 www.evanscap.com	<b>Product Specification</b>  <b>HYCAP</b>	<b>NUMBER</b>	<b>HC</b>
		<b>ISSUE</b>	<b>01</b>
		<b>REVISION</b>	H ECO 16-010
		<b>DATE</b>	<b>04/08/16</b>

## 1.0 SCOPE

This document contains specific electrical, mechanical, and environmental requirements and specifications for double-sealed, axial-leaded hybrid capacitors.

## 2.0 CONSTRUCTION

### 2.1 General

The capacitors shall be comprised of sintered tantalum anodes and ruthenium oxide coated cathodes operating in aqueous electrolyte. The components shall be confined within a tantalum case, first by a compressed gasket, followed by a hermetically welded glass to metal seal.

### 2.2 Package

The configuration and dimensions shall be as per Figure I.

### 2.3 Mass

The maximum mass is specified in Table II.

### 2.4 Hermetic Seal

The capacitor shall be hermetically sealed such that the package does not leak electrolyte or vent any gas when exposed to a vacuum, per MIL-STD-202, Method 112, Condition C, Procedure IIIa.

### 2.5 Part Marking

The capacitor shall be permanently and legibly marked on the case circumference with the following information, at a minimum:

- i. Manufacturer's name and/or cage code
- ii. Manufacturer's part number
- iii. Date/lot code
- iv. Individual unit serial number

The marking shall be resistant to solvents per MIL-STD-202, Method 215J.

### 2.6 Terminations

#### 2.6.1 Solderability


The terminations shall be solderable per ANSI J-STD-002.

#### 2.6.2 Finish

Standard leads Sn/Pb per N32 of MIL-STD-1276. For RoHS compliant leads add "-LF" at the end of the complete part number (e.g., HC2XXXXXXS-LF)

### 2.7 Resistance to Soldering Heat

The capacitor shall be able to withstand solder dipping of the terminations at 260°C for 10 seconds per MIL-STD-202, Method 210, Condition B. The capacitor shall not be visibly damaged, and the electrical characteristics shall not be affected.

 www.evanscap.com	<b>Product Specification</b>  <b>HYCAP</b>	<b>NUMBER</b>	<b>HC</b>
		<b>ISSUE</b>	<b>01</b>
		<b>REVISION</b>	H ECO 16-010
		<b>DATE</b>	<b>04/08/16</b>

### 2.8 Terminal Strength

The terminations shall be able to withstand a 5-lb, 30-second pull test per MIL-STD-202, Method 211, Condition A. The capacitor shall not be visibly damaged, and the electrical characteristics shall not be affected.

### 2.9 Fungus Resistance

The capacitor materials shall not support fungus growth, nor shall they be a nutrient to fungus.

### 2.10 Insulation

For Mylar sleeve insulation, add the suffix "S" to the P/N when ordering, e.g. HC2D125241S.

## 3.0 ENVIRONMENTAL REQUIREMENTS

### 3.1 Operating Temperature

-55°C to +125°C (with voltage de-rating)

### 3.2 Storage Temperature


-62°C to +130°C

### 3.3 Mechanical Environmental Testing

The capacitors shall be designed to withstand environmental testing in accordance with Table I below.

**TABLE I. Mechanical Environmental Tests**

TEST	REFERENCE	CONDITION	COMMENTS
Shock	MIL-STD-202, Method 213	D	1mS, 500g peak
Vibration, high freq	MIL-STD-202, Method 204	H	12 sweeps/axis, 80g peak
Random Vibration	MIL-STD-202, Method 214	II-K	1.5 hr/axis, 53.8g rms
Thermal Shock	MIL-STD-202, Method 107	A	30 cycles, step 3 at +125C
Moisture Resistance	MIL-STD-202, Method 106		6V bias
Altitude	MIL-STD-202, Method 105	D	100,000-ft test

 www.evanscap.com	<b>Product Specification</b>  <b>HYCAP</b>	<b>NUMBER</b>	<b>HC</b>
		<b>ISSUE</b>	<b>01</b>
		<b>REVISION</b>	H ECO 16-010
		<b>DATE</b>	<b>04/08/16</b>

#### 4.0 ELECTRICAL REQUIREMENTS

##### 4.1 Capacitance

25°C, 120Hz capacitance is specified ( $\pm 20\%$ ) in Table II.

NOTE: For ordering  $\pm 10\%$  cap tolerance, add the suffix "K" to the P/N.

##### 4.2 Equivalent Series Resistance

Maximum 25°C, 120Hz ESR is specified in Table II.

##### 4.3 DC Leakage

Maximum 25°C, 5-min rated voltage DCL is specified in Table II.

##### 4.4 Rated Voltage

Maximum rated voltages up to 85°C are specified in Table II. Voltage de-rating at 125°C is specified in Table II. Between 85°C and 125°C, voltage requires linear de-rating.

##### 4.5 Surge Voltage

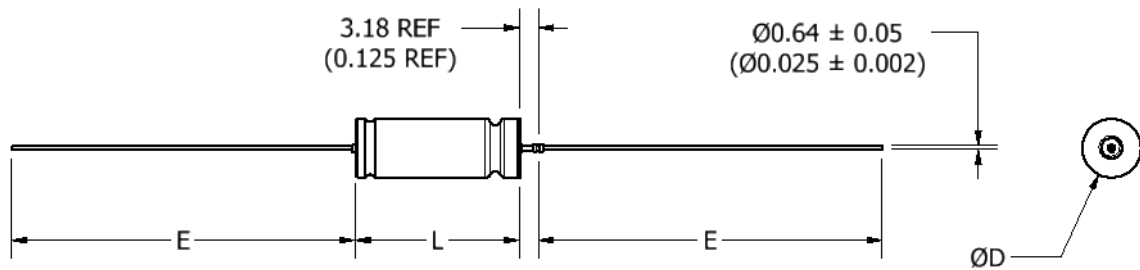
Capacitors shall be able to withstand 1000 charge/discharge cycles at 110% of rated voltage at 85°C through a 1K- $\Omega$  resistor. Each cycle shall consist of a 30-second surge voltage application, followed by a 330-second discharge period. Capacitors shall not be visibly damaged, and the electrical characteristics shall not be affected.

##### 4.6 Life Test


Capacitors shall be able to withstand 2000 hours life test at rated voltage and 85°C or at de-rated voltage (per Table II) and 125°C. Upon completion of life test, capacitors shall not be visibly damaged, and the capacitor electrical parameters shall remain within initial specifications.

<b>EVANS</b> <b>CAPACITOR</b> <small>www.evanscap.com</small> Company	<b>Product Specification</b>  <b>HYCAP</b>	<b>NUMBER</b>	<b>HC</b>
		<b>ISSUE</b>	<b>01</b>
		<b>REVISION</b>	H ECO 16-010
		<b>DATE</b>	<b>04/08/16</b>

**FIGURE I. MECHANICAL DIMENSIONS**



Case Size	Dimensions, mm (in)			
	Basic Case		Insulated Case	E ±6.35 (0.250)
	L +0.79 (0.031) -0.41 (0.016)	D ±0.41 (0.016)	D MAX	
B	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	57.15 (2.250)
D	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)
B-LF	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	25.40 (1.000)
D-LF	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	25.40 (1.000)

 www.evanscap.com	<b>Product Specification</b>  <b>HYCAP</b>	<b>NUMBER</b>	<b>HC</b>
		<b>ISSUE</b>	<b>01</b>
		<b>REVISION</b>	H ECO 16-010
		<b>DATE</b>	<b>04/08/16</b>

**TABLE II. SPECIFICATIONS BY PART NUMBER**

Part Number	Case Size	Max mass (g)	Max WVDC $\leq 85^{\circ}\text{C}$	Max WVDC @125 $^{\circ}\text{C}$	25 $^{\circ}\text{C}$ AC/DC			Max DCL ( $\mu\text{A}$ ) @85 $^{\circ}\text{C}$
					Nominal Cap ( $\mu\text{F}$ )	Max ESR ( $\Omega$ )	Max DCL ( $\mu\text{A}$ )	
HCB010102	B	5.5	10	7	1000	0.8	3	10
HC2B025102	B	5.5	25	15	1000	0.8	7.5	75
HCB050221	B	5.5	50	30	220	0.9	2	10
HC2B050471	B	5.5	50	30	470	0.9	5	50
HC3B050681	B	5.7	50	30	680	0.9	7.5	75
HCD050681	D	15	50	30	680	0.7	5	40
HC2D050152	D	15	50	30	1500	0.45	15	110
HC3D050222	D	15	50	30	2200	0.60	25	125
HCB060151	B	5.5	60	40	150	1.1	2	10
HC2B060331	B	5.5	60	40	330	0.9	5	50
HC3B060471	B	5.7	60	40	470	1.0	7.5	75
HC3B060561	B	5.7	60	40	560	1.0	7.5	75
HCD060561	D	15	60	40	560	0.8	5	40
HC2D060122	D	15	60	40	1200	0.5	20	200
HC3D060182	D	15	60	40	1800	0.5	25	250
HCB075111	B	6	75	50	110	1.3	2	10
HC2B075221	B	5.5	75	50	220	1.0	5	50
HC3B075331	B	5.7	75	50	330	1.5	7.5	75
HCD075471	D	15	75	50	470	0.9	5	50
HC2D075941	D	15	75	50	940	0.5	20	200
HC2D075102	D	15	75	50	1000	0.35	20	200
HC3D075122	D	15	75	50	1200	0.8	25	250
HCB100680	B	6	100	65	68	2.1	2	10
HC2B100151	B	5.5	100	65	150	1.2	7.5	75
HCD100221	D	18	100	65	220	1.2	5	50
HC2D100471	D	15	100	65	470	0.7	25	250
HCB125470	B	6	125	85	47	2.3	2	10
HC2B125101	B	5.5	125	85	100	1.5	7.5	75
HCD125151	D	18	125	85	150	1.6	5	50
HC2D125241	D	18	125	85	240	0.8	10	100
HC2D125331	D	15	125	85	330	0.8	25	250
HC2D150151	D	18	150	100	150	1.8	25	250