

# Type HHT 175 °C, Aluminum Electrolytic Capacitor



Type HHT has long life and rugged construction for high temperature environments. HHT capacitors are rated for full operating voltage at 175 °C and tested to 2000 hrs at rated voltage and temperature. 5000 hours of life at 150 °C with ripple current ratings up to 10 Arms.

## Highlights.

- Rated for +175 °C without voltage derating
- High capacitance retention @ -40 °C
- Up to 20g vibration

## Specifications

Temperature Range	-40 °C to +175 °C												
Rated Voltage Range	16 Vdc to 40 Vdc												
Capacitance Range	470 µF to 4700 µF												
Capacitance Tolerance	-10 / +30%												
Leakage Current (at 20 °C)	$I = 0.003 CV + 4.0 \mu A$ ; after 5 minutes at rated voltage I = leakage current in µAmps C = rated capacitance in µF V = rated DC Working voltage in Volts												
Ripple Current vs. Frequency Correction Factors	<table border="1"> <thead> <tr> <th>Frequency (Hz)</th> <th>100</th> <th>300</th> <th>1000</th> <th>5000</th> <th>100 kHz</th> </tr> </thead> <tbody> <tr> <td>Ripple Current Correction Factor</td> <td>0.35</td> <td>0.57</td> <td>0.8</td> <td>1</td> <td>1.04</td> </tr> </tbody> </table>	Frequency (Hz)	100	300	1000	5000	100 kHz	Ripple Current Correction Factor	0.35	0.57	0.8	1	1.04
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Low Temperature Characteristics	<b>Impedance ratio: <math>Z_{-40^\circ C} / Z_{+25^\circ C} @ 120 \text{ Hz} \leq 3</math></b>												
DC Life Test	2000 h @ rated voltage at 175 °C Δ Capacitance 30V and 40V ±20% , 16V ±25% ESR 200% of limit DCL 100% of limit												
Shelf Life Test	(+105 °C/0 Vdc): 1000 hours (+40 °C/0 Vdc): 10 years												
Case Material	Stainless Steel												

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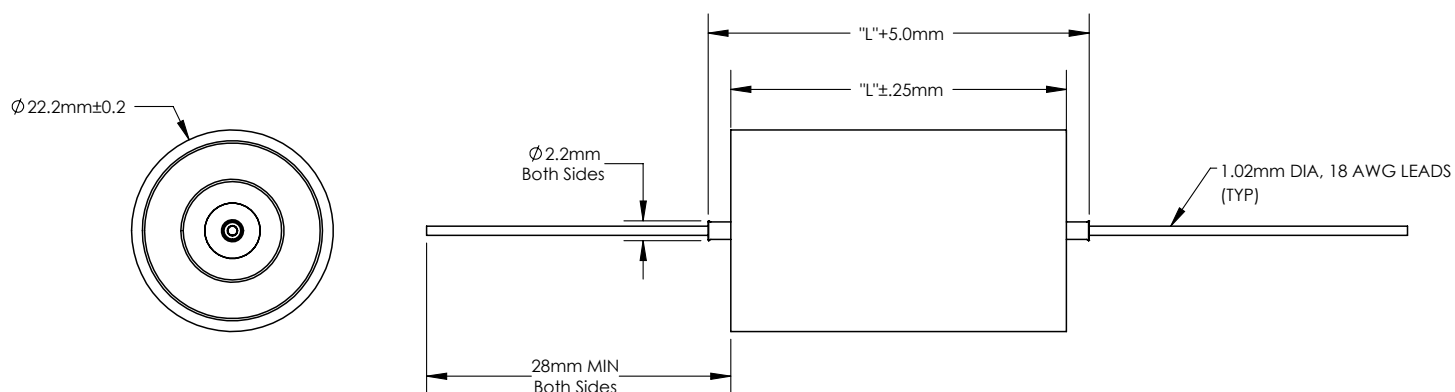
Vibration Test	Mil standard 202, method 204, high frequency 20g's
Surge Voltage Test	Subject the capacitors to their rated surge voltage at normal room temperature and through a 1000 $\Omega \pm 10\%$ resistor (except for capacitances of 2500 $\mu\text{F}$ and up, use a higher value resistor calculated as $2,500,000/C \Omega \pm 10\%$ where C is the capacitance in $\mu\text{F}$ ). Cycle the voltage 1/2 minute on followed by 4 1/2 minutes off during which each capacitor is discharged through the charging resistor or equal resistor. Repeat the cycles for 120 h. Post test requirements are for DCL, ESR and DF to meet initial requirements and for there to be no evidence of mechanical damage or electrolyte leakage.
Storage at Low Temperature Test	<p><b>Test</b> Subject the capacitor to 72 hours at -55°C. After 16 hours at room temperature, measure the capacitance and DCL.</p> <p><b><math>\Delta C</math></b> Capacitance change from the initial measurement must not exceed 10%.</p> <p><b>DCL</b> Leakage current will meet the initial specification.</p> <p><b>Appearance</b> No electrolyte leakage or other visible damage. The markings are to be legible.</p>

## Part Numbering System

<b>HHT</b>	<b>332</b>	<b>P</b>	<b>016</b>	<b>H</b>	<b>J</b>	<b>0</b>
↓	↓	↓	↓	↓	↓	↓
<b>Type</b>	<b>Capacitance</b>	<b>Tolerance</b>	<b>Rated Voltage</b>	<b>Case Diameter</b>	<b>Case Length Code</b>	<b>Sleeve/Label</b>
HHT	332 = 3300 $\mu\text{F}$ 471 = 470 $\mu\text{F}$	P = -10/+30%	016 = 16 Vdc 030 = 30 Vdc 040 = 40 Vdc	H = 22mm	E = 37mm J = 45mm L = 53mm	0 = Label 1 = Sleeve

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## Outline Drawing



<b>Typical Weight</b>
<b>HE</b> = 43 g
<b>HJ</b> = 50 g
<b>HL</b> = 56 g

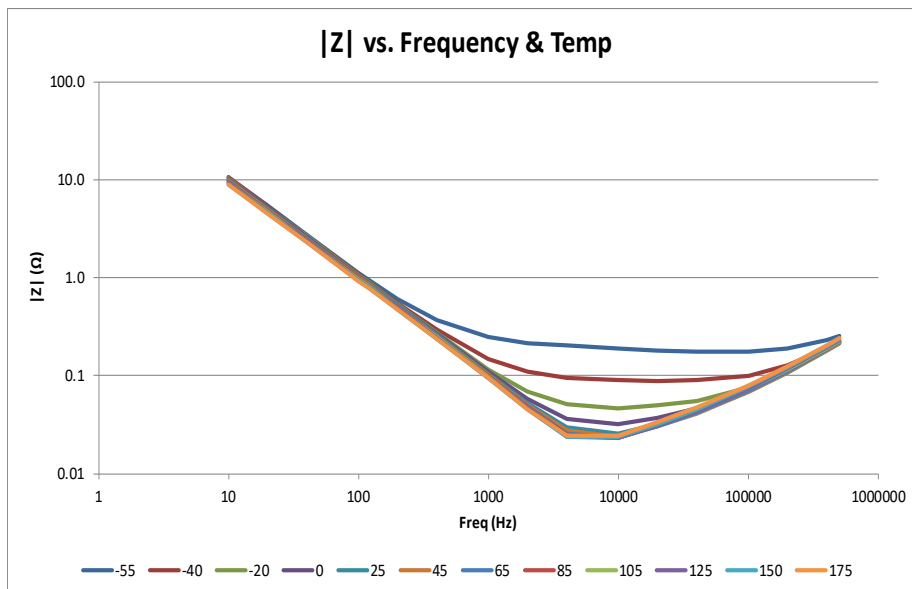
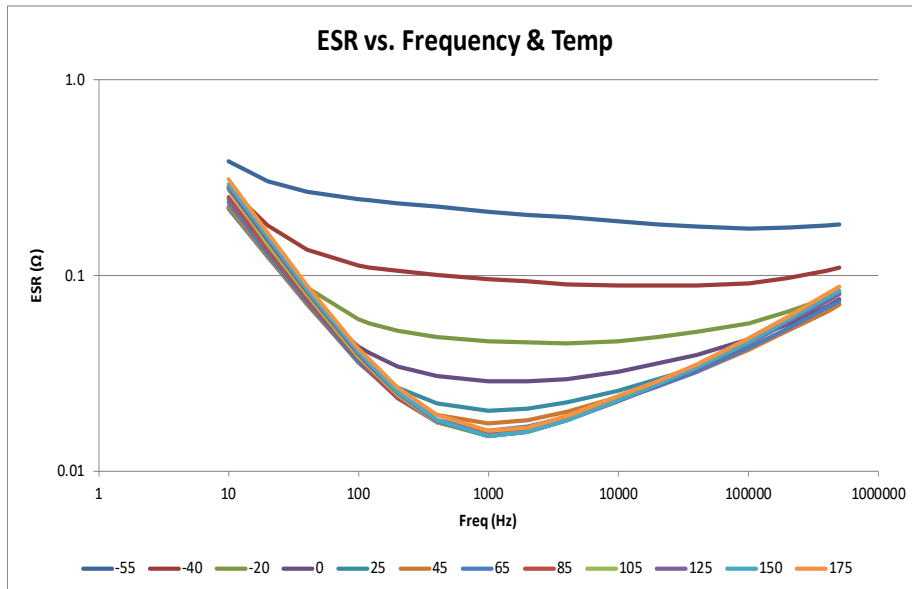
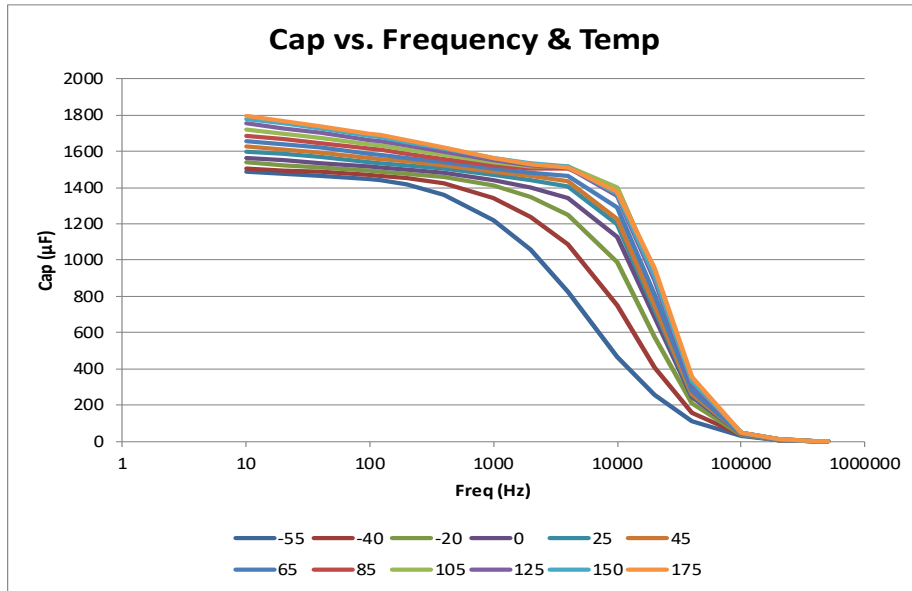
## Ratings

Voltage	Cap (µF) 120Hz 25 °C	Catalog Part Number	Case Size D x L mm	ESR max	
				25 °C (mΩ) 120 Hz	150 °C Ambient 5 KHz
<b>16 Vdc @ 175 °C</b> 25 Vdc Surge @25 °C	2200	HHT222P016HE0	22 x 37	90	7.1
	3300	HHT332P016HJ0	22 x 45	60	8.9
	4700	HHT472P016HL0	22 x 53	42	10.3
<b>30 Vdc @ 175 °C</b> 40 Vdc Surge @25 °C	1500	HHT152P030HE0	22 x 37	133	7.3
	2200	HHT222P030HJ0	22 x 45	90	8.9
	2700	HHT272P030HL0	22 x 53	74	10.1
<b>40 Vdc @ 175 °C</b> 63 Vdc Surge @25 °C	470	HHT471P040HE0	22 x 37	423	5.5
	680	HHT681P040HJ0	22 x 45	293	6.9
	900	HHT901P040HL0	22 x 53	221	8.1

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## Typical Performance Curves

Part Number: HHT152PO30HE



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