

High Performance Fixed Attenuator

HSA****TC系列 HSA****TC SERIES



- 衰减电路由薄膜一体形成，使用频带广、特性优异。（DC~20GHz）
 - 独自のFace-down构造可以不影响信号品质的基础上进行高品质的衰减。
 - 衰减量的温度系数小，对于温度变化的稳定性高。
 - 1005尺寸~3216尺寸四个尺寸。
 - 阻抗变换等订制品也可对应。
- Attenuation circuit integrated on single chip through thin film technology achieves excellent characteristics over very wide Frequency band. (DC~20GHz)
 - Unique face-down design provides good attenuation without affects to signal quality.
 - The temperature coefficient of attenuation is small and has high stability against temperature change.
 - A lineup of 4 sizes from 1005 size to 3216 size.
 - Custom products such as impedance conversion are also available.

1. 构造 Structure

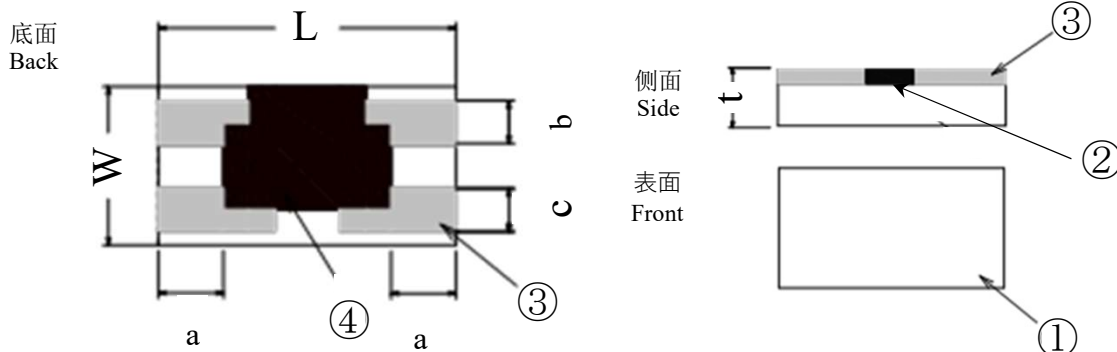
□外形尺寸 Dimensions

尺寸 Size	尺寸规格 Dimensions (mm)					
	W	L	a	b	c	t
HSA1005TC※	0.50 ± 0.15	1.00 ± 0.15	0.22 ± 0.15	0.15 ± 0.10	0.15 ± 0.10	0.4 ± 0.20
HSA1608TC	0.85 ± 0.20	1.60 ± 0.20	0.35 ± 0.15	0.24 ± 0.15	0.24 ± 0.15	0.5 ± 0.20
HSA2012TC	1.25 ± 0.20	2.00 ± 0.20	0.44 ± 0.15	0.30 ± 0.20	0.3 ± 0.20	0.5 ± 0.20
HSA3216TC	1.60 ± 0.20	3.20 ± 0.20	1.00 ± 0.25	0.55 ± 0.25	0.40 ± 0.20	0.5 ± 0.20

※研发中。 ※Currently under development

□构造 Structure

名称 Construction	使用材质 Material
①基板 Substrate	96% 氧化铝 Al ₂ O ₃ 96%
②电阻体 Resistor element	薄膜 thin film
③电极 Electrode	Sn镀层 Sn Plating
④保护膜 Outer protective coat	环氧树脂 Epoxy Resin



2. 规格 Specification

系列	额定功率 ※	尺寸		阻抗	衰减量	频率范围	dB ±			VSWR			包装
Series	Power Rating※	(mm)	(inch)	Impedance	Attenuation	Frequency Range	~5GHz	~10GHz	~20GHz	~5GHz	~10GHz	~20GHz	Packaging
HSA1005TC	0.032W	1005	0402	50Ω	0~10DB	DC~20GHz	± 0.2dB	± 0.3dB	± 0.5dB	1.2	1.3	1.5	5000pcs/reel
HSA1608TC	0.032W	1608	0603	50Ω	0~10DB	DC~20GHz	± 0.2dB	± 0.3dB	± 0.5dB	1.2	1.3	1.5	5000pcs/reel
HSA2012TC	0.063W	2012	0805	50Ω	0~10DB	DC~20GHz	± 0.2dB	± 0.3dB	± 0.5dB	1.2	1.3	1.5	5000pcs/reel
HSA3216TC	0.125W	3216	1206	50Ω	0~10DB	DC~20GHz	± 0.2dB	± 0.3dB	± 0.5dB	1.2	1.3	1.5	5000pcs/reel

※使用温度超过70℃会发生功率下降。

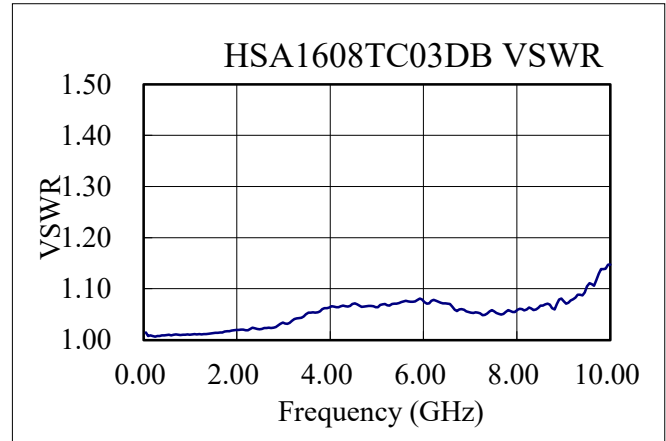
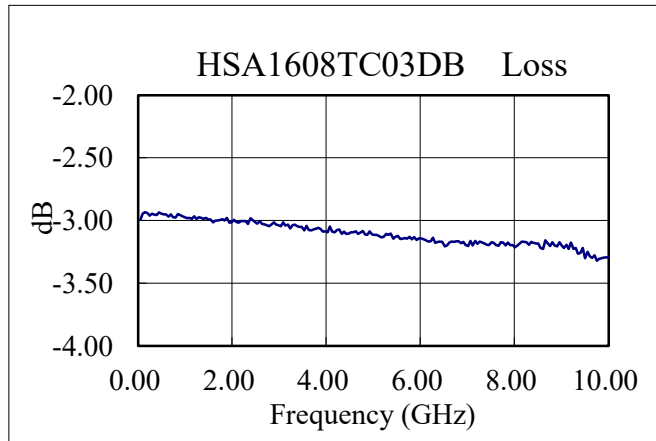
※ Operating temperature exceeding 70 °C is to be subject to the derating curve under separate sheet.

※本产品目录的规格如有变更，恕不另行通知。

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3. 高频特性 Characteristics of the Frequency For example: HSA1608TC03DB



4. 命名规则 Part Numbering

H S A 1 6 0 8 T C 0 3 D B T 5 X X X

系列名称 Series name	尺寸、特性 Formfactor, Performance	类型 Type	阻抗 Impedance	衰减量 Attenuation	包装 Packaging	电极镀层 Terminal Plating	等级 Grade
HSA : 高性能固定衰 减器 High Performance Fixed Attenuator	尺寸 Size 1005 : 1608 : 2012 : 3216 :	额定功率 Rated Power 0.032W 0.032W 0.063W 0.125W	T : 薄膜 Thin Film C : 50Ω D : 75Ω	03DB : 3dB 0~10DB (1dB Step)	T5 : 5Kpcs/卷 T5:5Kpcs/reel	X : 锡 X : Sn	XX : 常规 XX : General

5. 性能 Reliability Test

項 目 Parameter	試 験 条 件 Conditions	規 格 値 Specification	
		減衰量 Attenuation	インピーダンス Impedance
短时间过负荷 Short Time Overload	额定电压的2.5倍施加5秒。 2.5 times the rating voltage for 5sec.	±0.02 dB	±0.2%
额定负荷寿命 Load Life	70±3℃ 的环境中施加额定电压 90分钟后停止30分钟，循环1000小时。 At the temperature of 70±3℃, rated voltage for 90 mins, and off for 30 mins. Repeated for 1000 hours.	±0.04 dB	±0.5%
耐湿负荷寿命 Moisture Load Life	60±2℃ 90~95%RH的环境中施加额定电压 90分钟后停止30分钟，循环1000小时。 At the temperature of 60±2℃ with relative humidity of 90% to 95%, rated voltage for 90 mins, and off for 30 mins. Repeated for 1000 hours.	±0.04 dB	±0.5%
温度循环 Thermo Shock	[-55℃ 30分钟→室温 3分钟→+125℃ 30分钟 →室温 3分钟]进行5个循环。 [-55℃ 30 mins → R.T. 3 mins → +125℃ 30 mins → R.T. 3 mins] This cycle shall be continued for 5 times.	±0.02 dB	±0.2%
焊接耐热性 Resistance to Soldering Heating	260±5℃ 的锡膏中浸沾10±1秒。 Dip into solder at 260±5℃ for 10±1 seconds.	±0.02 dB	±0.2%

备注：衰减量按照直流测试方法进行。

Remark: Using direct-current to measure attenuation.

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