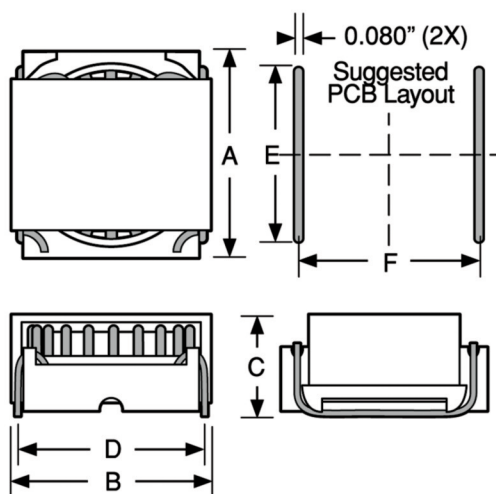


**SERIES****HCTR  
HCT****High Current Toroidal Inductors**Actual Size  
(HCT-44X)**Physical Parameters:**

| Package | A<br>Max. | B<br>Max. | C<br>Max. | D     | E     | F     |
|---------|-----------|-----------|-----------|-------|-------|-------|
| HCT-44X | 0.665     | 0.665     | 0.400     | 0.560 | 0.490 | 0.560 |
| HCT-50X | 0.740     | 0.740     | 0.400     | 0.630 | 0.560 | 0.630 |
| HCT-68X | 0.945     | 0.940     | 0.400     | 0.820 | 0.700 | 0.820 |

Above dimensions in inches and unless otherwise stated all tolerances are  $\pm 0.010$

**Mechanical Configuration**

Units are surface mount, low profile, self-leaded devices

**Frequency Range** 1kHz up to 1 MHz**Operating Temperature Range**  $-30^{\circ}\text{C}$  to  $+130^{\circ}\text{C}$ **Leads** Solder tinned**Materials** Meet UL94V-0**Optional Tolerances** As low as 10% available on some values.**Consult factory for details.****Maximum Power Dissipation at 25°C Ambient**

HCT-44x, 1.0 W

HCT-50x, 1.1 W

HCT-68x, 1.2 W

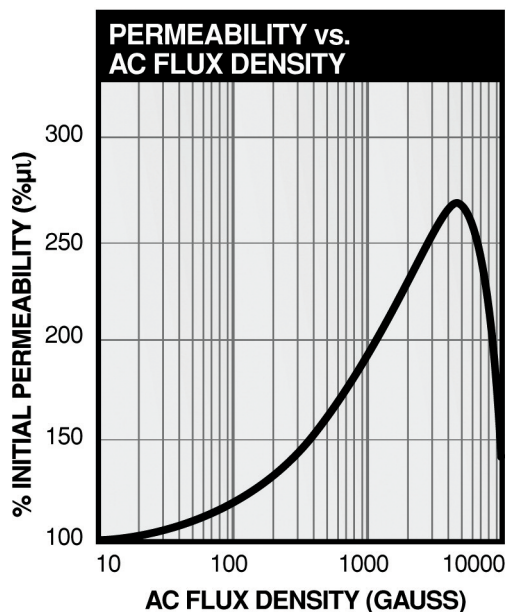
**Marking** API; part number.

Example: HCT-504

API  
HCT-504**Packaging** Bulk; contact factory for tape & reel options.**ELECTRICAL SPECIFICATIONS @ 25°C****DC AMPS TO PRODUCE A MAXIMUM  
TEMPERATURE RISE FROM 25°C AMBIENT**

| DASH NUMBER* | INDUCTANCE<br>( $\mu\text{H}$ ) $\pm 25\%$ | Q TYPICAL | L & Q TEST<br>FREQUENCY (kHz) | SFR (MHz,<br>TYPICAL) | DC RESISTANCE<br>MAXIMUM (m $\Omega$ ) | DC RESISTANCE<br>TYPICAL (m $\Omega$ ) | 5°C  | 15°C | 25°C  | 35°C  | 45°C  | 55°C  |
|--------------|--------------------------------------------|-----------|-------------------------------|-----------------------|----------------------------------------|----------------------------------------|------|------|-------|-------|-------|-------|
| -441         | 2.8                                        | 33        | 100                           | 110                   | 3.6                                    | 3.2                                    | 5.13 | 8.73 | 11.00 | 12.80 | 14.30 | 15.60 |
| -442         | 4.2                                        | 29        | 100                           | 85                    | 5.4                                    | 4.7                                    | 4.23 | 7.20 | 9.14  | 10.60 | 11.80 | 12.80 |
| -443         | 5.7                                        | 29        | 100                           | 65                    | 7.5                                    | 6.4                                    | 3.60 | 6.13 | 7.78  | 9.05  | 10.00 | 10.90 |
| -444         | 9.0                                        | 26        | 100                           | 55                    | 11.4                                   | 9.8                                    | 2.91 | 4.95 | 6.28  | 7.31  | 8.15  | 8.87  |
| -501         | 6.5                                        | 25        | 100                           | 55                    | 6.6                                    | 5.8                                    | 3.97 | 6.75 | 8.56  | 9.96  | 11.10 | 12.00 |
| -502         | 8.4                                        | 23        | 100                           | 45                    | 8.3                                    | 7.2                                    | 3.55 | 6.04 | 7.66  | 8.91  | 9.94  | 10.80 |
| -503         | 12.5                                       | 23        | 100                           | 35                    | 11.4                                   | 9.8                                    | 3.04 | 5.17 | 6.56  | 7.63  | 8.50  | 9.25  |
| -504         | 17.0                                       | 22        | 100                           | 29                    | 17.0                                   | 14.6                                   | 2.49 | 4.23 | 5.37  | 6.25  | 6.97  | 7.58  |
| -681         | 10.5                                       | 35        | 100                           | 30                    | 6.2                                    | 5.3                                    | 4.35 | 7.40 | 9.39  | 10.90 | 12.10 | 13.20 |
| -682         | 17.6                                       | 35        | 100                           | 24                    | 12.3                                   | 10.7                                   | 3.06 | 5.21 | 6.60  | 7.68  | 8.57  | 9.32  |
| -683         | 22.0                                       | 30        | 100                           | 21                    | 17.5                                   | 15.0                                   | 2.58 | 4.40 | 5.58  | 6.49  | 7.24  | 7.87  |
| -684         | 29.0                                       | 30        | 100                           | 16                    | 25.0                                   | 21.5                                   | 2.16 | 3.67 | 4.66  | 5.42  | 6.04  | 6.57  |

\*Complete part # must include series # PLUS the dash #

**SERIES****HCTR  
HCT**RoHS  
Compliant  
Traditional  
First Quality**High Current Toroidal Inductors****For frequencies  $\leq 10$  kHz**

$$\begin{array}{lll} \text{(mW/cm}^3\text{)} & \text{Hz} & \text{Gauss} \\ \text{Core loss} = & 1.47 \times 10^{-8} & f^{0.971} B^{2.11} \end{array}$$

**For frequencies  $\geq 10$  kHz**

$$\begin{array}{lll} \text{(mW/cm}^3\text{)} & \text{Hz} & \text{Gauss} \\ \text{Core loss} = & 9.07 \times 10^{-10} & f^{1.26} B^{2.11} \end{array}$$

$$\text{Bpk} = \frac{\text{Erms } 10^8}{4.44 \text{ Anf}}$$

**A:**

$$\text{T37} = 0.064 \text{ cm}^2; \text{T44} = 0.099 \text{ cm}^2;$$

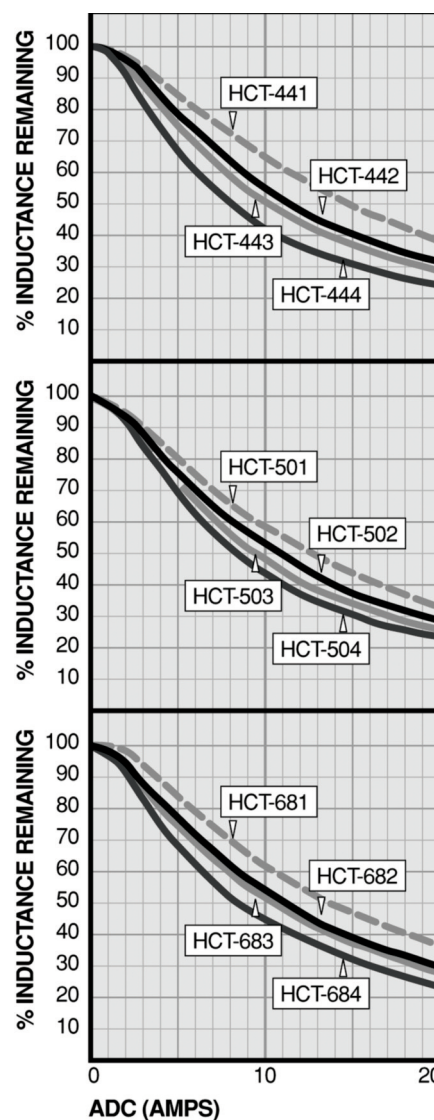
$$\text{T50} = 0.112 \text{ cm}^2; \text{T68} = 0.179 \text{ cm}^2$$

This information is intended to be used in assisting the designer in part selection. Each application may contain other variables which must be considered in part selection, such as temperature effects, waveform distortion, etc. API Delevan

Sales/Engineering is available to provide information as needed to fit each application.

Data is representative of a DC current with less than 1% ripple and an AC waveform less than: 25 gauss on the HCT-44X, 15 gauss on the HCT-50X and 10 gauss on the HCT-68X. The effect of AC or ripple flux can be significant in many DC inductor applications. When significantly greater AC flux density is present, it becomes necessary to consider its effect on both core loss and permeability (inductance).

All data points, on the above graphs, that exceed the rated DC current specified for a 55°C rise from a 25°C ambient are for design reference only and are not intended to imply continuous use at those DC current levels.



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