

## Carbon Composition Resistor

### IBT Series

- Meets performance standards of EIA RS-172
- Hot molded process for product uniformity
- Ideal for pulse-loaded handling
- Non-inductive design



 All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Electrical Data

| Tested Per MIL-STD-202  |   |   |
|---|---|---|
|   | IBT 1/4   | IBT 1/2                                 |
| Equivalent Allen Bradley reference  | RC07  | RC20                                    |
| Power Rating<br>Determined by load life test 100% load @ 70°C ambient   | 1/4W  | 1/2W                                    |
| Rated Continuous Working Voltage (RCWV)   | P x R or 250 volts<br>whichever is less                                   | P x R or 350 volts<br>whichever is less |
| Maximum Ambient Temperature<br>Resistors derated to zero load at this temperature   | +130°C  |   |
| Nominal Resistance Range  | 1Ω - 5.6 megΩ   | 1Ω - 20 megΩ                            |
| Standard Resistance Tolerances  | <100K: 5%, 10%, ≥100K: 10%  |   |
| Dielectric Withstand Voltage<br>Atmospheric Pressure<br>Barometric pressure 3.4" Hg 115 millibars                           | 500V<br>325V  | 700V<br>450V                            |
| Insulation Resistance (min.)  | 10,000 meg  | 10,000 meg                              |
| Voltage Coefficient of Resistance<br>% resistance change/volt at 10% and (min.)<br>100% RCWV for values 1K to 20 meg (max.) | -0.005%<br>-0.032%  | -0.005%<br>-0.032%                      |
| Short-Time Overload<br>Apply 2.5 times RCWV at maximum<br>Indicated for 5 seconds   | Maximum Voltage<br>Typical resistance change<br>Maximum resistance change | 700V<br>±0.5%<br>±2%                    |
|   |   | 700V<br>±0.5%<br>±2%                    |

### General Note

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## Resistance Temperature Characteristics

|   | Resistance Range | -55°C          | +105°C        |
|---|------------------|----------------|---------------|
| Maximum percent resistance change from room temperature (+25°C) value | under 1K         | +2.0 to +5.0   | -4.0 to -2.0  |
|   | 1K to 9.1 K      | +5.0 to +9.0   | -5.0 to -3.0  |
|   | 10K to 91K       | +8.0 to +11.0  | -7.0 to -5.0  |
|   | 100K to 910K     | +10.0 to +14.0 | -9.0 to -7.0  |
|   | 1 meg to 10 meg  | 13.0 to +20.0  | -14.0 to -9.0 |

## Physical Data

**PACKAGING:**  
 5000/reel  
 1000/bulk

| Dimensions (Inches and (mm)) |                              |   |                                 |                                |
|------------------------------|------------------------------|---|---------------------------------|--------------------------------|
| IRC Type                     | A                            | B   | C                               | D                              |
| IBT 1/4                      | 1.18 ± 0.12<br>(30.00 ± 3.0) | 0.248 ± 0.028<br>(6.3 ± 0.70)                   | 0.024 ± 0.002<br>(0.60 ± 0.05)  | 0.094 ± 0.004<br>(2.40 ± 0.10) |
| IBT 1/2                      | 1.1 ± 0.12<br>(28.00 ± 3.0)  | 0.374 + 0.032 / -0.028<br>(9.50 + 0.80 / -0.70) | 0.0275 ± 0.002<br>(0.70 ± 0.05) | 0.142 ± 0.008<br>(3.6 ± 0.20)  |

Application notes - Lead forming within 2mm of the body and soldering within 4mm of the body are not recommended. Owing to the hygroscopic nature of carbon composition technology, aqueous washing is not recommended.

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## Ordering Procedure

This product has two valid part numbers:

**European (Welwyn) Part Number: IBT1/2-20KJI** (IBT1/2, 20 kilohms  $\pm 5\%$ , Pb-free)

|   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I | B | T | 1 | / | 2 | - | 2 | 0 | K | J | I |
| 1 |   |   |   |   | 2 |   | 3 | 4 |   |   |   |

| 1      | 2                                      | 3              | 4                             |
|--------|--|----------------|-------------------------------|
| Type   | Value                                  | Tolerance      | Packing & Termination Finish  |
| IBT1/4 | 3/4 characters                         | J = $\pm 5\%$  | I = Tape Pack & Pb-free       |
| IBT1/2 | R = ohms<br>K = kilohms<br>M = megohms | K = $\pm 10\%$ | All sizes<br>Taped, 5000/reel |

**USA (IRC) Part Number: IBT1/2203JLFLTR** (IBT1/2, 20 kilohms  $\pm 5\%$ , Pb-free)

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I | B | T | 1 | / | 2 | 2 | 0 | 3 | J | L | F | L | T | R |
| 1 |   |   |   |   | 2 |   | 3 | 4 |   | 5 |   |   |   |   |

| 1      | 2                               | 3              | 4                  | 5                                     |
|--------|---------------------------------|----------------|--------------------|---------------------------------------|
| Type   | Value                           | Tolerance      | Termination Finish | Packing                               |
| IBT1/4 | 2 digits + multiplier           | J = $\pm 5\%$  | LF = Pb-free       | LTR = Lead Tape<br>Omit for Bulk Pack |
| IBT1/2 | R = ohms for values<br><10 ohms | K = $\pm 10\%$ |                    | All sizes<br>5000/reel<br>1000/bulk   |

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