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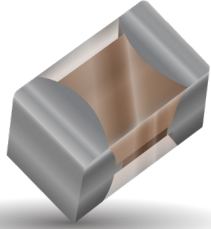
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# RC Equalizer Network

## GENERAL DESCRIPTION



These ruggedly constructed, ultraminiature (EIA 0402, 1005 metric) equalizers combine high-performance tantalum nitride (TaN) resistive elements and silicon/oxygen/nitrogen (SiON) capacitive elements with KYOCERA AVX's proprietary, automotive-qualified, glass-sandwich FLEXITERM® surface-mount technology, which provides an extra measure of protection against flexure damage during installation. The new GEQ Series equalizers are also manufactured with 100% laser trimming to achieve tight tolerances and offer a low 0.5mm profile, a 125mW power rating, resistance values spanning 10–50Ω, and capacitance values extending from 1–50pF.

Rated for a wide range of operating temperatures (-55°C to +125°C) and compliant with RoHS, ideal applications for the series extend across the optoelectronic, telecommunications, broadband, military, electronic warfare, space, test, and instrumentation markets and include optical transceiver modules, broadband receivers, and transmission and receiver optical subassemblies (TOSA and ROSA).

## FEATURES

- EIA 0402 Case Size
- Resistance Range: 10 to 50 Ω typ.
- Capacitance Range: 1 to 50 pF typ.
- Parallel Configurations
- Power Rating: 125 mW
- Operating Temperature: -55°C to +125°C
- Laser Trimmed Resistors
- RoHS Compliant

\*For other RC Combinations and EIA Sizes contact factory

## APPLICATIONS

- Optical Transceiver Modules
- Broadband Receiver
- TOSA / ROSA

## MARKETS

- Opto-electronics
- Telecom
- Broadband Jamming for EW
- Military
- Instrumentation and Test

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## HOW TO ORDER

**RCN**

**Series**  
0402

**25R0**

**Resistance Value (Ω)**

3 significant digits  
R = decimal point

**F**

**Resistance Tolerance**

F = 1%

**05R0**

**Capacitance Value (pF)**

3 significant digits  
R = decimal point

**J**

**Capacitance Tolerance**

J\* = 5%  
K\* = 10%  
M\* = 20%  
\*Minimum tolerance =  
+/- 0.1pF

**T**

**Terminations**

T = NiSn Plated

**TR**

**Packaging**

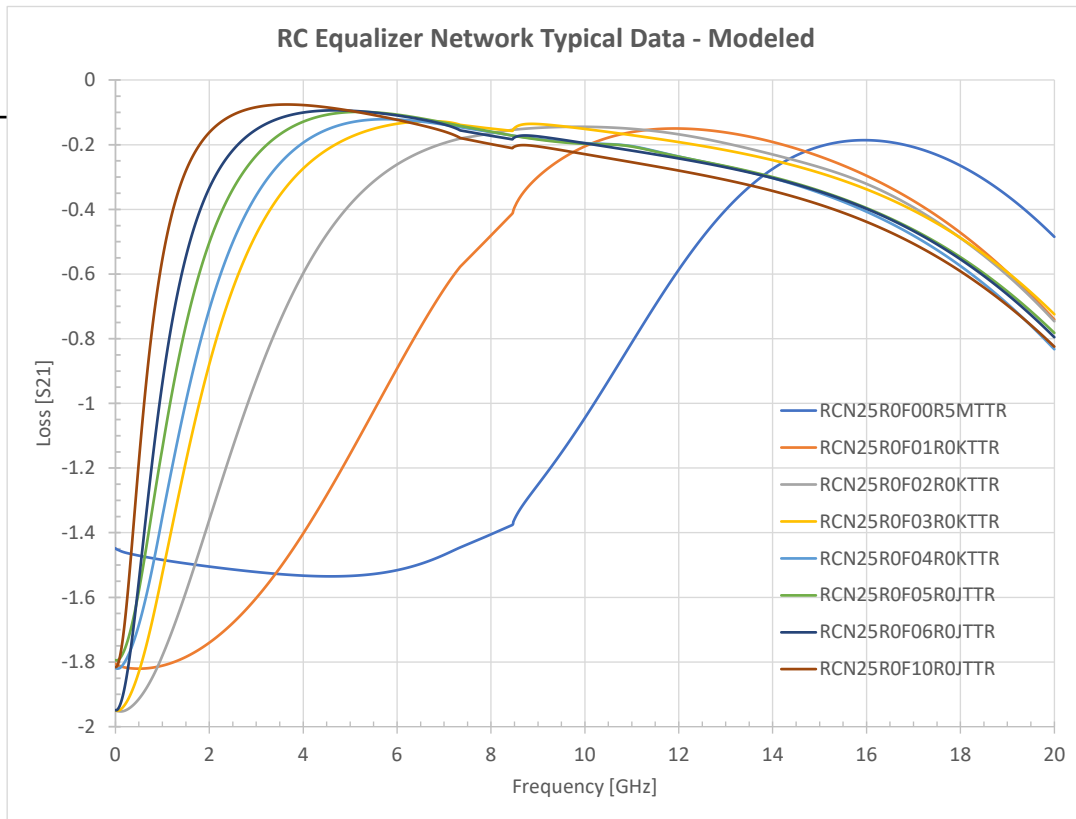
TR = Tape & Reel



## EQUALIZER GAIN SLOPE TABLE

| Part Number      | Starting Frequency (Typical) (GHz) | Loss at Starting Frequency (Typical) (dB) | End Frequency (Typical) (GHz) | Loss at End Frequency (Typical) (dB) | Bandwidth (Typical) (GHz) | Gain (Typical) (dB) |
|------------------|------------------------------------|---|-------------------------------|--------------------------------------|---------------------------|---------------------|
| RCN09R0F12R5JTTR | 0                                  | -0.7                                      | 4                             | -0.05                                | 4                         | 0.65                |
| RCN25R0F00R5MTTR | 5                                  | -1.5                                      | 16                            | -0.2                                 | 11                        | 1.3                 |
| RCN25R0F01R0KTTR | 0                                  | -1.8                                      | 12                            | -0.15                                | 12                        | 1.65                |
| RCN25R0F02R0KTTR | 0                                  | -1.8                                      | 10                            | -0.15                                | 10                        | 1.65                |
| RCN25R0F03R0KTTR | 0                                  | -1.8                                      | 7                             | -0.15                                | 7                         | 1.65                |
| RCN25R0F04R0KTTR | 0                                  | -1.8                                      | 6                             | -0.15                                | 6                         | 1.65                |
| RCN25R0F05R0JTTR | 0                                  | -1.8                                      | 5                             | -0.15                                | 5                         | 1.65                |
| RCN25R0F06R0JTTR | 0                                  | -1.8                                      | 4.5                           | -0.15                                | 4.5                       | 1.65                |
| RCN25R0F10R0JTTR | 0                                  | -1.8                                      | 3.5                           | -0.15                                | 3.5                       | 1.65                |
| RCN30R0F0R33MTTR | 9.25                               | -2.9                                      | 16                            | -0.3                                 | 6.75                      | 2.6                 |
| RCN43R0F1R15KTTR | 0                                  | -3  | 9                             | -0.15                                | 9                         | 2.85                |
| RCN50R0F0R31MTTR | 6                                  | -3.3                                      | 16                            | -0.3                                 | 10                        | 3                   |

# RC Equalizer Network



# RC Equalizer Network

## SPECIFICATIONS

**Package Size:** EIA 0402

**Design:** Glass wafer sandwich

**Termination:** NiSn plated

**Power Rating:** 125 mW

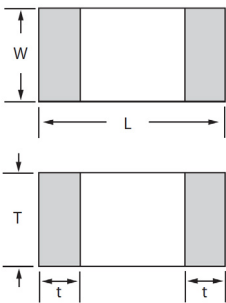
**Operating Temperature Range:** -55°C to +125°C

**Tolerance: Resistor:** 1-5%, **Capacitor:** 5-20%

**Resistance Range:** 10 to 50 Ω (typical)

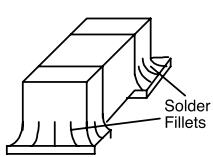
**Capacitance Range:** 1 to 50 pF (typical)

## DIMENSIONS



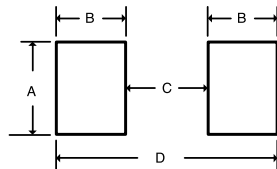
| Size (EIA) | Length (L)                      | Width (W)                       | Thickness (T)                 | Termination (t)                 |
|------------|---------------------------------|---------------------------------|-------------------------------|---------------------------------|
| 0402       | 1.02 ± 0.051<br>(0.040 ± 0.002) | 0.51 ± 0.051<br>(0.020 ± 0.002) | 0.50 ± 0.10<br>(.020 ± 0.004) | 0.25 ± 0.051<br>(0.010 ± 0.002) |

## SUGGESTED MOUNTING PAD DIMENSIONS



### Normal Pads

W = Chip Width L = Chip Length T = Chip Thickness



| Case Size | A Min. | B Min. | C Min. | D Min. |
|-----------|--------|--------|--------|--------|
| 0402      | 0.0213 | 0.0125 | 0.0206 | 0.0436 |

Dimensions are in inches.

## RESISTOR MATERIAL

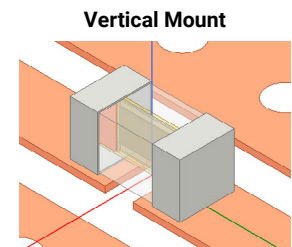
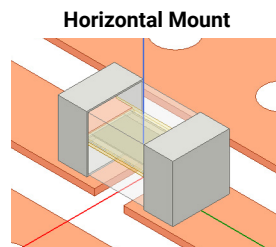
| Thin Film Resistors                         | TaN          |
|---|--------------|
| Typical Sheet Resistivity (ohm/sq)          | 10 to 100    |
| TCR (ppm/°C, -25 to 125°C)                  | -100 to -150 |
| Stability (Change after 1000 hours @ 125°C) | 1.0%         |

## CAPACITOR MATERIAL

| Material                   | SiON      |
|----------------------------|-----------|
| pF/mm Typical              | 50 to 100 |
| BDV (v/μm)                 | 600       |
| DF                         | ≤0.1%     |
| TCC (ppm/°C, -25 to 125°C) | ±60       |

## ENVIRONMENTAL TESTS

| Reliability Test                | Criteria                            |
|---------------------------------|-------------------------------------|
| Life Test                       | 1000 Hrs. @ 125°C @ 50 mW           |
| 85/85 Temp./ Humidity Breakdown | 1080 Hrs. @ 50 mW                   |
| Thermal Cycle                   | 100 cycles @ -40 to 125°C           |
| Termination Strength            | 200 g for 50 seconds (Dage Tester)x |



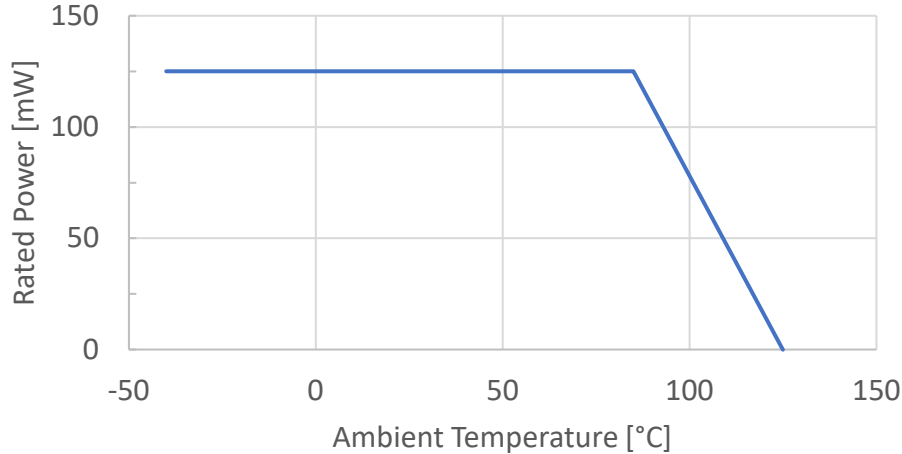
## NOTES:

Mounting will allow the solder fillet to travel up approximately 0.015" of the chip's end and side termination surface. Heavier fillets require a predeposition of solder paste and or an increase in pad dimensions. Typical solder paste application is a .008" to 0.01" thickness with >50% of volume in solder alloy. Can be mounted in both vertical and horizontal orientation without changing electrical performance

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## POWER DERATING

Power Derating Curve



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