

## Maxcap double layer capacitors (DLC)



High energy density capacitors for backup power. With Maxcap double layer capacitors, microprocessors, small motors and activators having current requirements from one to several hundred milliamps can be supported from several seconds to minutes.

A Maxcap electric double layer capacitor the size of a thimble will support microamp data retention currents of CMOS RAMs for up to several weeks.

### Maxcap double layer capacitors are characterized by:

- Extremely high volumetric efficiency (over 5.5 farads/in<sup>3</sup>)
- Virtually unlimited service life
- Fast/charge discharge capability
- Very low leakage current
- Wide operating temperature range, including -40°C to +85°C (-40 to +185°F)

### Typical applications for Maxcap double layer capacitors

Type of load	Appliance or equipment
CMOS RAMs and microprocessors, timers for integrated circuits	Home appliances such as TVs, microwave ovens, dishwashers, and refrigerators; data routers, personal computers, energy management controls, thermostats, point of sale terminals, process controllers
Wireless data pulses	Electric and water utility meters, vehicle tracking systems
Relays, solenoids	Starters, ignitors, actuators
Small motors, alarms	Disc drives, coin metering devices, security systems, toys



## Key features for Maxcap double layer capacitors

Maxcap double layer capacitors offer a variety of features. For detailed information about product geometries and electrical characteristics, go to the [capacitor selection guide](#).

### **Very high capacity in small size**

Up to 100 times that of conventional capacitors. Circuit board space and equipment size can be reduced.

### **Useful voltage ratings**

3.5 and 5.5 volt - Ideal for CMOS operating voltage range. 11 volt - LV Series, backup for relays, actuators, small motors.

### **Full range of sizes**

From 0.01 to 5.6 farads @ 5.5 volts; 0.47, 1.0 & 5.0 farads @ 11 volts.

### **Low profile**

With LP, LK & LJ series.

### **Ultra long life**

Unlike batteries, Maxcap LDCs have no parasitic chemical reactions. They can be fully charged and discharged indefinitely. There is no memory effect.

### **Maintenance free**

Maxcap DLCs can be placed in remote locations and require no access ports. Warranty claims are minimized.

### **Nonpolar**

Assembly errors and costs are minimized.

### **Wide operating temperature range**

-40 to +85°C (-40 to +185°F) LJ & LT Series; -25 to +70°C (-13 to +158°F) LP, LC, LK, LF, LV, LX series.

### **Simple, low cost circuitry**

Since Maxcap DLCs do not require current limiting resistors or over-voltage protection, component costs and assembly time are reduced.

### **Safer than batteries**

These capacitors will not explode or be damaged if short circuited. They can be installed with wave soldering equipment or surface mount package with IR or vapor phase reflow equipment.



## Capacitor selection guide

The Maxcap electric double layer capacitor standard products series offer a wide range of product geometries and electrical characteristics from which to choose.

The major design considerations in selecting a Maxcap electric double layer capacitor for a given application include the load characteristic, the allowable voltage drop, required backup time and available board space.

To help you select the best Maxcap electric double layer capacitor for your application the table below summarizes the characteristics of each product series.

Series	Key features	Typical backup application	Capacitance range	ESR range		Typical*long charge leakage current	Operating temp.
				Max	Typical		
<b>LF</b> (5.5 Volt)	Very low ESR	For short time, high current (up to amps)	0.047-1.5F	0.6-14Ω	0.2-7Ω	1-25μa	-25 to +75°C (-13 to +167°F)
<b>LP</b> (5.5 Volt)	Low height, low ESR	Days to weeks (up to milliamps)	0.022-1.0F	7-60Ω	1-20Ω	1-25μa	-25 to +70°C (-13 to +158°F)
<b>LC</b> (5.5 Volt)	Reduced diameter, high energy density, low leakage current	Several weeks (microamps)	0.022-2.2F	35-220Ω	5-80Ω	0.1-6μa	-25 to +70°C (-13 to +158°F)
<b>LK</b> (5.5 Volt)	Reduced height, high energy density, low leakage current	Several weeks (microamps)	0.022-1.0F	20-200Ω	2-120Ω	0.1-4μa	-25 to +70°C (-13 to +158°F)
<b>LT</b> (5.5 Volt)	Expanded temperature	Several weeks (microamps)	0.022-1.0F	60-220Ω	5-120Ω	0.1-4μa	-40 to +85°C



	range, low leakage current						(-40 to +185°F)
<b>LV</b> (11 Volt)	Increased voltage capability, low ESR	For short time, high current, high voltage (up to milliamps)	0.47, 1.0 and 5.0F	4-7Ω	0.8-5Ω	1-4μa	-25 to +70°C (-13 to +158°F)
<b>New LX</b> (5.5 Volt)	Our highest energy density product, low self discharge rate	Several weeks (microamps)	0.01-4.7F	35-300Ω	0.5-60Ω	0.7-15μa	-25 to +70°C (-13 to +158°F)
<b>New LJ</b> (5.5 Volt)	Expanded temperature range, low ESR	Several weeks (microamps)	0.1-5.6F	0.6-16Ω	0.2-10Ω	0.5-10μa	-40 to +85°C (-40 to +185°F)
<b>New LM</b> (35 & 5.5 Volt)	Surface mount package	Several weeks (microamps)	0.047-1.0F	7-50Ω	3-18Ω	0.5-10μa	-25 to +70°C (-13 to 158°F)