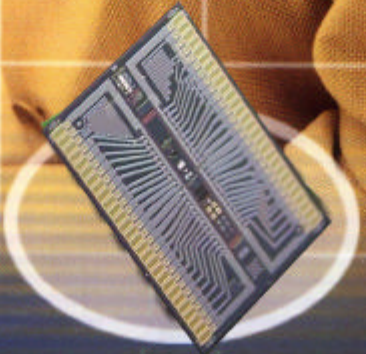
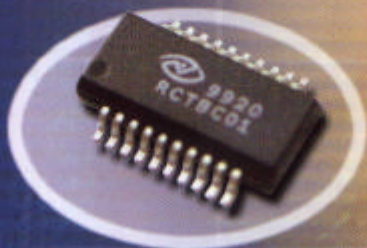
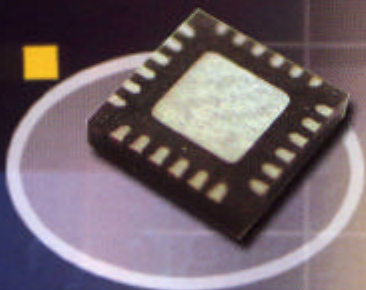




Viking

Tech Corporation



Overview

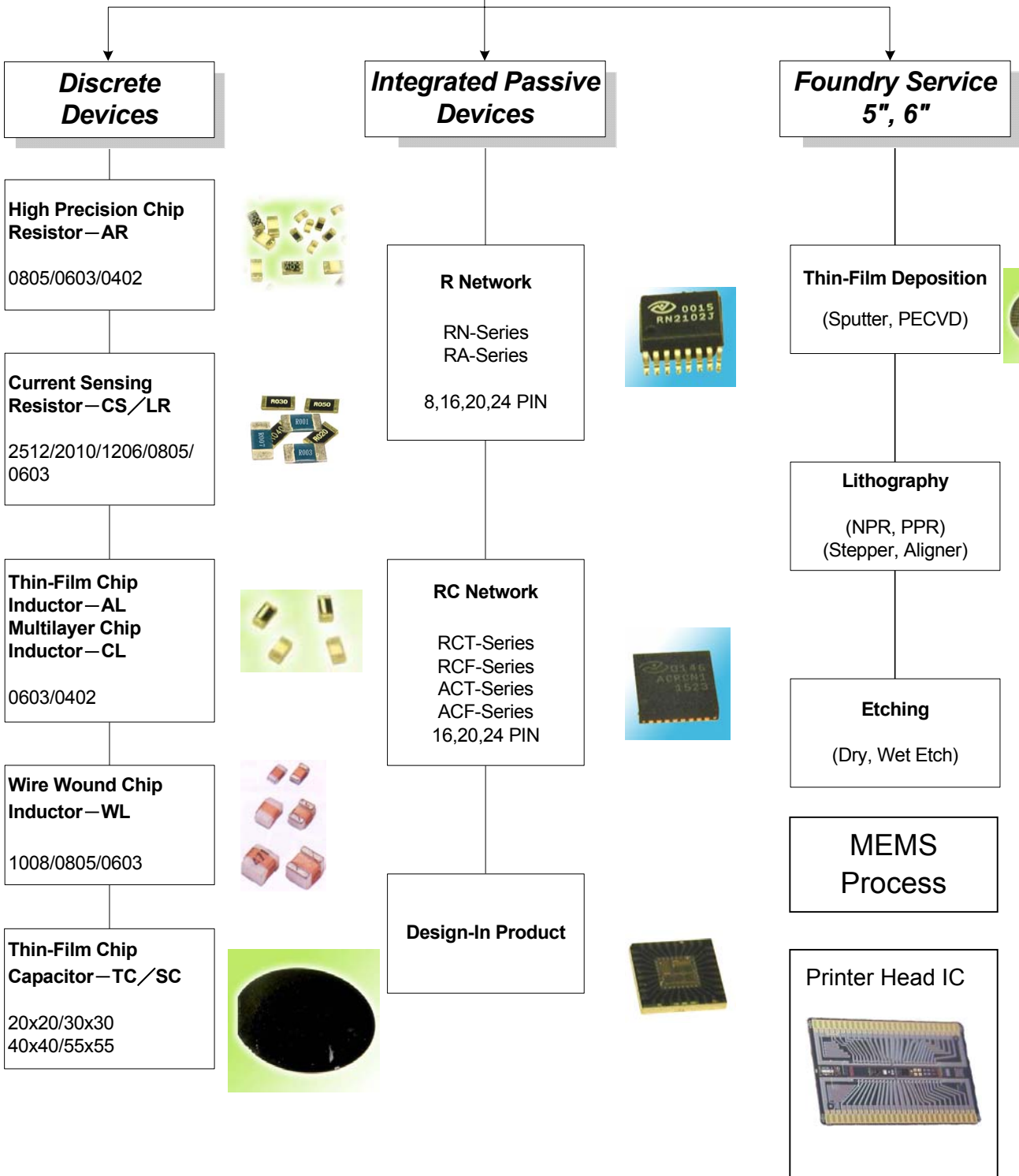
Viking Tech was established in October 1997 at Hsin-Chu Science-Based Industrial Park, Taiwan, as the leader in the design, manufacture and marketing of Thin-Film/Thick-Film integrated passive devices-passive ICs, and RF modules in Taiwan. Passive ICs offer significant advantages over conventional thick film products in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and lower Temperature Coefficient (TC). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Passive ICs also afford the benefits of board space savings, reduced assembly costs and increased reliability with fewer components.

To provide better service to our customers, Viking Tech has not only offices in Hong Kong and China but also distribution channels all over the world. Currently Viking Tech has more than 120 employees in Taiwan, Hong Kong, and China.

As a technology oriented company, Viking Tech is devoted to Thin-Film/Thick-Film process development on various substrates i.e. Si, Ceramic and Glass, to meet different customers' requirements in various applications. With its well-experienced RF design team and backed up by advanced EM simulation software, Viking Tech is capable to design and manufacture RF passive devices, Passive ICs-integrated passive devices (IPD), and RF modules.

Thank you for your interest in Viking's products. This Product Directory is designed to help you identify particular product solutions for specific requirements and includes a Selection Guide that lists the many products currently available both by function and by application.

Viking Product



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Discrete Devices

HIGH PRECISION CHIP RESISTOR – AR



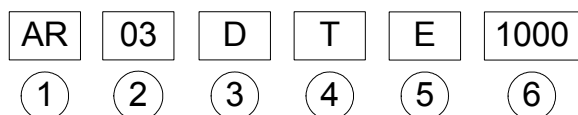
Features

- Tolerance from $\pm 0.1\%$ ~ 0.5%
- Thin film TaN & Ni/Cr Resistor
- TCR from $\pm 25\text{ppm}$ ~ $\pm 50\text{ppm}$ for thin film chip R

Applications

- Medical equipment
- Measurement instrument
- Communication devices
- Converters
- Printer equipment
- Consumer

Part Numbering



① Product Type

Product Type	
AR	High Precision Chip Resistor

② Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
06	3.1x1.55mm	1206
05	2.0x1.25mm	0805
03	1.6x0.8mm	0603
02	1.0x0.5mm	0402

③ Resistance Tolerance

Codes	Resistance Tolerance
B	$\pm 0.1\%$
C	$\pm 0.25\%$
D	$\pm 0.5\%$

④ Packaging

Code	Type
T	Taping Reel

* Viking has the ability to manufacture following options based on customer's requirement.

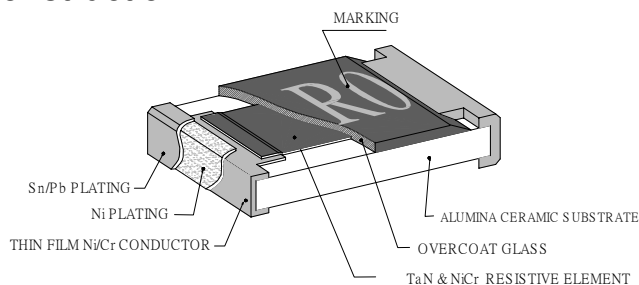
Tighter tolerance: $\pm 0.05\%$, $\pm 0.01\%$;

Resistance: 1~10 Ω ;

TCR $\leq 25\text{ppm}$;

Other size.

Construction



⑤ TCR

Code	Type
C	$\pm 25\text{ppm}$
D	$\pm 50\text{ppm}$

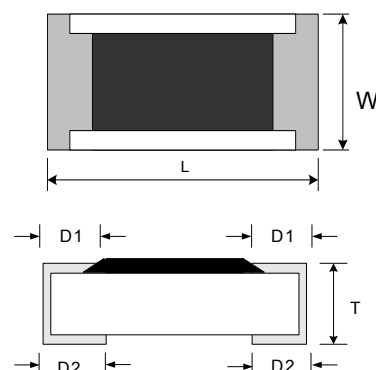
⑥ Resistance

Code	Type
1000	100 Ω
2201	2200 Ω
1002	10000 Ω
4992	49900 Ω
1003	100000 Ω

Dimensions

Unit: mm

SIZE	STYLE	L	W	T	D1	D2
1206	AR06	3.1 ± 0.1	1.6 ± 0.1	0.55 ± 0.1	0.45 ± 0.2	0.4 ± 0.2
0805	AR05	2.0 ± 0.15	1.25 ± 0.15	0.50 ± 0.1	0.35 ± 0.2	0.4 ± 0.2
0603	AR03	1.6 ± 0.1	0.8 ± 0.1	0.45 ± 0.1	0.3 ± 0.2	0.3 ± 0.2
0402	AR02	1.0 ± 0.05	0.5 ± 0.05	0.35 ± 0.05	0.25 ± 0.1	0.2 ± 0.1



S Standard electrical specifications

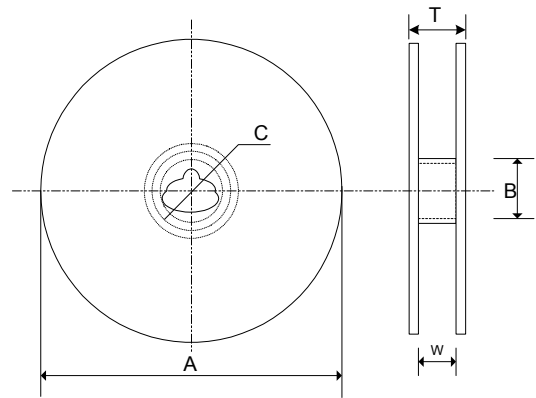
Item Type	Power Rating	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance	Resistance Range	TCR
AR06	1/8W	-55 ~ +125°C	150V	300V	±0.1% ±0.25% ±0.5%	10Ω~1MΩ	±25 ±50
AR05	1/10W	-55 ~ +125°C	100V	150V	±0.1% ±0.25% ±0.5%	10Ω~1MΩ	±25 ±50
AR03	1/16W	-55 ~ +125°C	75V	100V	±0.1% ±0.25% ±0.5%	10Ω~332KΩ	±25 ±50
AR02	1/16W	-55 ~ +125°C	25V	75V	±0.1% ±0.25% ±0.5%	10Ω~100KΩ	±25 ±50

Packaging

Packaging Quantity

Unit: pcs

Packaging Series	Paper Tape
AR06	5,000
AR05	5,000
AR03	5,000
AR02	10,000

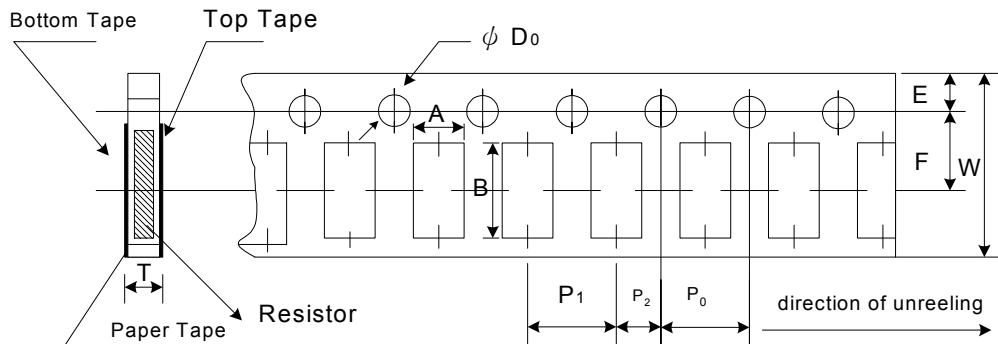


Reel Specifications

Unit: mm

Series	ΦA	ΦB	ΦC	W	T
AR06	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0
AR05	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0
AR03	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0
AR02	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0

Paper Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ϕ D ₀	T
AR06	2.00±0.15	3.6±0.2	8.0 ±0.2	3.50 ±0.05	1.75 ±0.01	4.00 ±0.01	2.00 ±0.05	4.00 ±0.10	1.50 ^{+0.01} ₋₀	0.75 ±0.1
AR05	1.6±0.15	2.4±0.2								0.75 ±0.1
AR03	1.1±0.1	1.9±0.1								0.64 ±0.1
AR02	0.65±0.15	1.15±0.2								0.7 ±0.1

Environmental Characteristics

Item	Specification	Test Method
1	Temperature Coefficient of Resistance 25ppm./50ppm	MIL-STD-202, Method 304 +25/-55/+25/+125/+25°C
2	Thermal Shock $\pm(0.5\%+0.05\Omega)$	MIL-STD-202, Method 107 -55°C~125°C, 100 cycles
3	Short Time Overload $\pm(2.0\%+0.05\Omega)$	MIL-R-55342D 4.7.5 RCWV*2.5 or Max Overloading Voltage, 5 seconds
4	High Temperature Exposure $\pm(1.0\%+0.05\Omega)$	MIL-R-55342D 4.7.6 1000 hours @ +125°C without load
5	Load Life $\pm(1.0\%+0.05\Omega)$	MIL-STD-202 M108 RCWV, 70°C, 1.5 hours on, 0.5 hours off 1000~1048 hours
6	Resistance to Soldering Heat $\pm(0.5\%+0.05\Omega)$	MIL-R-55342D 4.7.7 260±5°C, 10±1second
7	Moisture Resistance $\pm(1.0\%+0.05\Omega)$	MIL-STD-202, Method 106 40°C, 90~95%RH, 1000 hours
8	Low Temperature Operation $\pm(0.5\%+0.05\Omega)$	MIL-R-55342D 4.7.4 1hour, -55°C, followed by 45minutes of RCWV

CURRENT SENSING RESISTOR (1) – CS



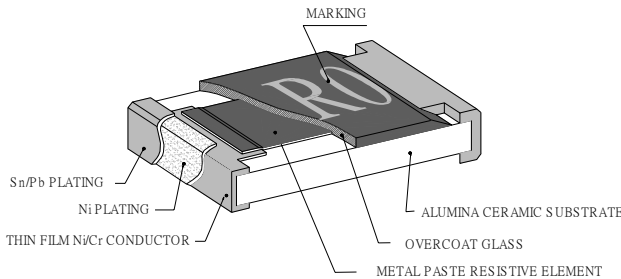
Features

- Low TCR from $\pm 200\text{ppm}$ ~ $\pm 600\text{ppm}$
- Resistance values from 10m ohms to 1 ohms
- High purity alumina substrate for high power dissipation

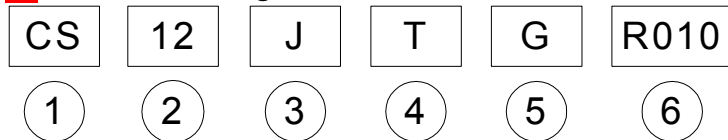
Applications

- NB (For power management)
- MB (For power management)
- SWPS (DC-DC converter, Charger, Adaptor)
- Monitor (For power management)

Construction



Part Numbering



① Product Type

Product Type	
CS	Current Sensing Resistor (SMD)

② Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
12	6.3x3.1mm	2512
10	5.0x2.5mm	2010
06	3.1x1.55mm	1206
05	2.0x1.25mm	0805
03	1.6x0.8mm	0603

③ Resistance Tolerance

Codes	Resistance Tolerance
J	$\pm 5\%$
G	$\pm 2\%$
F	$\pm 1\%$

④ Packaging

Code	Type
T	Taping Reel

⑤ TCR

Code	Type
F	$\pm 200\text{ppm}$
G	$\pm 300\text{ppm}$
H	$\pm 400\text{ppm}$
I	$\pm 500\text{ppm}$
J	$\pm 600\text{ppm}$

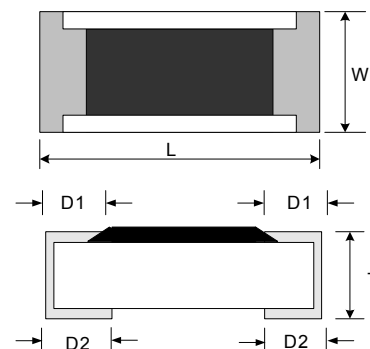
⑥ Resistance

Code	Type
1R00	1.000 Ω
R100	0.100 Ω
R050	0.050 Ω
R015	0.015 Ω
R010	0.010 Ω

Dimensions

Unit: mm

SIZE	STYLE	L	W	T	D1	D2
2512	CS12	6.3±0.15	3.1±0.15	0.6±0.10	0.6±0.3	0.5±0.25
2010	CS10	5.0±0.15	2.5±0.15	0.6±0.10	0.6±0.3	0.5±0.25
1206	CS06	3.1±0.15	1.55±0.15	0.6±0.10	0.5±0.3	0.4±0.2
0805	CS05	2.0±0.15	1.25±0.15	0.5±0.10	0.4±0.2	0.4±0.2
0603	CS03	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2



Standard electrical specifications

Item Type	Power Rating	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance	Resistance Range	TCR
CS12	1W	-55 ~ +125°C	200V	400V	±1% ±2% ±5%	10mΩ~20mΩ	±600
CS10	1/2W		200V	400V		21mΩ~50mΩ	±400
CS06	1/2W		200V	400V		51mΩ~1Ω	±200
CS05	1/8W		150V	300V		20mΩ~50mΩ	±500
CS03	1/10W		100V	200V		51mΩ~1Ω	±300
						500mΩ~1Ω	±300

Packaging

Packaging Quantity

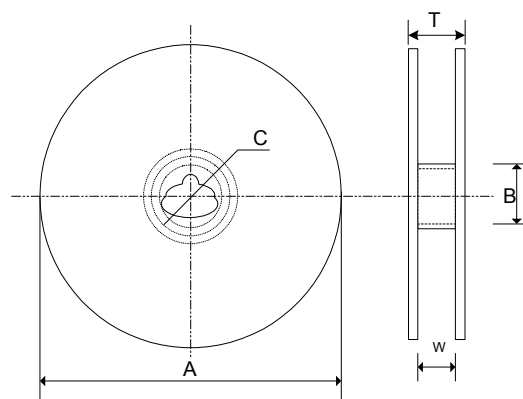
Unit: pcs

Series	Paper Tape	Emboss Plastic Tape
CS12		4,000
CS10		4,000
CS06	5,000	
CS05	5,000	
CS03	5,000	

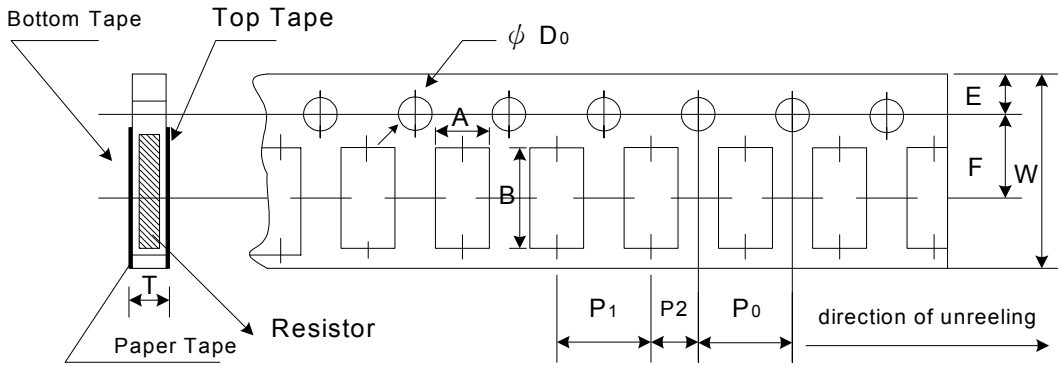
Reel Specifications

Unit: mm

Series	ΦA	ΦB	ΦC	W	T
CS12	180 ⁺⁰ ₋₃	60min.	13.0±1.0	14±0.1	16.4±2.0
CS10	180 ⁺⁰ ₋₃	60min.	13.0±1.0	14±0.1	16.4±2.0
CS06	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0
CS05	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0
CS03	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0



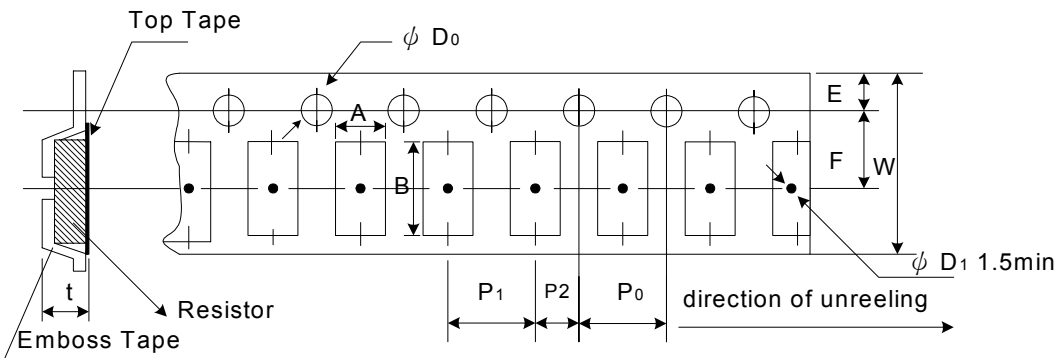
Paper Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	φ D ₀	T
CS06	2.00±0.15	3.6±0.2	8.0 ±0.2	3.50 ±0.05	1.75 ±0.01	4.00 ±0.01	2.00 ±0.05	4.00 ±0.10	1.50 ^{+0.01} -0	0.75±0.1
CS05	1.6±0.15	2.4±0.2								0.75±0.1
CS03	1.1±0.1	1.9±0.1								0.60±0.1

Emboss Plastic Tape Specifications



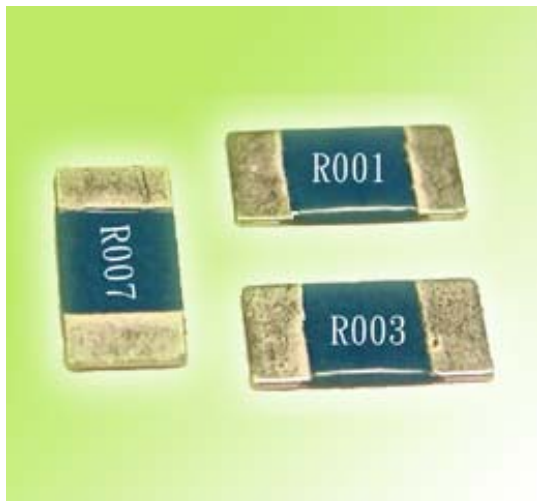
Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	φ D ₀	t
CS12	3.60±0.20	6.90±0.20	12.00 ±0.3	5.50 ±0.05	1.75 ±0.01	4.00 ±0.01	2.00 ±0.05	4.00 ±0.10	1.50	1.50
CS10	2.80±0.20	5.30±0.20								±0.1

Environmental Characteristics

Item	Specification	Test Method
1 Temperature Coefficient of Resistance	As Spec.	MIL-STD-202, Method 304 +25/-55/+25/+125/+25°C
2 Thermal Shock	±(1.0%+0.001Ω)	MIL-STD-202, Method 107 -55°C~125°C, 100 cycles
3 Short Time Overload	±(2.0%+0.001Ω)	MIL-R-55342D 4.7.5 RCWV*2.5 or Max Overloading Voltage, 5 seconds
4 High Temperature Exposure	±(2.0%+0.001Ω)	MIL-R-55342D 4.7.6 1000 hours @ +125°C without load
5 Load Life	±(2.0%+0.001Ω)	MIL-STD-202 M108 RCWV, 70°C, 1.5 hours on, 0.5 hours off 1000~1048 hours
6 Resistance to Soldering Heat	±(1.0%+0.001Ω)	MIL-R-55342D 4.7.7 260±5°C, 10±1second
7 Moisture Resistance	±(2.0%+0.001Ω)	MIL-STD-202, Method 106 40°C, 90~95%RH, 1000 hours
8 Low Temperature Operation	±(1.0%+0.001Ω)	MIL-R-55342D 4.7.4 1hour, -55°C, followed by 45minutes of RCWV
9 Bending Strength	±(1.0%+0.001Ω)	JIS C 5202 6.1.4 5 mm deflection in either direction, 10 seconds

CURRENT SENSING RESISTOR (2) – LR



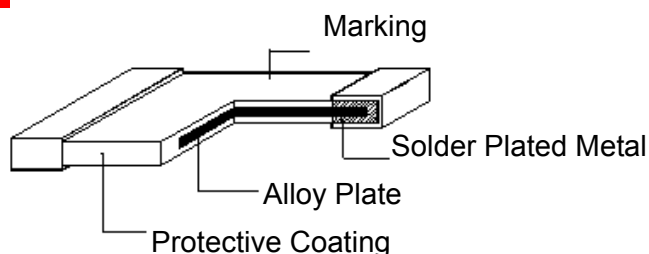
Features

- Low TCR $\pm 100\text{ppm}$
- Resistance values from 1m ohms to 10m ohms
- High power dissipation
- Lower inductance

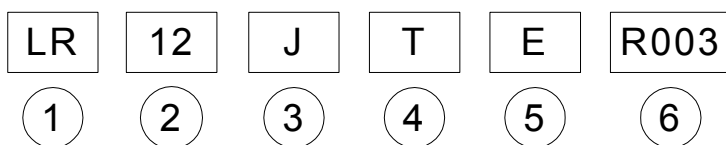
Applications

- NB (For power management)
- MB (For power management)
- SWPS (DC-DC converter, Charger, Adaptor)
- Monitor (For power management)

Construction



Part Numbering



① Product Type

Product Type	
LR	Current Sensing Resistor (SMD)

② Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
12	6.3x3.1mm	2512
10	5.0x2.5mm	2010
06	3.1x1.55mm	1206
05	2.0x1.25mm	0805

③ Resistance Tolerance

Codes	Resistance Tolerance
J	$\pm 5\%$
G	$\pm 2\%$
F	$\pm 1\%$

④ Packaging

Code	Type
T	Taping Reel

⑤ TCR

Code	Type
E	$\pm 100\text{ PPM}$
K	$\pm 150\text{ PPM}$

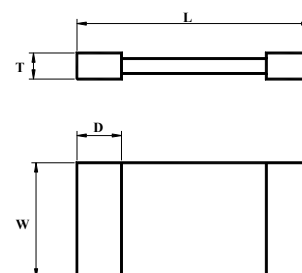
⑥ Resistance

Code	Type
R001	0.001 Ω
R003	0.003 Ω
R005	0.005 Ω
R007	0.007 Ω

Dimensions

Unit: mm

SIZE	STYLE	L	W	T	D	Resistance
2512	LR12	6.3 \pm 0.15	3.1 \pm 0.15	0.45 \pm 0.15	1.5 \pm 0.2	0.001~0.006
					0.8 \pm 0.2	0.007~0.010
2010	LR10	5.0 \pm 0.15	2.5 \pm 0.15	0.45 \pm 0.15	1.5 \pm 0.2	0.001~0.006
					0.8 \pm 0.2	0.007~0.010
1206	LR06	3.1 \pm 0.15	1.55 \pm 0.15	0.45 \pm 0.15	0.5 \pm 0.3	
0805	LR05	2.0 \pm 0.15	1.25 \pm 0.15	0.45 \pm 0.15	0.4 \pm 0.2	



S Standard electrical specifications

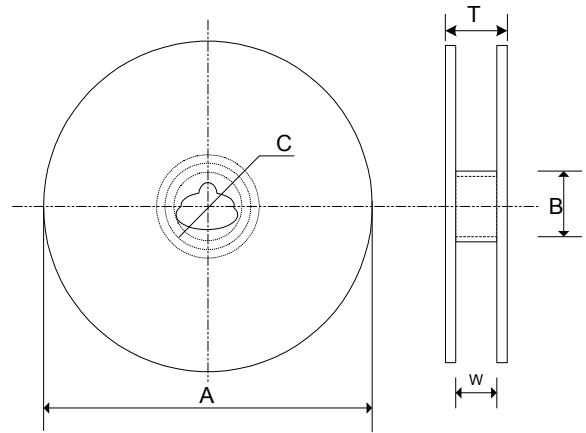
Item Type	Power Rating	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance	Resistance Range	TCR (ppm)
LR12	1W (1.5W)	-55°C~170°C	200V	400V	±1% ±2% ±5%	1mΩ 2mΩ~10mΩ	±100 ±150
LR10	1/2W (3/4W)		200V	400V		1mΩ 2mΩ~10mΩ	±100 ±150
LR06	1/4W (1/2W)		200V	400V		1mΩ 2mΩ~9mΩ	±100 ±150
LR05	1/8W (1/4W)		150V	300V		1mΩ 2mΩ~6mΩ	±100 ±150

Packaging

Packaging Quantity

Unit: pcs

Series	Packaging	Paper Tape	Emboss Plastic Tape
LR12			4,000
LR10			4,000
LR06		5,000	
LR05		5,000	

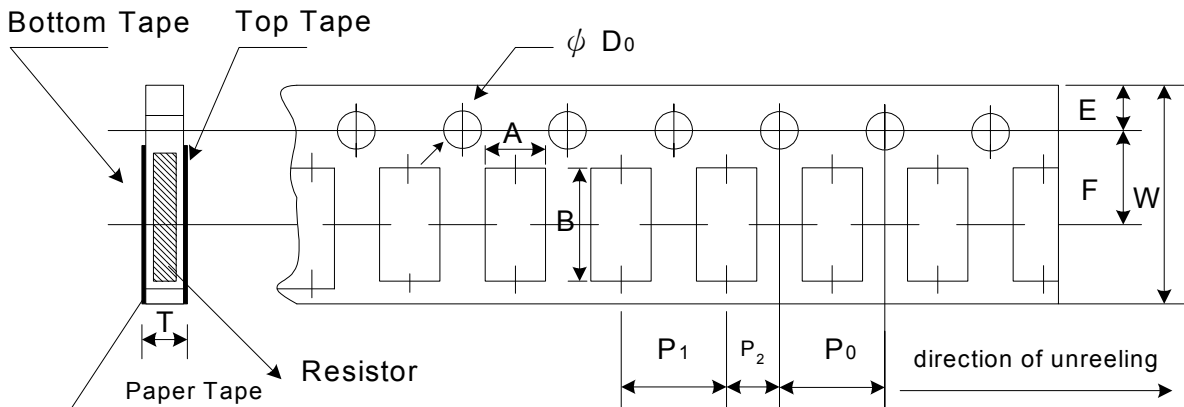


Reel Specifications

Unit: mm

Series	ΦA	ΦB	ΦC	W	T
LR12	180 ⁺⁰ ₋₃	60min.	13.0±1.0	14±0.1	16.4±2.0
LR10	180 ⁺⁰ ₋₃	60min.	13.0±1.0	14±0.1	16.4±2.0
LR06	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0
LR05	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0

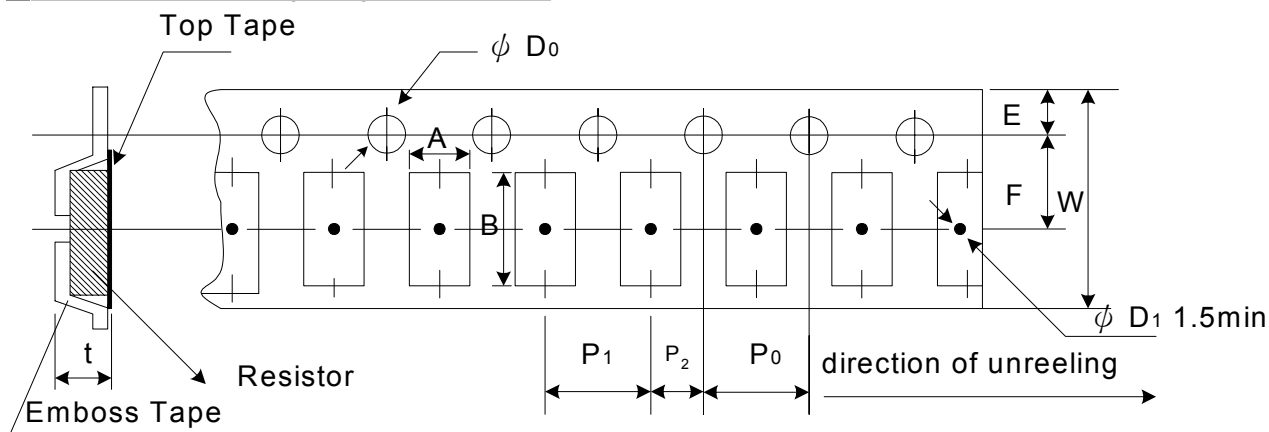
Paper Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	φ D ₀	T
LR06	2.00±0.15	3.6±0.2	8.0	3.50	1.75	4.00	2.00	4.00	1.50 ^{+0.01}	0.84
LR05	1.6±0.15	2.4±0.2	±0.2	±0.05	±0.01	±0.01	±0.05	±0.10	- ⁰	±0.1

Emboss Plastic Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ϕD_0	t
LR12	3.60±0.20	6.90±0.20	12.00	5.50	1.75	4.00	2.00	4.00	1.50 ^{+0.10}	1.50
LR10	2.80±0.20	5.30±0.20	±0.3	±0.05	±0.01	±0.01	±0.05	±0.10	- ₀	±0.1

Environmental Characteristics

Item	Specification	Test Method
1 Temperature Coefficient of Resistance	As Spec.	MIL-STD-202, Method 304 +25/-55/+25/+125/+25°C
2 Thermal Shock	±(0.5mΩ)	MIL-STD-202, Method 107 -55°C~125°C, 100 cycles
3 Short Time Overload	±(0.5mΩ)	MIL-R-55342D 4.7.5 RCWV*2.5 or Max Overloading Voltage, 5 seconds
4 High Temperature Exposure	±(0.5mΩ)	MIL-R-55342D 4.7.6 1000 hours @ +125°C without load
5 Load Life	±(0.5mΩ)	MIL-STD-202 M108 RCWV, 70°C, 1.5 hours on, 0.5 hours off 1000~1048 hours
6 Resistance to Soldering Heat	±(0.5mΩ)	MIL-R-55342D 4.7.7 260±5°C, 10±1second

THIN FILM CHIP INDUCTOR – AL



Viking's 0603 and 0402 series inductor is a photo lithographically etched single layer ceramic chip. Viking design provides high SRF, excellent Q, and superior temperature stability. This highly stable inductor family is specification designed for critical tolerance inductor needs.

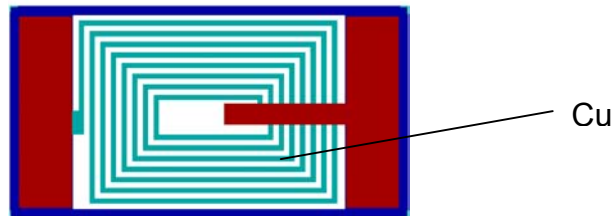
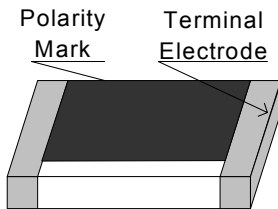
Features

- Tight Tolerance of 2% or 0.2nH
- Self resonant Frequency controlled within 10%
- Stable inductance in High Frequency Circuit
- Compatible with either reflow or flow soldering

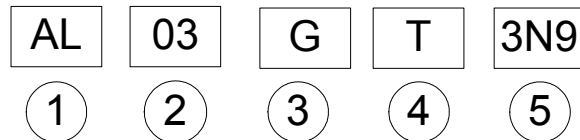
Applications

- Cellular Telephone, Pagers and GPS products
- Wireless LAN and other Communication appliances
- VCO, TCXO circuit and RF Transceiver Module

Construction



Part Numbering



① Product Type

Product Type	
AL	Chip Inductor

② Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
03	1.6x0.8mm	0603
02	1.0x0.5mm	0402

⑤ Inductance

Codes	Inductance
3N9	3.9nH
68N	68nH

③ Inductance Tolerance

Code	Type
G	2%
F	1%
D	0.5%
C	±0.2nH
B	±0.1nH

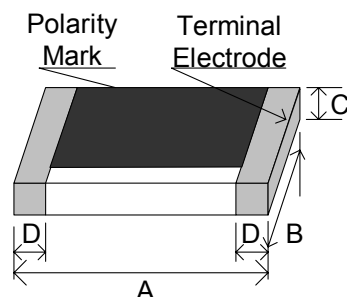
④ Packaging

Code	Type
T	Taping Reel

Dimensions

Unit: mm

SIZE	STYLE	A	B	C	D
0603	AL03	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2
0402	AL02	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1



Standard Electrical Specifications

0603 Chip Inductors

Inductance Normal (nH)	Inductance Tolerance (% or nH)	Quality Factor (Min)	Resistance DC/Max (Ohm)	Current DC/Max (mA)	Self Resonant Frequency/Min (GHz)
1.0	0.1/0.2nH	17 / 300MHz	0.2	800	6
1.2	0.1/0.2nH	17 / 300MHz	0.2	800	6
1.5	0.1/0.2nH	17 / 300MHz	0.2	800	6
1.8	0.1/0.2nH	17 / 300MHz	0.2	300	6
2.2	0.1/0.2nH	17 / 300MHz	0.2	300	6
2.7	0.1/0.2nH	17 / 300MHz	0.2	300	6
3.3	0.1/0.2nH	17 / 300MHz	0.2	300	6
3.9	0.1/0.2nH	17 / 300MHz	0.2	300	6
4.7	0.1/0.2nH	17 / 300MHz	0.2	300	5
5.6	0.1/0.2nH	17 / 300MHz	0.5	300	5
6.8	0.1/0.2nH	17 / 300MHz	0.5	300	5
8.2	0.1/0.2nH	17 / 300MHz	0.5	300	4
10	2%	15 / 300MHz	1.0	300	4
12	2%	15 / 300MHz	1.0	300	3
15	2%	15 / 300MHz	1.0	300	3
18	2%	15 / 300MHz	2.0	300	2
22	2%	15 / 300MHz	2.0	250	2
27	2%	15 / 300MHz	2.0	250	2
33	2%	15 / 300MHz	2.0	250	1.5
39	2%	15 / 300MHz	3.0	200	1.5
47	2%	15 / 300MHz	3.0	200	1.5
56	2%	15 / 300MHz	5.0	150	1
68	2%	15 / 300MHz	5.0	150	1

0402 Chip Inductors

Inductance Normal (nH)	Inductance Tolerance (% or nH)	Quality Factor (Min)	Resistance DC/Max (Ohm)	Current DC/Max (mA)	Self Resonant Frequency/Min (GHz)
1.0	0.1/0.2nH	13 / 500MHz	0.1	400	6
1.2	0.1/0.2nH	13 / 500MHz	0.1	390	6
1.5	0.1/0.2nH	13 / 500MHz	0.2	280	6
1.8	0.1/0.2nH	13 / 500MHz	0.2	280	6
2.2	0.1/0.2nH	13 / 500MHz	0.3	220	6
2.7	0.1/0.2nH	13 / 500MHz	0.3	220	6
3.3	0.1/0.2nH	13 / 500MHz	0.4	190	6
3.9	0.1/0.2nH	13 / 500MHz	0.5	170	6
4.7	0.1/0.2nH	13 / 500MHz	0.6	160	6
5.6	0.1/0.2nH	13 / 500MHz	0.7	140	6
6.8	0.1/0.2nH	13 / 500MHz	0.9	130	6
8.2	0.1/0.2nH	13 / 500MHz	1.1	110	5.5
10	2%	13 / 500MHz	1.3	100	4.5
12	2%	13 / 500MHz	1.6	90	3.7
15	2%	13 / 500MHz	1.8	90	3.3
18	2%	13 / 500MHz	2.0	80	3.1
22	2%	13 / 500MHz	2.6	70	2.8

Test Equipment: HP4287

Packaging

Packaging Quantity

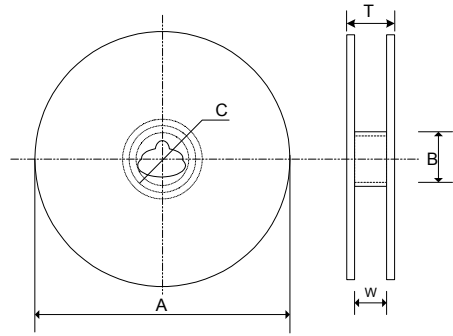
Unit: pcs

Series	Packaging	Paper Tape
AL03		5,000
AL02		10,000

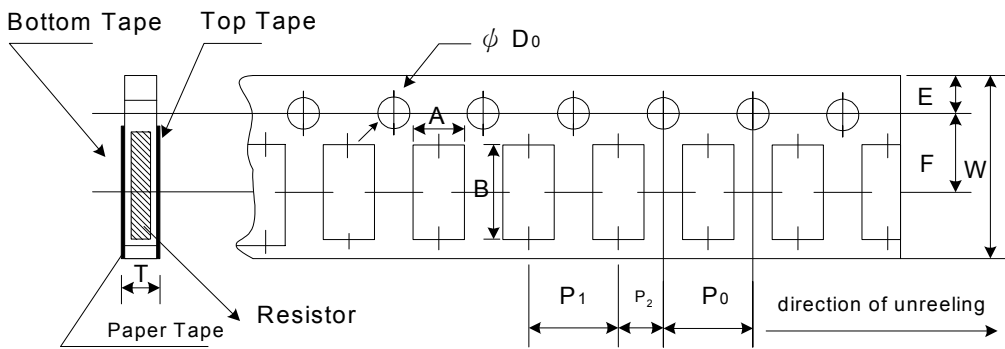
Reel Specifications

Unit: mm

Series	ΦA	ΦB	ΦC	W	T
AL03	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0
AL02	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0



Paper Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ϕD ₀	T
AL03	1.1±0.1	1.9±0.1	8.0	3.50	1.75±0.01	4.00±0.01	2.00	4.00	1.55	0.60±0.05
AL02	0.63±0.05	1.13±0.05	±0.2	±0.05	1.75±0.05	2.00±0.05	±0.05	±0.10	±0.03	0.40±0.1

Environmental Characteristics

Item	Specification	Test Method
1 Bending Test	ΔL ≤ 10%	Speed of applying force: 1mm/sec, Deflection: 2mm, Hold duration: 30sec
2 Vibration	ΔL ≤ 10%	Oscillation frequency: 10~55~10Hz for 1 min. Total amplitude: 1.5mm, Testing time: 2 hours for 3 directions
3 Resistance to Soldering Heat	ΔL ≤ 10%	270±5°C, 10±1second
4 High Temperature Exposure	ΔL ≤ 10%	+85±2°C, 1000 +48/-0 hours
5 Moisture Resistance	ΔL ≤ 10%	40±2°C, 90~95%RH, 1000 +48/-0 hours
6 Low temperature storage	ΔL ≤ 10%	+40±3°C, 1000 +48/-0 hours
7 Temperature Cycle	ΔL ≤ 10%	-40/RT/85/RT, 10 cycles

MULTILAYER CHIP INDUCTOR—CL



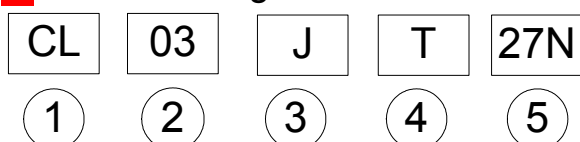
Features

- High frequency
- High Q
- High IDC

Applications

- High frequency circuits for portable telephones, PHS, Wireless communication, etc.

Part Numbering



① Product Type

Product Type	
CL	Multilayer Chip Inductor

② Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
03	1.6x0.8mm	0603
02	1.0x0.5mm	0402

③ Inductance Tolerance

Code	Type
J	5%
K	10%

④ Packaging

Code	Type
T	Taping Reel

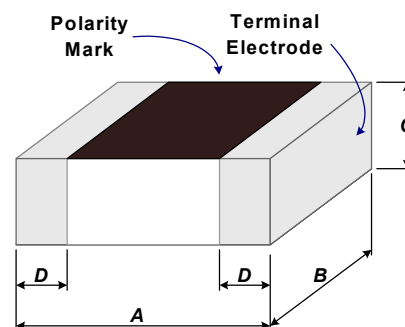
⑤ Inductance

Codes	Inductance
27N	27nH

Dimensions

Unit: mm

SIZE	STYLE	A	B	C	D
0603	CL03	1.0±0.15	0.5±0.15	0.5±0.15	0.25±0.15
0402	CL02	1.6±0.2	0.8±0.15	0.8±0.15	0.3±0.2



Standard Electrical Specifications

0603 Multilayer Chip Inductors

Inductance (nH) at 100MHz	Tolerance	Q min At 100MHz	Q Typical At		S.R.F Typical MHz	RDC (Ohm) Max	IDC (mA)
			100MHz	800MHz			
82	J, K	15	18	*32	900	1.00	300
100	J, K	15	18	*20	850	1.20	300
*** 120	J, K	*** 8	*** 16	** 23	680	1.60	250
*** 150	J, K	*** 8	*** 14	** 23	620	2.00	250
*** 180	J, K	*** 8	*** 14	** 21	540	2.40	200
*** 220	J, K	*** 8	*** 13	** 20	450	2.80	200

*** at 50MHz **300MHz *500MHz

0402 Multilayer Chip Inductors

Inductance (nH) at 100MHz	Tolerance	Q min At 100MHz	Q Typical At		S.R.F Typical MHz	RDC (Ohm) Max	IDC (mA)
			100MHz	800MHz			
27	J, K	8	12	27	1700	0.70	300
33	J, K	8	10	25	1550	1.50	200
39	J, K	8	10	25	1450	1.80	200
47	J, K	8	9	22	1300	2.00	200
56	J, K	8	10	21	1250	2.00	200

Packaging
Packaging Quantity

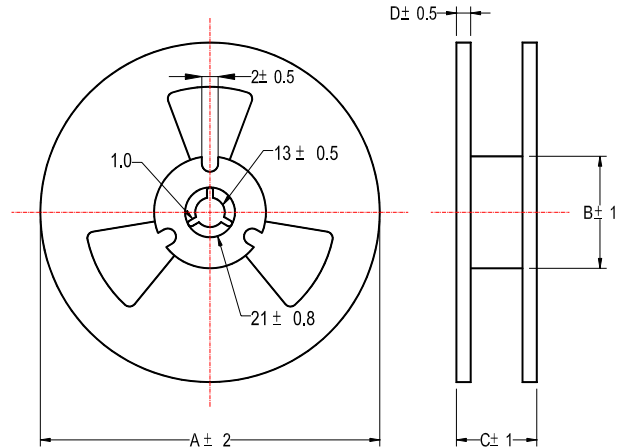
Packaging Series	PCS/REEL
CL03	4,000
CL02	10,000

Unit: pcs

Reel Dimensions

Series	A	B	C	D
CL03	178	60	12	1.5
CL02	178	60	12	1.5

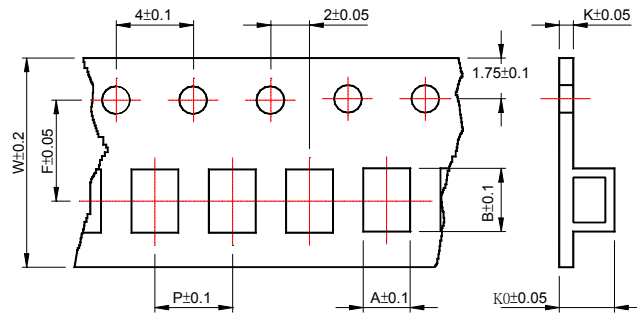
Unit: mm



Emboss Plastic Tape Specifications

Series	A	B	K0	W	P	F	K
CL03	1.1	1.9	0.95	8	4	3.5	0.95
CL02	0.65	1.15	0.6	8	2	3.5	0.6

Unit: mm

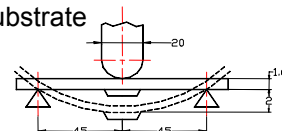


Environmental Characteristics

Storage temp: -55°C ~ 100°C

Operating temp: -40°C ~ 100°C

Item	Specification	Test Methods															
1	Bending Strength Appearance: No damage L change: within±10% Q change: within±30%	Test device shall be soldered on the substrate Substrate Dimension: 95x23x1.5mm Deflection: 2.0mm Keeping Time: 30sec															
2	Vibration RDC change: within±20%	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs															
3	Resistance to Soldering Heat	Pre-heating: 150°C, 1min Solder Composition: Sn/Pn = 60/40 Solder Temperature: 260±5°C Immersion Time: 10±1°C Measured after exposure in the room condition for 24hrs															
4	Solderability The electrodes shall be at least 90% covered with new solder coating	Pre-heating: 150°C, 1min Solder Composition: Sn/Pn = 60/40 Solder Temperature: 230±5°C Immersion Time: 4±1°C															
5	Temperature Cycle Appearance: No damage L change: within±10% Q change: within±30% RDC change: within±20%	One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55±3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25±2</td> <td>3</td> </tr> <tr> <td>3</td> <td>125±2</td> <td>30</td> </tr> <tr> <td>4</td> <td>25±2</td> <td>3</td> </tr> </tbody> </table> Total: 100cycles Measured after exposure in the room condition for 24hrs	Step	Temperature (°C)	Time (min)	1	-55±3	30	2	25±2	3	3	125±2	30	4	25±2	3
Step	Temperature (°C)	Time (min)															
1	-55±3	30															
2	25±2	3															
3	125±2	30															
4	25±2	3															
6	Humidity Resistance	Temperature: 40±2°C Relative Humidity: 90 ~ 95% Time: 1000hrs Measured after exposure in the room condition for 24hrs															
7	Heat Life	Temperature: 125±2°C Relative Humidity: 20% Applied Current: Rated Current Time: 1000hrs Measured after exposure in the room condition for 24hrs															
8	Cold Resistance	Temperature: -55±3°C Time: 1000hrs Measured after exposure in the room condition for 24hrs															



WIRE WOUND CHIP INDUCTOR—WL



Ceramic body and wire wound construction provide highest SRFs available in 0603 size. These ultra-compact inductors provided exceptional Q values, even at high frequencies.

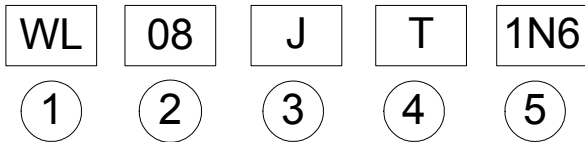
Feature

- High Q
- Large current

Application

- IF Impedance matching
- RF Oscillation circuit
- IF choke
- Circuits where large currents flow (PA, LNA)
- Circuits where high Q characteristics (DAC, LNA)

Part Numbering



① Product Type

Product Type	
WL	Wire Wound Chip Inductor

② Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
08	2.85x2.50mm	1008
05	2.25x1.50mm	0805
03	1.60x0.80mm	0603

③ Inductance Tolerance

Code	Type
G	±2%
J	5%
K	10%
M	20%

④ Packaging

Code	Type
T	Taping Reel

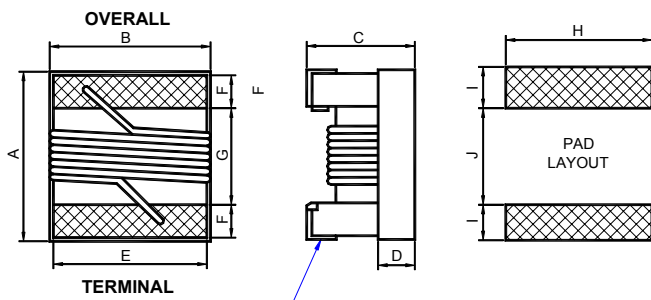
⑤ Inductance

Codes	Inductance
1N6	1.6nH
82N	82nH
R27	270nH

Dimensions

Unit: mm

SIZE	STYLE	A Max.	B Max.	C Max.	D Ref.	E	F	G	H	I	J
1008	WL08	2.92	2.79	2.10	0.51	2.03	0.51	1.52	2.54	1.02	1.27
0805	WL05	2.29	1.73	1.52	0.51	1.27	0.51	1.02	1.78	1.02	0.76
0603	WL03	1.80	1.12	1.02	0.38	0.76	0.33	0.86	1.02	0.64	0.64



TERMINAL WARP-AROUND:
Approx. 0.007" / 0.18mm BOTH ENDS

S Standard Electrical Specifications

1008 Wire Wound Chip Inductors

Inductance (nH)	Test Frequency (MHz)	Q Min	Test Frequency (MHz)	SRF Min (MHz)	RDC Max (Ω)	IDC Max (mA)	COLOR CODING		
							1 ST	2 ND	3 RD
4.7 ±10%	50	50	500	4100	0.08	1000	Black	Yellow	Violet
5.6 ±10%	50	50	500	4100	0.15	1000	Black	Green	Blue
10 ±10%	50	50	500	4100	0.08	1000	Brown	Black	Black
12 ±10%	50	50	500	3300	0.09	1000	Brown	Red	Black
15 ±10%	50	50	500	2500	0.10	1000	Brown	Green	Black
18 ±10%	50	50	350	2500	0.11	1000	Brown	Gray	Black
22 ±5%	50	55	350	2400	0.12	1000	Red	Red	Black
27 ±5%	50	55	350	1600	0.13	1000	Red	Violet	Black
33 ±5%	50	60	350	1600	0.14	1000	Orange	Orange	Black
39 ±5%	50	60	350	1500	0.15	1000	Orange	White	Black
47 ±5%	50	65	350	1500	0.16	1000	Yellow	Violet	Black
56 ±5%	50	65	350	1300	0.18	1000	Green	Blue	Black
68 ±5%	50	65	350	1300	0.20	1000	Blue	Gray	Black
82 ±5%	50	60	350	1000	0.22	1000	Gray	Red	Black
100 ±5%	25	60	350	1000	0.56	650	Brown	Black	Brown
120 ±5%	25	60	350	950	0.63	650	Brown	Red	Brown
150 ±5%	25	45	100	850	0.70	580	Brown	Green	Brown
180 ±5%	25	45	100	750	0.77	620	Brown	Gray	Brown
220 ±5%	25	45	100	700	0.84	500	Red	Red	Brown
270 ±5%	25	45	100	600	0.91	500	Red	Violet	Brown
330 ±5%	25	45	100	570	1.05	450	Orange	Orange	Brown
390 ±5%	25	45	100	500	1.12	470	Orange	White	Brown
470 ±5%	25	45	100	450	1.19	470	Yellow	Violet	Brown
560 ±5%	25	45	100	415	1.33	400	Green	Blue	Brown
620 ±5%	25	45	100	375	1.40	300	Blue	Red	Brown
680 ±5%	25	45	100	375	1.47	400	Blue	Gray	Brown
750 ±5%	25	45	100	360	1.54	360	Violet	Green	Brown
820 ±5%	25	45	100	350	1.61	400	Gray	Red	Brown
910 ±5%	25	35	50	320	1.68	380	White	Brown	Brown
1000 ±5%	25	35	50	220	1.75	370	Brown	Black	Brown
1200 ±5%	7.9	35	50	186	2.0	310	Brown	Red	Red
1500 ±5%	7.9	28	50	200	2.3	330	Brown	Green	Red
1800 ±5%	7.9	25	50	170	2.6	300	Brown	Gray	Red
2200 ±5%	7.9	20	50	110	2.8	280	Red	Red	Red
2700 ±5%	7.9	15	25	140	3.2	290	Red	Violet	Red
3300 ±5%	7.9	15	25	100	3.4	290	Orange	Orange	Red
3900 ±5%	7.9	15	25	100	3.6	260	Orange	White	Red
4700 ±5%	7.9	13	25	90	4.0	260	Yellow	Violet	Red

When ordering, please specify tolerance and packaging code.

Ex: WL08JT3N3

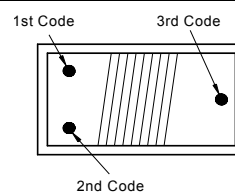
Tolerance: J = ±5%, K = ±10%

Packaging: Clear tape and reel (standard).

L, Q, RDC: Agilent4287

S R F: HP8753D / HP4291A

Operating temperature rang: -40°C to +125°C



COLOR CODING

0805 Wire Wound Chip Inductors

Inductance (nH)	Test Frequency (MHz)	Q Min	Test Frequency (MHz)	SRF Min (MHz)	RDC Max (Ω)	IDC Max (mA)	COLOR CODING
2.8 \pm 10%	250	70	1500	7900	0.06	800	Gray
3.0 \pm 10%	250	65	1500	7900	0.06	800	White
3.3 \pm 10%	250	50	1500	7900	0.08	600	Black
5.6 \pm 10%	250	65	1000	5500	0.08	600	Orange
6.8 \pm 10%	250	50	1000	5500	0.11	600	Brown
7.5 \pm 10%	250	50	1000	4500	0.14	600	Green
8.2 \pm 10%	250	50	1000	4700	0.12	600	Red
10 \pm 10%	250	60	500	4200	0.10	600	Blue
12 \pm 10%	250	50	500	4000	0.15	600	Orange
15 \pm 5%	250	50	500	3400	0.17	600	Yellow
18 \pm 5%	250	50	500	3300	0.20	600	Green
22 \pm 5%	250	55	500	2600	0.22	500	Blue
24 \pm 5%	250	50	500	2000	0.22	500	Gray
27 \pm 5%	250	55	500	2500	0.25	500	Violet
33 \pm 5%	250	60	500	2050	0.27	500	Gray
36 \pm 5%	250	55	500	1700	0.27	500	Orange
39 \pm 5%	250	60	500	2000	0.29	500	White
43 \pm 5%	200	60	500	1650	0.34	500	Yellow
47 \pm 5%	200	60	500	1650	0.31	500	Black
56 \pm 5%	200	60	500	1550	0.34	500	Brown
68 \pm 5%	200	60	500	1450	0.38	500	Red
82 \pm 5%	150	65	500	1300	0.42	400	Orange
91 \pm 5%	150	65	500	1200	0.48	400	Black
100 \pm 5%	150	65	500	1200	0.46	400	Yellow
110 \pm 5%	150	50	250	1000	0.48	400	Brown
120 \pm 5%	150	50	250	1100	0.51	400	Green
150 \pm 5%	100	50	250	920	0.56	400	Blue
180 \pm 5%	100	50	250	870	0.64	400	Violet
200 \pm 5%	100	50	250	860	0.68	400	Red
220 \pm 5%	100	50	250	850	0.70	400	Gray
240 \pm 5%	100	44	250	690	1.00	350	Red
250 \pm 5%	100	45	250	660	1.20	350	Yellow
270 \pm 5%	100	48	250	650	1.30	350	White
330 \pm 5%	100	48	250	600	1.65	310	Black
390 \pm 5%	100	48	250	560	1.80	290	Brown
470 \pm 5%	50	33	100	375	2.0	250	Violet
560 \pm 5%	25	23	50	340	2.1	230	Orange
680 \pm 5%	25	23	50	188	2.3	190	Green
820 \pm 5%	25	18	50	215	2.5	180	Blue

When ordering, please specify tolerance and packaging code.

Ex: WL05JT3N3

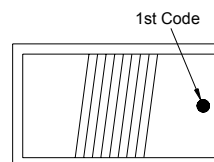
Tolerance: J = \pm 5%, K = \pm 10%, M = \pm 20%

Packaging: Clear tape and reel (standard).

L, Q, RDC: Agilent4287

S R F: HP8753D / HP4291A

Operating temperature rang: -40°C to + 125°C



COLOR CODING

0603 Wire Wound Chip Inductors

Inductance (nH)	Tol %	Q Min	SRF Min (MHz)	RDC Max (Ω)	IDC Max (mA)	900 MHz		1.7 GHz		Color
						L Typ	Q Typ	L Typ	Q Typ	
1.6@250MHz	10	24	12500	0.030	700	1.67	49	1.65	63	Re
1.8@250MHz	10	16	12500	0.045	700	1.63	35	1.66	50	Bk
3.6@250MHz	10	22	5900	0.063	700	3.72	53	3.71	65	Re
3.9@250MHz	10	22	6900	0.080	700	3.95	49	3.96	67	Br
4.3@250MHz	10	22	5900	0.063	700	4.32	50	4.33	70	Or
4.7@250MHz	10	20	5800	0.116	700	4.72	47	4.75	57	Vit
5.1@250MHz	10	20	5700	0.140	700	4.93	47	4.95	56	Gr
6.3@250MHz	10	20	5700	0.140	700	5.5	47	6.1	60	Wt
6.8@250MHz	10	27	5800	0.110	700	6.75	60	7.1	81	Re
7.5@250MHz	10	28	4800	0.106	700	7.70	60	7.82	65	Br
8.2@250MHz	10	28	4700	0.109	700	8.30	60	8.50	60	Wt
8.7@250MHz	5	28	4600	0.109	700	8.86	62	9.32	58	Ye
9.5@250MHz	5	28	5400	0.135	700	9.70	59	9.92	61	Bk
10@250MHz	5	31	4800	0.130	700	10	66	10.6	83	Or
11@250MHz	5	33	4000	0.086	700	11	53	11.5	56	Gry
12@250MHz	5	35	4000	0.130	700	12.3	72	13.5	83	Ye
15@250MHz	5	35	4000	0.170	700	15.4	64	16.8	89	Gr
16@250MHz	5	34	3300	0.104	700	16.2	55	17.3	52	Wt
18@250MHz	5	35	3100	0.170	700	18.7	70	21.4	69	Bk
22@250MHz	5	38	3000	0.190	700	22.8	73	26.1	71	Vit
24@250MHz	5	37	2650	0.135	700	24.5	45	28.7	39	Bk
27@250MHz	5	40	2800	0.220	600	29.2	74	34.6	65	Gry
30@250MHz	5	37	2250	0.144	600	31.4	47	39.9	28	Br
33@250MHz	5	40	2300	0.220	600	36	67	49.5	42	Wt
36@250MHz	5	38	2080	0.250	600	39.4	47	52.7	24	Re
39@250MHz	5	40	2200	0.250	600	42.7	60	60.2	40	Bk
43@250MHz	5	39	2000	0.280	600	47	44	64.9	21	Or
47@200MHz	5	38	2000	0.280	600	52.2	62	77.2	35	Br
56@200MHz	5	38	1900	0.310	600	62.5	56	97	26	Re
68@200MHz	5	37	1700	0.340	600	80.5	54	168	21	Or
72@150MHz	5	34	1700	0.490	400	82	53	135	20	Ye
82@150MHz	5	34	1700	0.540	400	96.2	54	177	21	Gr
100@150MHz	5	34	1400	0.580	400	124	49			Bk
110@150MHz	5	32	1350	0.610	300	138	43			Vit
120@150MHz	5	32	1300	0.650	300	166	39			Gry
150@150MHz	5	28	990	0.920	280	250	25			Wt
180@100MHz	5	25	990	1.250	240	305	22			Bk
220@100MHz	5	25	900	1.900	200	480	8			Br
270@100MHz	5	24	900	2.800	170	980	4			Re

When ordering, please specify tolerance and packaging codes.

Ex: WL03JT3N3

Tolerance: G = $\pm 2\%$, J = 5%, K = $\pm 10\%$, M = $\pm 20\%$

Packaging: Clear tape and reel {standard}.

L, RDC: Agilent4287

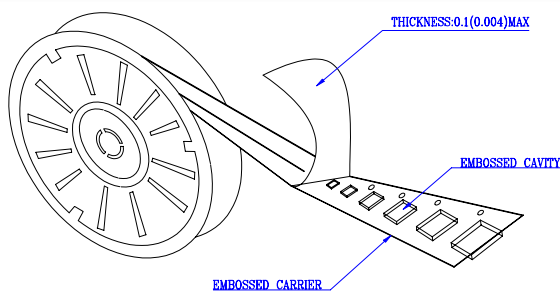
Q, SRF: HP4291A

Operating temperature range: -40°C to 125°C

Packing Packaging Quantity

Unit: pcs

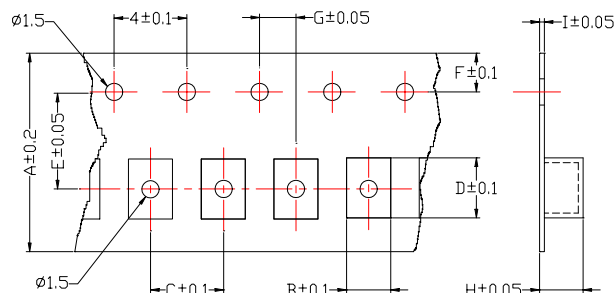
Packaging Series	pcs/wheel
WL08	2,000
WL05	2,500
WL03	4,000



Reel Dimensions

Unit: pcs

Series	A	B	C	D	E	F	G	H	I
WL08	8	2.73	4	2.88	3.5	1.75	2	2.33	0.2
WL05	8	1.88	4	2.38	3.5	1.75	2	1.48	0.2
WL03	8	1.1	4	1.75	3.5	1.75	2	1.15	0.25



Environmental Characteristics

Mechanical Performance

Item	Specification	Test Method
1 Vibration	Appearance: No damage L change: within $\pm 10\%$ Q change: within $\pm 30\%$	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs
2 Resistance to Soldering-teat	Appearance: No damage	Pre-heating: 150°C, 1min Solder Composition: Sn/Pb=63/67 Solder Temperature: 260 \pm 5°C Immersion Time: 10 \pm 1sec
3 Solderability	The electrodes shall be at least 90% covered with new solder coating	Pre-heating: 150°C, 1min Solder Composition: Sn/Pb=63/67 Solder Temperature: 230 \pm 5°C Immersion Time: 4 \pm 1sec

Environmental Performance

Item	Specification	Test Method															
1 Temperature Cycle	Appearance: No damage L change: within $\pm 10\%$ Q change: within $\pm 30\%$	One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25\pm3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25\pm2</td> <td>3</td> </tr> <tr> <td>3</td> <td>85\pm3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25\pm2</td> <td>3</td> </tr> </tbody> </table> Total: 100cycles Measure after exposure in the room condition for 24hrs	Step	Temperature (°C)	Time (min)	1	-25 \pm 3	30	2	25 \pm 2	3	3	85 \pm 3	30	4	25 \pm 2	3
Step	Temperature (°C)	Time (min)															
1	-25 \pm 3	30															
2	25 \pm 2	3															
3	85 \pm 3	30															
4	25 \pm 2	3															
2 Humidity Resistance		Temperature: 40 \pm 2°C Relative Humidity: 90~95% Time: 1000hrs Measured after exposure in the room condition for 24hrs															
3 High Temperature Resistance		Temperature: 85 \pm 3°C Relative Humidity: 20% Time: 1000hrs Measured after exposure in the room condition for 24hrs															
4 Low Temperature Resistance		Temperature: -25 \pm 3°C Relative Humidity: 0% Time: 1000hrs Measured after exposure in the room condition for 24hrs															

THIN FILM CHIP CAPACITOR—TC



Viking's TC series thin film capacitors provides an extremely stable and precise component for a variety of hybrid microelectronic applications. TC capacitors are available in a broad range of values and tolerances. Both MIS and MIM structures are available. The MIS capacitors Provide top and bottom contact, and MIM capacitors have both terminals on top of silicon substrate. The tantalum pen-oxide dielectric features high K and a smaller die size for high capacitance values. Each format has a defined bonding area.

Features

- Extremely stable & precise
- Available in a broad range of values & tolerances
- High Q and a low TCC
- MIM & MIS Structure available

Applications

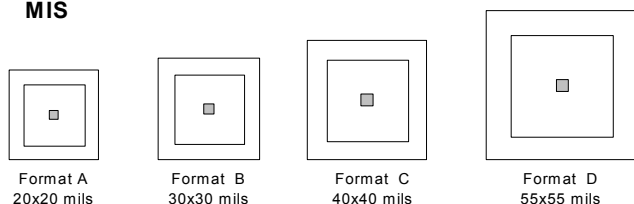
- RF bypass
- DC blocks coupling filter elements
- Microwaves circuit resonant elements

Mechanical Specifications

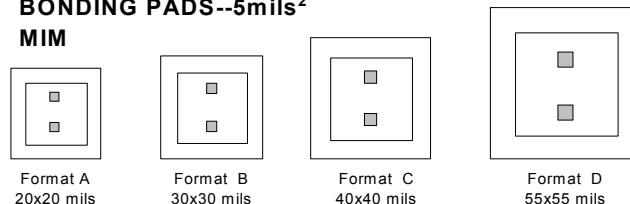
	MIM	MIS
Substrate	Silicon 21±1mils	Silicon 12±1mils
Backing	-	Gold
Metalization	TaN /Al 10,000Å ^U ,Thick, min	TaN /Al 10,000Å ^U ,Thick, min

Formats

MIS



BONDING PADS--5mils² MIM



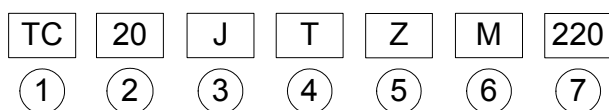
Capacitance & Volt rating

Picofarads (pF)	Volts(BV)	Picofarads(pF)	Volts(BV)
20x20 mils Format A		30x30 mils Format B	
3.75	150	330	120
15	150	390	120
150	125	470	100
80	110	560	85
220	95		
270	75		
40x40 mils Format C		55x55 mils Format D	
680	110	1200	120
820	90	1500	100
1000	70	2000	75

Electrical Characteristics

Parameter	Test Condition
Operating Temp. Range	-55°C to 125°C
D.C Working Volt @ 25°C	As Specified in C/V table
Peak Volt. @ 25°C	1.5 × Working Volt
Dissipation Factor @ 1kHz, 1V, 25°C	0.15% max
Q @ 1MHz, 50mV, 25°C	600 min
TCC, -55°C to + 150°C	200 ppm/°C

How to Order



- ① Ta₂O₅ dielectric layer
- ② Dimensions: 20x20 ; 30x30 ; 40x40 ; 55x55
- ③ Tolerance: J=±5%
- ④ Package: T=Tray ; W=Wafer
- ⑤ Thickness: Z=21 mil ; L=7 mil
- ⑥ MIS Structure: S; MIM Structure: M
- ⑦ Significant figures of capacitance. R indicates decimal point.

Options: Viking is capable of supplying various options based on customers' demand.

THIN FILM CHIP CAPACITOR – SC



Viking's SC series thin film capacitors provides an extremely stable and precise component for a variety of hybrid microelectronic applications. TC capacitors are available in a broad range of values and tolerances. Both MIS and MIM structures are available. The MIS capacitors Provide top and bottom contact, and MIM capacitors have both terminals on top of silicon substrate. The silicon dioxide dielectric features high Q and a low positive TCC over a wide temperature range.

Features

- Extremely stable & precise
- Available in a broad range of values & tolerances
- High Q and a low TCC

Applications

- RF bypass
- DC blocks coupling filter elements
- Microwaves circuit resonant elements

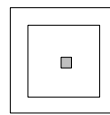
Mechanical Specifications

Substrate	Silicon 21±1 mils
Backing	Gold
Metalization	Aluminum 10,000Å ⁰ thick,min

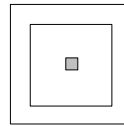
Formats

BONDING PADS--5mils²

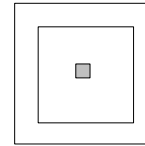
MIS



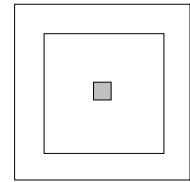
Format A
20x20 mils



Format B
30x30 mils



Format C
40x40 mils



Format D
55x55 mils

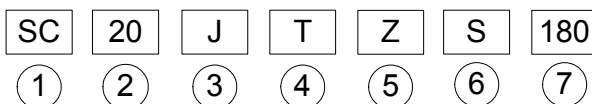
Capacitance & Volt rating

Picofarads (pF)	Volts(BV)	Picofarads (pF)	Volts(BV)
20x20 mils Format A		30x30 mils Format B	
3.75	200	51	80
4.7	200	56	80
5.6	200	62	70
6.8	150	68	70
10	100	75	60
12	100	82	50
15	80	100	50
18	70		
22	50		
27	50		
33	40		
39	30		
47	30		
40x40 mils Format C		55x55 mils Format D	
120	70	470	40
150	60	560	30
180	50	680	30
220	40	820	25

Electrical Characteristics

Parameter	Test Condition
Operating Temp. Range	-55°C to 125°C
D.C Working Volt @ 25°C	As Specified in C/V table
Peak Volt. @ 25°C	1.5 × Working Volt
Dissipation Factor @ 1kHz, 1V, 25°C	0.15% max
Q @ 1MHz, 50mV, 25°C	1000 min
TCC, -55°C to + 150°C	50 ppm/°C

How to Order



- ① SiO₂ dielectric layer
- ② Dimensions: 20x20 ; 30x30 ; 40x40 ; 55x55
- ③ Tolerance: J=±5%
- ④ Package: T=Tray ; W=Wafer
- ⑤ Thickness: Z=21 mil ; L=7 mil
- ④ MIS Structure: S
- ⑤ Significant figures of capacitance. R indicates decimal point.

Options: Viking is capable of supplying various options based on customers' demand.

Passive IC-Integrated Passive Devices (IPDS)

Product Description

The RN-1 is an isolated resistor network designed to offer a highly integrated and stable resistor network for general-purpose applications. Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature coefficient of resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components



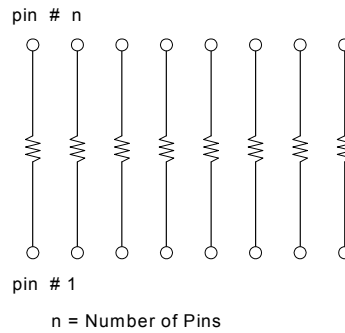
Features

- Reliable TaN thin-film-on-silicon technology
- 8, 10, 12 terminating lines per package
- PCB board space saving, assembly cost reduction

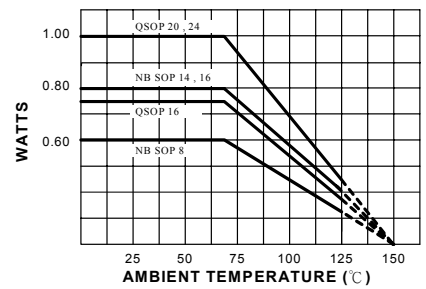
Applications

- Series termination
- Parallel termination
- Digital pulse squaring
- Coding and decoding
- Telemetry

Schematic



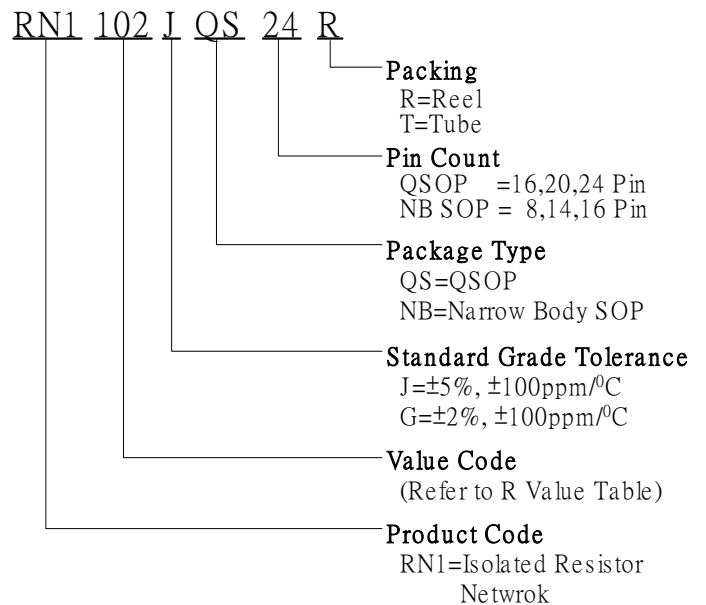
Power Derating



Standard Specifications

Description	Values		
	F	G	J
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±10, ±25 ppm/°C		
Power Rating / Resistor	0.100 watt for ≤ 1K		
@Ta=70°C	0.025 watt for > 1K		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Resistance (Ω)	10	22	33	39	47	51	68	220	330	470	510	680	1K	2.2K	4.7K	10K	20K	50K	100K
Correspondent Value Code	100	220	330	390	470	510	680	221	331	471	511	681	102	222	472	103	203	503	104

Standard Packages

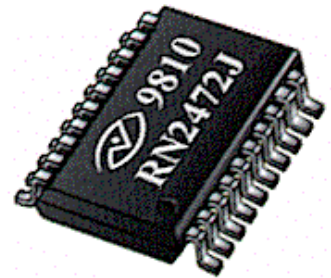
	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57
N/B SOP	8	100
	14	57
	16	50

Options

- Viking is capable of supply following options based on customer's demand
- Packages → TSSOP 20, 24 Pin
 - Resistance Variation → 10~100KΩ
 - Packing → Wafer form

Product Description

The RN-2 is a bussed resistor network designed to offer a highly integrated and stable resistor network for general-purpose applications. Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature coefficient of resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components



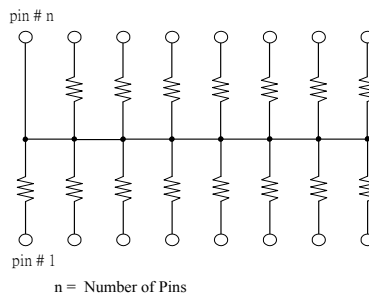
Features

- Reliable TaN thin-film-on-silicon technology
- Multiple resistors tied to a common mode
- Ultra-miniature package complies to JEDEC standards

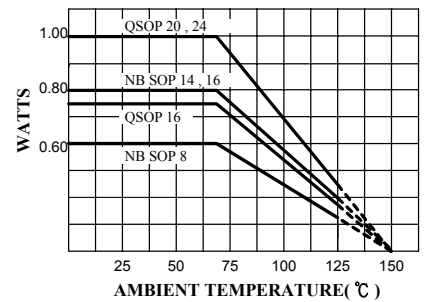
Applications

- Pull up / pull down
- Parallel termination
- Digital pulse squaring
- Coding and decoding
- Telemetry

Schematic



Power Derating

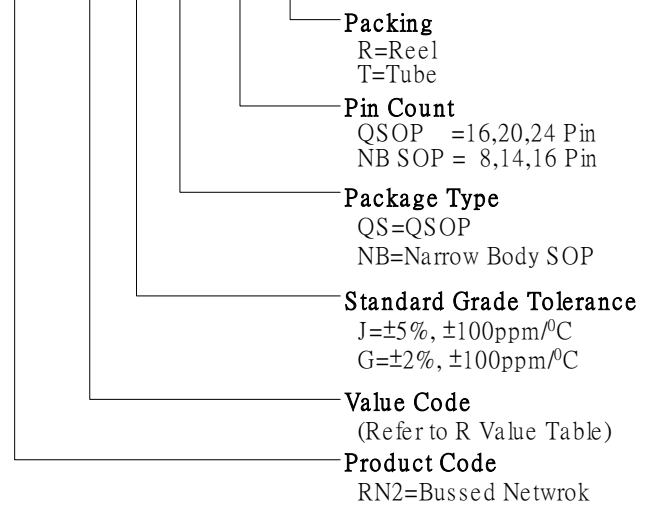


Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt for ≤ 1K 0.025 watt for > 1K		
Maximum Operating Voltage	50V		
Minimum Isolation Resistance	10,000meg Ω		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order

RN2 472 J QS 20 R



Standard Resistance Values

Resistance (Ω)	100	220	270	330	390	470	1K	1.5K	2K	2.2K	4.7K	10K	100K
Correspondent value Code	101	221	271	331	391	471	102	152	202	222	472	103	104

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57
N/B SOP	8	100
	14	57
	16	50

Options

Viking is capable of supply following options based on customer's demand

- Packages → TSSOP 20,24 Pin
- Resistance Variation → 10~100KΩ
- Packing → Wafer form

Product Description

The RN-3 is an integrated dual Termination network designed to eliminate transmission line effects on high-speed data lines. SCSI (Small Computer Systems Interface) is a bus interface covered by an ANSI Standard that allows for peripheral devices to be connected in a daisy chain and communicate with the host processor. Fast edge signals transmitted through the SCSI cable can generate ringing on the bus that can slow down communication between the host and peripherals. The SCSI standard recommends Termination at the host and peripheral locations to eliminate these transmission line effects.

Proper resistor termination requires a resistor whose value closely matches the characteristic impedance of the transmission line. Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature Coefficient of Resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components.



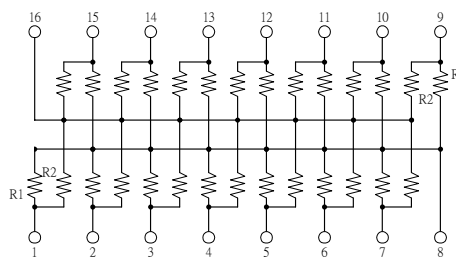
Features

- Proven TaN thin-film-on technology
- Saves board space and reduces assembly cost
- Ultra-miniature package complies to JEDEC standards

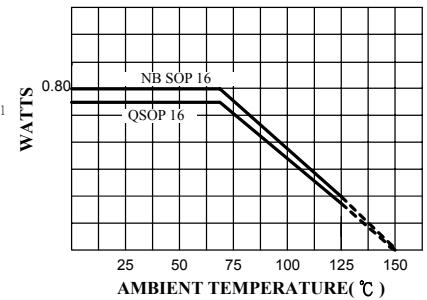
Applications

- Termination
- SCSI termination
- SCSI Buss device
- Pull UP / pull down

Schematic



Power Derating



Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

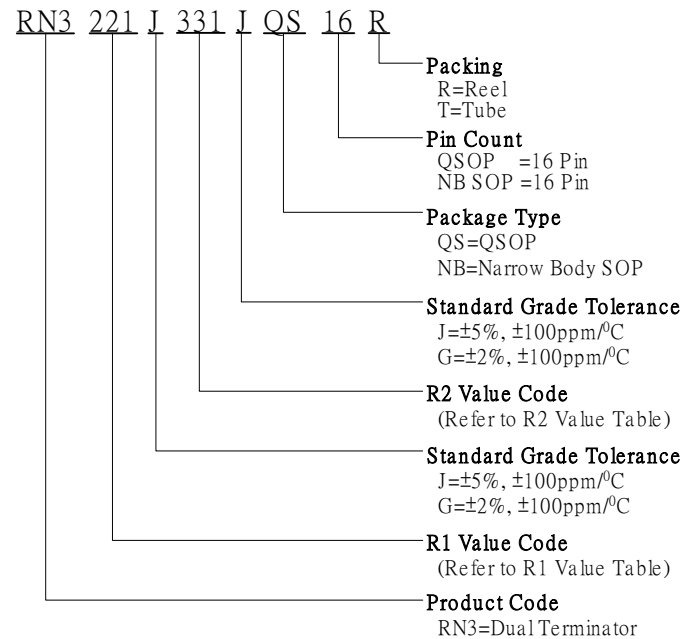
Standard Resistance Values

Resistance (Ω)	Correspondent Value Code
R1=220, R2=330	R1=221, R2=331

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57
N/B SOP	8	100
	14	57
	16	50

How to Order



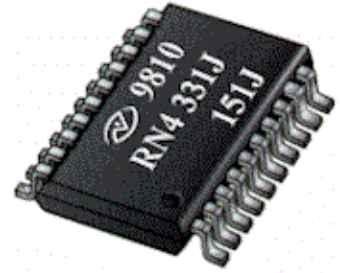
Options

Viking is capable of supply following options based on customer's demand
Packing → Wafer form

Product Description

The RN-4 is a Small Computer System Interface (SCSI) compliant termination network that provides the mechanical, electrical, and functional requirements for an input/output bus to connect small computers with a variety of peripheral devices. The most common application of this bus is to connect small computers with disk drive (mass storage) units. The RN-4 provides 7 or 9 sets of three-resistor terminator configuration for the differential-line version of the SCSI bus in just one package, which saves board space and reduced assembly costs by replacing 21 or 27 discrete components.

Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature Coefficient of Resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components



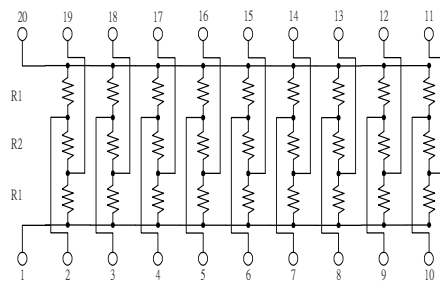
Features

- Reliable TaN thin-film-on-silicon technology
- SCSI Termination
- 18 terminating lines / package

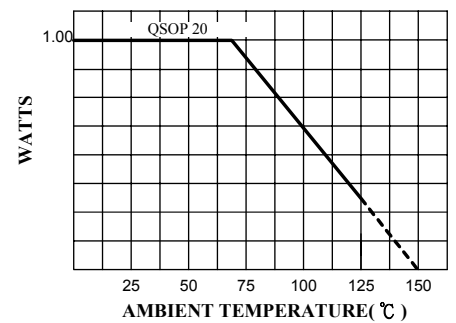
Applications

- Differential SCSI termination
- SCIS Buss devices

Schematic



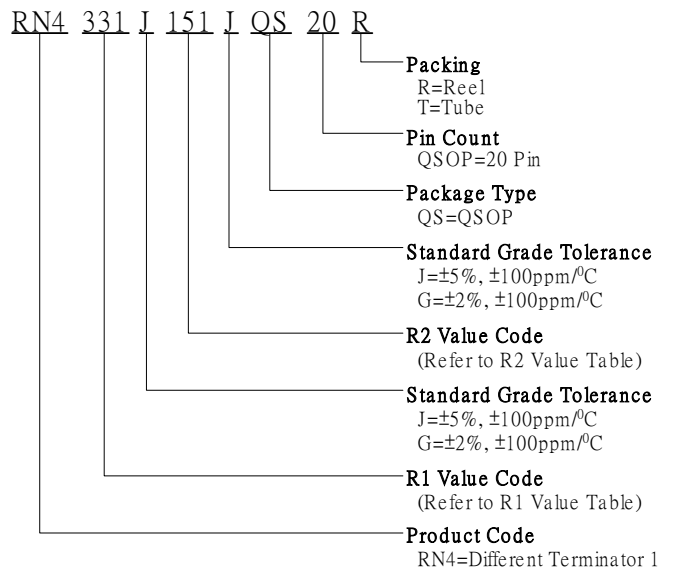
Power Derating



Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Resistance (Ω)	Correspondent Value Code
R1=330, R2=150	R1=331, R2=151

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57

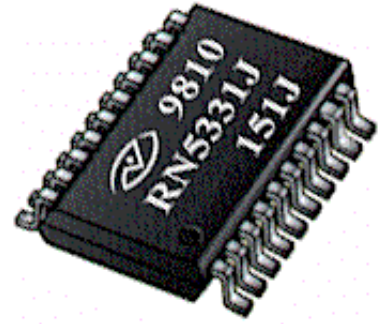
Options

- Viking is capable of supply following options based on customer's demand
- Packages → TSSOP 20 Pin
 - Packing → Wafer form

Product Description

The RN-5 is a Small Computer System Interface (SCSI) compliant termination network that provides the mechanical, electrical, and functional requirements for an input/output bus to connect small computers with a variety of peripheral devices. The most common application of this bus is to connect small computers with disk drive (mass storage) units. The RN-5 provides 7 or 9 sets of three-resistor terminator configuration for the differential-line version of the SCSI bus in just one package, which saves board space and reduced assembly costs by replacing 21 or 27 discrete components.

Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature Coefficient of Resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components



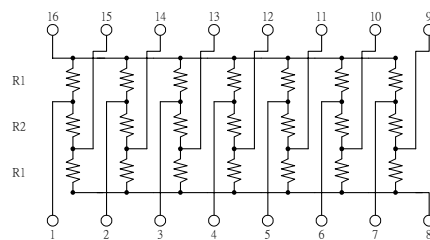
Features

- Proven TaN thin-film technology
- QSOP available
- SCSI termination

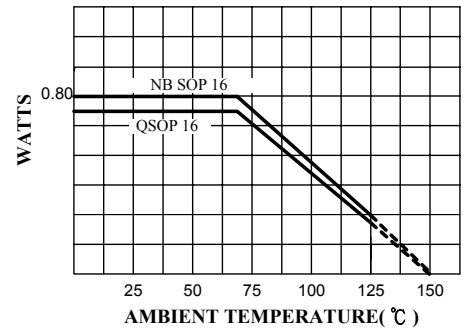
Applications

- Differential SCSI termination
- SCSI Buss devices

Schematic



Power Derating



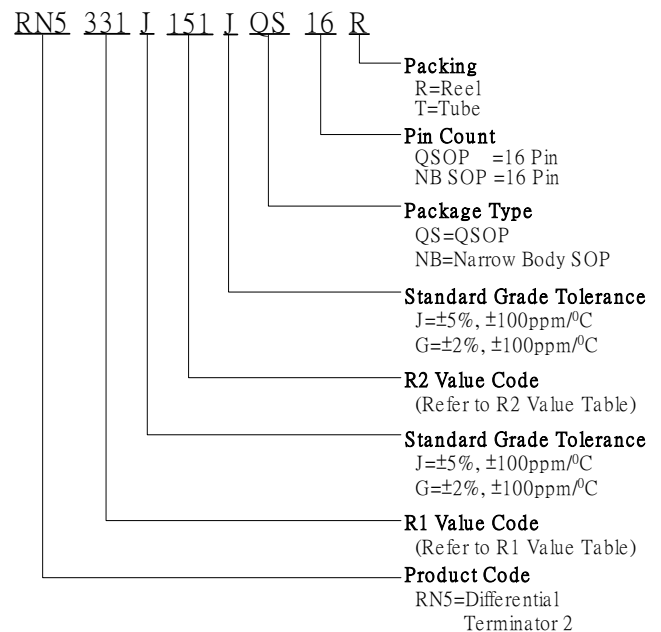
Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±10, ±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

Standard Resistance Values

Resistance (Ω)	Correspondent Value Code
R1=330, R2=150	R1=331, R2=151

How to Order



Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57
N/B SOP	8	100
	14	57
	16	50

Options

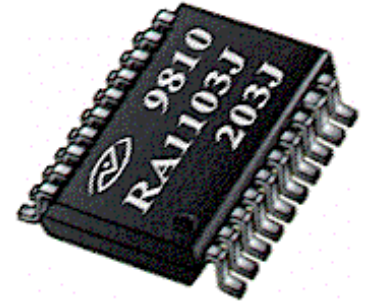
Viking is capable of supply following options based on customer's demand

Packing → Wafer form

Product Description

The R/2R Ladder Network is commonly used for Digital to Analog (D/A) conversions and Analog to Digital (A/D) conversion by successive approximations. The bits of the ladder are the points at which input signals are presented to the ladder and the output terminal (OUT) is the point at which the output is taken from the R/2R ladder. This terminal (OUT) is commonly used to drive an operational amplifier. The terminating resistor is always connected to ground.

Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature Coefficient of Resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components.



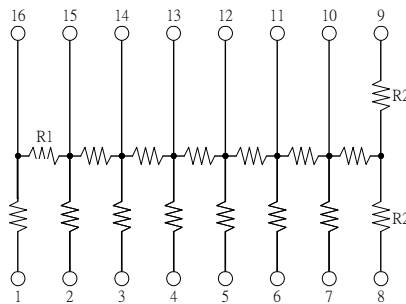
Features

- 1:2 ratio for resistor ladder
- Proven TaN thin-film technology
- QSOP available

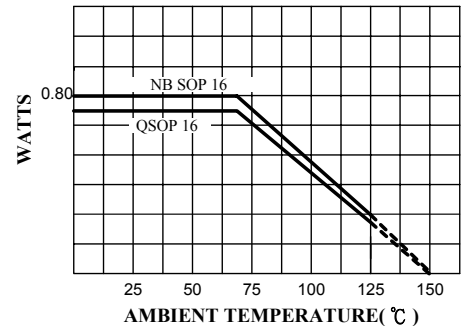
Applications

- D/A converters
- A/D converters

Schematic



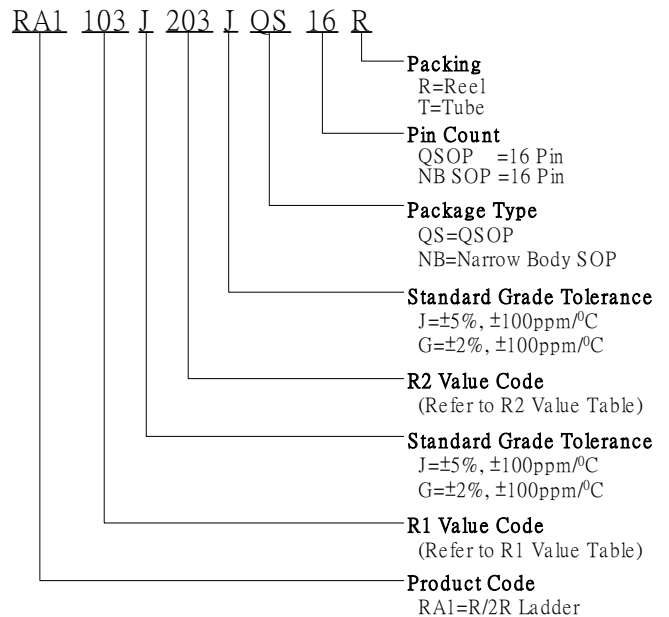
Power Derating



Standard Specifications

Description	Values		
	F	G	J
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Resistance (Ω)	Correspondent Value Code
R1=10K, R2=20K	R1=103, R2=203
R1=25K, R2=50K	R1=253, R2=503

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57
N/B SOP	8	100
	14	57
	16	50

Options

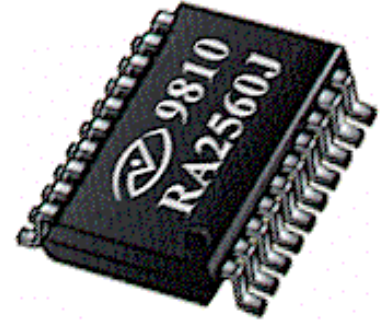
Viking is capable of supply following options based on customer's demand

- Resistance Variation → 10~10KΩ
- Packing → Wafer form

TERMINATION NETWORK—RA2

Product Description

The RA-2 is a high performance bus termination network ideal for high speed bus termination applications. The RA-2 meets all intel® Pentium termination specifications as well as the termination requirements of other high-speed microprocessors such as the DEC Alpha, Motorola PowerPC, SGI MIPS, and Sun SPARC. A 300-line termination solution can be achieved with just 14 RA-2 networks. A terminating resistor is used to eliminate unwanted transmission line effects such as ringing, overshoots and undershoots on printed circuit board traces, and/or provide DC pull-up/pull-down. Proper resistor termination requires a resistor whose value closely matches the characteristic impedance of the transmission line. Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature Coefficient of Resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components.



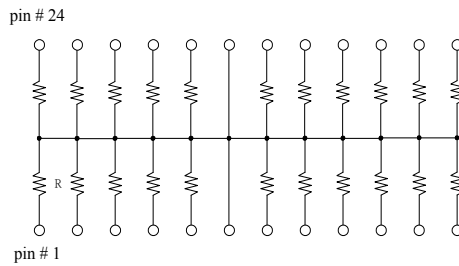
Features

- 22-Line high-speed termination
- Stable thin-film-on-silicon technology
- Miniaturized package as QSOP

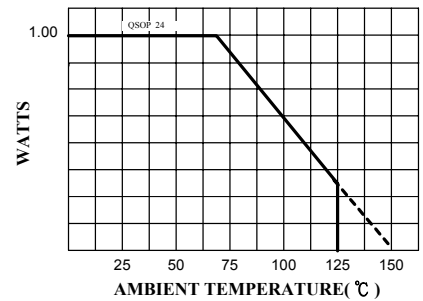
Applications

- Servers, Desktops & mobile
- Computing Devices
- High speed microprocessor system termination
- GTL / ECL Termination

Schematic



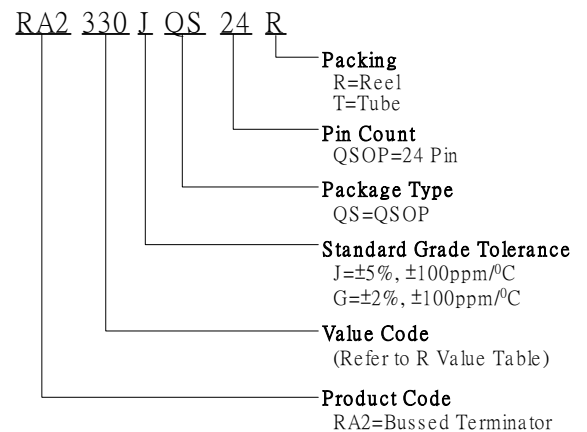
Power Derating



Standard Specifications

Description	Values
Absolute Tolerance (R)	±2% ±5%
TCR	±100ppm/°C
TTCR (Typical)	±25ppm/°C
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @ Ta=70°C	1.00watt / QSOP
Maximum Operating Voltage	50V
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

How to Order



Standard Resistance Values

Resistance (Ω)	33	47	50	56	68	75	90
Correspondent Value Code	330	470	500	560	680	750	900

Standard Packages

	Pin No.	Ea.tube
QSOP	24	57

Options

- Viking is capable of supply following options based on customer's demand
- Packages → TSSOP 24 Pin
 - Resistance Variation → 10~10KΩ
 - Packing → Wafer form

Product Description

The NTL Terminator is designed for terminating high speed bus lines where NTL (NMOS Transceiver Logic) and other high-speed system devices are employed. R1 and R2 value are selected according to standard requirements. Fabricated with Tantalum Nitride on Silicon, these resistors feature excellent stability, TCR and Tracking Performance. The NTL Terminator is packaged in a 16-pin QSOP package offering exceptional functional density for space-constrained applications.



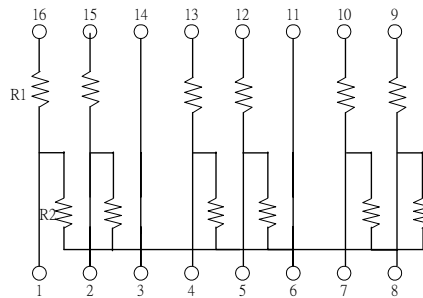
Features

- 6-Line NTL termination
- Stable thin-film-on-silicon technology
- Ultra-miniature 16-pin QSOP package

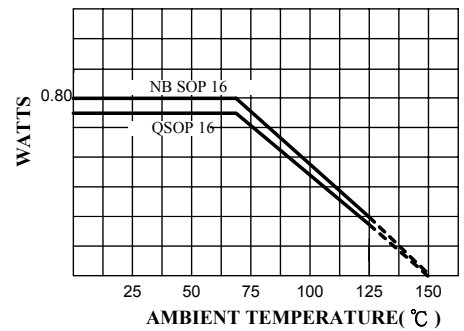
Applications

- High-speed transceiver bus termination
- NTL, GTL systems
- Ideal for space-constrained applications

Schematic



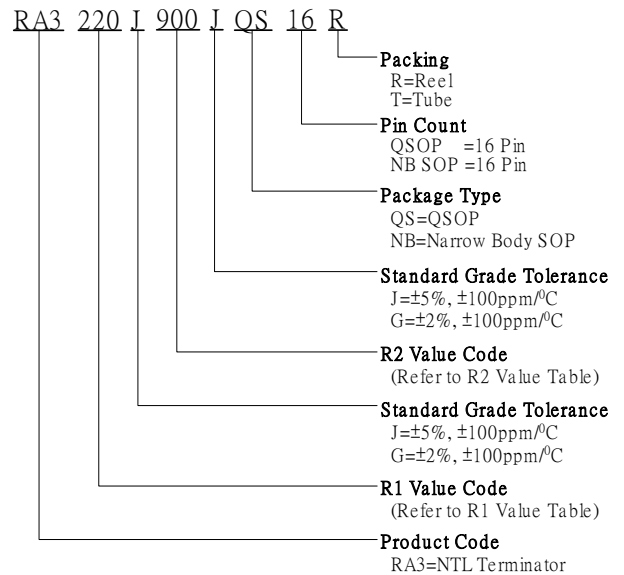
Power Derating



Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Isolation Resistance	10000megΩ		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Resistance (Ω)	Correspondent Value Code
R1=22K, R2=90K	R1=220, R2=900

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
N/B SOP	16	50

Options

Viking is capable of supply following options based on customer's demand
 Packing → Wafer form

APPLICATIONS—RA4

Product Description

The **RA-4** is a high performance termination network that ensures proper signal integrity between transmitter and receiver sections of the ITU-T V.35 communications protocol interface. The RA-4 is configured as a T or delta network for termination at the generator and receiver ends of the V.35 interface.



Features

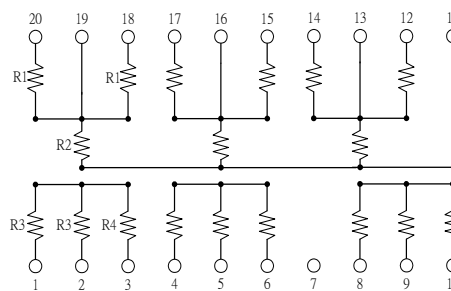
- Proven TaN thin-film technology
- Meets IUT-T V.35 termination specification
- Separate ground for transmit terminations
- Version for receiver input impedance compensation

Applications

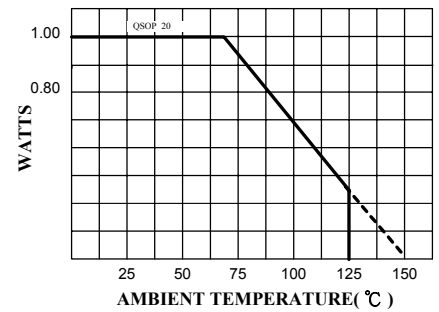
- IUT-T V-.35 termination in communications equipment

Schematic

RA-4 V.35 Terminator



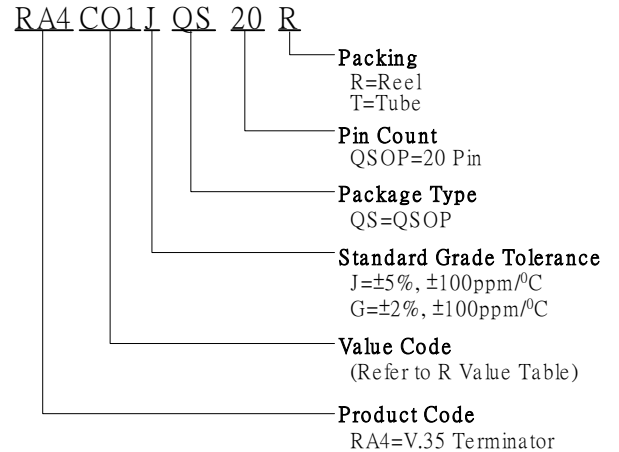
Power Derating



Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Rs Value Code	R1 Value (Ω)	R2 Value (Ω)	R3 Value (Ω)	R4 Value (Ω)
CO1	50	125	50	125
CO2	50	125	515	124

Standard Packages

	Pin No.	Ea.tube
QSOP	20	57

Options

- Viking is capable of supply following options based on customer's demand
- Packing → Wafer form
 - Package → TSSOP 20 pin

Product Description

The V.35 Terminator is used to terminate fax modem lines according to the V.35 standard. Two alternative termination configurations exist: 'Star' and 'Delta'. These electrically equivalent circuits both fulfill the V.35 standard specifications. Fabricated with Tantalum Nitride on Silicon, these termination resistors feature excellent stability, TCR and tracking performance. The JEDEC standard miniature QSOP package offers the most space efficient V.35 Terminator array available



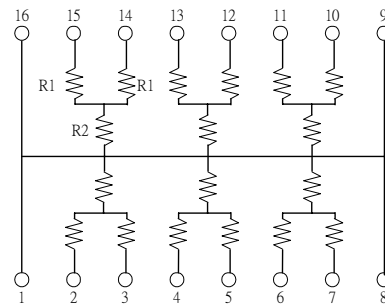
Features

- Proven TaN Thin-film technology
- Multiple V.35 termination resistors
- Stable thin-film-on-silicon technology
- Ultra-miniature package complies to JEDEC Standards

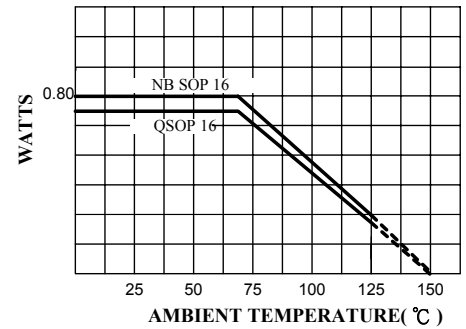
Applications

- Line Termination to V.35 standard
- Ideal for space-constrained applications
- Specified for modem

Schematic



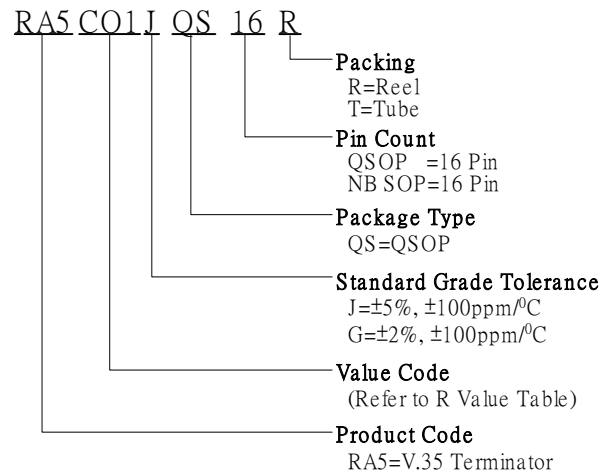
Power Derating



Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Rs Value Code	R1 Value (ohms)	R2 Value (ohms)
CO1	50	125

Standard Packages

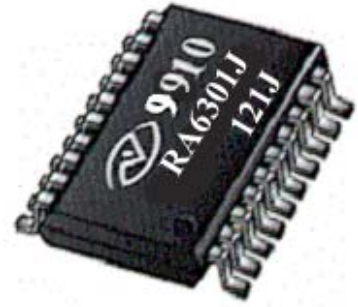
	Pin No.	Ea.tube
QSOP	16	100
N/B SOP	16	50

Options

Viking is capable of supply following options based on customer's demand
Packing → Wafer form

Product Description

The V.35 Terminator is used to terminate fax modem lines according to the V.35 standard. Two alternative termination configurations exist: 'Star' and 'Delta'. These electrically equivalent circuits both fulfill the V.35 standard specifications. Fabricated with Tantalum Nitride on Silicon, these termination resistors feature excellent stability, TCR and tracking performance. The JEDEC standard miniature QSOP package offers the most space efficient V.35 Terminator array available



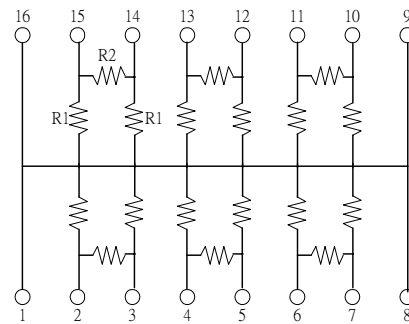
Features

- Proven TaN Thin-film technology
- Multiple V.35 termination resistors
- Stable thin-film-on-silicon technology
- Ultra-miniature package complies to JEDEC Standards

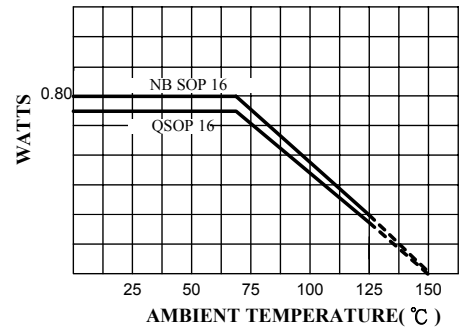
Applications

- Line Termination to V.35 standard
- Ideal for space-constrained applications
- Excellent for modem communication

Schematic



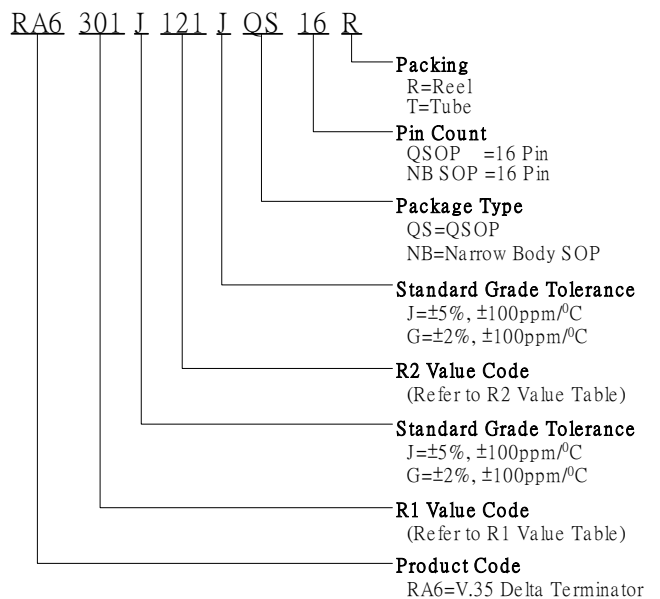
Power Derating



Standard Specifications

Description	Values		
	F	G	J
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Resistance (Ω)	Correspondent Value Code
R1=330, R2=120	R1=331, R2=121

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
N/B SOP	16	50

Options

- Viking is capable of supply following options based on customer's demand
- Resistance Variation → 10~500Ω
 - Packing → Wafer form

Product Description

The HSTL Dual Terminator is designed primarily for terminating bus lines in HSTL systems (High-Speed-Transceiver-Logic). Resistor values have been selected for that the therein impedance, i.e. the parallel combination of R1 and R2, will match the most common line-termination impedances associated with such systems. Fabricated with tantalum Nitride on Silicon, these resistors feature excellent stability, TCR and tracking performance. The HSTL Dual Terminator is packaged in a 24pin QSOP package offering exceptional functional density for space constrained applications



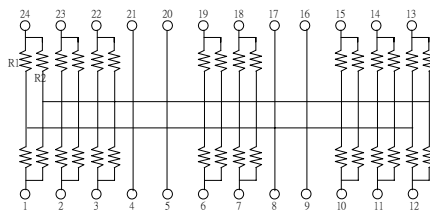
Features

- 16-Line Thevenin termination
- Stable thin-film-on-silicon technology
- Ultra-miniature package complies to JEDEC Standards

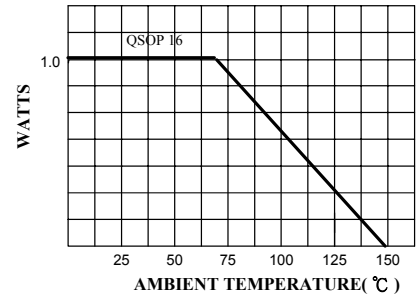
Applications

- High-speed bus termination
- Designed for HSTL Systems
- Ideal for space-constrained applications

Schematic



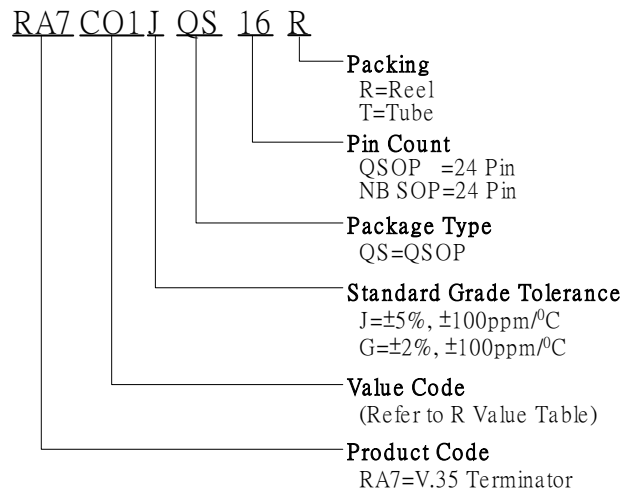
Power Derating



Standard Specifications

Description	Values		
Tolerance code	F	G	J
Absolute Tolerance (R)	±1%	±2%	±5%
TCR (ppm/°C)	±50	±100	±100
TTCR (Typical)	±25ppm/°C		
Power Rating / Resistor @Ta=70°C	0.100 watt for ≤ 1k 0.025watt for > 1k		
Maximum Operating Voltage	50V		
Operation Temperature	-55°C ~ 125°C		
Storage Temperature	-65°C ~ 150°C		

How to Order



Standard Resistance Values

Rs Value Code	R1 Value (ohms)	R2 Value (ohmS)	RT Value (ohms)
CO1	94	94	47
CO2	100	100	50
CO3	112	112	56
CO4	136	136	68

Standard Packages

	Pin No.	Ea.tube
QSOP	24	57

Options

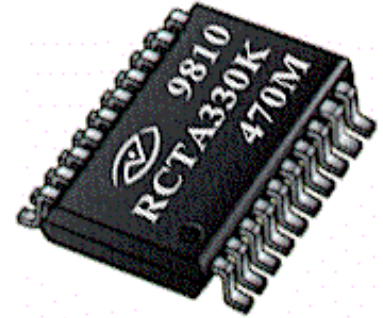
Viking is capable of supply following options based on customer's demand

- Package → TSSOP 24 pin
- Packing → Wafer form

Product Description

The RCT-A is an integrated AC termination network designed to eliminate or reduce unwanted transmission line effects on high-speed signal lines. AC termination provides an alternative termination strategy over series or parallel termination where power consideration is a concern since DC current is blocked by the capacitor. The RCT-A series has been upgraded to the ACT-A which is recommended for all new designs.

A terminating resistor is used to eliminate unwanted transmission line effects such as ringing, overshoots and undershoots on printed circuit board traces, and/or provide DC pull-up/pull-down. Proper resistor termination requires a resistor whose value closely matches the characteristic impedance of the transmission line. Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature Coefficient of Resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components.



Features

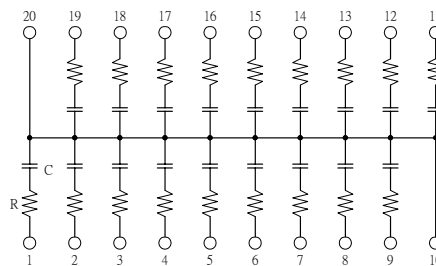
- 18 termination lines per package
- $\pm 10\%$ absolute tolerance (R)
- $\pm 20\%$ absolute tolerance (C)
- 20-pin QSOP package
- 20-pin SOIC-Wide package

Applications

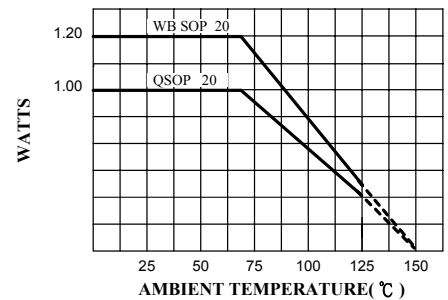
- AC termination
- Low pass filtering

Refer to website for complete datasheet and technical

Schematic



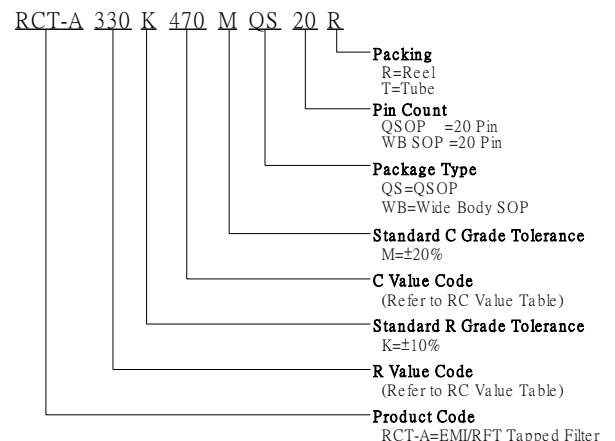
Power Derating



Standard Specifications

Description	Values
Absolute Tolerance(R)	$\pm 10\%$
Absolute Tolerance(C)	$\pm 20\%$
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @Ta=70°C	1.0 watt / QSOP 1.20 watt / WB SOP
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

How to Order



Standard Resistance Values

R Value (ohms)	C Value (pF)	BV (Typ)
33	47	134
47	47	134
47	33	191
50	180	35
75	50	126
100	100	63

\neq With 0 source impedance.

*Concert R,C value to code as

R,C value	Value Code
33Ω	330(=33*10 ⁰ Ω)
100Ω	101(=10*10 ¹ Ω)
47 pF	470(=47*10 ⁰ pF)
180 pF	181(=18*10 ¹ pF)

Standard Packages

	Pin No.	Ea.tube
QSOP	20	57
W/B SOP	20	37

Options

Viking is capable of supply following options based on customer's demand

- Packages → TSSOP 24 Pin
- Resistance Variation → 10~470 Ω
- Capacitance Variation → 15~220 pF
- Packing → Wafer form

Product Description

The RCT-B is an IEEE 1284 compliant termination network that provides complete pull-up, series termination, and EMI filtering for an ECP/EPP parallel port. The RCT-B provides a complete parallel port termination solution in just two packages, which saves board space and reduced assembly costs by replacing 54 discrete components.

Advanced, high-speed parallel ports conforming to the IEEE 1284 standard are used to provide communications between the host computer and external devices such as printers, tape back-up drives, ZIP drives, parallel port SCSI adapters, external LAN adapters, scanners, and other PC peripherals. These advanced ports support bi-directional data transfer rates to 2MB/sec and above. The IEEE1284 standard recommends a combined pull-up, termination and filter network between the driver/receiver and cable at both ends of the parallel port interface. In addition, government EMC regulations impose the need to include EMI filtering on the parallel port.



Features

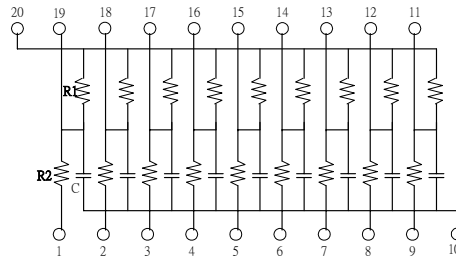
- Meet IEEE-1284 ECP/EPP parallel port termination
- Two chip solution
- 20-pin QSOP or SOIC Wide package

Applications

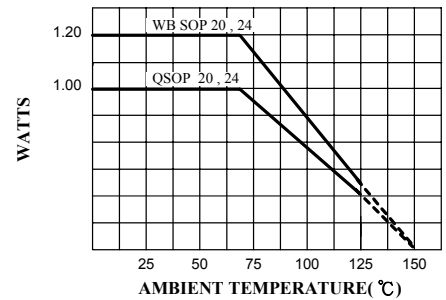
- IEEE 1284 ECP/EPP parallel port termination
- Notebook and desktop computers
- Engineering servers and workstations

Refer to website for complete datasheet and technical

Schematic



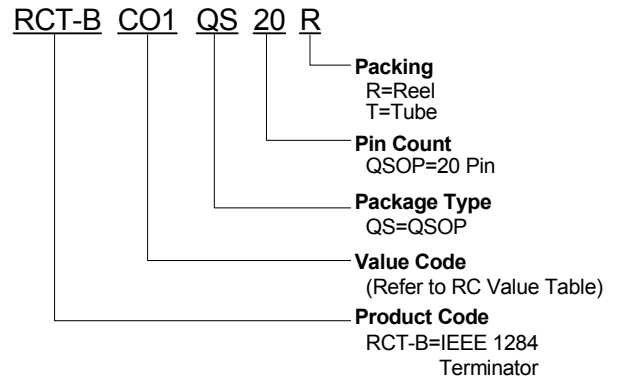
Power Derating



Standard Specifications

Description	Values
Absolute Tolerance(R)	±10%
Absolute Tolerance(C)	±20%
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @Ta=70°C	1.0 watt / QSOP 1.20 watt / WB SOP
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

How to Order



Standard Resistance Values

Rs Value (ohms)	R1 Value (ohms)	R2 Value (ohms)	C1 Value (pF)	Cap. BV (Typ.)
CO1	1K	33	180	25
CO2	2.2K	33	220	25
CO3	4.7K	10	180	25
CO4	4.7K	33	180	25
CO5	4.7K	270	33	25
CO6	4.7K	27	33	25
CO7	10K	10	27	25

Standard Packages

	Pin No.	Ea.tube
QSOP	20	57
W/B SOP	20	37

Options

Viking is capable of supplying following options based on customer's demand

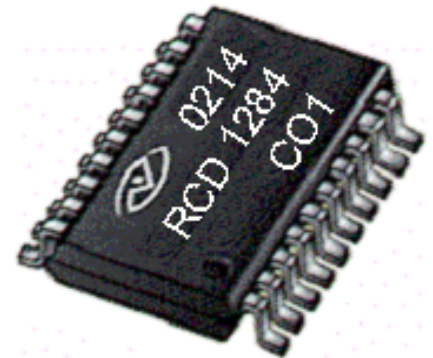
- Packages → TSSOP 20, 24 Pin
- R1 Resistance Variation → 1K~10K Ω
- R2 Resistance Variation → 10~270 Ω
- Packing → Wafer form

IEEE 1284 ECP/EPP TERMINATION NETWORK -ESD PROTECTION— RCD-A

Viking

The RCD-A is an IEEE 1284 compliant termination network that provides complete pull-up, series termination, and EMI filtering for an ECP/EPP parallel port. The RCD-A offers the most elegant IEEE 1284 termination solution by integrating 60 discrete components in a single package for considerable board space savings and reduced assembly costs. In addition, the RCD-A has the necessary robustness for parallel port applications by providing for 4KV ESD protection per Human Body Model on all I/O pins and 8KV on all output pins.

Advanced, high-speed parallel ports conforming to the IEEE 1284 standard are used to provide communications between the host computer and external devices such as printers, tape back-up drives, ZIP drives, parallel port SCSI adapters, external LAN adapters, scanners, and other pc peripherals. These advanced ports support bi-directional data transfer rates to 2MB/sec and above. The IEEE1284 standard recommends a combined pull-up, termination and filter network between the driver/receiver and cable at both ends of the parallel port interface. In addition, government EMC regulations impose the need to include EMI filtering on the parallel port. attenuation.



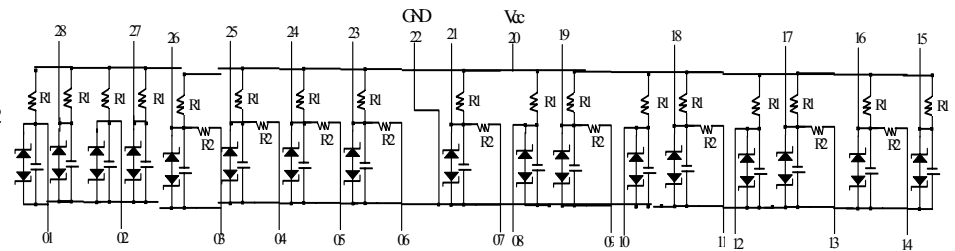
Features

- Single chip IEEE 1284 Termination solution
- ±4KV device and ±8KV in system ESD protection per HBM
- ±4KV contact ESD protection per IEC61000-4-2 (level 2)

Applications

- IEEE 1284 ECP/EPP parallel port termination
- Notebook and desktop computers
- Engineering servers and workstations

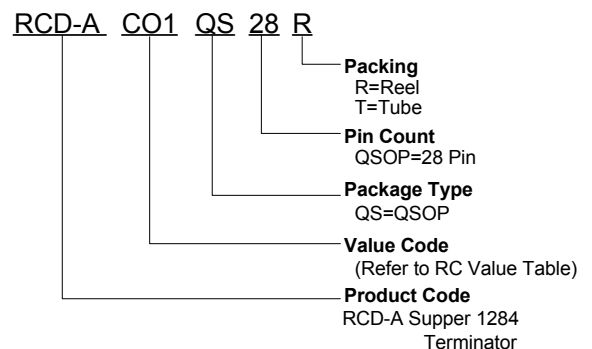
Schematic



Standard Specifications

Description	Values
Resistor Tolerance	±10%
Resistor Power Dissipation @ 70°C	100mW
Capacitor Tolerance	±20%
Capacitor Breakdown Voltage	100V
Vcc	6V max
Maximum Power Dissipation	100mW
Charge Carrier Lifetime (tl)	100ps Typ
Maximum Operation Voltage	6.0 V
Max Leakage Current:@max. Vcc	1 μA@25°C
Signal Clamp Voltages	
Positive Clamp	>6V max
Negative Clamp	<-6V max

How to Order



Standard Packages

	Pin No.	Ea.tube
QSOP	28	50

Standard Resistance Values

Code	R1	R2	C	BV (Typ)
C01	1K	33	180	25
C02	2.2K	33	220	25
C03	4.7K	10	180	25
C04	4.7K	33	180	25

Options

Viking is capable to supply following options based on customer's demand
Packing → Wafer form

Product Description

The RCF-A is an integrated EMI/RFI T Filter designed to Suppress EMI/RFI noise at I/O ports of personal computers, peripherals, and communications equipment. Low pass resistor-capacitor filters are effective at suppressing board-level EMI/RFI since the capacitor bypasses high frequency noise directly to ground, thus eliminating it from the circuit. Discrete RC filters have limitations because of their inherently higher parasitic inductance and capacitance, which create resonance and a notch-like filter characteristic at lower frequencies.

Furthermore, these parasitic effects are highly variable and can turn discrete RC filters into tuned circuits. Using proprietary semiconductor technology, Viking's RCF-A filters exhibit almost pure RC characteristics that extend effective filter performance to the GHz range and provide true broadband attenuation.



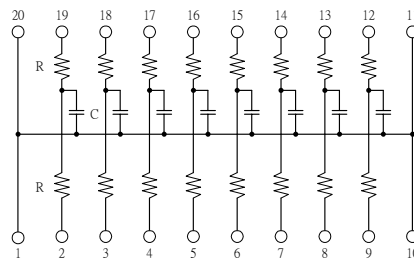
Features

- 8 filter lines per package
- T filter configuration
- 24-pin QSOP or SOIC Wide packages

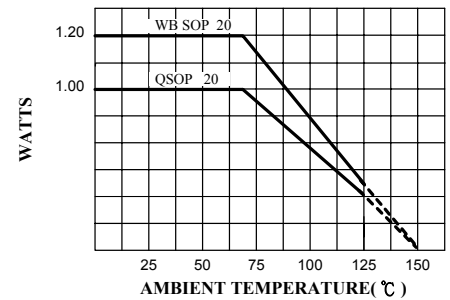
Applications

- Low pass filtering
- Bi-directional filtering
- I/O interface cards
- LCD panel display filter

Schematic



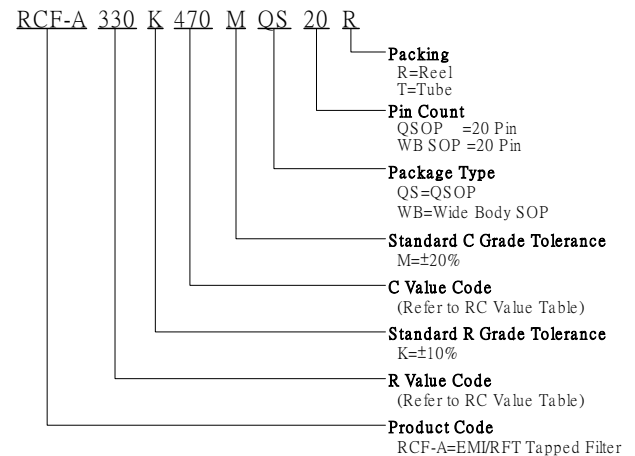
Power Derating



Standard Specifications

Description	Values
Absolute Tolerance(R)	±10%
Absolute Tolerance(C)	±20%
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @Ta=70°C	1.0 watt / QSOP 1.20 watt / WB SOP
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

How to Order



Standard Resistance Values

R Value (ohms)	C Value (pF)	BV (Typ)
15	47	156
25	100	155
25	180	74
25	200	64
27	220	56
40	50	149
47	33	229
100	100	155

*Concert R,C value to code as

R,C value	Value Code
15Ω	150(=15*10 ⁰ Ω)
100Ω	101(=10*10 ¹ Ω)
47 pF	470(=47*10 ⁰ pF)
180 pF	181(=18*10 ¹ pF)

≠ With 0 source impedance.

Standard Packages

	Pin No.	Ea.tube
QSOP	20	57
W/B SOP	20	37

Options

Viking is capable to supply following options based on customer's demand

- Packages → TSSOP 20 Pin
- Resistance Variation → 10~270 Ω
- Capacitance Variation → 15~220 pF
- Packing → Wafer form

Product Description

The RCF-B are a series of integrated EMI/RFI Tapped filter designed to suppress EMI/RFI noise in computers and peripherals, data and telecom equipment, and wireless devices. A single RC tapped configuration is ideal for filtering signal waveforms on a unidirectional bus and provides some flexibility for adding components such as ferrite bead inductors for further wave shaping.

Low pass resistor-capacitor filters are effective at suppressing board-level EMI/RFI since the capacitor bypassed high frequency noise directly to ground, thus eliminating it from the circuit. Discrete RC filters have limitations because of their inherently higher parasitic inductance and capacitance, which create resonance and a notch-like filter characteristic at lower frequencies.

Furthermore, these parasitic effects are highly variable and can turn discrete RC filters into tuned circuits. Using proprietary semiconductor technology, Viking's RCF-B filters exhibit almost pure RC characteristics that extend effective filter performance to the GHz range and provide true broadband attenuation.



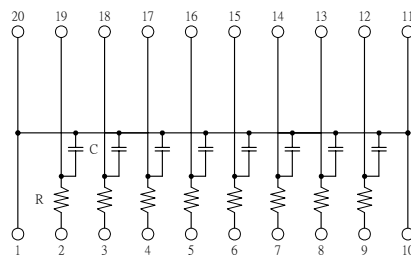
Features

- 8 filter lines per package
- Tapped filter configuration
- Single pole RC values
- 20-pin SOIC Wide, QSOP or TSSOP packages

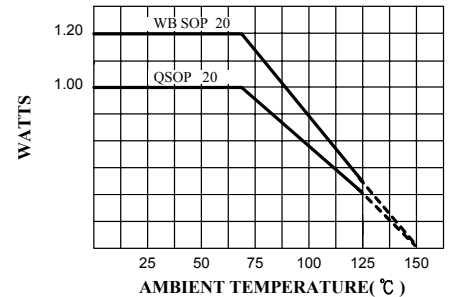
Applications

- EMI/RFI filtering
- Low pass filter

Schematic



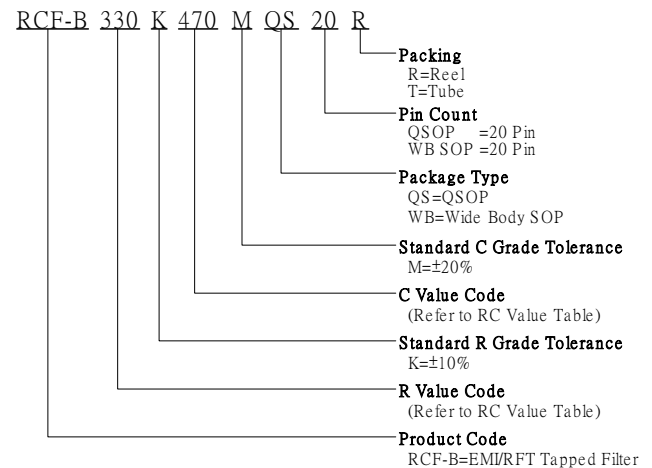
Power Derating



Standard Specifications

Description	Values
Absolute Tolerance(R)	±10%
Absolute Tolerance(C)	±20%
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @Ta=70°C	1.0 watt / QSOP 1.20 watt / WB SOP
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

How to Order



Standard Resistance Values

R Value (ohms)	C Value (pF)	BV (Typ)
10	15	125
27	15	125
27	47	80
33	47	80
33	100	44
33	220	40
33	250	30
39	220	40
47	47	80
75	50	75
100	100	69
100	150	46

*Concert R,C value to code as

R,C value	Value Code
15Ω	150(=15*10 ⁰ Ω)
100Ω	101(=10*10 ¹ Ω)
47 pF	470(=47*10 ⁰ pF)
180 pF	181(=18*10 ¹ pF)

≠ With 0 source impedance.

Standard Packages

	Pin No.	Ea.tube
QSOP	20	57
W/B SOP	20	37

Options

Viking is capable to supply following options based on customer's demand

Packages	→	TSSOP 20 Pin
Resistance Variation	→	10~470 Ω
Capacitance Variation	→	15~220 pF
Packing	→	Wafer form

Product Description

The ACT-A is an integrated AC termination network designed to reduce unwanted transmission line effects on high-speed signal lines.

AC termination provides an alternative termination strategy over series or parallel termination where power consideration is a concern since DC current is blocked by the capacitor. The ACT-A offers superior high frequency performance with minimal lead inductance and parasitic capacitance.

Proper resistor termination requires a resistor whose value closely matches the characteristic impedance of the transmission line. Thin film networks offer significant advantages over conventional thick film processes in terms of tighter absolute and ratio tolerances, greater stability, lower noise, and Temperature Coefficient of Resistance (TCR). Furthermore, they offer superior high frequency performance with minimal parasitic inductance and capacitance. Integrated thin film networks also afford the benefits of board space savings, reduced assembly costs, and increased reliability with fewer components.



Features

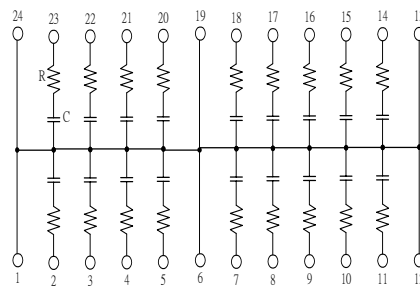
- 18 termination lines per package
- $\pm 10\%$ absolute tolerance (R)
- $\pm 10\%$ absolute tolerance (C)
- 24-pin QSOP package

Applications

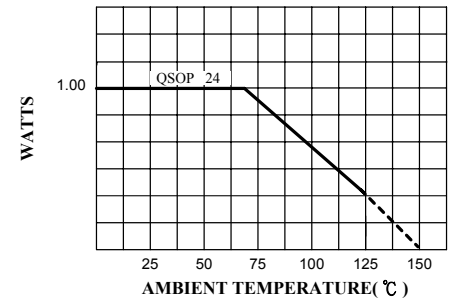
- AC termination
- Low pass filtering

Refer to website for complete datasheet and technical

Schematic



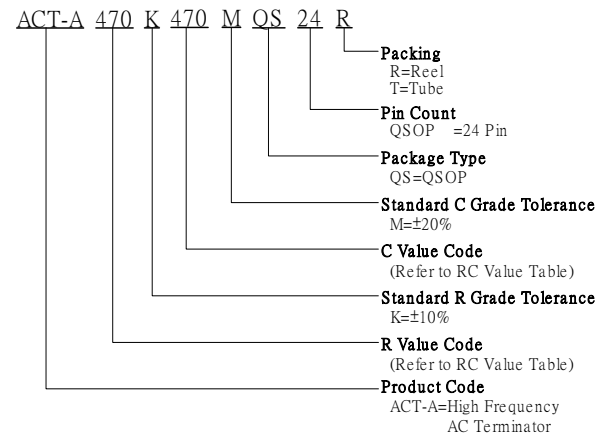
Power Derating



Standard Specifications

Description	Values
Absolute Tolerance(R)	$\pm 10\%$
Absolute Tolerance(C)	$\pm 20\%$
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @Ta=70°C	1.00 watt / QSOP
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

How to Order



Standard Resistance Values

R Value (ohms)	C Value (pF)	BV (Typ)
33	47	134
47	47	134
47	33	191
50	180	35
75	50	126
100	100	63

\neq With 0 source impedance.

*Concert R,C value to code as

R,C value	Value Code
33Ω	330(=33*10 ⁰ Ω)
100Ω	101(=10*10 ¹ Ω)
47 pF	470(=47*10 ⁰ pF)
180 pF	181(=18*10 ¹ pF)

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57

Options

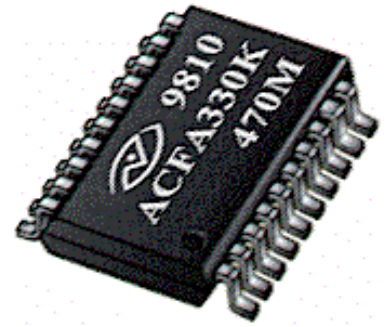
Viking is capable to supply following options based on customer's demand

Packages	→	TSSOP 24 Pin
Resistance Variation	→	10~470 Ω
Capacitance Variation	→	15~220 pF
Resistance Tolerance	→	$\pm 5\%$
Capacitor Tolerance	→	$\pm 10\%$
Packing	→	Wafer form

Product Description

The ACF-A is an integrated EMI/RFI T-filter designed to suppress EMI/RFI noise in computers, peripherals, data and telecom equipment, and wireless products. The ACF-A has a symmetrical design ideal for filtering signal waveforms traveling in opposite directions such as on a bi-directional bus.

Low pass resistor-capacitor filters are effective at suppressing board-level EMI/RFI since the capacitor bypasses high frequency noise directly to ground, thus eliminating it from the circuit. Discrete RC filters have limitations because of their inherently higher parasitic inductance and capacitance, which create resonance and a notch-like filter characteristic at lower frequencies. Furthermore, these parasitic effects are highly variable and can turn discrete RC filters into tuned circuits. Using proprietary semiconductor technology, Viking's ACF-A filters exhibit almost pure RC characteristics that extend effective filter performances to the GHz range and provide true broadband attenuation.



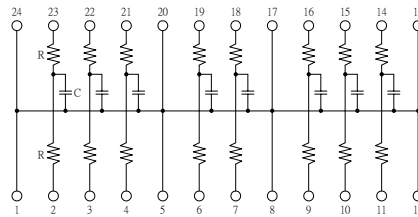
Features

- 8 filter lines per package
- T filter configuration
- Superior high frequency performance
- Low crosstalk, <5% (typical)
- 24-pin QSOP or SOIC Wide packages

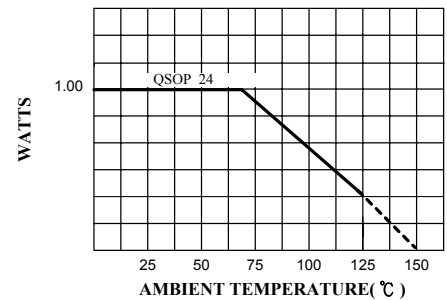
Applications

- EMI/RFI suppression
- I/O interface cards
- SCSI port filter
- Low pass filtering
- LCD panel display filter

Schematic



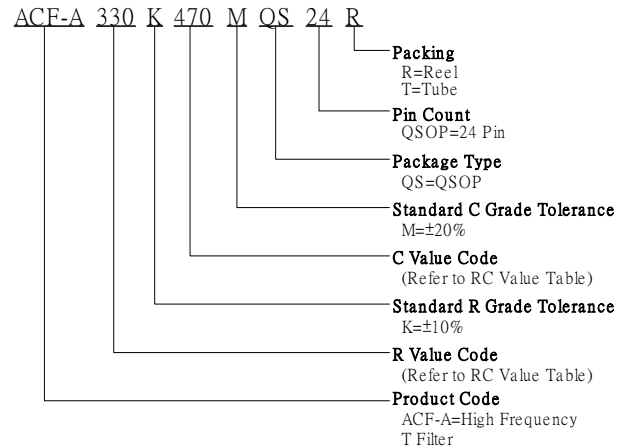
Power Derating



Standard Specifications

Description	Values
Absolute Tolerance(R)	±10%
Absolute Tolerance(C)	±20%
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @Ta=70°C	1.00 watt / QSOP
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

How to Order



Standard Resistance Values

R Value (ohms)	C Value (pF)	BV (Typ)
10	15	175
10	100	47
15	47	100
25	100	47
25	200	39
33	47	100
33	180	43
33	220	35
39	50	94
39	220	35
47	33	142
47	47	100
100	100	77

*Concert R,C value to code as \neq With 0 source impedance.

R,C value	Value Code
33Ω	330(=33*10 ⁰ Ω)
100Ω	101(=10*10 ¹ Ω)
47 pF	470(=47*10 ⁰ pF)
180 pF	181(=18*10 ¹ pF)

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57

Options

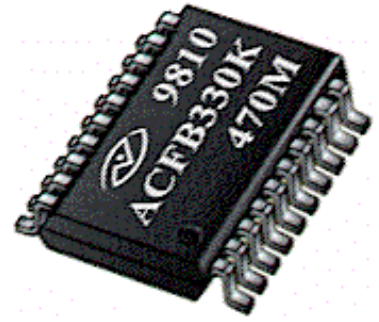
- Viking is capable to supply following options based on customer's demand
- Packages → TSSOP 24 Pin
 - Resistance Variation → 10~270 Ω
 - Capacitance Variation → 15~220 pF
 - Resistance Tolerance → ±5%
 - Capacitor Tolerance → ±10%
 - Packing → Wafer form

Product Description

The ACF-B is an integrated EMI/RFI Tapped filter designed to suppress EMI/RFI noise in computers and peripherals, data and Telecom equipment, and wireless devices. A single RC tapped configuration is ideal for filtering signal waveforms on a unidirectional bus and provides flexibility for adding components such as ferrite bead inductors for further wave shaping.

Note: ACF-B is an upgraded version of the RCF-B series and is recommended for all new designs.

Low pass resistor-capacitor filters are effective at suppressing board-level EMI/RFI since the capacitor bypasses high frequency noise directly to ground, thus eliminating it from the circuit. Discrete RC filters have limitations because of their inherently higher parasitic inductance and capacitance, which create resonance and a notch-like filter characteristic at lower frequencies. Furthermore, these parasitic effects are highly variable and can turn discrete RC filters into tuned circuits. Using proprietary semiconductor technology, Viking's ACF-B filters exhibit almost pure RC characteristics that extend effective filter performance to the GHz range and provide true broadband attenuation.



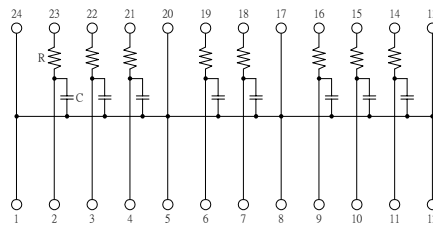
Features

- 8 filter lines per package
- Tapped filter configuration
- Superior high frequency performance
- Low crosstalk, <5% (typical)
- 24-pin QSOP or SOIC Wide packages

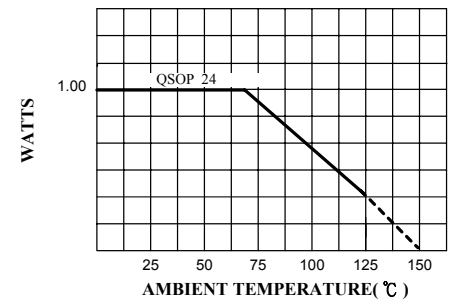
Applications

- EMI/RFI suppression
- I/O interface cards
- SCSI port filter
- Low pass filtering
- LCD panel display filter

Schematic



Power Derating



Standard Specifications

Description	Values
Absolute Tolerance(R)	±10%
Absolute Tolerance(C)	±20%
Power Rating / Resistor @Ta=70°C	0.100 watt
Package Power Rating @Ta=70°C	1.00 watt / QSOP
Operation Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

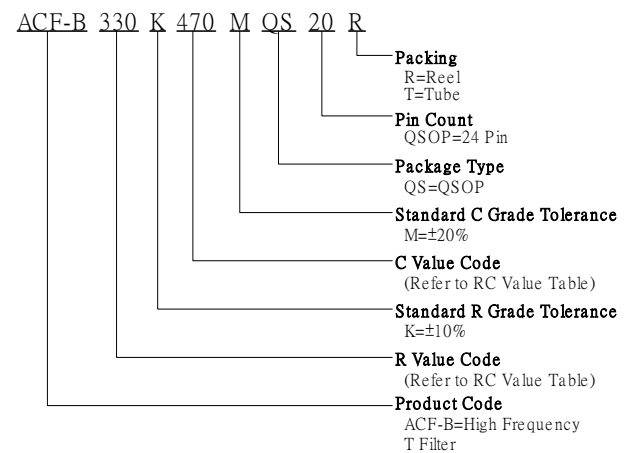
Standard Resistance Values

R Value (ohms)	C Value (pF)	BV (Typ)
10	15	175
10	100	47
15	47	100
25	100	47
25	200	39
33	47	100
33	180	43
33	220	35
39	50	94
39	220	35
47	33	142
47	47	100
100	100	77

*Concert R,C value to code as \neq With 0 source impedance.

R,C value	Value Code
33Ω	330(=33*10 ⁰ Ω)
100Ω	101(=10*10 ¹ Ω)
47 pF	470(=47*10 ⁰ pF)
180 pF	181(=18*10 ¹ pF)

How to Order



Standard Packages

	Pin No.	Ea.tube
QSOP	16	100
	20	57
	24	57

Options

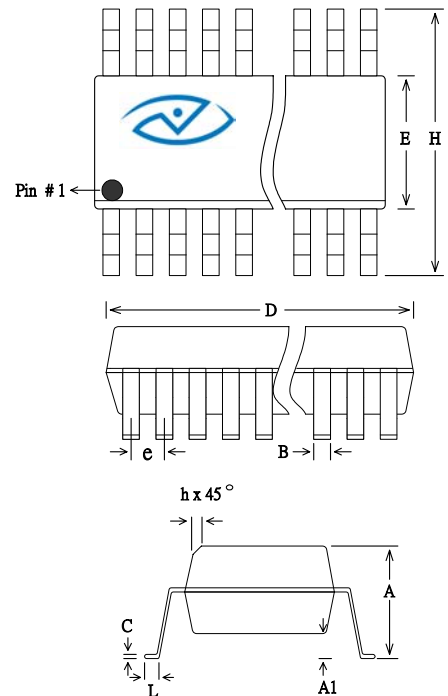
- Viking is capable to supply following options based on customer's demand
- Packages → TSSOP 24 Pin
 - Resistance Variation → 10~270 Ω
 - Capacitance Variation → 15~220 pF
 - Resistance Tolerance → ±5%
 - Capacitor Tolerance → ±10%
 - Packing → Wafer form

8,14,16 LEAD SOP NARROW BODY (0.150")

Package Dimension, Power Rating & Packing Information.												
Package	SOP NARROW BODY (0.150" Center)											
JEDEC	MO-012											
Pins#	8				14				16			
Unit	Mm		inches		mm		inches		mm		inches	
	min	max	min	max	min	max	min	max	min	max	min	max
A	1.35	1.75	0.053	0.069	1.35	1.75	0.053	0.069	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010	0.10	0.25	0.004	0.010	0.10	0.25	0.004	0.010
B	0.33	0.51	0.013	0.020	0.33	0.51	0.013	0.020	0.33	0.51	0.013	0.020
C	0.19	0.25	0.0075	0.0098	0.19	0.25	0.0075	0.0098	0.19	0.25	0.0075	0.0098
D	4.80	4.98	0.189	0.196	8.56	8.74	0.337	0.344	9.78	10.01	0.385	0.394
E	3.81	3.99	0.150	0.157	3.81	3.99	0.150	0.157	3.81	3.99	0.150	0.157
e	1.27BSC		0.050BSC		1.27BSC		0.050BSC		1.27BSC		0.050BSC	
H	5.79	6.20	0.228	0.244	5.79	6.20	0.228	0.244	5.79	6.20	0.228	0.244
h	0.25	0.51	0.010	0.020	0.25	0.51	0.010	0.020	0.25	0.51	0.010	0.020
L	0.41	1.27	0.016	0.050	0.41	1.27	0.016	0.050	0.41	1.27	0.016	0.050
P _b @ Ta=70°C	0.6W				0.8W				0.8W			

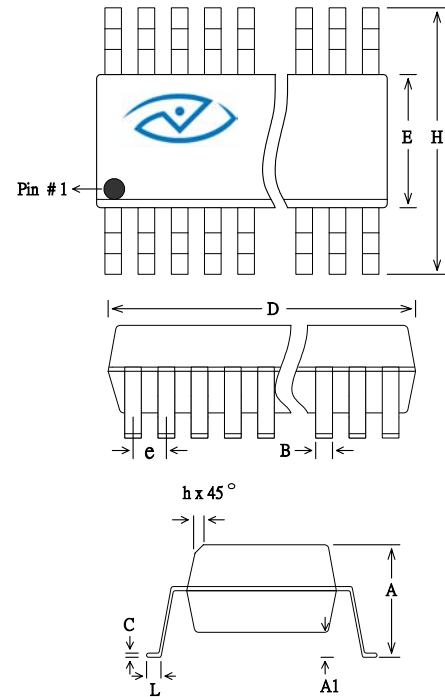
16,20,24 LEAD QSOP

Package Dimension, Power Rating & Packing Information.												
Package	QSOP (0.150" Center)											
JEDEC	M0-137											
Pins#	16				20				24			
Unit	mm		inches		mm		inches		mm		inches	
	min	max	min	max	min	max	min	max	min	max	min	max
A	1.35	1.75	0.053	0.069	1.35	1.75	0.053	0.069	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010	0.10	0.25	0.004	0.010	0.10	0.25	0.004	0.010
B	0.20	0.30	0.008	0.012	0.20	0.30	0.008	0.012	0.20	0.30	0.008	0.012
C	0.18	0.25	0.007	0.010	0.18	0.25	0.007	0.010	0.18	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197	8.56	8.74	0.337	0.344	8.56	8.74	0.337	0.344
H	5.79	6.20	0.228	0.244	5.79	6.20	0.228	0.244	5.79	6.20	0.228	0.244
E	3.81	3.99	0.150	0.157	3.81	3.99	0.150	0.157	3.81	3.99	0.150	0.157
e	0.635BSC		0.025BSC		0.635BSC		0.025BSC		0.635BSC		0.025BSC	
L	0.41	1.27	0.016	0.050	0.41	1.27	0.016	0.050	0.41	1.27	0.016	0.050
P _b @ Ta=70°C	0.75W				1.0W				1.0W			



28 LEAD QSOP

Package Dimension, Power Rating & Packing Information.				
Package	QSOP (0.150" Center)			
JEDEC	M0-137			
Pins#	28			
Unit	mm		inches	
	min	max	min	max
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
B	0.20	0.30	0.008	0.012
C	0.18	0.25	0.007	0.010
D	9.80	10.00	0.386	0.394
H	5.79	6.20	0.228	0.244
E	3.81	3.99	0.150	0.157
e	0.635BSC		0.025BSC	
L	0.41	1.27	0.016	0.050
$P_D@ Ta=70^\circ C$	1.0W			



16,20,24 LEAD SOP WIDE BODY (0.300")

Package Dimension, Power Rating & Pacing Information												
Package	SOP WIDE BODY (0.300" Center)											
JEDEC	MS-013											
Pins#	16				20				24			
Unit	mm		inches		mm		inches		mm		inches	
	min	max	min	max	min	max	min	max	min	max	min	max
A	2.36	2.64	0.093	0.104	2.36	2.64	0.093	0.104	2.36	2.64	0.093	0.104
A1	0.10	0.30	0.004	0.012	0.10	0.30	0.004	0.012	0.10	0.30	0.004	0.012
B	0.33	0.51	0.013	0.020	0.33	0.51	0.013	0.020	0.33	0.51	0.013	0.020
C	0.23	0.33	0.009	0.013	0.23	0.33	0.009	0.013	0.23	0.33	0.009	0.013
D	10.11	10.49	0.398	0.413	12.60	12.98	0.496	0.511	15.19	15.60	0.598	0.614
E	7.39	7.62	0.291	0.300	7.39	7.62	0.291	0.300	7.39	7.62	0.291	0.300
e	1.27BSC		0.050BSC		1.27BSC		0.050BSC		1.27BSC		0.050BSC	
H	10.01	10.64	0.394	0.419	10.01	10.64	0.394	0.419	10.01	10.64	0.394	0.419
L	0.41	1.27	0.016	0.050	0.41	1.27	0.016	0.050	0.41	1.27	0.016	0.050
$P_D@ Ta=70^\circ C$	1.0W				1.2W				1.2W			

Foundry Service

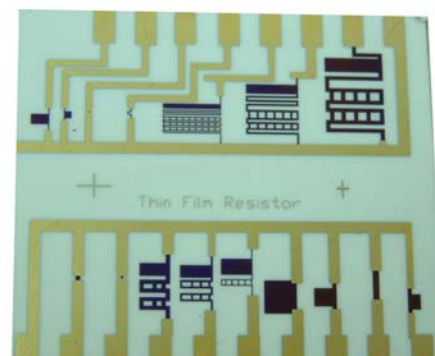
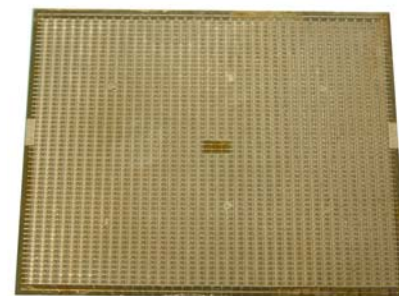
THIN FILM TECHNOLOGY for CERAMIC SUBSTRATES

VIKING have refined on the thin film technology to provide customer special requirement on ceramic substrates. We bring a standard specification to thin film technology products to meet every individual requirement for the customers. Custom metalized and patterned substrates are offered to address a broad spectrum of deposition and hybrid circuit fabrication requirements

- Ceramic Substrates**
- Al₂O₃ substrate
 - SIZES : Standard 49.5*60mm(max.85*85 mm);5" & 6" wafer form

Thin-Film Process (standard ; other requirement is acceptable)

■ Sputter material	Thickness(um)	Rs(ohm/sq.)
Ta	0.1 ~ 0.6	-
TaN	-	20 ~ 50
TaAl	-	20 ~ 50
NiCr	-	1~500
NiCrSi	-	100~1k
Ta ₂ O ₅	0.05 ~ 0.25	-
Al Alloy	0.1 ~ 1.0	-
Ti	0.05 ~ 0.3	-
TiW	0.05 ~ 0.3	-
Au	0.1 ~1.0	-
Cu	0.1 ~ 0.5	-



Lithography process

■ Equipment	Resolution
Aligner	Less than 3.0 μm

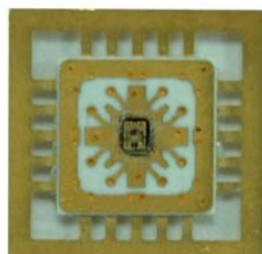
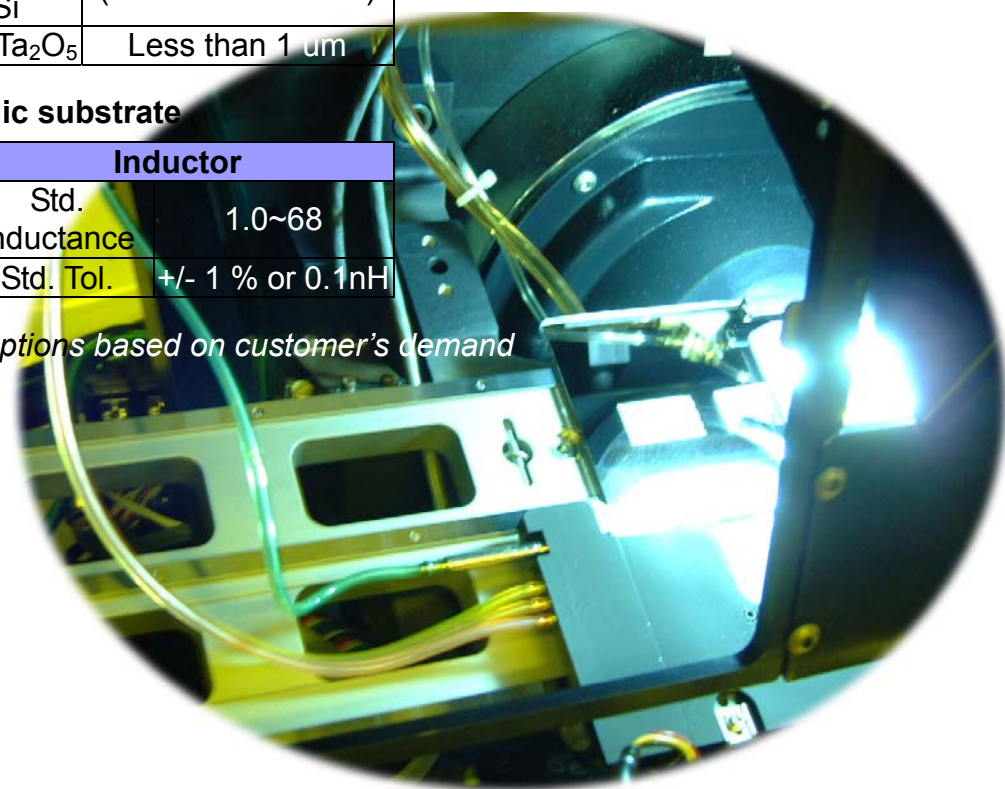
Etching Process

■ Method	material	CD loss (um)
Wet Etch	Ti · TiW · Cu · Au · TaN · Ta · TaAl NiCr · NiCrSi	Less than 1.5 um (Au less than 6 um)
Dry Etch	Ta · TaN · TaAl · Ta ₂ O ₅	Less than 1 um

Capability of R · L on ceramic substrate

Resistor		Inductor	
Resistance	10~1M Ω	Std.	1.0~68
Std. TCR	+/- 25 ppm/°C	Inductance	
Std. Tol.	+/- 0.1 %	Std. Tol.	+/- 1 % or 0.1nH

Viking is capable of supplying options based on customer's demand



THIN FILM TECHNOLOGY for SILICON WAFER

VIKING have refined on the thin film technology to provide customer special requirement on silicon substrates. We bring a standard specification to thin film technology products to meet every individual requirement for the customers. Custom metalized and patterned substrates are offered to address a broad spectrum of deposition and hybrid circuit fabrication requirements

Silicon Wafer ■ 5" and 6" wafer

Thin-Film Process (standard ; other requirement is acceptable)

■ Sputter material	Thickness(um)	Rs(ohm/sq.)
Ta	0.1 ~ 0.6	-
TaN	-	20 ~ 50
TaAl	-	20 ~ 50
NiCr	-	1~500
NiCrSi	-	100~1k
Ta ₂ O ₅	0.05 ~ 0.25	-
Al Alloy	0.1 ~ 1.0	-
Ti	0.05 ~ 0.3	-
TiW	0.05 ~ 0.3	-
Au	0.1 ~1.0	-
Cu	0.1 ~ 0.5	-
■ PECVD material		
SiNx	0.3 ~ 1.0	-
SiCx	0.15 ~ 0.5	-
■ Furnace		
SiO ₂	1.0 ~ 1.7	-

Lithography process

■ Equipment	Resolution
Stepper	Less than 1.0 μm
Aligner	Less than 3.0 μm

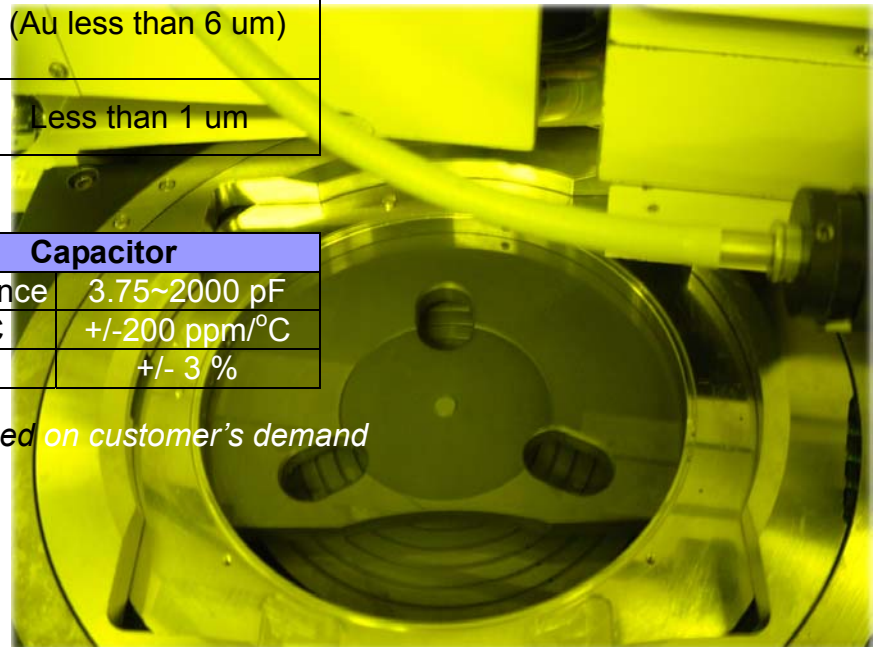
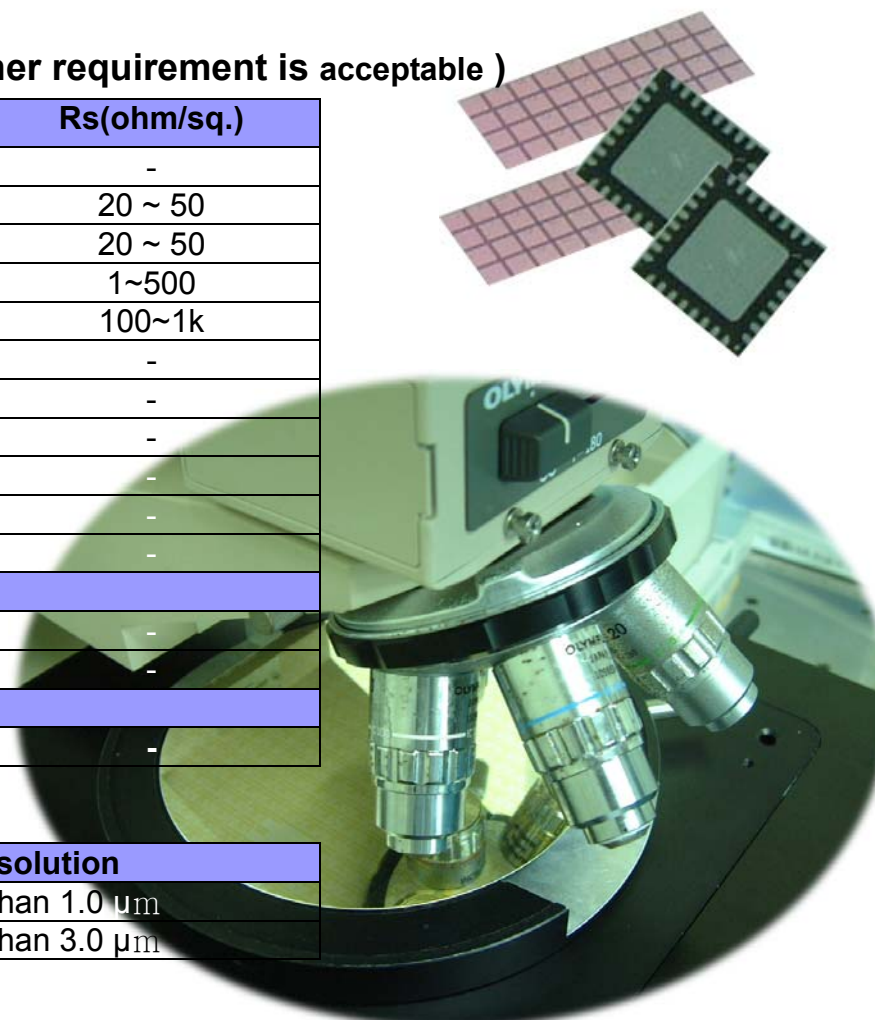
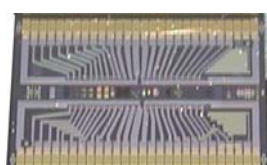
Etching Process

■ Method	material	CD loss (um)
Wet Etch	SiO ₂ 、Ti、TiW、Cu、 Au、TaN、Ta、TaAl NiCr、NiCrSi	Less than 1.5 um (Au less than 6 um)
Dry Etch	Ta、TaN、TaAl、Ta ₂ O ₅ 、 SiNx、SiCx、	Less than 1 um

Capability of R、C on silicon wafer

Resistor		Capacitor	
Resistance	10~1M Ω	Capatance	3.75~2000 pF
TCR	+/-25 ppm/°C	TCC	+/-200 ppm/°C
Tol.	+/- 0.5 %	Tol.	+/- 3 %

Viking is capable of supplying options based on customer's demand





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