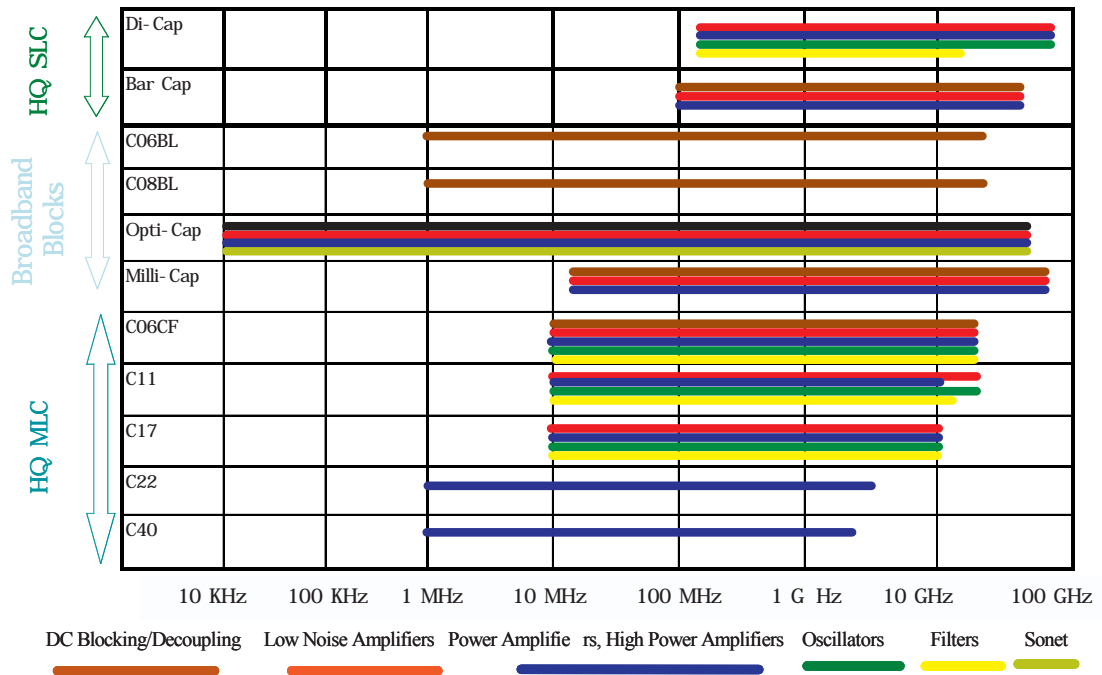
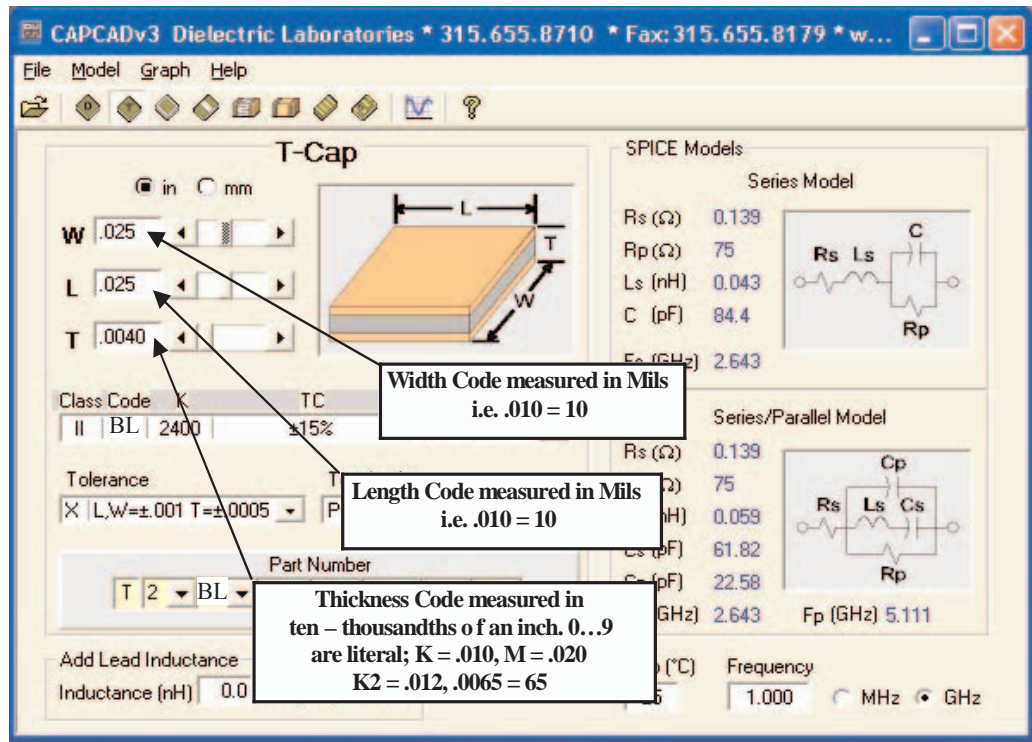


Capacitor Spectrum Chart



CapCad™



Download your free Capcad™ modeling software on DLI's homepage at: www.dilabs.com

email sales@dilabs.com
or europesales@dilabs.com
or asiasesales@dilabs.com

phone 315.655.8710
fax 315.655.0445
www.dilabs.com

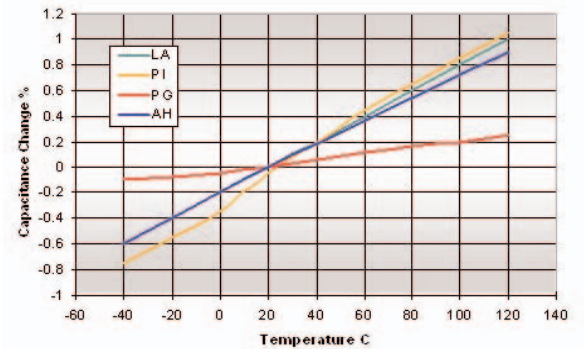
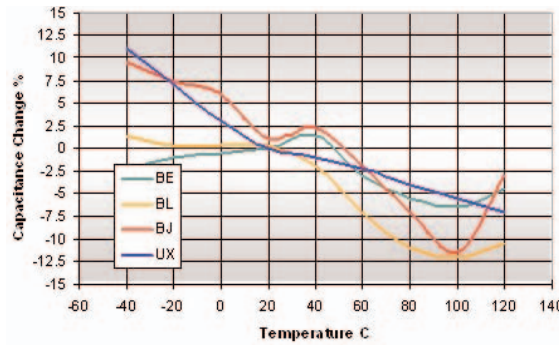
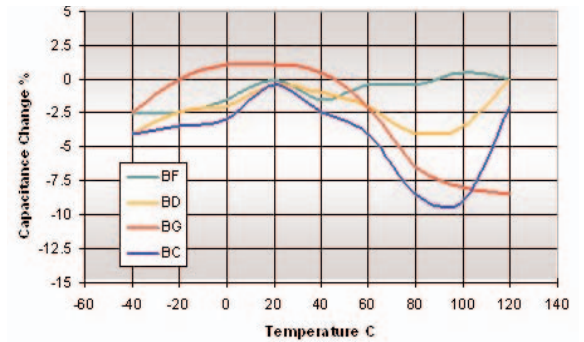
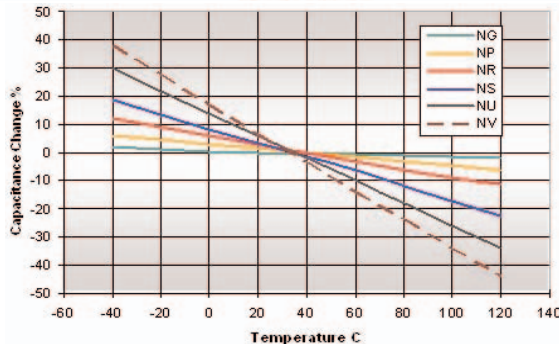
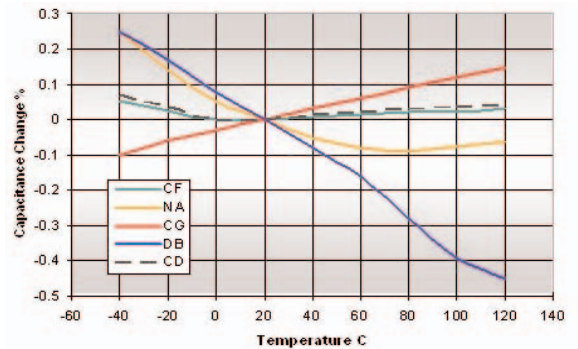
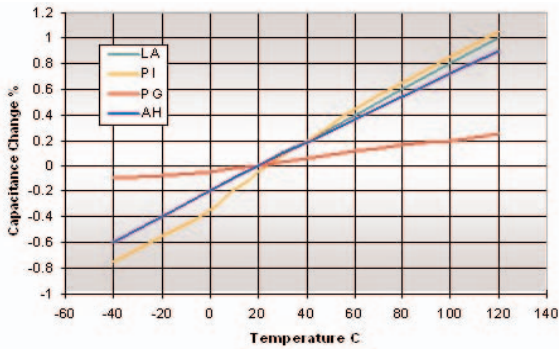
Dielectric Laboratories Inc.
2777 Route 20 East
Cazenovia, New York, USA
13035-9433

Dielectric General Information

| DLI Class I Dielectric Materials | | | | | |
|---|-------------------------------------|--|---|--|------------------|
| Dielectric Code | Relative ϵ_r @ 1 MHz | Temperature Coefficient -55°C to +125°C (ppm/°C Maximum) | Dissipation Factor @ 1 MHz (% Maximum) | Insulation Resistance (M Ω) | |
| | | | | @ +25°C | @ +125°C |
| LA | 6.0 | P115 \pm 20 | 0.20 | >10 ⁶ | >10 ⁵ |
| PI | 9.9 | P105 \pm 20 | 0.15 | >10 ⁶ | >10 ⁵ |
| PG | 13 | P22 \pm 30 | 0.15 | >10 ⁶ | >10 ⁵ |
| AH | 20 | P90 \pm 20 | 0.15 | >10 ⁶ | >10 ⁵ |
| CF | 24 | 0 \pm 15 | 0.60 | >10 ⁶ | >10 ⁵ |
| NA | 22 | N30 \pm 15 | 0.15 | >10 ⁶ | >10 ⁵ |
| CD | 37 | N20 \pm 15 | 0.15 | >10 ⁶ | >10 ⁵ |
| NG | 43 | N220 \pm 60 | 0.25 | >10 ⁶ | >10 ⁵ |
| CG | 70 | 0 \pm 30 | 0.70 | >10 ⁶ | >10 ⁵ |
| DB | 72 | N50 \pm 30 | 0.15 | >10 ⁶ | >10 ⁵ |
| NP | 85 | N750 \pm 200 | 0.50 | >10 ⁴ | >10 ³ |
| NR | 160 | N1500 \pm 500 | 0.25 | >10 ⁶ | >10 ⁵ |
| NS | 300 | N2400 \pm 500 | 0.70 | >10 ⁶ | >10 ⁵ |
| NU | 600 | N3700 \pm 1000 | 1.50 | >10 ⁶ | >10 ⁵ |
| NV | 900 | N4700 \pm 1000 | 1.20 | >10 ⁶ | >10 ⁵ |

| DLI Class II Dielectric Materials | | | | | | |
|--|----------------------------------|---|--|--|--|------------------|
| Dielectric Code | Relative ϵ_r @ 1 MHz | Temperature Coefficient -55°C to +125°C (% Maximum) | | Dissipation Factor @ 1MHz (% Maximum) | Insulation Resistance (M Ω) | |
| | | No Bias, Pre Voltage Conditioning | No Bias, Post Voltage Conditioning | | | |
| | | | | | @ +25°C | @ +125°C |
| BF | 445 | \pm 7.5 | \pm 10 | 2.5 | >10 ⁴ | >10 ² |
| BD | 700 | \pm 10 | \pm 15 | 2.5 | >10 ⁴ | >10 ³ |
| BG | 900 | \pm 10 | \pm 15 | 2.5 | >10 ⁴ | >10 ³ |
| BC | 1300 | \pm 10 | \pm 15 | 2.5 | >10 ⁴ | >10 ³ |
| BE | 1250 | \pm 10 | \pm 15 | 2.5 | >10 ⁴ | >10 ³ |
| BL | 2000 | \pm 15 | \pm 25 | 2.5 | >10 ⁵ | >10 ⁴ |
| BJ | 3300 | \pm 10 | \pm 15 | 3.0 | >10 ⁵ | >10 ⁴ |
| BN | 4500 | \pm 15 | \pm 25 | 3.0 | >10 ⁵ | >10 ⁴ |
| BT | 4200 | +22/-56 (-55°C to +105°C) | +22/-56 (-55°C to +105°C) | 3.0 | >10 ⁵ | >10 ² |
| BU | 8500 | +22/-82 (+10°C to +85°C) | +22/-82 (+10°C to +85°C) | 3.0 | >10 ⁵ | >10 ⁴ |
| BV | 13,500 | +22/-82 (+10°C to +85°C) | +22/-82 (+10°C to +85°C) | 3.0 | >10 ⁵ | >10 ⁴ |
| UX | 30,000 | \pm 15% | \pm 25% | 2.5 | >10 ³ | >10 ² |

Dielectric Temperature Characteristics



email sales@dilabs.com
or europesales@dilabs.com
or asiasesales@dilabs.com

phone 315.655.8710
fax 315.655.0445
www.dilabs.com

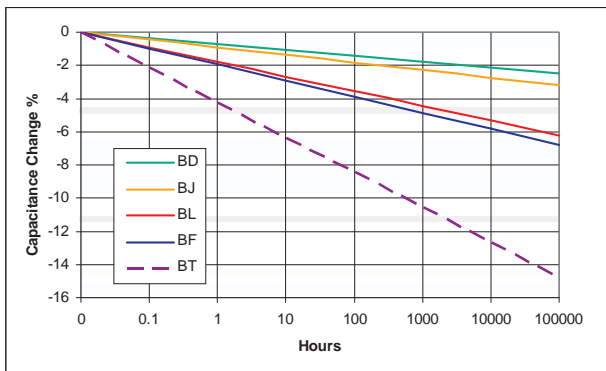
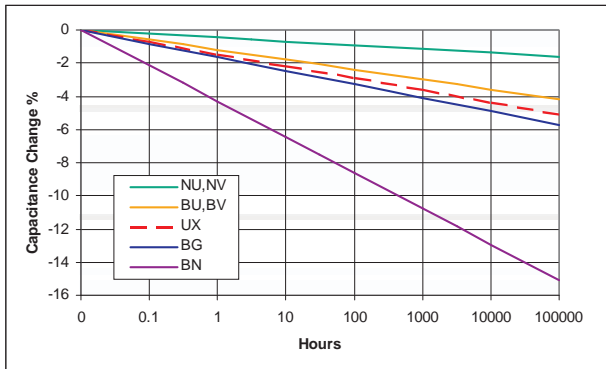
Termination Codes

| Code | Description (Layers in order from dielectric material to outermost) | | Capacitor Types |
|------|--|---|--|
| | S1 | AU-100 | |
| P | 1. 300 Angstroms Titanium - Tungsten 2. 50i Inches min. Nickel - Vanadium 3. 100i Inches min. Gold | 1. 50i Inches min. Nickel 2. 100i Inches min. Gold | DiCap®, T-Cap®, Bar Cap, Binary Cap, and Gap Cap |
| T | S2 1. 300 Angstroms Titanium - Tungsten 2. 50i Inches min. Nickel - Vanadium 3. 300i Inches min. Gold - Tin | | DiCap®, T-Cap® |
| M | S5 1. 300 Angstroms Titanium - Tungsten 2. 100i Inches min. Gold | | DiCap®, T-Cap®, Bar Cap, Binary Cap, and Gap Cap |
| B | S1 | AU-100 | Single border Cap |
| E | S1 | AU-100 | Double border Cap |
| L | Single beam lead. (Standard lead material is silver (Ag) .002" thick. Optional Gold (Au)) | | DiCap® |
| A | Axial beam lead. (Standard lead material is silver (Ag) .002" thick. Optional Gold (Au)) | | DiCap® |
| S | Standing axial beam lead. (Standard lead material is silver (Ag) .002" thick. Optional Gold (Au)) | | DiCap® |

Dielectric Laboratories Inc.
2777 Route 20 East
Cazenovia, New York, USA
13035-9433

Test Level Codes

Dielectric Aging Characteristics



| Code | Description |
|--|--|
| Industrial / Commercial Options | |
| Y | <ul style="list-style-type: none"> 1% AQL 2 Side Visual Screening. |
| X | <ul style="list-style-type: none"> 100% 4 Side Visual Screening. 1% AQL for the electrical parameters Capacitance, Dissipation Factor, Insulation Resistance, and Dielectric Withstanding Voltage. |

| High Reliability Options | |
|---------------------------------|---|
| A | MIL-PRF-49464 Group A <ul style="list-style-type: none"> 100%, 100 +0/-4 Hours Voltage Conditioning. 100% Electrical Screening 100% 6 Side Visual Screening. |
| B | <ul style="list-style-type: none"> Bond Strength. Die Shear Strength. Temperature Coefficient Limits. |
| B | MIL-PRF-49464 Group B <ul style="list-style-type: none"> MIL-PRF-49464, Group A above Thermal Shock and Immersion. Resistance to Soldering Heat. Moisture Resistance. Low Voltage Humidity. Life. |
| D | Special agreed upon testing to customers' formal specification. Customer Drawing Required! (May include, but is not limited to, one or more of the following common requests.) <ul style="list-style-type: none"> MIL-PRF-38534 Class H Element Evaluation. MIL-PRF-38534 Class K Element Evaluation. 10(0) Destructive Bond Pull per MIL -STD-883, Method 2011. 10(0) Die Shear per MIL -STD-883, Method 2019. Consult Factory for other alternatives or assistance in specifying custom testing. |
| E | 6 Side Visual Screening per MIL -STD-883, Method 2032. |

Environmental & Physical Testing Procedures

| Parameter | MIL-STD-202 | |
|---------------------------|-------------|--|
| | Method | Condition |
| Thermal Shock | 107 | A, (modified), -55°C to +125°C. |
| Immersion | 104 | B |
| Moisture Resistance | 106 | - |
| Resistance to Solder Heat | 210 | C, 260°C for 20 seconds. |
| Life | 108 | A, 96 Hours @ +125°C. |
| Barometric Pressure | 105 | B |
| Shock, (Specified Pulse) | 213 | I, 100g's, 6ms. |
| Vibration, High Frequency | 204 | G, 30g's peak, 10Hz to 2kHz. |
| Parameter | MIL-STD-883 | |
| Bond Strength | 2011 | D, 3 grams minimum with .001" dia wire |
| Die Shear Strength | 2019 | Limit per MIL -STD-883, Figure 2019-4. |
| Temperature Cycling | 1010 | C |
| Mechanical Shock | 2002 | B, Y1, |
| Constant Acceleration | 2001 | 3,000g's, Y1 direction |

Capacitance Tolerance Table

| Tolerance Code | Tolerance |
|----------------|------------|
| A | ±.05pF |
| B | ±.10pF |
| C | ±.25pF |
| D | ±.50pF |
| E | ±.5% |
| F | ±1% |
| G | ±2% |
| H | ±3% |
| I | ±4% |
| J | ±5% |
| K | ±10% |
| L | ±15% |
| M | ±20% |
| X | GMV |
| V | +100%, -0% |
| Z | +80%, -20% |
| S | Special |