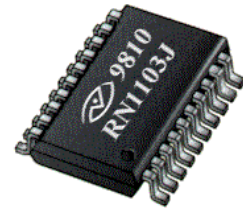


Product Description

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



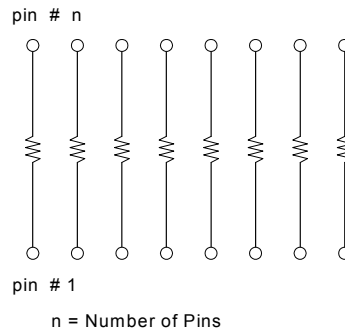
Features

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

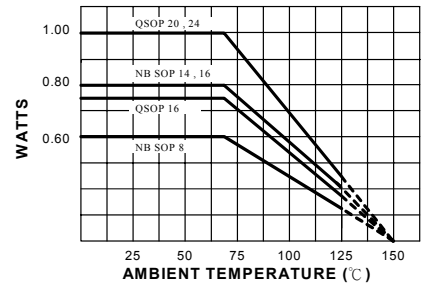
Applications

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

Schematic



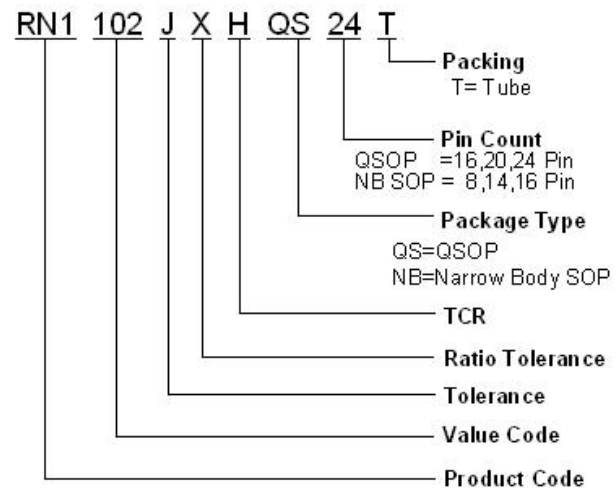
Power Derating



Specifications

Description	Standard	Non-Standard ¹		
		D	F	G
Abs. Tolerance code	J	D	F	G
Absolute Tolerance (R)	±5%	±0.5%	±1%	±2%
Ratio Tolerance code	X	R	Q	P
Ratio Tolerance (R)	No Ratio Tol.	±0.1%	±0.2%	±0.5%
TCR code	H	A	B	C
TCR (ppm/°C)	±100	±75	±50	±25
TTCR (ppm/°C)	±25	±5, ±10		
Power Rating / Resistor @Ta=70°C	0.100 watt for ≤ 1K 0.025 watt for > 1K			
Maximum Operating Voltage	50V			
Minimum Insulation Resistance	10,000MΩ			
Operation Temperature	-55°C ~ 125°C			
Storage Temperature	-65°C ~ 150°C			

How to Order



Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

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

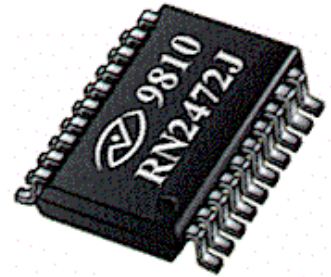
	Pin No.	Ea.tube
QSOP	16	100
	20	50
	24	50
N/B SOP	8	100
	14	50
	16	50

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



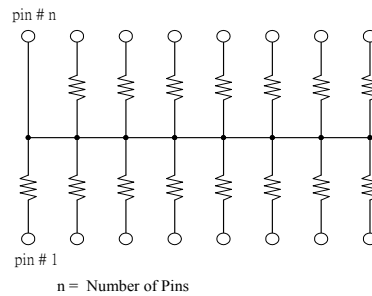
Features

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

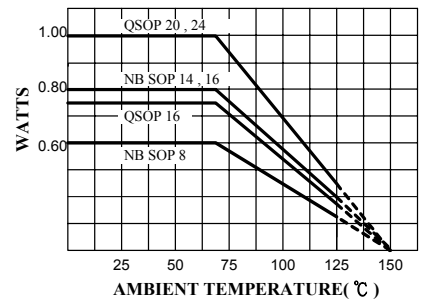
Applications

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

Schematic



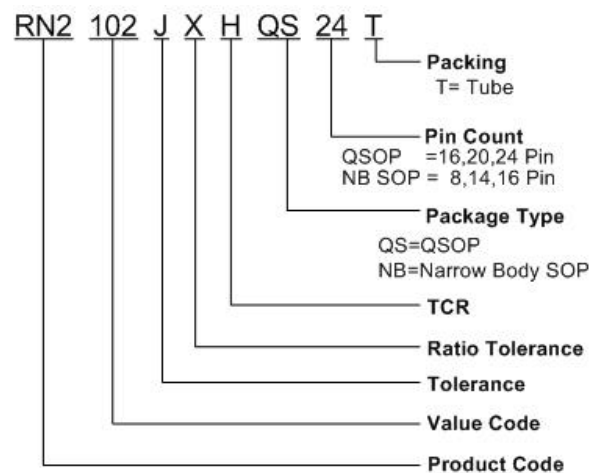
Power Derating



Standard Specifications

Description	Standard	No-Standard ¹		
Abs. Tolerance code	J	D	F	G
Absolute Tolerance (R)	±5%	±0.5%	±1%	±2%
Ratio Tolerance code	X	R	Q	P
Ratio Tolerance (R)	No Ratio Tol.	±0.1%	±0.2%	±0.5%
TCR code	H	A	B	C
TCR (ppm/°C)	±100	±75	±50	±25
TTCR (ppm/°C)	±25	±5, ±10		
Power Rating / Resistor @Ta=70°C	0.100 watt for ≤1K 0.025 watt for >1K			
Operation Temperature	-55°C ~ 125°C			
Storage Temperature	-65°C ~ 150°C			

How to Order



Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

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	50
	24	50
N/B SOP	8	100
	14	50
	16	50

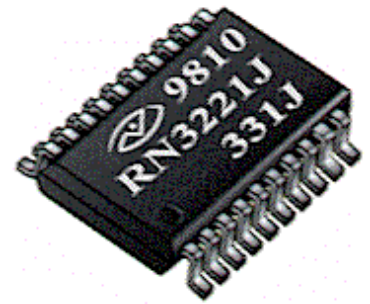
Options

- 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 Thevenin 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 Thevenin 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.



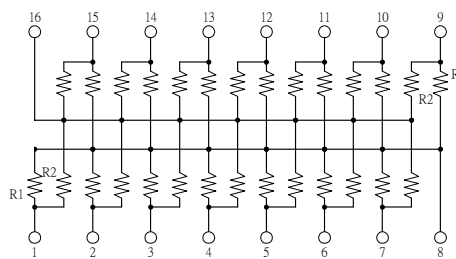
Features

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

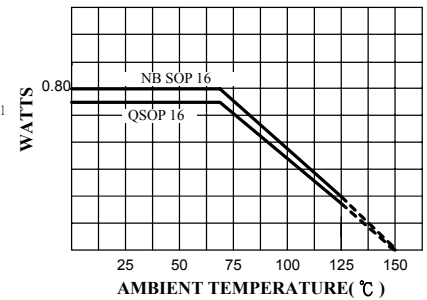
Applications

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

Schematic



Power Derating



Specifications¹

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		

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

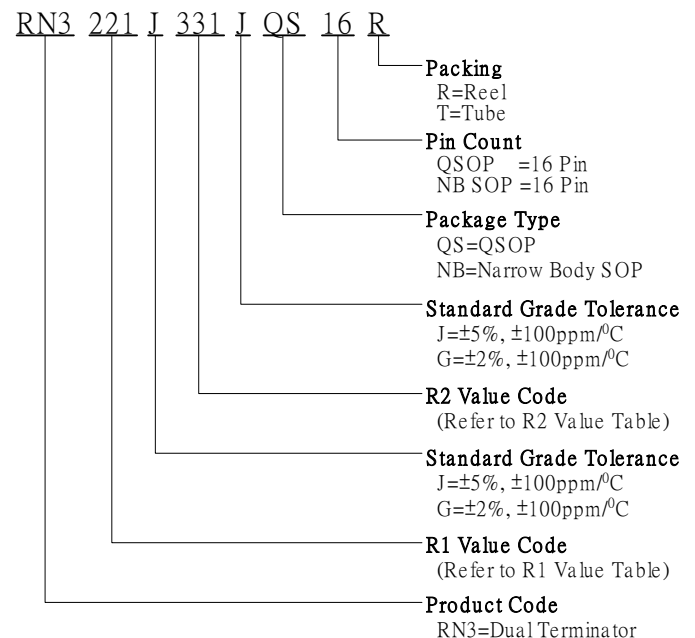
Resistance Values

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

Standard Packages

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

How to Order



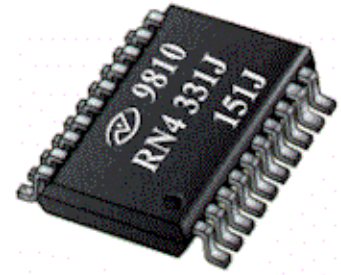
Options

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



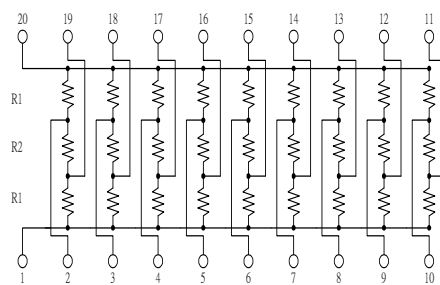
Features

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

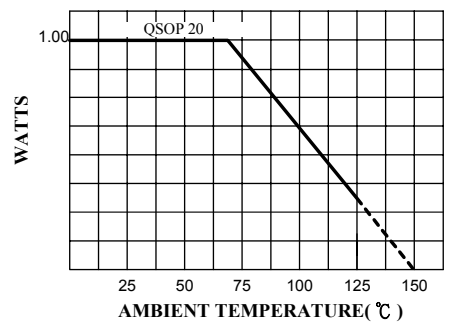
Applications

- Differential SCSI termination
- SCIS Buss devices

Schematic



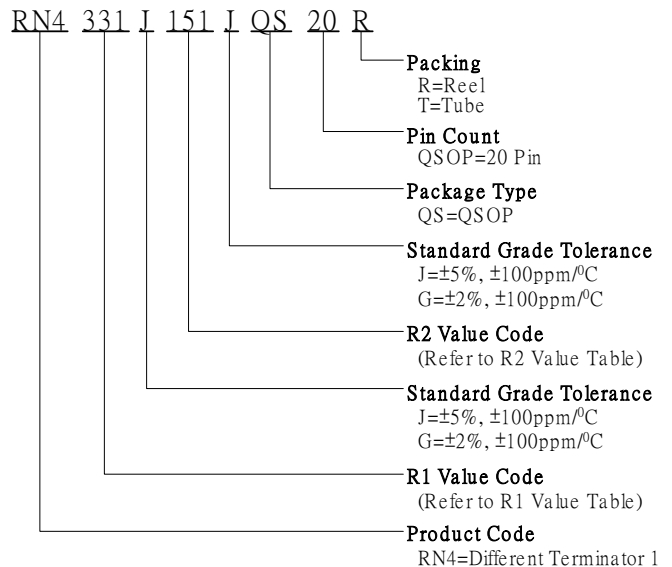
Power Derating



Specifications¹

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		
Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.			

How to Order



Resistance Values

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

Standard Packages

	Pin No.	Ea.tube
QSOP	20	50

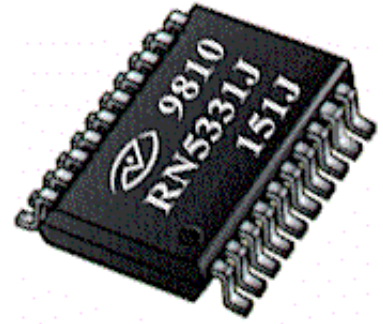
Options

- 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



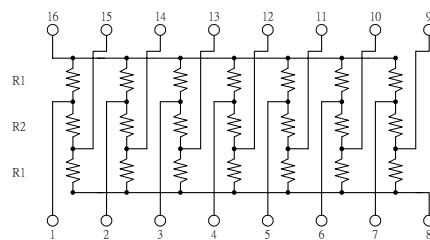
Features

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

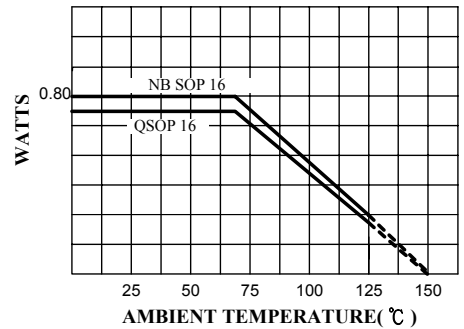
Applications

- Differential SCSI termination
- SCSI Buss devices

Schematic



Power Derating



Specifications¹

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		
Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.			

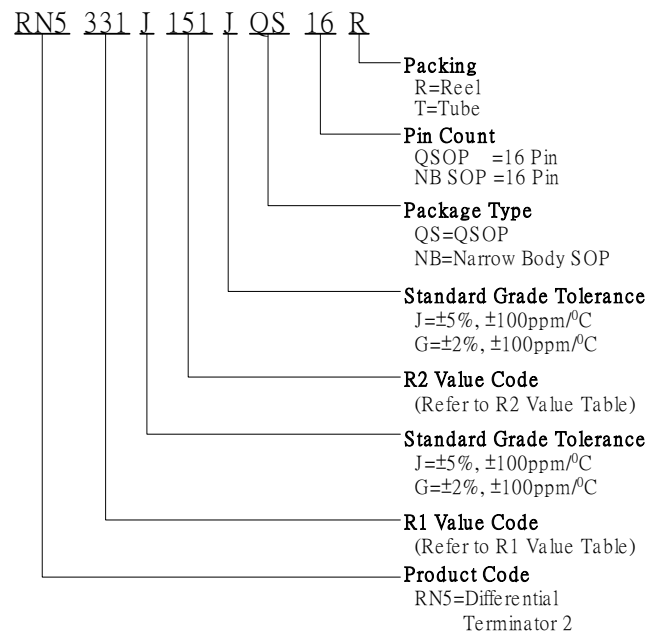
Resistance Values

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

Standard Packages

	Pin No.	Ea.tube
QSOP	16	100

How to Order



Options

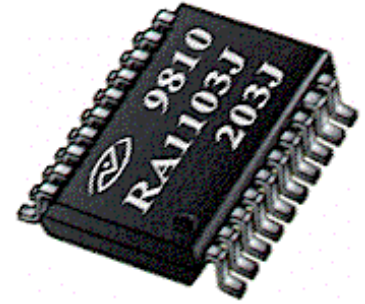
Viking is capable of supply following options based on customer's demand

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.



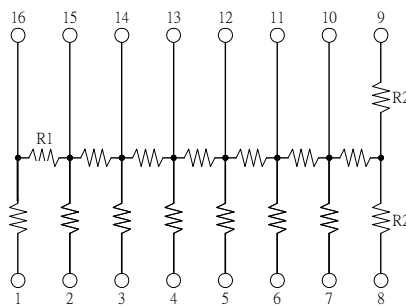
Features

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

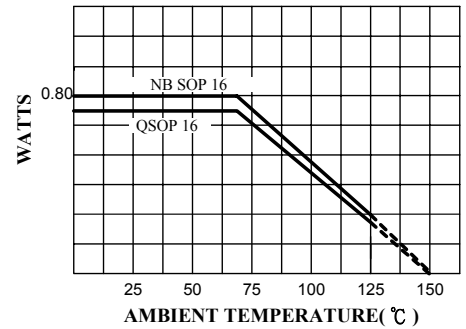
Applications

- D/A converters
- A/D converters

Schematic



Power Derating

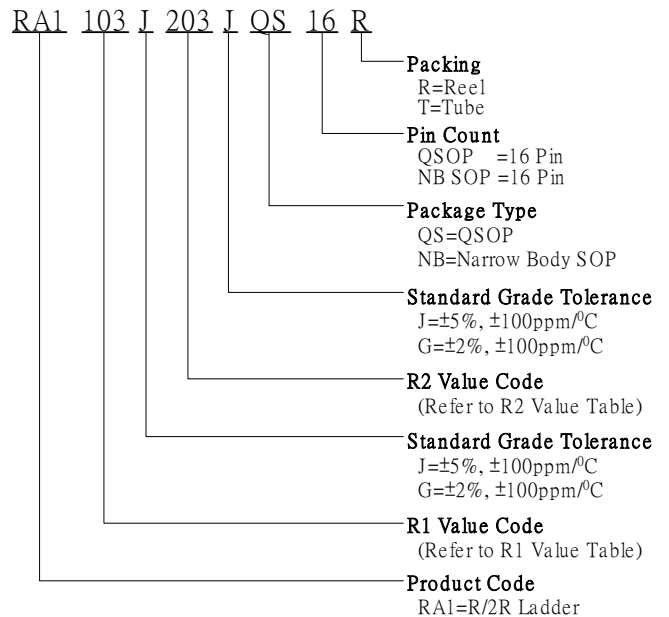


Specifications¹

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		

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

How to Order



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

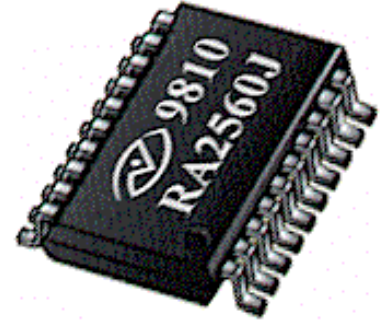
Options

- 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.



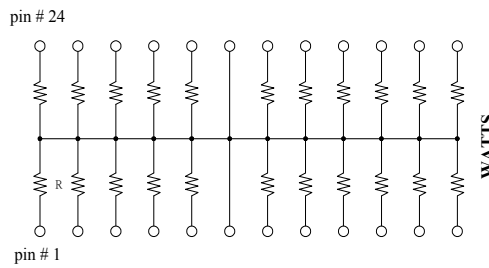
Features

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

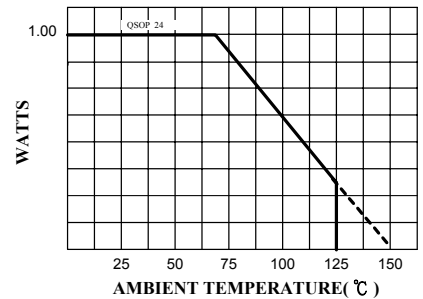
Applications

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

Schematic



Power Derating

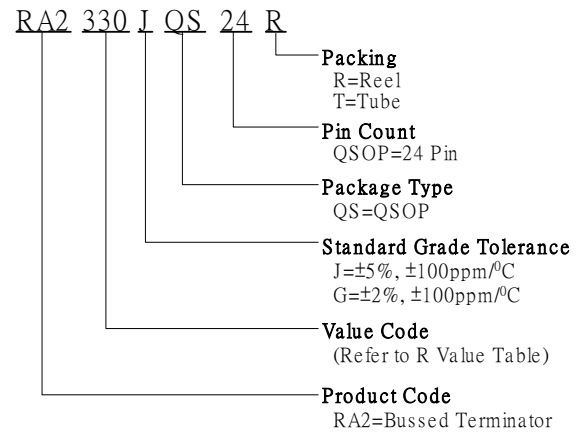


Specifications¹

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

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

How to Order



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	50

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.



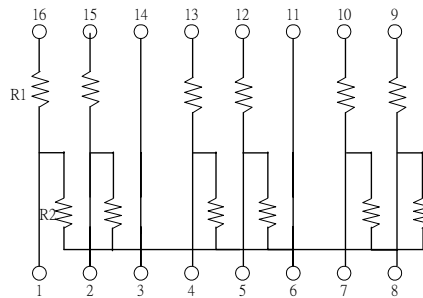
Features

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

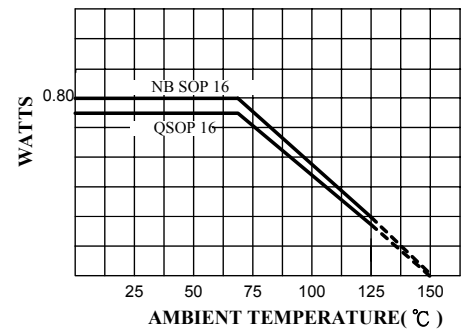
Applications

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

Schematic



Power Derating

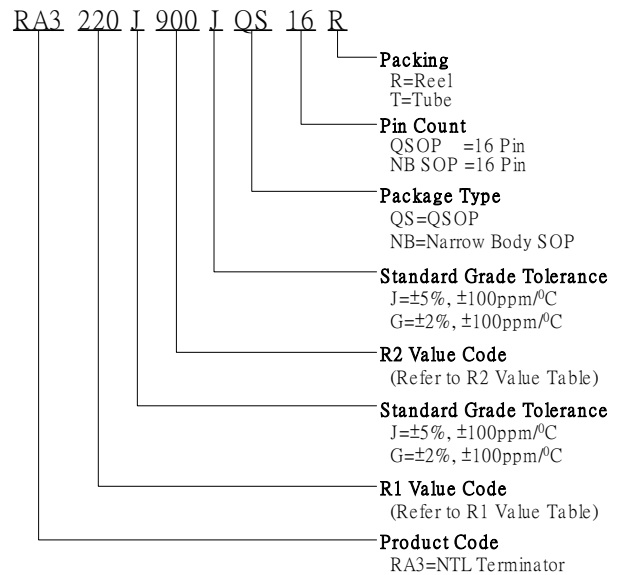


Specifications¹

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		

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

How to Order



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.



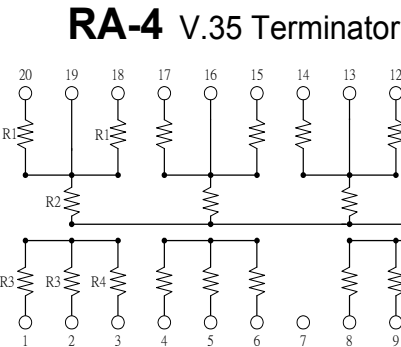
Features

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

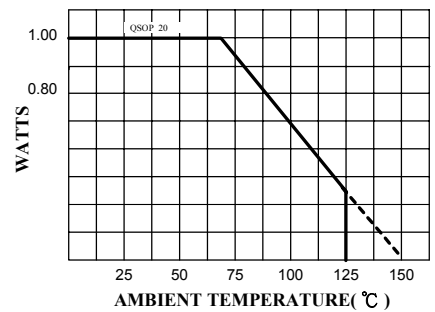
Applications

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

Schematic



Power Derating

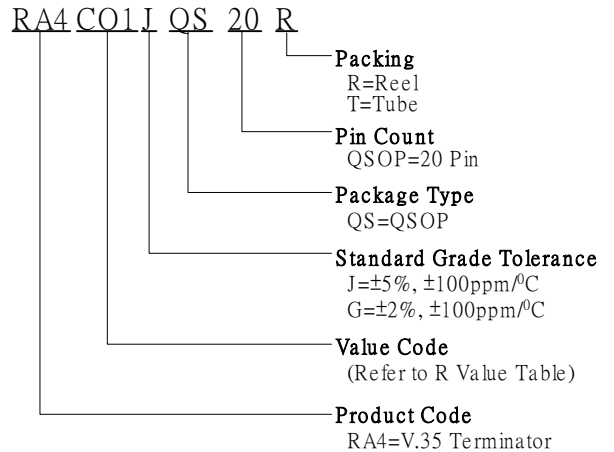


Specifications¹

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		

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

How to Order



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	50

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



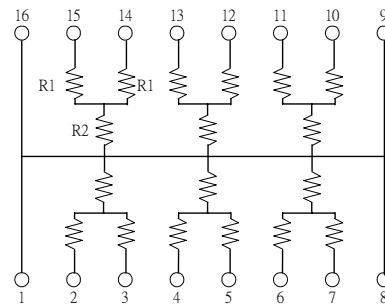
Features

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

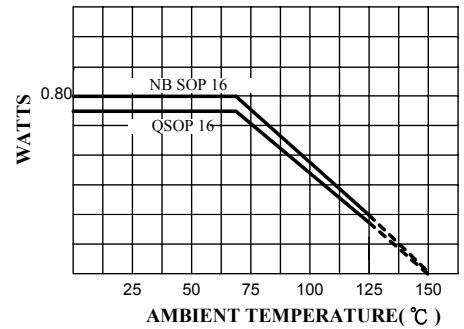
Applications

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

Schematic



Power Derating

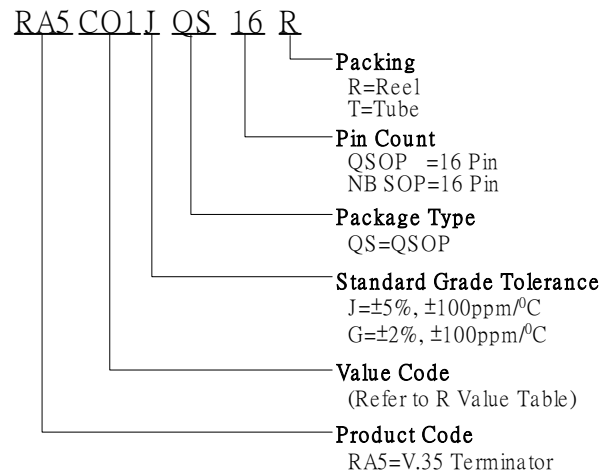


Specifications¹

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		

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

How to Order



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

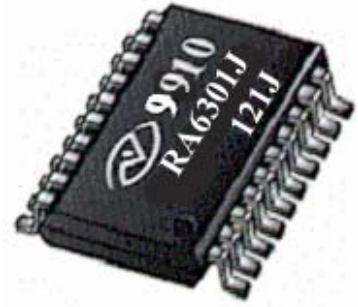
Options

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



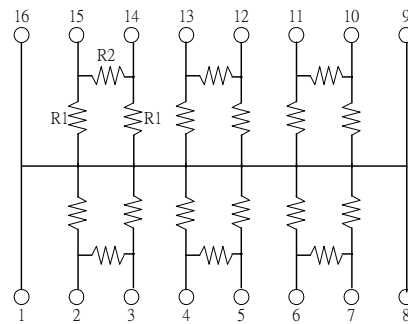
Features

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

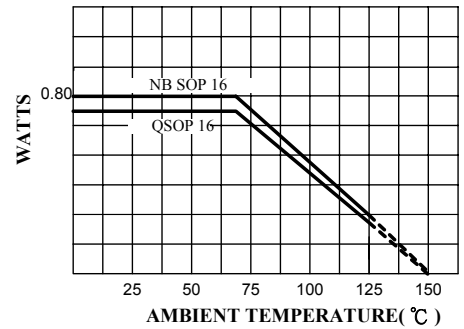
Applications

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

Schematic



Power Derating

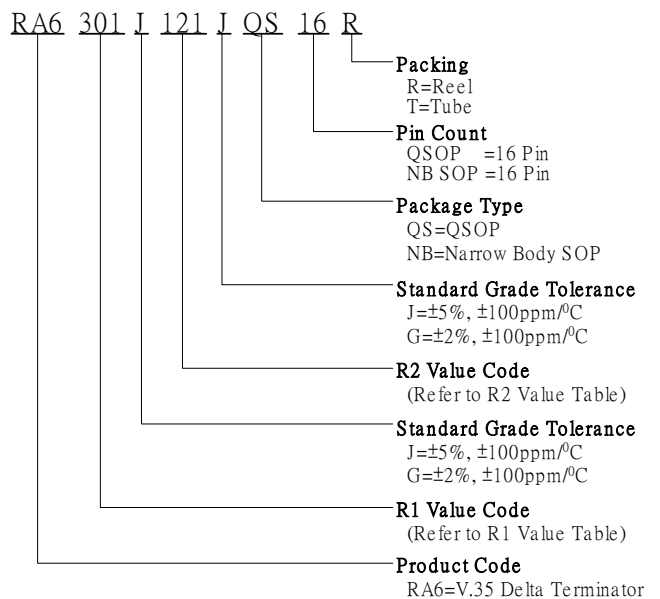


Specifications¹

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		

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

How to Order



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



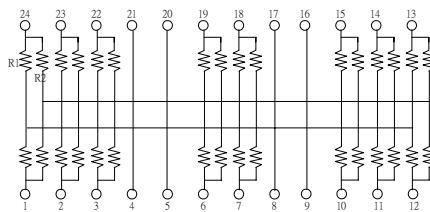
Features

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

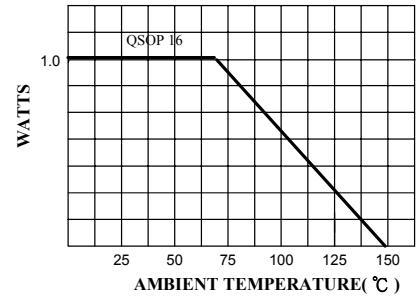
Applications

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

Schematic



Power Derating

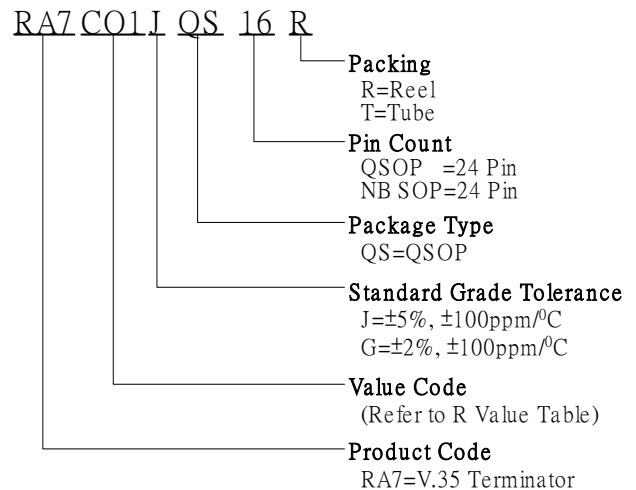


Specifications¹

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		

Note 1: A Non-Recurring Engineering (NRE) charge and a minimum order/lot size may apply for all fully customized requirements.

How to Order



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	50

Options

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

- Package → TSSOP 24 pin
- Packing → Wafer form