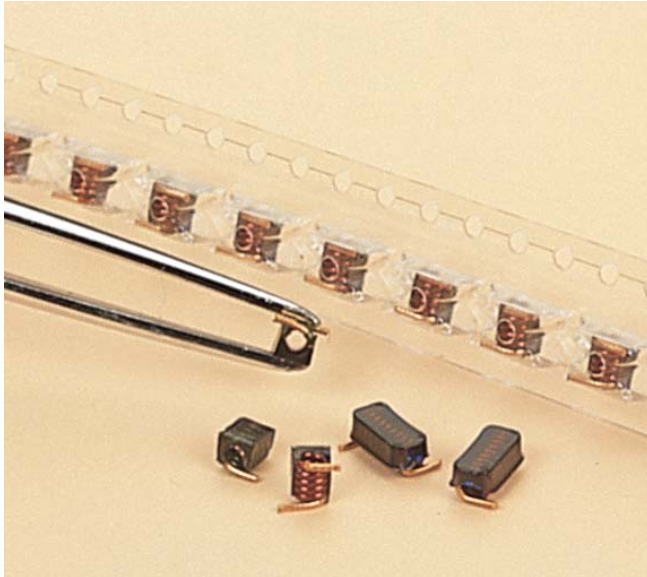


PRELIMINARY

Aerospace Grade Air Core Inductors

AE439RAT
AE470RAT



- High temperature materials allow operation in ambient temperatures up to 155°C.
- Passes NASA low outgassing specifications
- Tin-lead (Sn-Pb) terminations ensures the best possible board adhesion

Terminations Tin-lead (63/37) over copper

Ambient temperature -55°C to +125°C with I_{max} current, +125°C to +155°C with derated current

Storage temperature Component: -55°C to +155°C.
Packaging: -40°C to +80°C

Resistance to soldering heat Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles

Temperature Coefficient of Inductance (TCL) +5 to +70 ppm/°C

Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)

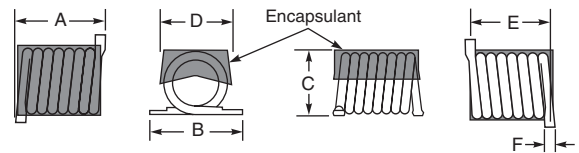
Enhanced crush-resistant packaging

AE439RAT: 700/7" reel; 2500/13" reel Plastic tape: 12 mm wide, 0.32 mm thick, 8 mm pocket spacing, 3.3 mm pocket depth

AE470RAT: 500/7" reel; 2200/13" reel Plastic tape: 16 mm wide, 0.28 mm thick, 8 mm pocket spacing, 3.4 mm pocket depth

PCB washing Only pure water or alcohol recommended

| Part number ¹ | Turns | L ² (nH) | Percent tol | Q ³ min | SRF min ⁴ (GHz) | DCR max ⁵ (mOhm) | I _{max} (A) | Weight (mg) |
|--------------------------|-------|---------------------|-------------|--------------------|----------------------------|-----------------------------|----------------------|-------------|
| AE439RAT2N5KSZ | 1 | 2.5 | 10 | 145 | 12.5 | 1.1 | 4 | 31 |
| AE439RAT5N0_SZ | 2 | 5.0 | 5,2 | 140 | 6.5 | 1.8 | 4 | 42 |
| AE439RAT8N0_SZ | 3 | 8.0 | 5,2 | 140 | 5.0 | 2.6 | 4 | 52 |
| AE439RAT13N_SZ | 4 | 12.5 | 5,2 | 137 | 3.3 | 3.4 | 4 | 65 |
| AE439RAT19N_SZ | 5 | 18.5 | 5,2 | 132 | 2.5 | 3.9 | 4 | 78 |
| AE470RAT18N_SZ | 6 | 17.5 | 5,2 | 100 | 2.2 | 4.5 | 4 | 100 |
| AE470RAT22N_SZ | 7 | 22.0 | 5,2 | 102 | 2.1 | 5.2 | 4 | 110 |
| AE470RAT28N_SZ | 8 | 28.0 | 5,2 | 105 | 1.8 | 6.0 | 4 | 118 |
| AE470RAT36N_SZ | 9 | 35.5 | 5,2 | 112 | 1.5 | 6.8 | 4 | 133 |
| AE470RAT43N_SZ | 10 | 43.0 | 5,2 | 106 | 1.2 | 7.9 | 4 | 147 |



| Size | A max | B max | C max | D | E | F max |
|------|---------------|---------------|---------------|----------------------------|----------------------------|---------------|
| 439 | 0.155 3,94 | 0.175 4,45 | 0.124 3,15 | 0.125 ±0.010 3,18 ±0,25 | 0.115 ±0.010 2,92 ±0,25 | 0.029 0,74 |
| 470 | 0.270 6,86 | 0.175 4,45 | 0.124 3,15 | 0.125 ±0.010 3,18 ±0,25 | 0.230 ±0.015 5,84 ±0,38 | 0.029 0,74 |

1. When ordering, please specify **tolerance** and **testing** codes:

AE470RAT43NGSZ

Tolerance: G = 2% J = 5%

Testing: Z = Coilcraft Critical Products Environmental Stress Conditions Testing.

H = Coilcraft Qual + Coilcraft Hi-Rel Burn-in

P = Coilcraft Qual + MIL-STD-981 Class S Group A screening

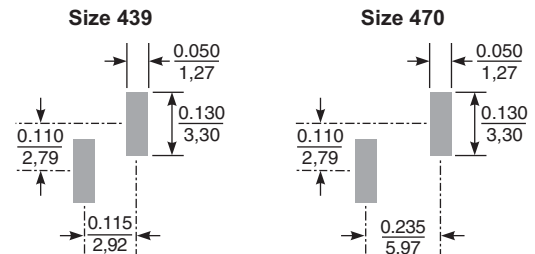
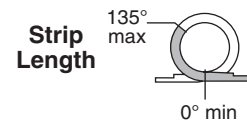
N = Coilcraft Qual + MIL-STD-981 Class B Group A screening

C = Coilcraft Qual + MIL-STD-981 Class S Group A screening + MIL-STD-981 Class S Group B qualification

W = Coilcraft Qual + MIL-STD-981 Class B Group A screening + MIL-STD-981 Class S Group B qualification

- Inductance measured at 150 MHz on an Agilent/HP 4286A or equivalent with a Coilcraft SMD-A test fixture and correlation.
- Q measured at 150 MHz on an Agilent/HP 4291A or equivalent with a 16193-A test fixture or equivalent.
- SRF measured on an Agilent/HP 8753D or equivalent with a Coilcraft SMD-D test fixture.
- DCR measured on a Keithley 580 Micro-Ohmmeter or equivalent.
- Electrical specifications at 25°C.

Refer to Doc 362 "Soldering Surface Mount Components" before soldering.



Suggested Land Patterns

Dimensions are in $\frac{\text{inches}}{\text{mm}}$



These parts are preproduction products for electrical evaluation only.
Specification subject to change without notice.

Document AE107-1 Revised 07/16/09

1102 Silver Lake Road
Cary IL 60013

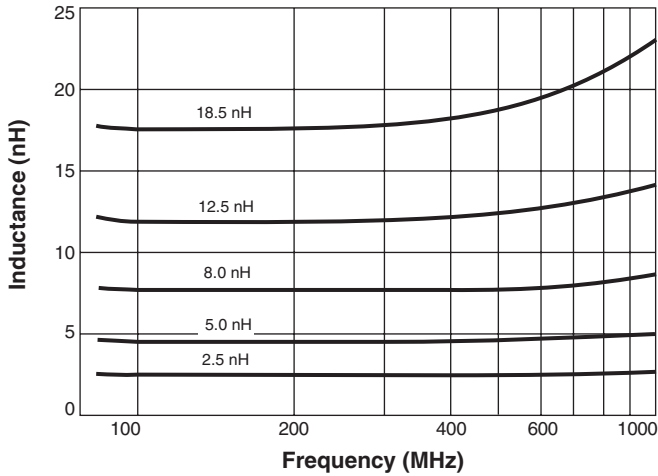
Phone 800-981-0363
Fax 847-639-1508

E-mail cp@coilcraft.com
Web www.coilcraft-cps.com

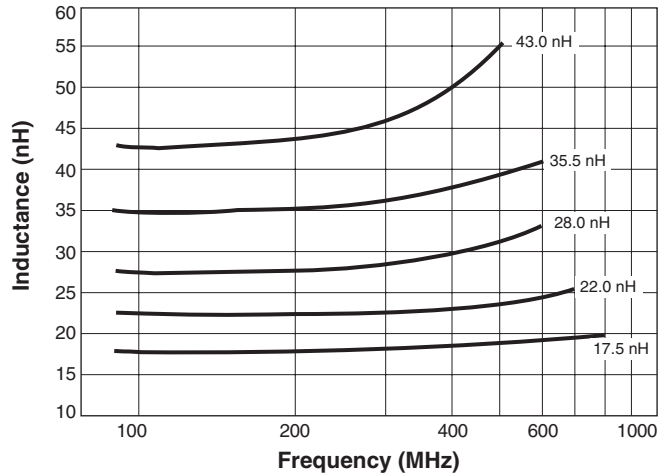
PRELIMINARY

AE439RAT/AE470RAT Air Core Inductors

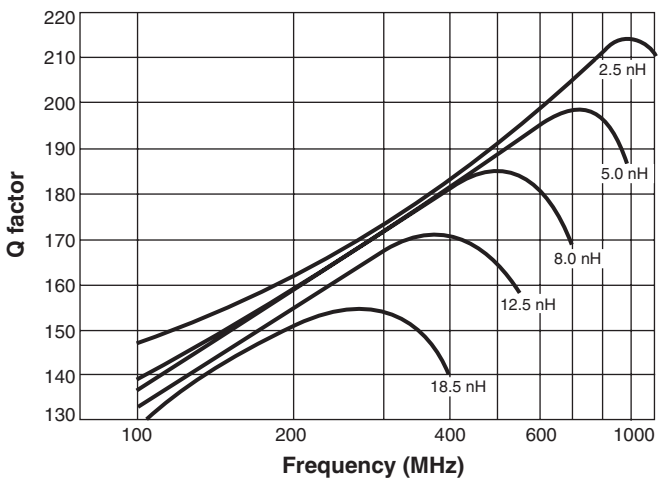
L vs Frequency – AE439RAT



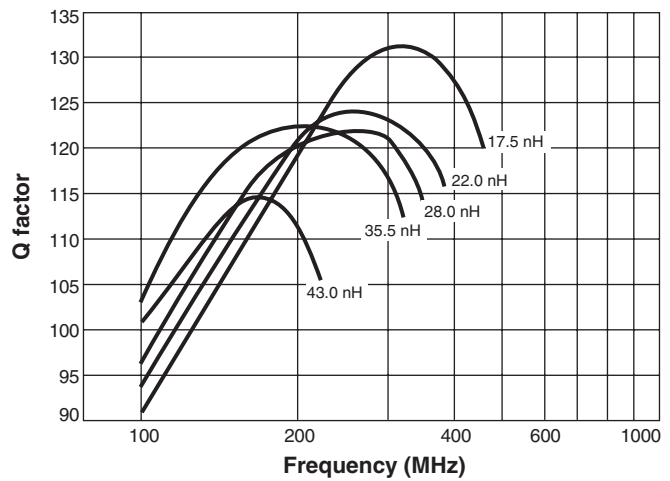
L vs Frequency – AE470RAT



Q vs Frequency – AE439RAT



Q vs Frequency – AE470RAT



Typical Current Derating

