capacitors

metallized polycarbonate capacitor

hermetically sealed/radial leads

QUALIFIED TO MIL-C-39022/11

type HECR

The Avionicap® HECR type capacitor is a hermetically sealed version of our Avionicap® ECR type series, which has gained broad acceptance in the electronic industry. It is hermetically sealed in a ceramic case with metal end caps so it offers excellent environmental protection. The capacitor is qualified to MIL-C-39022/11, styles CHR 21 through CHR 25.

It features radial leads and a miniature rectangular size, measuring as compact as .110" x .210" x .240". Therefore, significantly less area on a printed circuit board is required, as compared to conventional tubular, axial leaded capacitors. The HECR capacitors can be supplied with a plastic sleeve to insulate them from other components on the circuit board. A low profile version is also available for applications where component height is critical. Electrical properties are the same as those of the standard tubular, metallized polycarbonate capacitor, even though the package is much more compact.

The HECR metallized polycarbonate capacitor represents a competitive edge for the user because of its compact size, more functional shape, MIL qualification and availability.

electronic concepts, inc.

BULLETIN NO. L85-115 REV. 7
P/N 161011150

specifications

INTERNAL CONSTRUCTION

Extended electrode metallized polycarbonate film.

ENCLOSURE

Hermetically sealed ceramic case with tinned metal end caps.

TERMINALS

Number 22 AWG tinned copper clad steel.

ENVIRONMENTAL

Meets or exceeds all the environmental tests of MIL-C-39022/11.

TESTING

Capacitors are tested 100% for:

- ☐ CAPACITANCE TOLERANCE
- ☐ DISSIPATION FACTOR
- ☐ DIELECTRIC WITHSTANDING VOLTAGE
- ☐ INSULATION RESISTANCE
- ☐ SEAL PER METHOD 112 OF MIL-STD-202

HECR — test condition A
M39022/11 — also tested to condition C, procedure IIIa.

Process and inspection data is maintained on file and is available on special request.

MARKING

All capacitors are marked with the HECR part number and date code. Those supplied to MIL-C-39022/11 are marked in accordance with the military specification.

DATE CODE

The first two digits of the date code represent the year, the second two digits the week, i.e., 9452 is 52nd week of 1994, 9502 is the 2nd week of 1995.

QUALITY ASSURANCE

Emphasis is placed on quality assurance. The functions of raw material inspection, manufacturing process inspection and final product inspection are constantly being monitored by our Quality Control Department. Complete procedures are described in our quality control manual. E.C.I. will continue to advance the state-of-the-art by utilizing and combining leading edge technology, ultra-miniature capacitor designs and established reliability procedures.

In the construction of the components described, the full intent of the specification will be met. Electronic Concepts, Inc., however, reserves the right to depart from detail specifications to allow for improvements in the design of its products. Components made under military approvals will be done so in accordance with specification requirements.

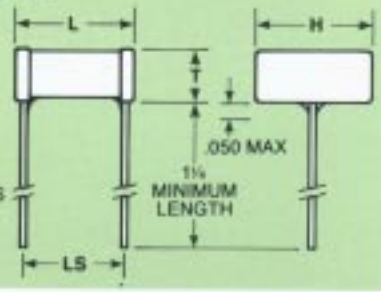
We believe this information to be accurate and reliable. However, Electronic Concepts, Inc. assumes no responsibility for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

Application note:
Because of its subminiature size, care must be taken to assure that the body temperature of the HECR capacitor does not exceed 125°C during installation, so as not to adversely affect performance.

DIMENSIONAL DATA

LOW PROFILE

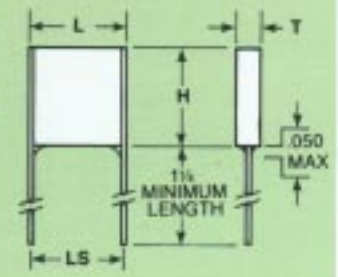
ALL DIMENSIONS SHOWN IN INCHES



DIMENSIONAL DATA

UNINSULATED TYPE HECR

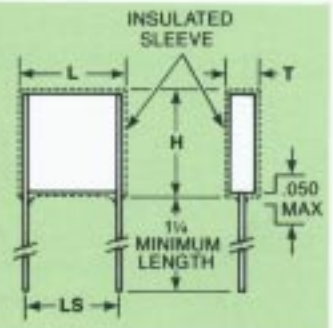
ALL DIMENSIONS SHOWN IN INCHES



DIMENSIONAL DATA

INSULATED CASE TYPE HECR

ALL DIMENSIONS SHOWN IN INCHES



specifications

CASE DIMENSIONS

Case No.	T +.030 −.010	H +.030 −.010	L +.030 −.020	LS ±.015
1	.110	.210	.240	.200
2	.170	.270	.240	.200
3	.170	.270	.340	.300
4	.190	.380	.340	.300
5	.190	.380	.450	.400
6	.220	.500	.450	.400

NOTE: WHEN SPECIFYING INSULATED CASE CAPACITORS, ADD .025" TO THE T AND L DIMENSIONS, AND .040" TO THE H DIMENSION.

CASE NUMBER

VALUE IN MFD	VDC 50	100	150	200	300	VALUE IN MFD	VDC 50	100	150	200	300	VALUE IN MFD	VDC 50	100	150	200	300
.0010	—	—	—	—	1	.010	1	2	—	—	3	.10	3	5	6	—	—
.0012	—	—	—	—	1	.012	1	2	—	3	4	.12	3	5	—	—	—
.0015	—	—	—	—	1	.015	1	2	—	3	4	.15	3	6	—	—	—
.0018	—	—	—	—	1	.018	1	—	—	3	5	.18	4	6	—	—	—
.0022	—	—	—	1	2	.022	1	—	3	4	5	.22	4	6	—	—	—
.0027	—	—	—	1	2	.027	1	—	3	4	5	.27	4	—	—	—	—
.0033	—	—	1	2	3	.033	2	3	4	5	6	.33	5	—	—	—	—
.0039	—	—	1	2	3	.039	2	3	4	5	6	.39	5	—	—	—	—
.0047	—	—	1	2	3	.047	2	3	—	5	—	.47	6	—	—	—	—
.0056	—	1	2	—	3	.056	—	3	5	6	—	.56	6	—	—	—	—
.0068	—	1	2	—	3	.068	3	4	5	6	—	.68	6	—	—	—	—
.0082	—	1	—	—	3	.082	3	4	6	—	—	.82	—	—	—	—	—
												1.00	—	—	—	—	—

how to order

ELECTRONIC CONCEPTS PART NUMBER SYSTEM

HECR 102 H K

TYPE — HECR

CAPACITANCE — 102
The first two digits are significant, the third digit represents the number of zeros to follow to express capacitance in picofarads.

VOLTAGE — H

B = 50VDC
D = 100VDC
E = 150VDC
F = 200VDC
H = 300VDC

TOLERANCE — K

K = ±10% J = ±5% G = ±2% F = ±1%

NOTE: TO SPECIFY AN INSULATED VERSION, ADD THE LETTER "S" TO THE END OF PART NUMBER, FOR EXAMPLE: HECR102HKS

MIL-C-39022/11 PART NUMBER SYSTEM

M39022/11 B 333 F M

MILITARY SPECIFICATION — M39022/11

VOLTAGE — B

B = 50VDC
C = 100VDC
D = 150VDC
E = 200VDC
F = 300VDC

CAPACITANCE — 333
Expressed in picofarads, the first two digits are significant figures. The third is the number of zeros (e.g., 333 equals 33,000 pF equals .033 mF).

CAPACITANCE TOLERANCE — F

F = ±1% G = ±2% J = ±5% K = ±10%

FAILURE RATE — M

NOTE: INSULATED CASE PARTS SHOULD BE SPECIFIED AS SUCH ON PURCHASE ORDER

MIL-C-39022/11 STYLES:

CHR 21: 50VDC
CHR 22: 100VDC
CHR 23: 150VDC
CHR 24: 200VDC
CHR 25: 300VDC

characteristics

OPERATING TEMPERATURE RANGE

−55°C to +125°C

INSULATION RESISTANCE

When measured at the applicable test temperature and rated voltage, the insulation resistance will equal or exceed the following values:

Temperature	25°C	85°C	125°C
Megohm × Microfarads	100,000	7,000	700
Except the insulation resistance in megohms need not exceed	200,000	70,000	7,000

DISSIPATION FACTOR

When measured at 1KHz, the dissipation factor will not exceed 0.2% from +25° to 125°C.

CAPACITANCE CHANGE

The capacitance change versus temperature for these capacitors will not exceed the following:

Temperature Degrees C.	−55	+25	+85	+125
Percent Change	−2.5	0	±1.0	±2.0

DIELECTRIC STRENGTH

Capacitors will withstand a DC potential of 200% rated voltage for two (2) minutes without damage or breakdown. Test voltage is applied and discharged through a resistance of 1 OHM per volt minimum, and at 25°C.

VOLTAGE RATING

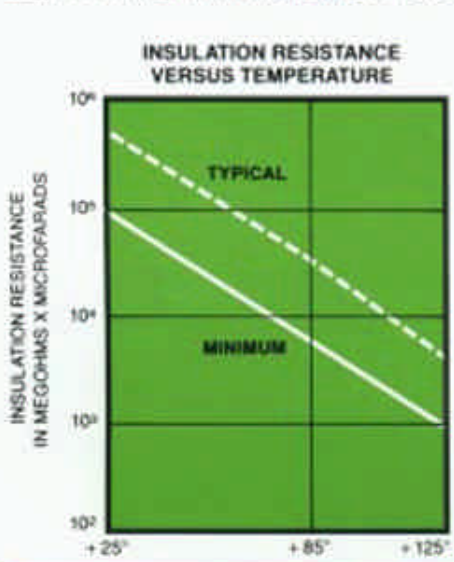
DC working voltage ratings at +85°C are: , 50VDC, 100VDC, 150VDC, 200VDC and 300VDC. Voltage derating of 1.25% per degree C is necessary to +125°C.

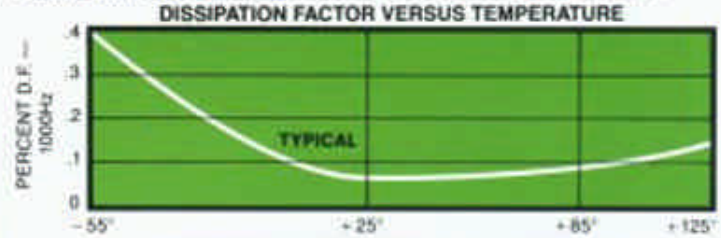
CAPACITANCE RANGE

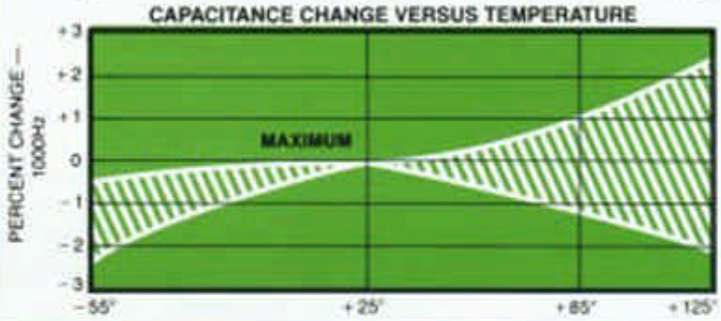
See Case Number Table

Note: Capacitance is measured at 25°C and at or referred to a frequence of 1KHz.

ELECTRICAL CHARACTERISTICS VS. TEMPERATURE TEMPERATURE IN DEGREE CENTIGRADE







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PRINTED IN U.S.A.