

# 5HT SERIES

## High Temperature Film & Foil

### High Temperature Film & Foil Resonant Power Supply Capacitors

Specifically designed to meet higher ambient temperature requirements of resonant power circuits.



#### FEATURES

- Operation to 175°C
- Compact Configuration
- Direct Plug-in Spade Lugs
- Low ESL
- Low ESR
- High dv/dt
- High Peak Current

# Specification Summary

## Capacitance Range

0.010 $\mu$ F to 0.100 $\mu$ F

## Capacitance Tolerance

Standard capacitance tolerance is  $\pm 10\%$ . Tolerance of  $\pm 5\%$  is also available upon request.

## Operating Temperature Range

-55°C to +175°C

## Enclosure/Construction

High temperature film and foil potted in a thermo plastic housing.

## Voltage Rating

400 VDC

230 VAC

## Quality Control

Capacitors are tested 100% for:

- Capacitance
- Tolerance
- Dissipation Factor
- Dielectric withstanding voltage
- Insulation Resistance

Process and inspection data are maintained on file and available upon special request.

## Environmental

| Parameter     | Method | Condition |
|---------------|--------|-----------|
| Vibration     | 204    | D         |
| Shock         | 213    | I         |
| Humidity      | 106    | -         |
| Thermal Shock | 107    | F*        |
| Life          | 108    | F**       |

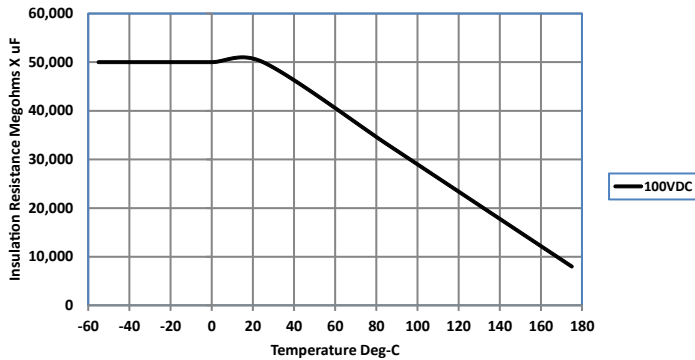
Reference MIL-STD-202

\* The temperature at step 3 shall be set at 175°C instead of 150°C

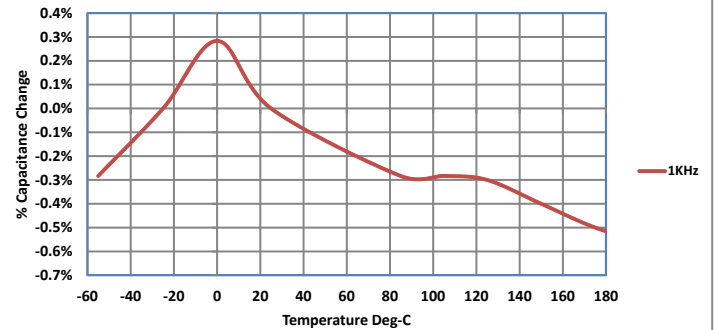
\*\* Life test conditions: 133% of rated voltage at 175°C

# Characteristics

**SHT Insulation Resistance vs. Temperature**



**SHT Capacitance Change vs. Temperature at 1kHz Referenced to 25C**



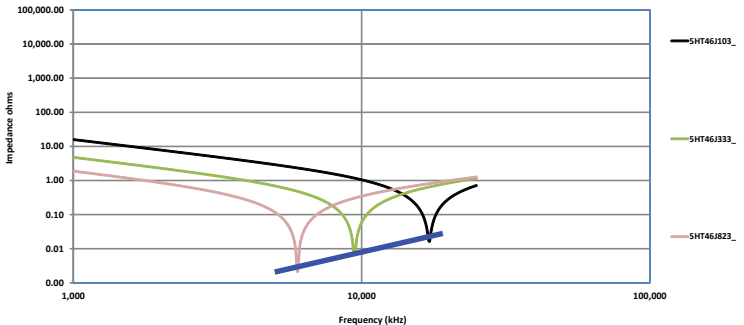
## Dielectric Strength

Capacitors withstand a DC potential of 1.5 x rated voltage for one (1) minute without damage or breakdown. Test voltage is applied and discharged through a minimum resistance of 100 OHMS per volt minimum.

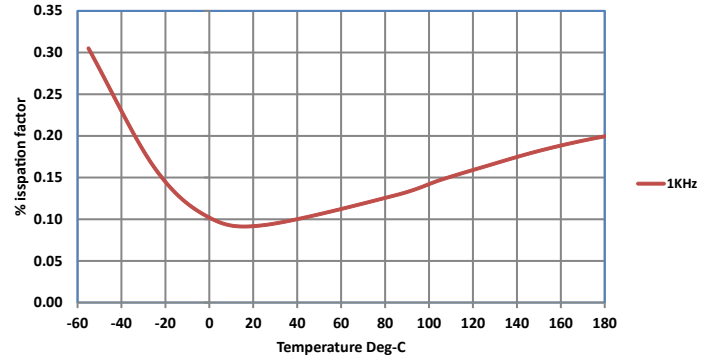
## Dissipation Factor

When measured at the frequency specified for capacitance measurement, the dissipation factor will not exceed 0.05%.

**SHT Impedance vs. Frequency**



**SHT Dissipation Factor vs. Temperature at 1kHz**

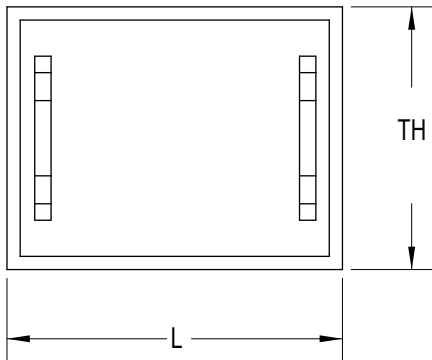


## Detail Data

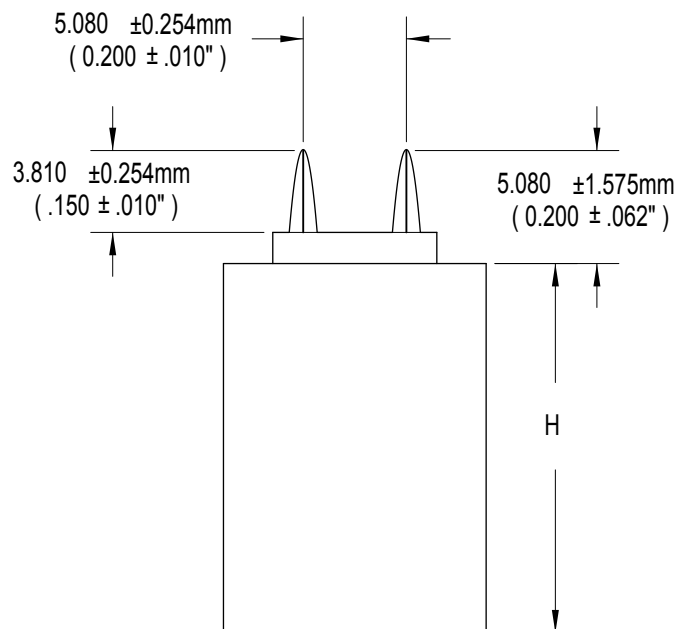
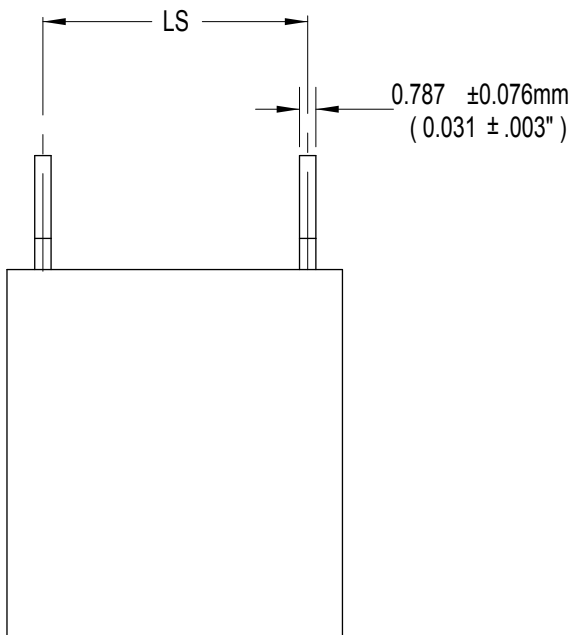
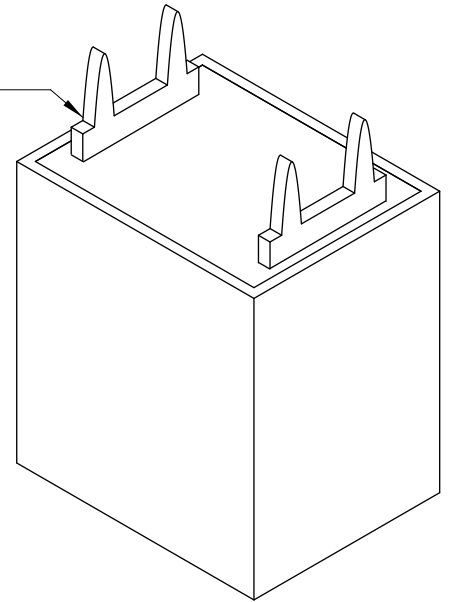
| PART NUMBER | CAP<br>μF | VOLTAGE<br>VDC | VOLTAGE<br>VAC | ESR (ohms)<br>100 kHz | 100kHz (Arms) |      |       |       | dv/dt<br>V/μs | I PEAK<br>(AMPS) | ESL<br>(nH) | Fres<br>(MHz) |
|-------------|-----------|----------------|----------------|-----------------------|---------------|------|-------|-------|---------------|------------------|-------------|---------------|
|             |           |                |                |                       | 25°C          | 75°C | 125°C | 175°C |               |                  |             |               |
| 5HT46J103_  | 0.010     | 400            | 230            | 0.075                 | 7.1           | 5.8  | 4.1   | 0.21  | 27,937        | 279              | 8.6         | 17.2          |
| 5HT46J123_  | 0.012     | 400            | 230            | 0.070                 | 8.2           | 6.7  | 4.8   | 0.24  | 27,937        | 335              | 8.6         | 15.7          |
| 5HT46J153_  | 0.015     | 400            | 230            | 0.056                 | 9.4           | 7.6  | 5.4   | 0.27  | 23,280        | 349              | 8.6         | 14.0          |
| 5HT46J183_  | 0.018     | 400            | 230            | 0.046                 | 10.2          | 8.4  | 5.9   | 0.30  | 23,280        | 419              | 8.6         | 12.8          |
| 5HT46J223_  | 0.022     | 400            | 230            | 0.038                 | 11.3          | 9.3  | 6.5   | 0.33  | 18,624        | 410              | 8.6         | 11.6          |
| 5HT46J273_  | 0.027     | 400            | 230            | 0.031                 | 12.5          | 10.2 | 7.2   | 0.37  | 18,624        | 503              | 8.6         | 10.4          |
| 5HT46J333_  | 0.033     | 400            | 230            | 0.025                 | 13.7          | 11.2 | 7.9   | 0.40  | 16,296        | 538              | 8.6         | 9.4           |
| 5HT46J393_  | 0.039     | 400            | 230            | 0.022                 | 15.0          | 12.2 | 8.7   | 0.44  | 13,968        | 545              | 8.6         | 8.7           |
| 5HT46J473_  | 0.047     | 400            | 230            | 0.018                 | 16.7          | 13.6 | 9.6   | 0.49  | 11,640        | 608              | 8.6         | 7.9           |
| 5HT46J563_  | 0.056     | 400            | 230            | 0.015                 | 18.3          | 15.0 | 10.6  | 0.54  | 11,640        | 652              | 8.6         | 7.3           |
| 5HT46J683_  | 0.068     | 400            | 230            | 0.012                 | 20.4          | 16.7 | 11.8  | 0.60  | 10,476        | 712              | 8.6         | 6.6           |
| 5HT46J823_  | 0.082     | 400            | 230            | 0.010                 | 21.2          | 17.3 | 12.2  | 0.62  | 10,476        | 859              | 8.6         | 6.0           |
| 5HT46J104_  | 0.10      | 400            | 230            | 0.009                 | 24.8          | 20.3 | 14.3  | 0.73  | 9,209         | 921              | 8.6         | 5.4           |

# Mechanical Data

| TH          |             | H     |        | L           |             | LS          |             |
|-------------|-------------|-------|--------|-------------|-------------|-------------|-------------|
| in.         | mm          | in.   | mm     | in.         | mm          | in.         | mm          |
| $\pm 0.010$ | $\pm 0.254$ | max   | max    | $\pm 0.010$ | $\pm 0.254$ | $\pm 0.010$ | $\pm 0.254$ |
| 0.500       | 12.700      | 0.730 | 18.542 | 0.645       | 16.383      | 0.500       | 12.700      |



PINS ARE  $1.270 \pm .127\text{mm}$   
 $(0.050 \pm .005")$   
 TAPERED TO  $0.889 \pm .076\text{mm}$   
 $(0.035 \pm .003")$



## Additional Information

This series is specifically designed to meet the challenges of high temperature environments in resonant power supplies with operation to 175°C. The 5HT series meets the critical requirements of series resonant power supplies for high current carrying capabilities at lower capacitance values.

## How to Order

|  |   |              |
|--|---|--------------|
| TYPE<br>High temperature film & foil   | → | <b>5HT46</b> |
| VOLTAGE<br>J = 400VDC  | → | <b>J</b>     |
| CAPACITANCE IN PICO FARADS<br>The first two digits are significant, the third represents the number of zeros | → | <b>103</b>   |
| TOLERANCE<br>K = ±10%. Tolerance of ±5% is also available upon request.                                      | → | <b>K</b>     |

### Marking And Date Code

All capacitors are marked with company initials "EC", corporate logo or EC trademark—in addition to type 5PT, capacitance, tolerance, rated DC working voltage and date code. The first two digits of the date code represent the year, the second two digits the week, i.e., 1252 is the 52nd week of 2012, 1202 is the second week of 2012.

### Quality Assurance

Major emphasis is placed on quality assurance. EC is an ISO 9001 and AS9100 Certified Company. Raw material inspection and the use of SPC manufacturing procedures assure the highest quality standards. Procedures are fully described in the EC Quality Control Manual. Electronic Concepts will continue to advance the state-of-the-art by utilizing leading edge technology, compact capacitor designs and establishing reliability procedures.

## Sales Offices

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