**MECHANICAL STEP ATTENUATOR**

**R&K-PT120(1/31)-0S/3.3V**

**R&K-PT120(1/31)-0S/5.0V**

- Broadband Frequency: DC ~ 2500MHz
- Attenuation: 1dB Step/5Bit/31dB
- High Power: +40dBm (avg.)
- Input Intercept Point: +75.0dBm (min.)
- RoHS Compliance

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>DC ~ 2500MHz</td>
</tr>
<tr>
<td>Insertion Loss (DC-1.5GHz)</td>
<td>2.0dB (max.)</td>
</tr>
<tr>
<td>(1.5GHz-2.5GHz)</td>
<td>3.5dB (max.)</td>
</tr>
<tr>
<td>Attenuation Range / Steps</td>
<td>31dB / 1, 2, 4, 8, 16dB</td>
</tr>
<tr>
<td>Attenuation Accuracy</td>
<td>±1.0dB (max.)</td>
</tr>
<tr>
<td>(DC-1.5GHz)</td>
<td>±1.5dB (max.)</td>
</tr>
<tr>
<td>(1.5GHz-2.5GHz)</td>
<td>50Ω</td>
</tr>
<tr>
<td>Impedance</td>
<td>50Ω</td>
</tr>
<tr>
<td>Input /Output VSWR</td>
<td>1.5 : 1 (typ.)</td>
</tr>
<tr>
<td>Logic Input (DC Drive/Option)</td>
<td>+3.3V = Att Setting / 0V = Zero Setting</td>
</tr>
<tr>
<td>(DC Drive/Standard)</td>
<td>+5.0V = Att Setting / 0V = Zero Setting</td>
</tr>
<tr>
<td>(TTL Drive/Option-1)</td>
<td>High = Att Setting / Low = Zero Setting</td>
</tr>
<tr>
<td>(TTL Drive/Option-2)</td>
<td>High = Zero Setting / Low = Att Setting</td>
</tr>
<tr>
<td>Switching Speed</td>
<td>5ms (max.)</td>
</tr>
<tr>
<td>DC Supply Input (Standard)</td>
<td>+3.3V ±0.5V 120mA (max.) / Step</td>
</tr>
<tr>
<td>DC Supply Input (Option)</td>
<td>+5.0V ±0.5V 100mA (max.) / Step</td>
</tr>
<tr>
<td>Input Intercept Point</td>
<td>+75.0dBm (min.)</td>
</tr>
<tr>
<td>Maximum RF Input Power</td>
<td>+40.0dBm (avg.)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>−20℃ to +60℃</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>−20℃ to +80℃</td>
</tr>
<tr>
<td>Connectors (Standard)</td>
<td>SMA-FEMALE</td>
</tr>
<tr>
<td>Connectors (Option)</td>
<td>BNC-FEMALE</td>
</tr>
<tr>
<td>Weight (Standard)</td>
<td>550g (typ.)</td>
</tr>
</tbody>
</table>

**TYPICAL PERFORMANCE**

- **Insertion Loss**
  - Frequency (GHz)
  - Insertion Loss (dB)

- **Attenuation Accuracy**
  - Frequency (GHz)
  - Phase vs Attenuation State

- **VSWR Port 1 and Port 2**
  - Frequency (GHz)
  - VSWR

- **Switching Speed**
  - RF: 100MHz/0dBm (CONT 10Hz/Duty 20%)
  - CH1: CONT, V:2V/Div
  - CH2: RF, V:200mV/Div

- **Input Intercept Point**
  - Frequency (GHz)
  - IIP3: +75dBm (min.)

**HOW TO ORDER**

- **Model Name**
  - PT120(1/31)-0S/3.3V
  - 0 = DC Drive
  - 1 = TTL Drive (Normal)
  - 2 = TTL Drive (Invert)
  - S = SMA - FEMALE
  - B = BNC - FEMALE
  - N = N - FEMALE

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※IN MILLIMETERS
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**R&K-PT120(1/31)-0S/3.3V**

### Mechanical & Electrical Life Test / Test Report

**TEST CONDITIONS**

- **Voltage**: 3.3V DC
- **Operation frequency**: 1000MHz
- **Input power**: 10W (+40dBm)
- **Switching speed**: 1 sec.
- **Duty**: 50%
- **Ambient temperature**: Room temperature
- **Operation**: $1 \times 10^6$ switching times

**MEASURING BLOCK DIAGRAM**

- Signal Generator
- Amplifier
- D.U.T
- Attenuator
- Mixer
- Oscilloscope
- Power Supply
- Photo MOS Relay
- Pulse Generator
- Signal Generator

### TEST RESULT

#### Insertion Loss / ATT=0dB Setting

- **Effect**: Various insertion losses at different frequencies and cycles.

#### Port1 VSWR / ATT=0dB Setting

- **Effect**: VSWR values at 100kHz, 1.5GHz, and 2.5GHz.

#### Normalized Attenuation / at 2.5GHz

- **Effect**: Normalized attenuation levels at different power levels and cycles.

#### Port2 VSWR / ATT=0dB Setting

- **Effect**: VSWR values at 2.5GHz, 1.5GHz, and 100kHz.