V—t Characteristics (Reference)



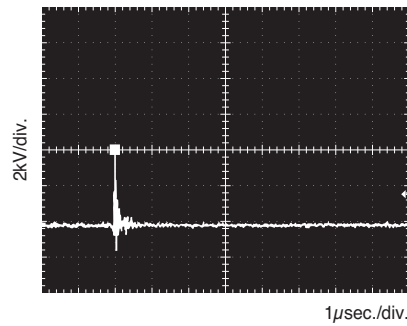
- 表现出快速响应瞬变静电的特性。
- 无明暗效应。
- Rapid response against electrostatic discharge with instantaneous rise.
- No dark effect.

■ 静电响应特性(参考值) Electrostatic response characteristics (Reference)

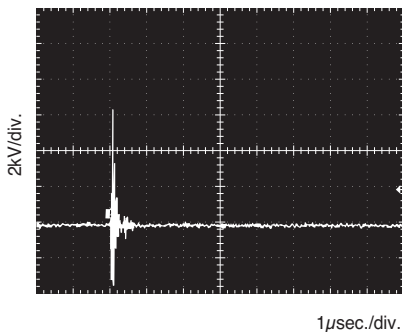
静电原波形 Original waveform  
500pF-500Ω-10kV



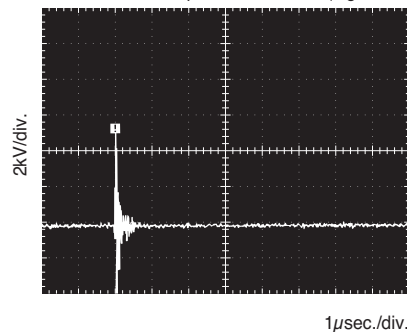
DSP-201M 响应波形(明、暗)  
DSP-201M Response waveform (Light & Dark mode)



Ne管(80V) 响应波形(暗)  
Ne-Tube-80V Response waveform (Dark mode)



Ne管(80V) 响应波形(明)  
Ne-Tube-80V Response waveform (Light mode)



■特点

- 结构极其小巧，且放电开始电压为高电压。  
(备有1000、1500、2700、3000V4个品种)
- DSP-272M可适应AC1200V-3秒或AC1000V-1分钟、DSP-302M可适应AC1500V-1分钟的AC试验。
- 静电浪涌吸收性好，限制电压低。
- 静电容量小，绝缘性(100MΩ以上)优异。
- 可稳定应对反复静电浪涌及环境变化。
- 无极性。
- 无明显暗效应。

■Features

- High DC spark-over voltage (4types; 1000, 1500, 2700, 3000V) in spite of compact size.
- DSP-272M and DSP-302M each correspond to 1200volts rms 3seconds or 1000volts rms 1minute and 1500volts rms 1minute AC withstanding voltage tests respectively.
- Quick response for electrostatic surge and low limiting voltage.
- Small capacitance and excellent insulation resistance (100M Ω min)
- Stable for repeated electrostatic test conditions and environmental fluctuation.
- No polarity.
- No dark effect.

■型号构成 Part number system

DSP  
系列名  
Series

272  
直流放电开始电压 (Vs)  
DC Spark-over  
voltage(Vs)

M  
直流放电开始电压容许偏差  
DC Spark-over  
voltage tolerance

A  
编带形式  
Taping form

21  
编带尺寸  
Taping dimensions

R  
包装形式  
Packing form

前2位数字表示电压值的有效数字。  
第3位数字表示乘幂。  
The first two digits are significant,  
and the third is number of zeros.

例) 272表示:  $27 \times 10^2=2700V$   
Ex.) 272 means:  $27 \times 10^2=2700V$

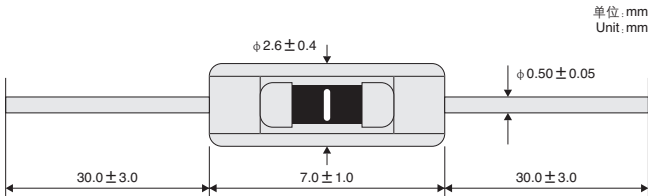
M	±20%
---	------

A	轴向(卧式)编带 Axial taping
S	无编带 No taping

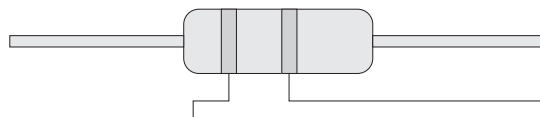
记号 Code	编带内侧面宽度 taping width	间距 Pitch
11	26	5
21	52	5
00	无编带 No taping	

B	散装装 Bulk pack
F	扁平带装 Flat pack taping
R	卷盘带装 Reel taping

■形状·尺寸 Dimensions



■标记 Marking



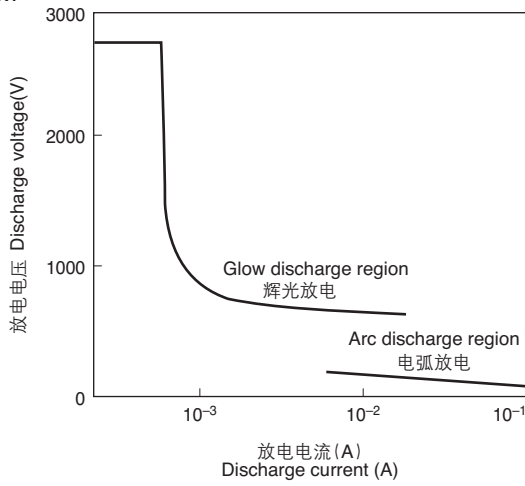
颜色代码 Color code	Color code	第一色带 First color band	第二色带 Second color band
		型号 Part number	生产批号个位数 The unit digit of lot number
黑	Black	102M	0
茶	Brown	152M	1
红	Red	272M	2
橙	Orange	302M	3
黄	Yellow		4
绿	Green		5
蓝	Blue		6
紫	Purple		7
灰	Gray		8
白	White		9

■特性 Characteristics

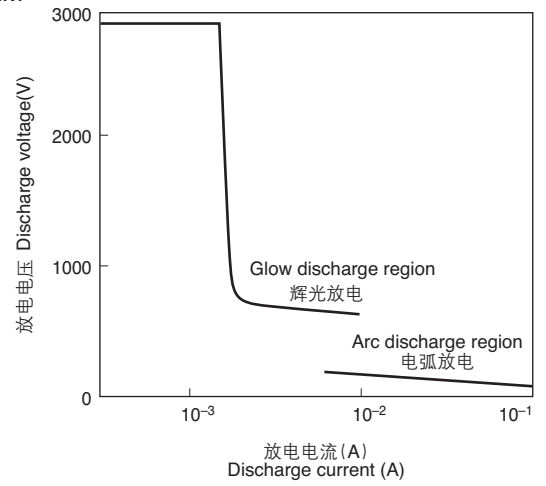
型号 Part number	直流放电开始电压 DC spark-over voltage Vs(V)	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max.	浪涌耐量 Surge current capacity	浪涌寿命 Surge life test	AC耐电压 AC withstanding voltage
DSP-102M	1,000V(800-1,200)	100MΩmin.	DC 500V	1pF max.	8/20μsec-300A	1,500pF-0Ω-10kV 200 times	无 (nothing)
DSP-152M	1,500V(1,200-1,800)						无 (nothing)
DSP-272M	2,700V(2,160-3,240)						AC1,000V-1min. AC1,200V-3sec.
DSP-302M	3,000V(2,400-3,600)						AC1,500V-1min.

■ V—I特性(参考值) V—I Characteristics (Reference)

DSP-272M

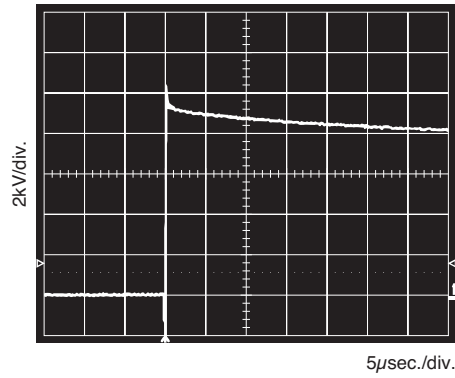


DSP-302M

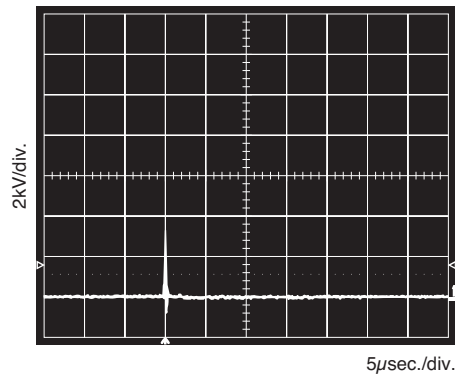


■ 静电响应特性(参考值) Electrostatic response characteristics (Reference)

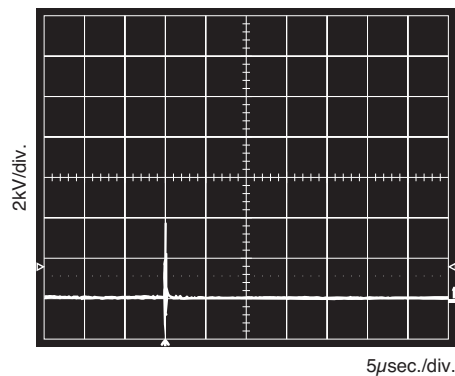
静电原波形 Original waveform  
500pF-500Ω-10kV



DSP-272M响应波形  
DSP-272M Response waveform



DSP-302M响应波形  
DSP-302M Response waveform



CSA30 (3216形状) 是贴片式防静电浪涌吸收器。采用本公司历经多年研发的微隙方式, 实现了优异的浪涌响应特性和1pF以下的低静电容量。本产品结构小巧, 静电浪涌耐量达150pF-330Ω-25kV, 完全符合IEC61000-4-2的要求。

CSA30 (EIA 1206 size) is a chip type surge absorber for protection from ESD (electrostatic discharge). Through our long history of developing microgap products, we have been able to realize a product with excellent surge protection characteristics and low capacitance of less than 1pF. Even with its small package design, it is easily able to meet the electrostatic protection requirements of IEC61000-4-2.

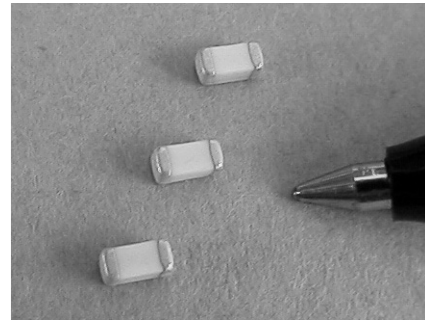
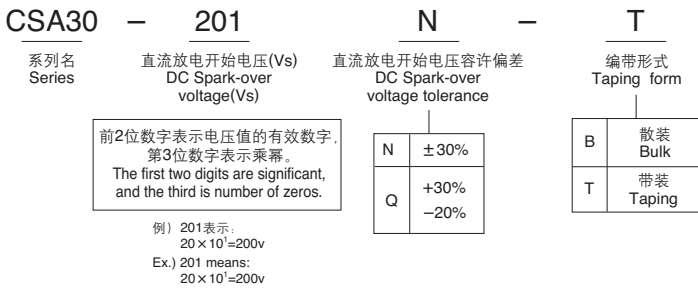
■特点

- 适合高密度表面贴装的防静电浪涌吸收器。
- 适合流动和回流焊接。
- 采用微隙方式, 具有优异的浪涌响应效果。
- 静电容量小, 可用于高频电路。
- 高绝缘阻抗特性。
- 可以编带包装。
- 符合IEC61000-4-2规格。

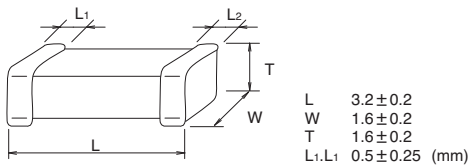
■Features

- ESD surge absorber in a compact surface mount package.
- Can be used with flow or reflow solder.
- Microgap technology gives excellent surge response.
- Can use in high frequency circuits due to low capacitance.
- High insulation resistance characteristics.
- Available in embossed taping.
- Conforms with IEC61000-4-2 standard.

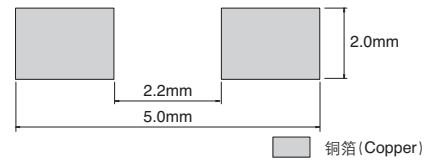
■型号构成 Part number system



■形状・尺寸(mm) Dimensions (mm)



■推荐焊盘布局 Recommended Land Pattern



■特性 Characteristics

型号 Part number	直流放电开始电压 DC Spark-over voltage Vs	绝缘阻抗 Insulation resistance IR	静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌寿命(接触放电) Surge life test (Contact discharge)
CSA30-141N	140V(98~182)	10MΩmin.	1pF max.	150pF-330Ω-25kV 20 times
CSA30-201N	200V(140~260)			
CSA30-401Q	400V(320~520)			

■关于IEC61000-4-2

- 静电放电扰度试验  
150pF-330Ω-2~8kV (接触放电)  
2~15kV (空气放电)  
CSA30具有150pF-330Ω-25kV的静电浪涌耐量, 完全满足上述要求。

■About IEC61000-4-2

- Electrostatic discharge immunity test  
150pF-330Ω-2~8kV (Contact discharge)  
2~15kV (Air discharge)  
CSA30 series is easily able to meet requirements of IEC61000-4-2.

■焊接条件请参见第92页。

Please refer to page 92 for soldering conditions.

CSA20 (2125形状)是贴片式防静电浪涌吸收器。采用本公司历经多年研发的微隙方式, 实现了优异的浪涌响应特性和1pF以下的低静电容量。本产品结构小巧, 静电浪涌耐量达150pF-330Ω-20kV, 完全符合IEC61000-4-2的要求。

CSA20 (EIA 0805 size) is a chip type surge absorber for protection from ESD (electrostatic discharge). Through our long history of developing microgap products, we have been able to realize a product with excellent surge protection characteristics and low capacitance of less than 1pF. Even with its small package design, it is easily able to meet the electrostatic protection requirements of IEC61000-4-2.

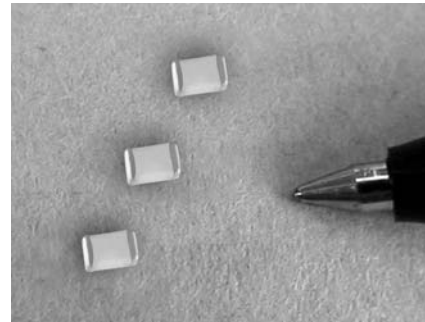
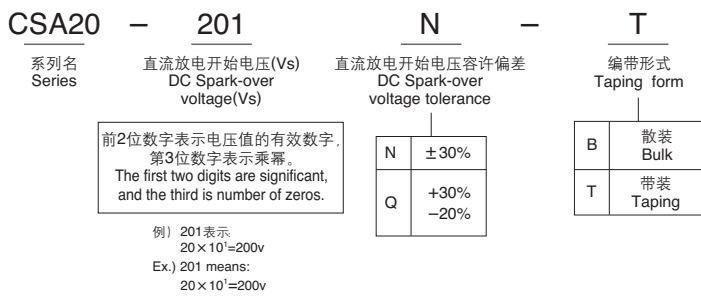
■特点

- 适合高密度表面贴装的防静电浪涌吸收器。
- 适合流动和回流焊接。
- 采用微隙方式, 具有优异的浪涌响应效果。
- 静电容量小, 可用于高频电路。
- 高绝缘阻抗特性。
- 可以编带包装。
- 符合IEC61000-4-2规格。

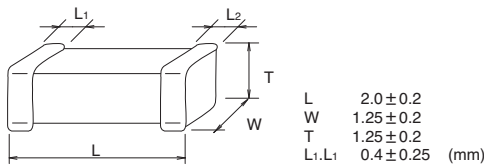
■Features

- ESD surge absorber in a compact surface mount package.
- Can be used with flow or reflow solder.
- Microgap technology gives excellent surge response.
- Can use in high frequency circuits due to low capacitance.
- High insulation resistance characteristics.
- Available in embossed taping.
- Conforms with IEC61000-4-2 standard.

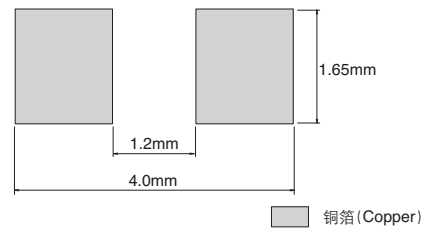
■型号构成 Part number system



■形状・尺寸(mm) Dimensions (mm)



■推荐焊盘布局 Recommended Land Pattern



■特性 Characteristics

型号 Part number	直流放电开始电压 DC Spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌寿命(接触放电) Surge life test (Contact discharge)
CSA20-141N	140V(98~182)	100MΩmin.	DC 50V	1pF max.	150pF-330Ω-20kV 20 times
CSA20-201N	200V(140~260)		DC 100V		
CSA20-401Q	400V(320~520)		DC 250V		

■关于IEC61000-4-2

- 静电放电扰度试验  
150pF-330Ω-2~8kV (接触放电)  
2~15kV (空气放电)  
CSA20具有150pF-330Ω-20kV的静电浪涌耐量, 完全满足上述要求。

■About IEC61000-4-2

- Electrostatic discharge immunity test  
150pF-330Ω-2~8kV (Contact discharge)  
2~15kV (Air discharge)  
CSA20 series is easily able to meet requirements of IEC61000-4-2.

■焊接条件请参见第92页。

Please refer to page 92 for soldering conditions.

CSA10(1608形状)是贴片式防静电浪涌吸收器。采用本公司历经多年研发的微隙方式,实现了优异的浪涌响应特性和1pF以下的低静电容量。本产品结构小巧,静电浪涌耐量达150pF-330Ω-15kV,完全符合IEC61000-4-2的要求。

CSA10 (EIA 0603 size) is a chip type surge absorber for protection from ESD (electrostatic discharge). Through our long history of developing microgap products, we have been able to realize a product with excellent surge protection characteristics and low capacitance of less than 1pF. Even with its small package design, it is easily able to meet the electrostatic protection requirements of IEC61000-4-2.

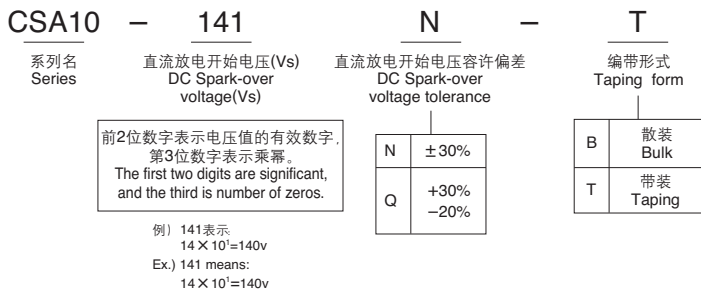
■特点

- 适合高密度表面贴装的防静电浪涌吸收器。
- 适合流动和回流焊接。
- 采用微隙方式,具有优异的浪涌响应效果。
- 静电容量小,可用于高频电路。
- 高绝缘阻抗特性。
- 可以编带包装。
- 符合IEC61000-4-2规格。

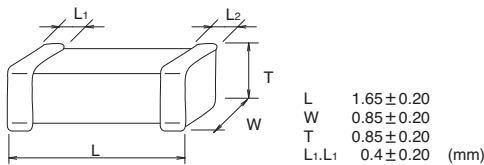
■Features

- ESD surge absorber in a compact surface mount package.
- Can be used with flow or reflow solder.
- Microgap technology gives excellent surge response.
- Can use in high frequency circuits due to low capacitance.
- High insulation resistance characteristics.
- Available in embossed taping.
- Conforms with IEC61000-4-2 standard.

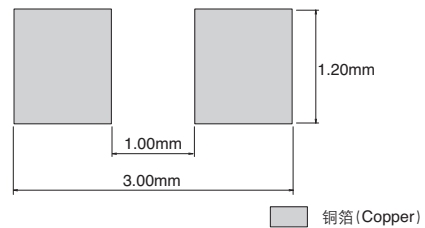
■型号构成 Part number system



■形状・尺寸(mm) Dimensions (mm)



■推荐焊盘布局 Recommended Land Pattern



■特性 Characteristics

型号 Part number	直流放电开始电压 DC Spark-over voltage Vs	绝缘阻抗 Insulation resistance IR	静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌寿命(接触放电) Surge life test (Contact discharge)
CSA10-141N	140V(98~182)	100MΩmin. DC 50V	1pF max.	150pF-330Ω-15kV 20 times

■关于IEC61000-4-2

- 静电放电抗扰度试验 150pF-330Ω-2~8kV (接触放电) 2~15kV (空气放电)
- CSA10具有150pF-330Ω-15kV的静电浪涌耐量,完全满足上述要求。

■About IEC61000-4-2

- Electrostatic discharge immunity test 150pF-330Ω-2~8kV (Contact discharge) 2~15kV (Air discharge)
- CSA10 series is easily able to meet requirements of IEC61000-4-2.

■焊接条件请参见第92页。

Please refer to page 92 for soldering conditions.

CSZ30(3216形状)是贴片式车辆ECU防静电用浪涌吸收器。采用本公司历经多年研发的微隙方式,实现了优异的浪涌响应性和1pF以下的低静电容量。本产品结构小巧,静电浪涌耐受达330pF-2kΩ-25kV,完全符合ISO10605标准。

CSZ30 (EIA 1206 size) is a chip type surge absorber for automotive ECU protection from ESD (electrostatic discharge). Through our long history of developing microgap products, we have been able to realize a product with excellent surge protection characteristics and low capacitance of less than 1pF. Even with its small package design, it is easily able to meet the electrostatic protection requirements of ISO10605.

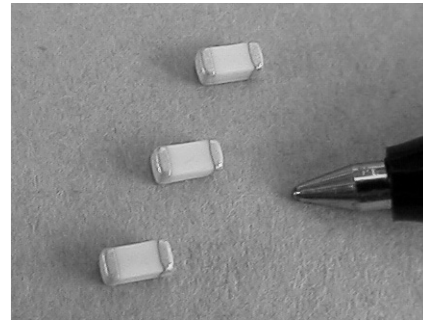
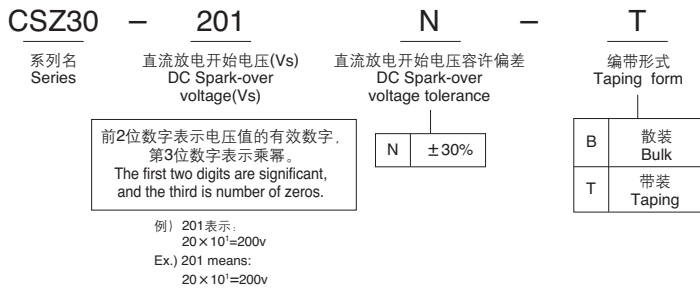
■特点

- 适合高密度表面贴装的防静电用浪涌吸收器。
- 适合流动和回流焊接。
- 采用微隙方式,具有优异的浪涌响应效果。
- 静电容量小,可用于高频电路。
- 高绝缘阻抗特性。
- 可以编带包装。
- 符合ISO10605规格。

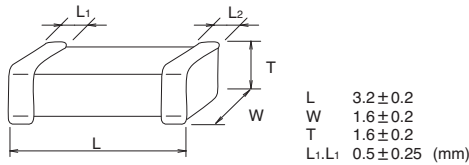
■Features

- ESD surge absorber in a compact surface mount package
- Can be used with flow or reflow solder
- Microgap technology gives excellent surge response
- Can use in high frequency circuits due to low capacitance
- High insulation resistance characteristics
- Available in embossed taping
- Conforms with ISO10605 standard

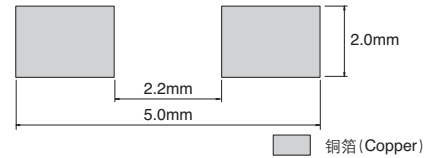
■型号构成 Part number system



■形状・尺寸(mm) Dimensions (mm)



■推荐焊盘布局 Recommended Land Pattern



■特性 Characteristics

型号 Part number	直流放电开始电压 DC Spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌寿命 Surge life test
CSZ30-201N	200V(140~260)	10MΩmin.	DC 100V	1pF max.	330pF-2kΩ-25kV ± 10 times

■关于ISO10605

- 路面车辆 静电放电电压试验方法  
330pF-2kΩ-4~8kV (接触放电)  
4~15kV (空气放电)
- CSZ30具有330pF-2kΩ-25kV的静电浪涌耐受量,完全满足上述要求。

■About ISO10605

- Road vehicles-Test methods for electrical disturbances from electrostatic discharge  
330pF-2kΩ-4~8kV (Contact discharge)  
4~15kV (Air discharge)
- CSZ30 series easily able to meet requirements of ISO10605.

■焊接条件请参见第92页。

Please refer to page 92 for soldering conditions.

CSZ20 (2125形状) 是贴片式车辆ECU防静电用浪涌吸收器。采用本公司历经多年研发的微隙方式, 实现了优异的浪涌响应性和1pF以下的低静电容量。本产品结构小巧, 静电浪涌耐量达330pF-2kΩ-15kV, 完全符合ISO10605标准。

CSZ20 (EIA 0805 size) is a chip type surge absorber for automotive ECU protection from ESD (electrostatic discharge). Through our long history of developing microgap products, we have been able to realize a product with excellent surge protection characteristics and low capacitance of less than 1pF. Even with its small package design, it is easily able to meet the electrostatic protection requirements of ISO10605.

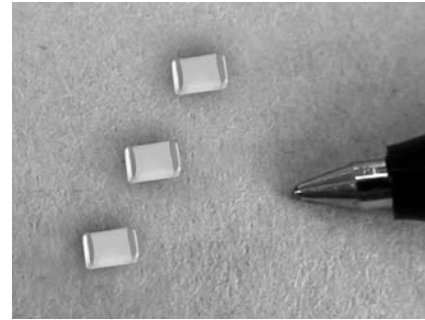
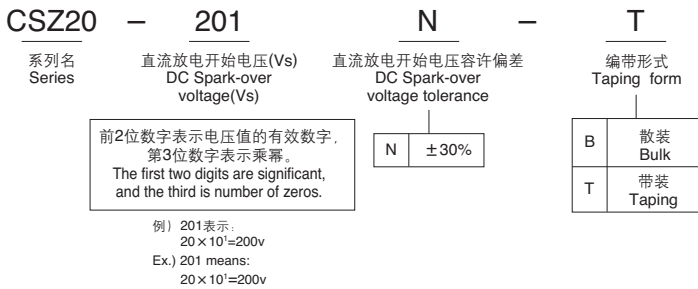
**特点**

- 适合高密度表面贴装的防静电用浪涌吸收器。
- 适合流动和回流焊接。
- 采用微隙方式, 具有优异的浪涌响应效果。
- 静电容量小, 可用于高频电路。
- 高绝缘阻抗特性。
- 可以编带包装。
- 符合ISO10605规格。

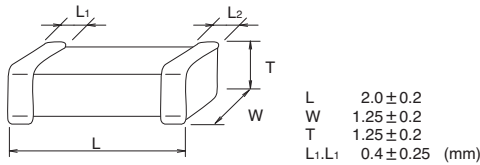
**Features**

- ESD surge absorber in a compact surface mount package
- Can be used with flow or reflow solder
- Microgap technology gives excellent surge response
- Can use in high frequency circuits due to low capacitance
- High insulation resistance characteristics
- Available in embossed taping
- Conforms with ISO10605 standard

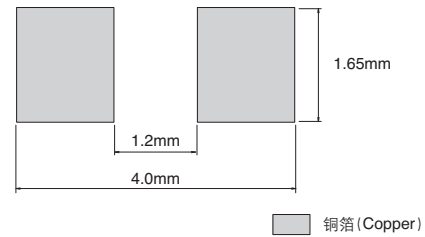
**型号构成 Part number system**



**形状・尺寸(mm) Dimensions (mm)**



**推荐焊盘布局 Recommended Land Pattern**



**特性 Characteristics**

型号 Part number	直流放电开始电压 DC Spark-over voltage Vs	绝缘阻抗 Insulation resistance IR		静电容量 Electrostatic capacitance 1kHz-6V max. C	浪涌寿命 Surge life test
CSZ20-201N	200V(140~260)	10MΩmin.	DC 100V	1pF max.	330pF-2kΩ-15kV ± 10 times

**关于ISO10605**

- 路面车辆 静电放电扰度试验方法  
330pF-2kΩ-4~8kV (接触放电)  
4~15kV (空气放电)  
CSZ20具有330pF-2kΩ-15kV的静电浪涌耐量, 完全满足上述要求。

**About ISO10605**

- Road vehicles-Test methods for electrical disturbances from electrostatic discharge  
330pF-2kΩ-4~8kV (Contact discharge)  
4~15kV (Air discharge)  
CSZ20 series easily able to meet requirements of ISO10605.

焊接条件请参见第92页。

Please refer to page 92 for soldering conditions.

线路浪涌保护器“LITOL”系列可保护各种电子设备免遭感应雷击浪涌(雷害)、噪声等异常电压的损害。

该系列有两种类型：一种是用一台保护种电子设备的桌台插座型和另一种使可安装在控制柜内的通用型。

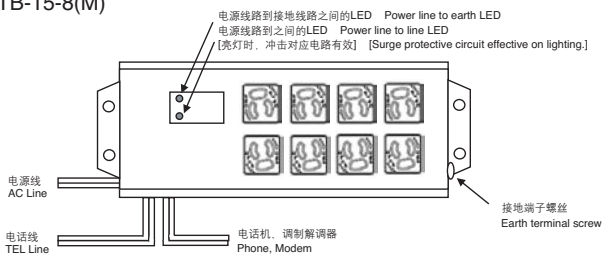
## 特点

- 结构小巧，使用及安装非常简便。
- 可对浪涌作出快速响应，保护设备免遭损坏。
- LTB-15-8(M)符合电源以及电话线路的冲击。
- LTM-125U、250U符合等级(Ⅱ)(JIS C5381-1)的要求。

## 典型用途

- 电脑、调制解调器、传真机、POS系统、自动贩卖机或家用电器产品(LTB-15-8(M))
- NC机床、放电加工机、机械手等(LTM-125U、LTM-250U)。

LTB-15-8(M)



(接线方法)

设备控制盘的输入处有R, S(N), T, E铭牌。LTM-250U(LTM-125U)的接线板上也有相同的表示，所以请用同捆电线分别对R-R, S-S(N-N), T-T, E-E进行接线。

LINE SURGE PROTECTOR "LITOL" has been developed as an effective means of protecting every electronic equipment and machinery especially from surge voltages in the form of induced lightning or electrical noises.

This series involve two types of functional products: tap box type protecting various electronic equipments, and popular type able to be installed in control box.

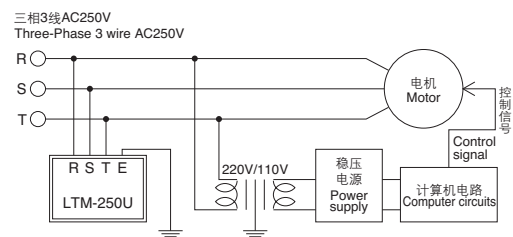
## Features

- Compact design for extremely easy handling and installation.
- Fast response to surges ensures effective equipment protection.
- LTB-15-8(M) has surge protective effect to power and telephone line.
- LTM-125U, 250U meet the standard for ClassII surge protective device (SPD) in accordance with JIS C5381-1.

## Applications

- Computer, modem, facsimile, POS system, vending machine, electric equipment etc.(LTB-15-8(M))
- NC tooling machine, arc discharge tooling machine, robot etc.(LTM-125U, LTM-250U)

LTM-250U



(Wiring method)

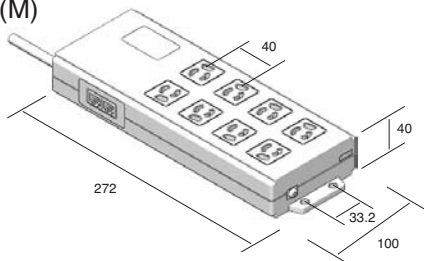
There are name plates of R, S(N), T, E in power line input of machine control panel. Please connect corresponding parts of "LTM-250U(LTM-125U)" to the above, like R-R, S-S(N-N), T-T and E-E.

## 型号构成 Part number system

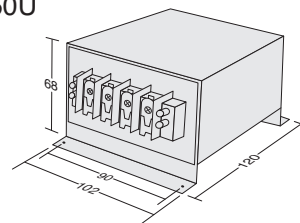


## 形状·尺寸 Dimensions

LTB-15-8(M)



LTM-125U  
LTM-250U



单位: mm  
Unit:mm

## 特性 Characteristics

系列 Series	型号 Part number	最大连续使用电压 Maximum continuous operating voltage U <sub>c</sub>	标称放电电流 Nominal discharge current I <sub>n</sub>	最大放电电流 Maximum discharge current I <sub>max</sub>	电压保护标准 Voltage protection level (Up 1)
DLSP	LTB-15-8(M)	AC125V (单相3线) (Single-phase 3 wire)	—	— 2)	—
	LTM-125U	AC125V (单相3线) (Single-phase 3 wire)	3kA (8/20μs)	5kA (8/20μs)	线—线 Line to line 1.2kV
	LTM-250U	AC250V (3相3线) (Three-phase 3 wire)			线—GND Line to GND 1.5kV
					线—线 Line to line 1.5kV
					线—GND Line to GND 1.5kV

1) 施加标称放电电流 I<sub>n</sub>=3kA(8/20μs)时。 Applying nominal discharge current I<sub>n</sub>; 3kA(8/20μs)

2) 冲击量：电源线与接地线之间为2,000A(8/20μsec)、电话线路与接地线之间为1,500A(8/20μsec)。

Surge current capability : 2,000A (8/20 usec) between Power lines and line to ground, 1,500A (8/20 usec) between Telephone lines and line to ground.

# DIA环形压敏电阻 (DRV)

# DIA RING VARISTOR (DRV)

DIA环形压敏电阻是用于消除各种小型电机的火花、防止噪声的半导体陶瓷元件。非线性系数(α)及静电容量大,防噪声性能优异。

DIA RING VARISTOR has been specially designed for the application of spark elimination and noise protection of various compact DC motors. It is most suitable for noise-proof because of high non-linear coefficient (α) and high capacitance.



浪涌吸收器  
SURGE ABSORBER

## 特点

- 电压非线性系数(α)实际高达3~7,静电容量(C)也高达5,000~30,000pF,可在很大的频率范围内抑制噪声。
- 耐热强度大,无需预热即可进行焊接。
- 温度特性优异。

## Features

- High non-linearity of V-I characteristic (α:3~7) and a high capacitance (C:5,000~30,000pF) enable application for noise protection over wide frequency range.
- High heat resistance for soldering without pre-heating.
- Excellent temperature characteristics.

## 用途

- 消除各种小型直流电机的火花及防止噪声。

## Applications

- Spark elimination and noise protection of various compact DC motors.

## 型号构成 Part number system

DRV-T

系列名  
Series

AZ

形状  
Shape

—

160

E<sub>10</sub>电压  
E<sub>10</sub>voltage

M

E<sub>10</sub>容许偏差  
E<sub>10</sub> tolerance

3P

表面电极数  
Number of poles

B

电极形状  
Shape of termination

R

背面电极标记  
Back face pole

前2位数字表示E<sub>10</sub>电压值的有效数字,第3位数字表示10的乘幂。  
The first two digits are significant, the third is the number of zeros.

例) 16 × 10<sup>0</sup> = 16V  
Ex.) 16 × 10<sup>0</sup> = 16V

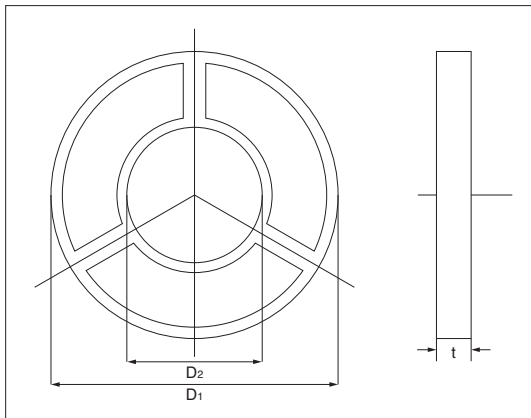
M	±20%
N	±30%

3P	3极 3 Terminals
5P	5极 5 Terminals

B	电极面积大 larger area
无 None	电极面积小 smaller area

R	背面电极 With back face pole 有Be
---	------------------------------------

## 形状·尺寸 Dimensions



形状 Shape	内径 D2 Inner dia. D2 (mm)	外径 D1 Outer dia. D1 (mm)	厚度 t Thickness t (mm)	电极数 Number of poles	E <sub>10</sub> 电压 E <sub>10</sub> voltage (V)
AW	ø5.0 <sup>+0.2</sup> <sub>-0.1</sub>	ø8.0±0.2	0.6 <sup>+0</sup> <sub>-0.2</sub>	3, 5	10~38
AY	ø5.80±0.15	ø9.3±0.2	0.7±0.1		
AZ	ø6.8±0.2	ø10.7±0.2	1.05max.		
A3	ø7.4±0.2	ø11.7±0.2	1.0±0.2	3, 5	16~60
AV	ø8.5±0.2	ø12.4±0.2	1.00±0.20		
A110	ø9.6±0.2	ø15.4±0.2	0.90±0.15	3, 5	12~55

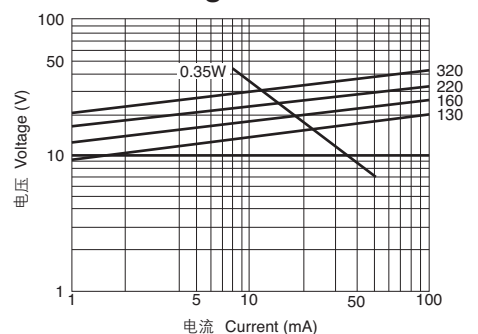
## 特性 Characteristics

型号 Part number	E <sub>10</sub> 电压 E <sub>10</sub> voltage (V)	非线性系数 α Non-linear coefficient α		静电容量 C(nF) Capacitance C(nF)		额定功率 Rated power (W)	电机适用电压 Rated voltage of motor (V)
		标准值 Standard	参考值 Typical value	标准值 Standard	参考值 Typical value		
DRV-TAZ-130M3PBR	10.4~15.6	4.0min.	5.0	12min.	15	0.35	9
DRV-TAZ-160M3PBR	12.8~19.2	4.0min.	5.0	10min.	15		12
DRV-TAZ-220M3PBR	17.6~26.5	4.0min.	6.0	8min.	8		16
DRV-TAZ-320M3PBR	25.6~38.4	4.0min.	6.0	6min.	8		24
DRV-TAZ-550M3PBR	44.0~66.0	4.0min.	7.0	4min.	6		32

※有关E<sub>10</sub>电压范围、形状及尺寸等其他项目,请垂询本公司。

※Please consult us for range of E<sub>10</sub> voltage, shape and dimensions.

## 电压-电流特性 Current-voltage characteristics



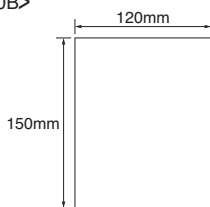
## 包装数量及包装形式 Packing quantity·Packing form

形式 Form	CSA10:数量 CSA10/Unit quantity	CSA20,CSZ20,CSA30,CSZ30:数量 CSA20,CSZ20,CSA30,CSZ30 /Unit quantity	CSA70, CDA70:数量 CSA70, CDA70/Unit quantity	DSA:数量 DSA/Unit quantity	DA38:数量 DA38/Unit quantity	DA53:数量 DA53/Unit quantity	DB60:数量 DB60/Unit quantity
散袋装 Bulk packing in plastic bag	B类: 500个/袋 B type: 500pcs/bag	B类: 500个/袋 B type: 500pcs/bag	B类: 1000个/袋 B type: 1000pcs/bag	A类: 100个/袋 A type: 100pcs/bag S类: 200个/袋 S type: 200pcs/bag -05F25: 100个/袋 -05F25: 100pcs/bag -U10T: 100个/袋 -U10T: 100pcs/bag	B类: 200个/袋 B type: 200pcs/bag	F类: 100个/袋 F type: 100pcs/bag -E15E: 100个/袋 -E15E: 100pcs/bag -E25E: 100个/袋 -E25E: 100pcs/bag	
轴向编带(箱装) Axial taping (in box)					A21F: 800个/箱 A21F: 800pcs/box		
径向编带(箱装) Radial taping (in box)							1000个/箱 1000pcs/box
SMD编带(卷装) SMD taping (in reel)	T type: 4000个/卷 T type: 4000pcs/reel	T type: 2000个/卷 T type: 2000pcs/reel					

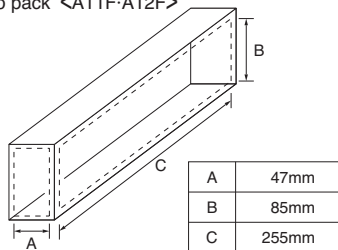
形式 Form	DSP:数量 DSP/Unit quantity	高电压DSP:数量 High voltage DSP /Unit quantity	DSS:数量 DSS/Unit quantity	高电压DSS:数量 High voltage DSS /Unit quantity	DE37:数量 DE37/Unit quantity
散袋装 Bulk packing in plastic bag	S00B: 200个/袋 S00B: 200pcs/bag				
轴向编带(箱装) Axial taping (in box)	A11F: 2000个/箱 A11F: 2000pcs/box A21F: 2000个/箱 A21F: 2000pcs/box A12F: 2000个/箱 A12F: 2000pcs/box A22F: 2000个/箱 A22F: 2000pcs/box		A21F: 1000个/箱 A21F: 1000pcs/box A12F: 1000个/箱 A12F: 1000pcs/box A22F: 1000个/箱 A22F: 1000pcs/box		A21F: 1000个/箱 A21F: 1000pcs/box A12F: 1000个/箱 A12F: 1000pcs/box A22F: 1000个/箱 A22F: 1000pcs/box
轴向编带(卷装) Axial taping (in reel)	A21R: 4000个/卷 A21R: 4000pcs/reel A22R: 3000个/卷 A22R: 3000pcs/reel		A21R: 3000个/卷 A21R: 3000pcs/reel A22R: 3000个/卷 A22R: 3000pcs/reel		
径向编带(箱装) Radial taping (in box)	C04F: 2000个/箱 C04F: 2000pcs/box		C04F: 2000个/箱 C04F: 2000pcs/box		D04F: 2000个/箱 (DE37-272M以上的产品除外) D04F: 2000pcs/box (Except more than DE37-272M)
径向编带(卷装) Radial taping (in reel)	C04R: 3000个/卷 C04R: 3000pcs/reel		C04R: 3000个/卷 C04R: 3000pcs/reel		

※有上述以外的包装要求时，请与我公司协商。  
Please consult us for the packing form except the above.

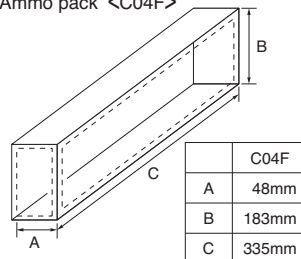
散袋装 <S00B>  
Bulk <S00B>



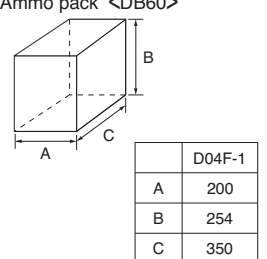
扁平包装 <A11F · A12F>  
Ammo pack <A11F-A12F>



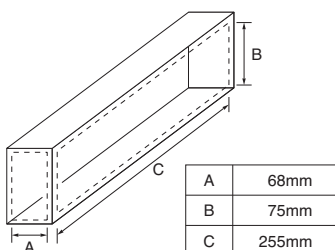
扁平包装 <C04F>  
Ammo pack <C04F>



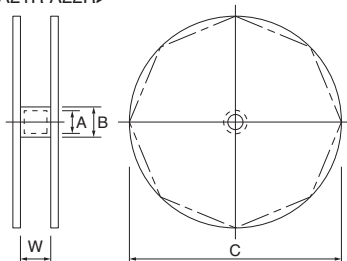
扁平包装 <DB60>  
Ammo pack <DB60>



扁平包装 <A21F · A22F>  
Ammo pack <A21F-A22F>



卷盘包装 <A21R · A22R>  
Reel <A21R-A22R>

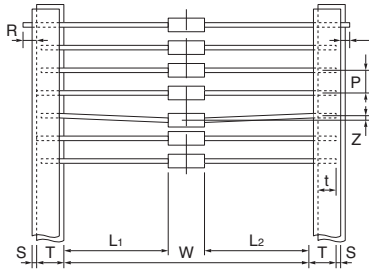


包装袋  
<CSA20, CSZ20, CSA30, CSZ30, CSA70, CDA70>  
Bulk  
<CSA20, CSZ20, CSA30, CSZ30, CSA70, CDA70>

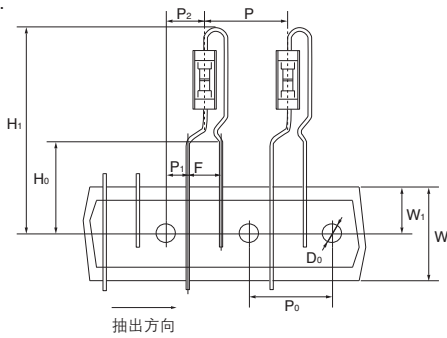


## ■ 编带 Taping

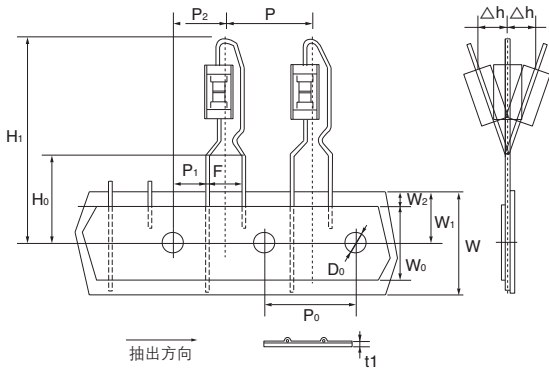
轴向编带 Axial taping



径向编带: C04F  
 ※ 不适应高压DSP、高压DSS系列及超过DE37-272M以上规格产品。  
 Radial taping: C04F  
 High voltage DSP, high voltage DSS and more than DE37-272M is not provided in this form.

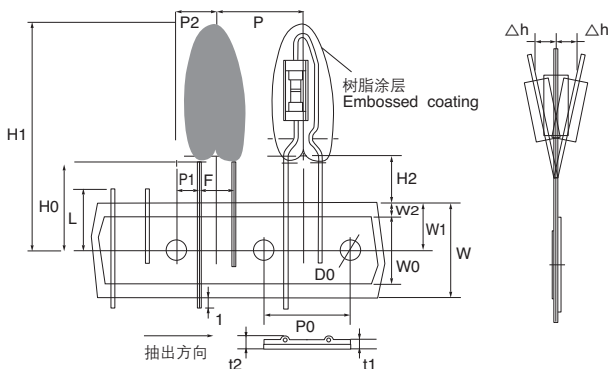


径向编带: D04F  
 ※ 不适应高压DSP、高压DSS系列及超过DE37-272M以上规格产品。  
 Radial taping: D04F  
 High voltage DSP, high voltage DSS and more than DE37-272M is not provided in this form.



径向编带 (DB系列)

Radial taping (DB Series)



记号 Symbol	轴向编带 Axial Taping (mm)			
	A11	A21	A12	A22
W	26 $+1.5$ $-0.0$	52 $+2.0$ $-1.0$	26 $+1.5$ $-0.0$	52 $+2.0$ $-1.0$
P	5.0 ± 0.5		10.0 ± 0.5	
L1-L2	1以下 1max.		1以下 1max.	
T	6.0 ± 1.0			
Z	1.0以下 1.0max.	1.2以下 1.2max.	1.0以下 1.0max.	1.2以下 1.2max.
R	端子不得露出编带。 Terminal must not project from tape.			
t	3.2以上 3.2min.			
S	0.8以下 0.8max.			

记号 Symbol	径向编带C04F Radial Taping C04F (mm)
P	12.7 ± 1.0
P <sub>0</sub>	12.7 ± 0.3
P <sub>1</sub>	3.85 ± 0.5
P <sub>2</sub>	6.35 ± 1.3
F	5.0 ± 0.5
W	18.0 $+1.0$ $-0.5$
W <sub>1</sub>	9.0 ± 0.5
H <sub>0</sub>	16.0 ± 0.5
H <sub>1</sub>	32.2以下 (32.2max.)
D <sub>0</sub>	φ4.0 ± 0.2

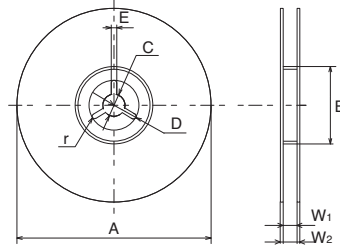
记号 Symbol	径向编带D04F Radial Taping D04F (mm)
P	12.7 ± 1.0
P <sub>0</sub>	12.7 ± 0.3
P <sub>1</sub>	3.85 ± 0.5
P <sub>2</sub>	6.35 ± 1.0
F	5.0 ± 0.5
W	18.0 $+1.0$ $-0.5$
W <sub>0</sub>	13.0 ± 0.5
W <sub>1</sub>	9.0 ± 0.5
W <sub>2</sub>	3.0max.
H <sub>0</sub>	16.0 ± 0.5
D <sub>0</sub>	4.0 ± 0.2
Δh	2.0max.
H <sub>1</sub>	31.0max.
t <sub>1</sub>	0.6 ± 0.3

单位 unit (mm)					
记号 Symbol	尺寸 Dimensions	容许偏差 Tolerance	记号 Symbol	尺寸 Dimensions	容许偏差 Tolerance
P	12.7	± 1.0	H0	15.0	± 2.5
P <sub>0</sub>	12.7	± 0.3	D0	4.0	± 0.2
P <sub>1</sub>	3.85	± 0.5	L	11.0	Max.
P <sub>2</sub>	6.35	± 1.0	l	1.0	Max.
F	5.0	± 0.5	Δh	2.0	Max.
W	18.0	± 1.0 -0.5	H1	32.0	Max.
W <sub>0</sub>	13.0	± 0.5	H2	3.5	Min.
W <sub>1</sub>	9.0	± 0.5	t1	0.6	± 0.3
W <sub>2</sub>	3.0	Max.	t2	1.5	Max.

■SMD编带 (CSA10系列)  
SMD Taping (CSA10 Series)

包装记号 Packing code	系列 Series	包装数量 Packing Qty
T	CSA10	4,000

卷盘 Reel



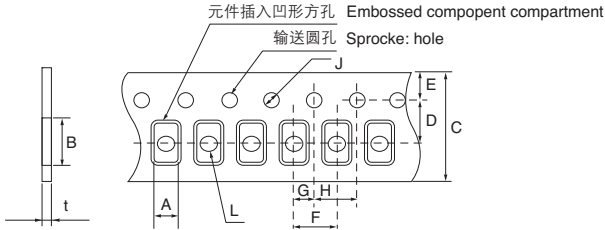
塑料卷盘 (标准型) Reel

单位 unit (mm)

A	B	C	D
$\varnothing 180_{-3.0}^{+0}$	$\varnothing 60_{+0.0}^{+1.0}$	$\varnothing 13.0 \pm 0.2$	$R10.5 \pm 0.4$
E	W <sub>1</sub>	W <sub>2</sub>	r
$2.0 \pm 0.5$	$9.0 \pm 0.3$	$11.4 \pm 1.0$	0.5

纸载带 Paper carrier tape

单位 unit (mm)



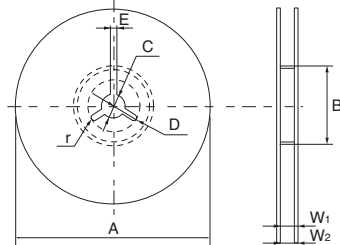
形状 mark	A	B	C	D	E	F
CSA10	$1.10 \pm 0.05$	$1.90 \pm 0.05$	$8.00 \pm 0.2$	$3.50 \pm 0.05$	$1.75 \pm 0.10$	$4.00 \pm 0.10$
形状 mark	G	H	J	t <sub>1</sub>		
CSA10	$2.00 \pm 0.05$	$4.00 \pm 0.10$	$\varnothing 1.5 \pm 0.10$ -0.00	$0.98 \pm 0.05$		

D,G的尺寸为每个袋子的中心值

■SMD编带 (CSA20/CSZ20系列)  
SMD Taping (CSA20/CSZ20 Series)

包装记号 Packing code	系列 Series	包装数量 Packing Qty
T	CSA20 CSZ20	2,000

卷盘 Reel



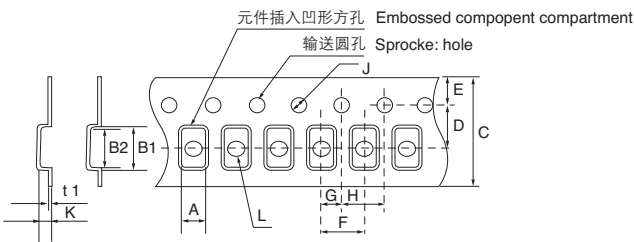
塑料卷盘 (标准型) Reel

单位 unit (mm)

A	B	C	D
$\varnothing 180_{-3}^{+0}$	$\varnothing 60_{+0}^{+1}$	$\varnothing 13.0 \pm 0.2$	$R10.5 \pm 0.4$
E	W <sub>1</sub>	W <sub>2</sub>	r
$2.0 \pm 0.5$	$9.0 \pm 0.3$	$11.4 \pm 1.0$	0.5

塑料载带 Plastic carrier tape

单位 unit (mm)

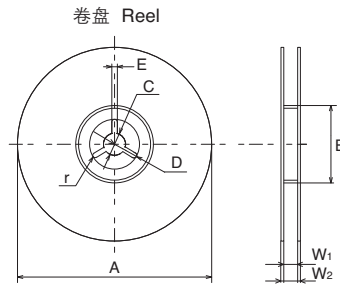


形状 mark	A	B	C	D	E	F
CSA20 CSZ20	$1.45 \pm 0.1$	$2.2 \pm 0.1$	$8.0 \pm 0.2$	$3.50 \pm 0.05$	$1.75 \pm 0.1$	$4.0 \pm 0.1$
形状 mark	G	H	J	K	L	t <sub>1</sub>
CSA20 CSZ20	$2.00 \pm 0.05$	$4.0 \pm 0.1$	$\varnothing 1.5 \pm 0.1$ -0	$1.42 \pm 0.05$	$\varnothing 1.0 \pm 1.0$ -0	$0.25 \pm 0.05$

D,G的尺寸为每个袋子的中心值

■SMD编带 (CSA30/CSZ30系列)  
SMD Taping (CSA30/CSZ30 Series)

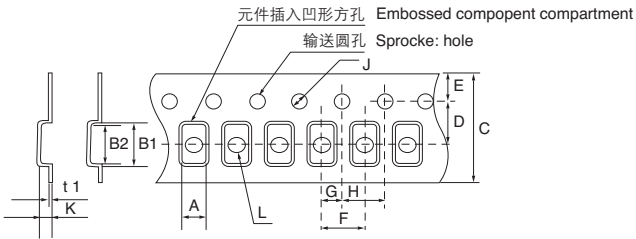
包装记号 Packing code	系列 Series	包装数量 Packing Qty
T	CSA30 CSZ30	2,000



塑料卷盘 (标准型) Reel 单位 unit (mm)

A	B	C	D
$\varnothing 180^{+0}_{-3}$	$\varnothing 60^{+1}_{-0}$	$\varnothing 13.0 \pm 0.2$	$R10.5 \pm 0.4$
E	W <sub>1</sub>	W <sub>2</sub>	r
$2.0 \pm 0.5$	$9.0 \pm 0.3$	$11.4 \pm 1.0$	0.5

塑料载带 Plastic carrier tape

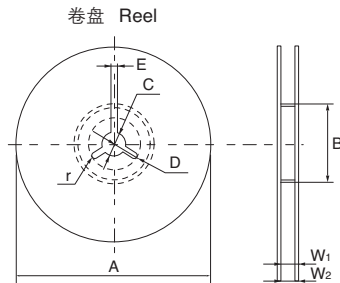


单位 unit (mm)

形状 mark	A	B	C	D	E	F
CSA30 CSZ30	$1.85 \pm 0.05$	$3.50 \pm 0.05$	$8.0 \pm 0.1$	$3.50 \pm 0.05$	$1.75 \pm 0.1$	$4.0 \pm 0.1$
形状 mark	G	H	J	K	L	t1
CSA30 CSZ30	$2.00 \pm 0.05$	$4.0 \pm 0.1$	$\varnothing 1.55 \pm 0.05$	$1.80 \pm 0.05$	$\varnothing 1.05 \pm 0.05$	0.25以下

■SMD编带 (CSA70/CDA70系列)  
SMD Taping (CSA70/CDA70 Series)

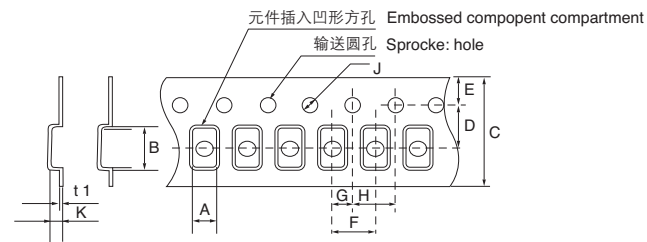
包装记号 Packing code	系列 Series	包装数量 Packing Qty
T	CSA70 CDA70	2,000



塑料卷盘 (标准型) Reel 单位 unit (mm)

A	B	C	D
$\varnothing 382$ 以下	$\varnothing 50.0$ 以上	$\varnothing 13.0 \pm 0.2$	$21 \pm 0.8$
E	W <sub>1</sub>	W <sub>2</sub>	r
$2.0 \pm 0.5$	$13.0 \pm 0.5$	18.4以下	1.0

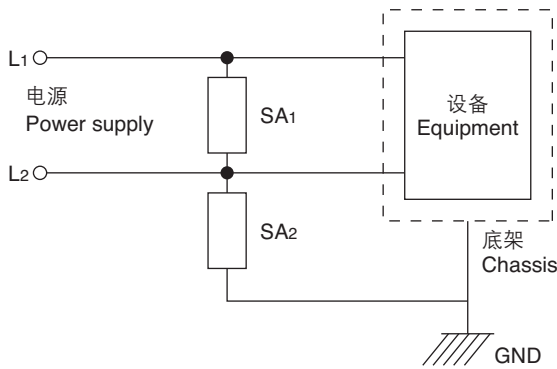
塑料载带 Plastic carrier tape



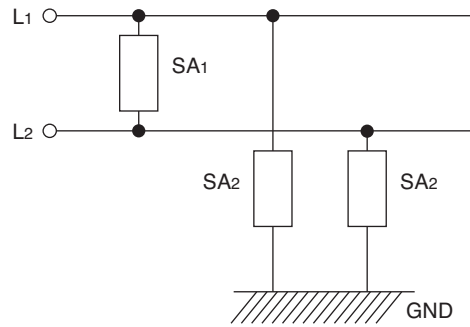
单位 unit (mm)

形状 mark	A	B	C	D	E	F
CSA70 CDA70	$3.6 \pm 0.1$	$4.3 \pm 0.1$	$12.0 \pm 0.1$	$5.50 \pm 0.05$	$1.75 \pm 0.1$	$8.0 \pm 0.1$
形状 mark	G	H	J	K	t1	
CSA70 CDA70	$2.00 \pm 0.05$	$4.0 \pm 0.1$	$\varnothing 1.55 \pm 0.05$	$2.5 \pm 0.1$	$0.30 \pm 0.05$	

1. 需要进行AC耐电压试验的电源  
Power supply requiring AC withstanding voltage test



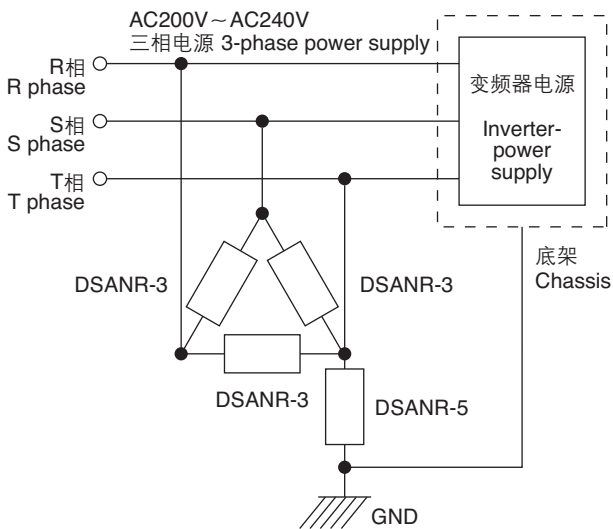
2. 高可靠性电源  
High quality supply



条件 Conditions	额定电路电压 Rated voltage	AC125V	AC250V
正常模式 (L1 - L2之间) Normal mode (Between L1 and L2)	SA1	DSANR-1 DSAZR1-301L	DSANR-3 DSAZR2-501M
共用模式 (L1、L2 - GND之间) Common mode (Between L1, L2-GND)	SA2	Test is not required	DSANR-3 DSAZR2-501M
	AC1200V	DSANR-4 DSAZR1-242M	DSAZR2-242M
	AC1500V	DSANR-5 DSAZR1-302M	DSANR-5 DSAZR2-302M
	AC1800V	DSANR-6 DSAZR1-362M	DSANR-6A DSAZR2-362M
AC耐电压试验条件 AC withstanding voltage test condition	AC2000V	DSANR-10B DSAZR1-452M	DSANR-10B DSAZR2-452M

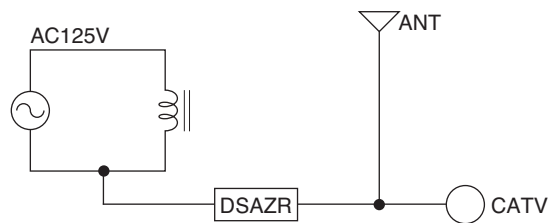
应用例：SW电源、变频器电源、OA设备及家用电器的电源  
Applications : SW power supply, inverter power supply, power supply of office and home appliance

3. 使用三相电源的设备  
Equipment using a three-phase power supply

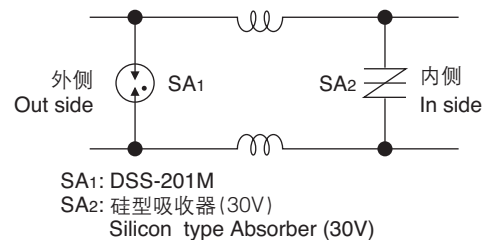


※在(R、S、T相)-GND之间进行AC 1500V绝缘耐压试验的实例。  
※Example of a dielectric withstanding voltage test carried out at a voltage of AC 1500V applied between the RST phases and the ground.

4. 电视天线电路  
TV tuner circuit : cold chassis



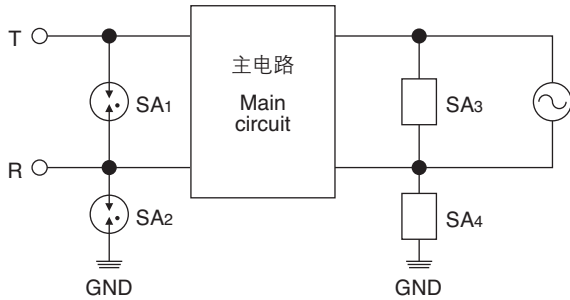
5. 传感器及数据线  
Sensor and data line



6. 连接到电话线路的设备

Telecommunication equipment  
(FAX, KTS, PBX)

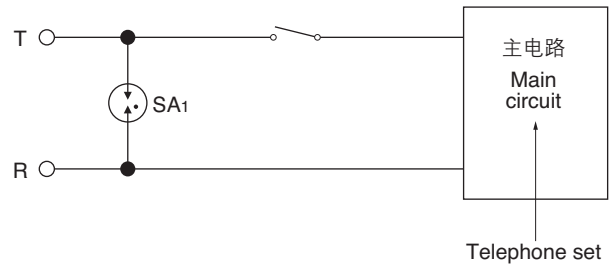
通信设备



Telephone

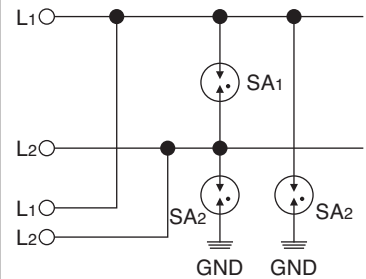
(One piece, cordless, answering machine)

电话机



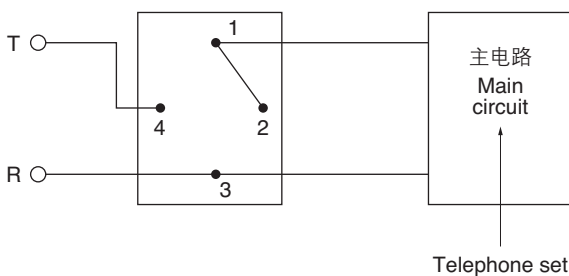
	通信线路 Telecommunication interface		电源 Power supply		
			AC125V	AC250V	
正常模式 Normal mode	T~R间 Between T and R. SA1	日本、美国、欧洲、东南亚 Japan, USA, EU and South East Asia DSS-301L CSA70-301L	SA3	DSANR-1 DSAZR1-301L	DSANR-3 DSAZR2-501M
		加拿大 Canada DSS-401M CSA70-401L			
共用模式 Common mode	T,R~GND间 Between T, R and GND. SA2	不需要AC耐电压试验 AC withstanding test is not required 与SA1相同 Same as SA1	SA4	DSANR-4 DSAZR1-242M	DSANR-5 DSANR-6A DSAZR2-302M DSAZR2-362M
		需要AC耐电压试验 AC withstanding test is required AC1200V→ DSA-242MA AC1500V→ DSA-302MA			

调制解调器  
Modem



应用例：传真机、按键式电话系统、PBX、调制解调器、录音电话、无绳电话、电话机等。  
Applications : key telephone system, PBX, modem, answering phone, cordless telephone, normal telephone etc.

7. 过电压试验电路(DSSV-YD)  
Overvoltage test circuit (DSSV-YD)



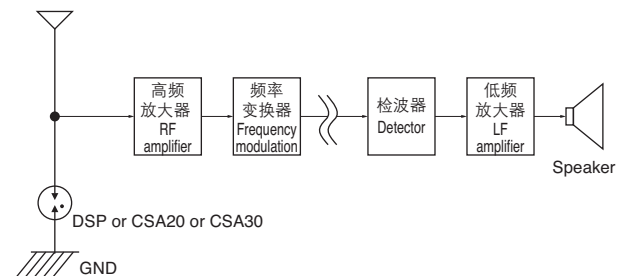
在DSSV-YD型中，当在T~R间外加过电压时，与通信线路串联的金属导线开路，使通信线路中断。

When the applied overvoltage is between tip and ring, the communication line is cut off by the wire opening.

8. 汽车收音机、无线电设备  
Car radio, wireless

插入天线输入部，防止从天线侵入的静电浪涌所引起的对前端集成电路或场效应管等损坏。

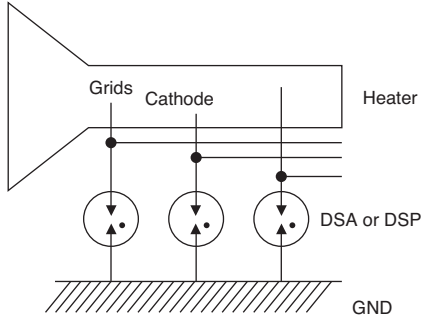
Inserted in the antenna input terminal, the surge absorber will protect the semiconductor (front-end IC or FET, etc.) against failure due to static surge entering from the antenna.



9. CRT (Cathode Ray Tube)

(DSA and DSP series protect display driver IC and transistors from damage due to ingress of static surge.)

防止因CRT管异常放电产生的静电损坏驱动IC或晶体管。



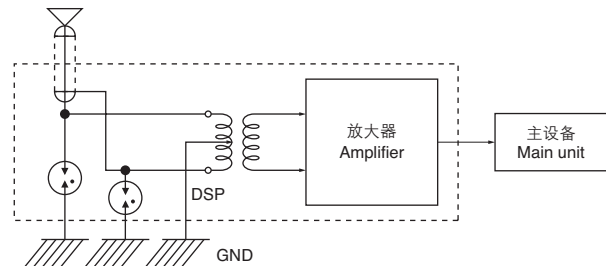
显示屏尺寸 Screen size	15英寸以下 15" under	15英寸以上 15" up
阴极~GND间 Between cathode and GND	DSP-201M DSP-301N	DSA-301LA DSA-501MA
灯丝 Heater	DSP-201M DSP-301N	DSA-301LA DSA-501MA
栅极~GND间 Between grids and GND	DSP-501N DSP-751N DSP-102M DSP-152M DSP-272M DSP-302M	DSA-102MA DSA-242MA DSA-152MA DSP-102M DSP-152M DSP-272M DSP-302M

注：用于本电路时，请检查有无延期保持现象。  
Note : For this application, please check for hold over.

10. 各种天线放大器 (卫星广播用、一般电视设备用)  
Boosters (for satellite broadcasting and general TV equipment)

用于防止从天线附近侵入的微小浪涌能量或者人体接触而引起的静电对半导体造成损坏。尤其是当今随着高灵敏度场效应管使用的增加，防浪涌措施必不可少。

In this application, the surge absorber protects the semiconductor against small surge energies from the vicinity of the antenna or against static electricity due to human contact. The recent use of high-sensitivity FET has led to a stronger requirement for surge protection.



11. 共振措施

Resonance measure

如右图浪涌侵入电源线，电源线与接地间的浪涌措施电路(A点)反应时，其残余电压会传至后半部分。因滤波器的LC共振，残余电压增幅并有可能破坏后半部分的电路。建议在共模扼制线圈(common mode coil)的前后安装浪涌吸收器以保持电位均衡。

In case surge absorber located between power line to ground; point A in figure, reacts against the surge, residual voltage is transmitted to the latter part of the circuit. Some part of the circuit is destroyed because of amplified residual voltage by LC resonance of a noise filter. Potential equalization before and behind the common mode coil by a surge absorber; SA2, is recommended as a measure.

使用浪涌吸收器

- SA1: 没有AC耐压测试时 AC125V用... DSA-301LA  
AC250V用... DSA-501MA
- 有AC耐压测试时 AC1,200V 3秒... DSA-242MA, DA38-272M  
AC1,500V 1分... DSA-302MA, DA38-302M  
AC1,800V 3秒... DSA-362MA, DA38-362M

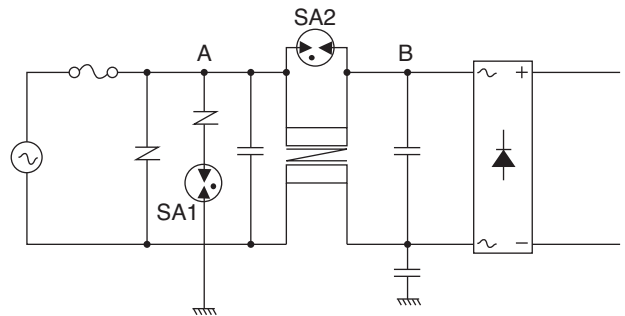
变阻器(与SA1连接): AC125V用... V1mA=270V, AC250V用... V1mA=470V  
SA2: CSA70-301L, CSA70-401L, DE37-401W, DE37-501M, DSS-301L

Recommended Parts

- SA1: AC withstanding test is not required;  
AC125V... DSA-301LA  
AC250V... DSA-501MA
- AC withstanding test is required;  
AC1,200V 3sec... DSA-242MA, DA38-272M  
AC1,500V 1min... DSA-302MA, DA38-302M  
AC1,800V 3sec... DSA-362MA, DA38-362M

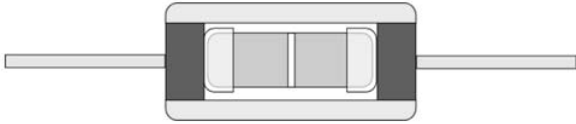
Varistor connected with SA1 in series: AC125V... V1mA=270V, AC250V... V1mA=470V

SA2: CSA70-301L, CSA70-401L, DE37-401W, DE37-501M, DSS-301L



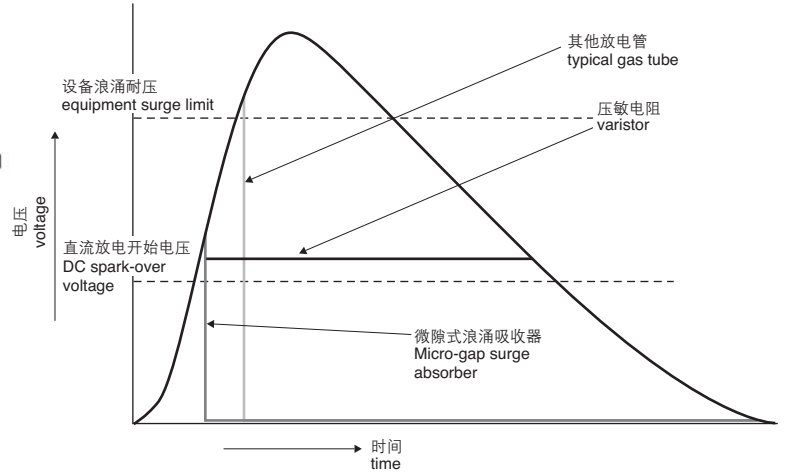
## 微隙方式的特点

- 对高速冲击的响应性良好。
- 无明显场所的特性差异。
- 绝缘阻抗值极高： $10^7 \Omega$ 以上。
- 静电容量小：1pF以下。
- 无极性。



## Features of the Micro-Gap

- Response to quick rise time of surge is good.
- Same quick response in dark or light.
- High Insulation Resistance: Greater than  $10^7 \Omega$ .
- Low Capacitance: Less than 1pF.
- No polarity.



## 验收测试

您在防浪涌方面有以下问题吗？

- 开发中的设备无法通过UL等规格的要求。
- 市场上的电子设备常常因感应雷击而遭破坏，希望采取保护措施。

三菱综合材料的陶瓷工厂备有各种规格的脉冲电压发生器及脉冲电流发生器，我们会与客户共同进行浪涌试验，提供最完善的解决方案。

## Test facilities

Troubled with surge requirements?

- Products being developed can't meet UL standards.
- Need to protect equipment from indirect lightning surges in the field.

At Mitsubishi Materials ceramic factory, customers can come and observe testing of their product with the latest impulse voltage and current generators that can duplicate the test requirements of the various worldwide standards agencies. From these tests we can recommend the best solution to help you pass requirements.

相关规格 Reference standard	波形 Wave form	备注 comments
JEC规格 JEC standard	1.2/50 $\mu$ s 30kVmax	保护电源免遭间接雷击的损害 Indirect lightning protection
	8/20 $\mu$ s 6kAmax	
IEC61000-4-5标准 IEC61000-4-5 conformance	1.2/50 $\mu$ s 15kV 8/20 $\mu$ s 7.5kA	保护电源免遭间接雷击的损害 Indirect lightning protection
IEC61000-4-2标准 IEC61000-4-2 conformance	150pF 330 $\Omega$ 30kVmax	防静电 Static electricity protection
FCC规格 FCC standard	10/560 $\mu$ s 800V 100A	保护通信设备 Communication related protection
FCC规格 FCC standard	10/160 $\mu$ s 1.5kV 200A	保护通信设备 Communication related protection
FCC规格标准 FCC standard conformance	10/700 $\mu$ s 15kVmax	保护通信设备 Communication related protection
IEEE	0.5 $\mu$ -100kHz 6kVmax	保护通信设备(AC电源交叉) Communications (AC power cross)
UL规格 UL standard	AC600V 40A 1.5s	
	AC600V 7A 5s	
	AC600V 2.2A 30min 最大为AC600V的过电压 Over-voltage to AC600V	
其他 others	矩形波脉冲宽度50~1000ns 4kVmax 30~60Hz Rectangular wave, pulse width 50~1000ns, 4kV max, 30~60Hz	
	2/10 $\mu$ s 2.5kV 1kA	
	10/200 $\mu$ s 20kVmax	
	0.5/700 $\mu$ s 6kVmax	
	100/700 $\mu$ s 5kVmax	

※对于其他规格，请与我司协商。  
Please talk about the other standards.

## ■浪涌吸收器系列使用注意

使用浪涌吸收器系列时，根据使用条件(电源条件，周边环境条件，贴装条件等)，有可能发生以下异常，如火灾事故，触电事故，产品故障等，因此请核查下列事项之后使用。

但是关于未声明的事项，请咨询本公司。

### 1. 严守事项

#### (1) 确认额定性能

每个产品有各自的浪涌破坏容量、浪涌寿命，和使用温度范围等规定，请在额定性能的规定下使用。若超过额定性能的规定使用时，会引起性能退化或玻璃管破坏，并可能会导致冒烟，起火。

#### (2) 避免意外行为所造成的事故

该产品的毁坏时，玻璃有可能飞散，因此请把产品装入容器中。

### 2. 注意事项

#### (1) 电流值/通电时间

在连续放电下使用时，功能可能会降低，因此测量直流放电开始电压时请多加注意。

#### (2) 关于续流的发生

AC或DC电源电路中使用本产品时，因电源的电压供应可能会发生续流。使用本产品时请与压敏电阻串联连接，以防止此类续流现象。

#### (3) 交流电压试验

实施本产品的交流电压试验时，请勿施加超出保证值得电压。此外，使用针表显示交流电压测试设备时，请用数字显示式万用表核实电压。

使用交流电压测试设备时，微小的输入电压的变动，输出电压可能有很大的变动。

输入电压有变动时，请安装稳压电源，控制电压变动。

此外，请勿在高温和潮湿的环境中测量。绝缘电阻降低等，由此标准值可能无法得到满足。

放电管和电线的模式接近时，交流电压会下降。因此放电管和电线的模式之间请保持1毫米以上的间距。

#### (4) 落下/冲击

玻璃管型产品，因落下/震动及冲击等玻璃碎裂时，可能无法保持其功能，特请谨慎处理。

#### (5) 成形

成形时使用本产品的导线时，特请注意玻璃管的碎裂。

#### (6) 保管

① 请保管在正常温度和湿度(温度：40℃以内，湿度：70%RH以内)的环境中。

② 交付产品后，请在6个月内使用。

③ 请勿保管在直接照射阳光的场所。

④ 请勿保管有发生毒气体(腐蚀性气体等)和灰尘多的场所。

⑤ 有急速的温度变化，导线有可能因冷凝而腐蚀，请保管在温度变化少的场所。

#### (7) 导线

因本产品是导线端子零件，故在运输过程中振动等会使导线有所弯曲，请给予谅解。

### 3. 免责声明

(1) 本规范中所述的产品用途为一般消费者产品使用为前提而设备。

(2) 安装在医疗设备，航空设备，核电设备等，发生故障时有可能对人体造成影响，或对社会造成巨大损失的设备时，与一般消费者设备不同需要高可靠性。考虑以上用途时，请事先与本公司联系。

## ■Caution in Surge Absorber series usage

In case that a surge absorber series is used, if an abnormality takes place because of peripheral conditions of the surge absorber (power source conditions, environment, mounted conditions, etc.), fire, electric shock, product failure may be occur, so confirm the next matter sufficiently, and please use. For more questions, contact us.

### 1. Precautions to be strictly observed

#### (1) Confirmation of performance ratings

Use the surge absorber within its rated range of performance such as surge current capacity, surge life and operating temperature range. If used outside the range, surge absorber can be degrade and have glass fracture, which may result in smoking and ignition.

#### (2) Avoiding accidents due to unexpected phenomena

In the event of fracture of surge absorber, its pieces may scatter; hence, put the case or cover of the set product in place.

### 2. Application notes

#### (1) Current value • Test current time

There is a case where an electric characteristic deteriorates in continuous-discharge, in case of measuring DC spark-over voltage.

#### (2) Concerning Hold-Over

Hold-over may occur by power supply, in case this product is used in AC or DC power supply circuit. We recommend using a varistor, electrically connected in series.

#### (3) AC withstand voltage test

Do not apply the voltage over a guaranteed value, in case of the AC withstand voltage test. Please be sure the voltage with voltmeters, such as digital multi-meter, in case to perform a voltage setup of AC withstand voltage tester with analog display. By change of slight input voltage, output voltage may change a lot. So if there were changes of input voltage, installation of stabilization power supply is recommended to suppress voltage change.

For AC electric strength to fall, when the wiring pattern approaches with Absorber, please leave more than 1 mm of space of Absorber and the wiring pattern and use.

#### (4) Fall and a shock

Glass may be cracked by fall, vibration, a shock, etc. Since it may become impossible to maintain the characteristics when glass has crack, please be careful of handling enough.

#### (5) Forming

Please be careful enough not to cause a crack of glass and a chip, in case of lead forming.

#### (6) Storage

① Please store at a temperature up to 40℃ and at humidity below 70%RH.

② This products should be used within 6 months after delivery.

③ Avoid direct sunlight.

④ Avoid the place where poisonous gas and dusty condition.

⑤ Avoid rapid temperature change in the storage area, otherwise dew condensation may occur and a lead wire may corrode.

#### (7) Lead wire

This product has lead wire. A lead may slightly bend by vibration in transport condition.

### 3. Notice

(1) Parts shown in the specification are meant for general commercial products.

(2) Electronic components used in equipment that can have a series effect on human life or society, such as medical equipment, equipment for use in space, nuclear related equipment, etc. requires higher reliability parts than those found in general commercial electronics. For these types of applications not mentioned in the specification, please contact our charge sections.