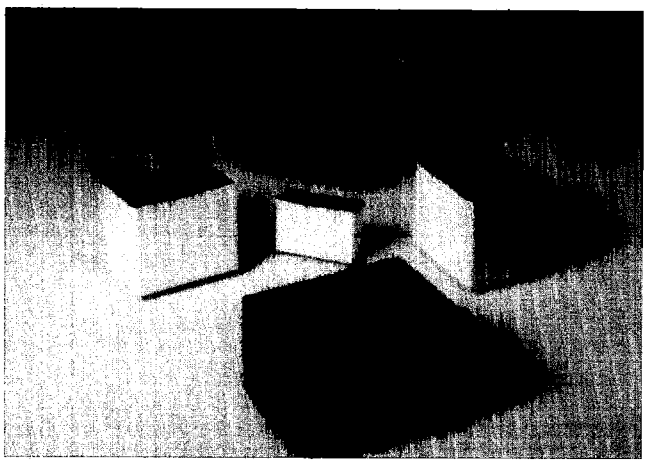
# IGBT Snubber Capacitors
# Type **RBPS**

## Radial Leaded Capacitors
## Metallized Polypropylene Dielectric
## Preformed Case with Epoxy Fill



### Physical

| | |
|---|---|
| Dielectric Material | • Polypropylene |
| Electrode Material | • Dual metallized electrodes |
| Enclosure | • UL 94 V-O flame retardant rectangular plastic case and resin. |
| Component Marking | • Aerovox, part number, capacitance, nominal DC voltage, and date code, at a minimum. |

### Electrical

| | |
|---|---|
| Capacitance Range | • .010µF to 3 µF @ 1KHz |
| Tolerance | • ± 10% (K) |
| Voltage Range | • 1000 and 1600VDC standard ratings. (Consult factory for other ratings) |
| Temperature | • -40°C to + 85°C. From 85°C to 105°C derate DC voltage 1% / °C, AC voltage 1.5% / °C. |
| Dissipation Factor | • <0.1% at 1KHz, 25°C |
| Insulation Resistance | • >100,000 megohms x µF at 100VDC measured after 2 minutes. |
| Equivalent Series Resistance | • See tables |
| Dielectric Strength | • 1.6 x rated VDC for 60 sec. |
| Capacitance Change with Temperature | • (-250ppm ± 100ppm) /°C |
| Equivalent Series Inductance (ESL) | • The value is determined by the terminal option selected and is measured at resonant frequency. Refer to table on page 27. |

### Performance Testing

**Accelerated Life:**

Performance Requirements

| | |
|---|---|
| Capacitance | • delta < 5% |
| ESR | • ≤ 125% of initial limit |
| Insulation Resistance | • > 50% of initial limit |

**Humidity:**

Test Conditions

| | |
|---|---|
| Temperature | • 40°C ± 3.0°C |
| Applied Voltage | • Zero voltage |
| Humidity | • 93% ± 5% RH |
| Test Duration | • 500 hours |

Performance Requirements

| | |
|---|---|
| Capacitance | • delta of ≤ 3.0% |
| Insulation Resistance | • 10% of initial limit |
| ESR | • ≤ 125% of initial limit |

**Resistance to Solder Heat:**

Test Conditions

| | |
|---|---|
| Solder Temperature | • 260°C ± 5.0°C |
| Test Duration | • 10 seconds ± 1 second |

Perfomance Requirements

| | |
|---|---|
| Capacitance | • delta < 2.0% |

**Accelerated Pulse Handling Capability:**

Test Conditions

A capacitor under test will be charged through an impedance of a magnitude greater than the discharging impedance. The capacitor under test will be charged to the rated DC voltage and discharged through an impedance capable of producing a minimum voltage gradient with time (DV/DT). The test will be performed in accordance with the requirements for the voltage gradient multiplier and charge and discharge cycles as listed below.

| Voltage Gradient Multiplier | Test Cycles |
|---|---|
| 6x | 100 |
| 4x | 1000 |
| 2x | 1 million |

Example: An RBPS part rated 1.0µF 1,000VDC has a DV/DT rating of 600 volts per microsecond. This part would be capable of withstanding 100 cycles at a minimum of 3,600 volts/microsecind, 1,000 cycles at 2,400 volts/microsecond, or 1 million cycles at 1,200 volts/microsecond.

Performance Criteria After Testing

| | |
|---|---|
| Capacitance | • delta ≤ 3% |
| ESR | • Absolute value ≤ 150% of original measured value |

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### Normal and Peak Intermittent Voltages

• **Rated voltage ($U_R$)** is the maximum direct voltage or the maximum Rms alternating voltage or peak value of the pulse voltage that may be applied continuously to the capacitor.

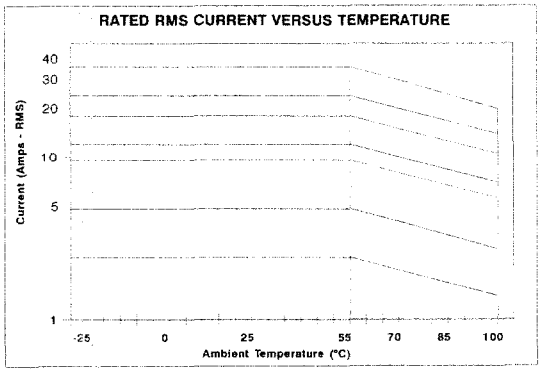
• **Peak voltage ($U_{peak}$)** is the maximum voltage that can be applied on an intermittent basis without any substantial reduction in capacitor service.

| Voltage Ratings | | |
|---|---|---|
| | Code 91 | Code 96 |
| $U_R$ | 1000VDC/530VAC | 1600 VDC/630VAC |
| $U_{peak}$ | 1400VDC/600VAC | 2100VDC/720VAC |

| Equivalent Series Inductance | | |
|---|---|---|
| Terminal Description (see outline drawings on page 28) | Terminal Style | Maximum Inductance nanoHenries |
| Radial Lead | 2L | 30 |
| Circuit Mounted, 2 pins per side | 2P | 15 |
| Circuit Mounted, 3 pins per side | 3P | 15 |
| Circuit Mounted, 4 pins per side | 4P | 15 |
| Direct Mounted, 22 to 31 mm centers | B1 | 20 |
| Direct Mounted, 39 to 48 mm centers | B2 | 20 |

### Ripple Current

The maximum Rms current is the maximum current flowing through the capacitor at an ambient case temperature of 55°C. This value changes with temperature as shown in the following diagram.




| Case Codes and Dimensions (mm) | | | | |
|---|---|---|---|---|
| Case Code | T | H | L | P |
| VO | 11.0 | 20.0 | 32.1 | 27.5 |
| WO | 13.0 | 22.0 | 32.1 | 27.5 |
| C7 | 17.0 | 28.0 | 42.7 | 35.0 |
| B7 | 22.1 | 30.1 | 42.7 | 35.0 |
| A7 | 28.2 | 37.3 | 42.7 | 35.0 |
| R4 | 29.2 | 41.2 | 58.5 | 52.0 |
| R5 | 46.0 | 36.0 | 58.7 | 52.0 |

### Part Numbering System

**Example:** 1.0µF 1000VDC ± 10% Direct Mounted, 22 to 31 mm centers

RBPS 00105 91 K A7 B1

Type
Capacitance Code
Voltage Code
Tolerance Code
Case Code
Terminal Code

| CODE 91<br>1000 VDC (530 VAC @ 60 HZ) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Capacitance | | DV / DT | $I_{peak}$ | $I_{RMS}$ Max Amps @55°C | Case Code | ERS Max @100 KHz mOhms | Terminal Option(s) |
| µF | Code | V/µ sec | Amps | | | | |
| .10 | 00104 | 1000 | 100 | 5.3 | VO | 16 | 2L |
| .15 | 00154 | 1000 | 150 | 5.5 | VO | 15 | 2L |
| .22 | 00224 | 1000 | 220 | 6.6 | WO | 12 | 2L |
| .27 | 00274 | 700 | 245 | 10.0 | C7 | 12 | 2P, B1 |
| .33 | 00334 | 700 | 300 | 10.9 | C7 | 10 | 2P, B1 |
| .39 | 00394 | 700 | 310 | 11.5 | C7 | 9 | 2P, B1 |
| .47 | 00474 | 700 | 375 | 12.2 | C7 | 8 | 2P, B1 |
| .56 | 00564 | 700 | 450 | 14.0 | B7 | 8 | 2P, B1 |
| .68 | 00684 | 700 | 450 | 15.0 | B7 | 8 | 2P, B1 |
| .75 | 00754 | 700 | 525 | 15.0 | B7 | 8 | 2P, B1 |
| .82 | 00824 | 600 | 490 | 17.2 | A7 | 8 | 3P, B1 |
| 1.00 | 00105 | 600 | 600 | 18.4 | A7 | 7 | 3P, B1 |
| 1.20 | 00125 | 500 | 600 | 18.5 | A7 | 7 | 3P, B1 |
| 1.50 | 00155 | 500 | 750 | 21.7 | R4 | 7 | 3P, B1, B2 |
| 1.75 | 01754 | 500 | 875 | 22.0 | R4 | 7 | 3P, B1, B2 |
| 2.00 | 00205 | 450 | 900 | 22.5 | R4 | 7 | 3P, B1, B2 |
| 2.20 | 00225 | 450 | 990 | 26.0 | R5 | 7 | 4P, B1, B2 |
| 2.50 | 00255 | 400 | 1000 | 27.0 | R5 | 7 | 4P, B1, B2 |
| 3.00 | 00305 | 400 | 1200 | 30.0 | R5 | 6 | 4P, B1, B2 |

| CODE 96<br>1600 VDC (630 VAC @ 60 HZ) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Capacitance | | DV / DT | $I_{peak}$ | $I_{RMS}$ Max Amps @55°C | Case Code | ERS Max @100 KHz mOhms | Terminal Option(s) |
| µF | Code | V/µ sec | Amps | | | | |
| .10 | 00104 | 1200 | 120 | 5.7 | WO | 16 | 2L |
| .15 | 00154 | 1000 | 1500 | 8.9 | C7 | 15 | 2P, B1 |
| .22 | 00224 | 1000 | 220 | 10.0 | C7 | 12 | 2P, B1 |
| .27 | 00274 | 850 | 230 | 12.0 | B7 | 12 | 2P, B1 |
| .33 | 00334 | 850 | 280 | 13.4 | B7 | 10 | 3P, B1 |
| .39 | 00394 | 850 | 330 | 16.0 | A7 | 9 | 3P, B1 |
| .47 | 00474 | 850 | 400 | 17.2 | A7 | 8 | 3P, B1 |
| .56 | 00564 | 850 | 475 | 17.5 | A7 | 8 | 3P, B1 |
| .68 | 00684 | 700 | 475 | 20.0 | R4 | 8 | 3P, B1, B2 |
| .75 | 00754 | 600 | 450 | 20.5 | R4 | 8 | 3P, B1, B2 |
| .82 | 00824 | 600 | 490 | 21.0 | R4 | 8 | 3P, B1, B2 |
| 1.00 | 00105 | 600 | 600 | 21.7 | R4 | 7 | 3P, B1, B2 |
| 1.20 | 00125 | 600 | 720 | 26.0 | R5 | 7 | 4P, B1, B2 |
| 1.50 | 00155 | 600 | 900 | 28.0 | R5 | 7 | 4P, B1, B2 |

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