

Product Bulletin

GS1 Series – Double Layer Supercapacitors

The GS1 Series of CAP-XX Supercapacitors are low profile, low impedance (low ESR) power sources that are designed to overcome both the power delivery limitations of battery systems and the energy delivery limitations of conventional capacitors.

The features of CAP-XX Supercapacitors are:

- Provide high power for peak current loads (low ESR)
- Store sufficient energy to enable power surges (high capacitance)
- Operate at low (-30°C) temperature
- Smallest devices for given ESR and capacitance (high power and energy density)

| CAP-XX Model Number | DC Capacitance ± 20% | ESR ± 20% | Maximum Thickness |
|---------------------|----------------------|-----------|-------------------|
| GS 1 02F | 300 mF | 34 mΩ | 0.9 mm |
| GS 1 03F | 400 mF | 26 mΩ | 1.1 mm |
| GS 1 04F | 550 mF | 22 mΩ | 1.2 mm |
| GS 1 11F | 650 mF | 18 mΩ | 1.4 mm |
| GS 1 21F | 800 mF | 34 mΩ | 1.0 mm |
| GS 1 06F | 1100 mF | 26 mΩ | 1.2 mm |
| GS 1 13F | 1400 mF | 20 mΩ | 1.4 mm |
| GS 1 08F | 1600 mF | 18 mΩ | 1.7 mm |
| GS 1 18F | 2400 mF | 28 mΩ | 1.6 mm |
| GS 1 19F | 3300 mF | 24 mΩ | 1.8 mm |
| GS 1 20F | 4000 mF | 22 mΩ | 2.1 mm |

| GS1 Parameter | Minimum | Nominal | Maximum |
|----------------------|------------------------|--------------------|-------------------------|
| Operating Temp | -30°C | +20°C ¹ | +75°C ² |
| Storage Temp | -40°C | | +75°C |
| Voltage | | 2.3V | 2.5V (peak) |
| Length | 38.0mm | 39.0mm | 40.0mm |
| Width | 16.5mm | 17.0mm | 17.5mm |
| ESR change with Temp | 75% of nominal @ +75°C | | 150% of nominal @ -20°C |
| Pulse Current | - | - | 30A |

1 Tolerance is based on nominal operating temperature, +20°C

2 Maximum sustained temperature is 70°C, but operation at 75°C for shorter periods is acceptable

N.B. All product produced after August 2004 is lead-free



RoHS Compliance

Enables LED flash for camera phones

Solve RF power limitations in wireless PDAs, smart phones

Reduced voltage drops – Reduce DC/DC requirements

Extend low temperature (-30°C) operation of wireless devices

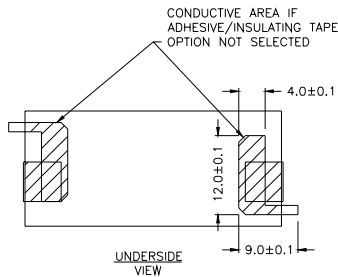
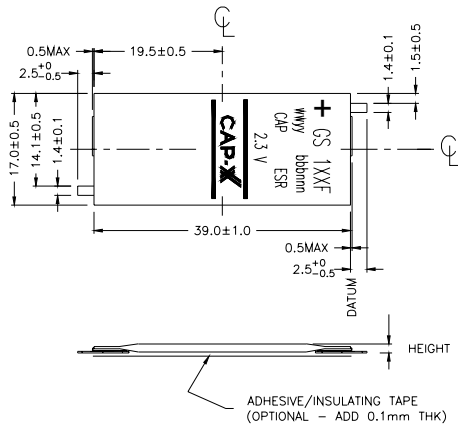
Solve current limitations in PCMCIA and CF cards

-30°C to +85°C operating temperatures also available

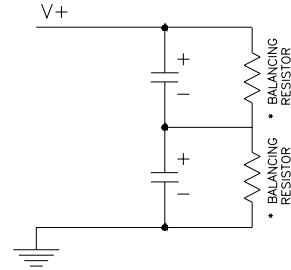
Mounting Option: CAP-XX also provides a mounting option of adhesive/insulating tape as shown in the following Mechanical Drawings. The adhesive/insulating tape is available on all products. To order this Packaging Option, replace the 'F' in the CAP-XX Model No. with a 'G', ie. GS 1 02G. The device thickness will increase by 0.1mm with mounting tape with the release layer removed or 0.2mm without removing the release layer.



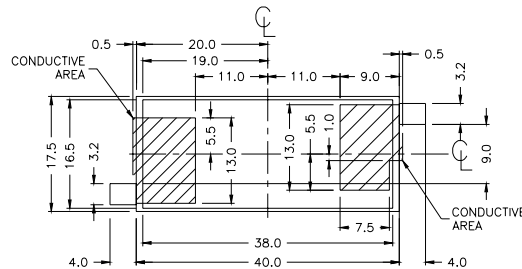
Mechanical Drawings



Electrical Drawing



SUGGESTED CONNECTION DETAILS
for using 2 GS 1XX Supercapacitors in Series.
Please Note: External Balancing Resistors required



SUGGESTED PAD LAYOUT
PAD layout only caters for CAP-XX Manufacturing tolerances. The customer must increase pad size to allow for any placement tolerances

Further Information:

Further information on all of CAP-XX's products, other temperature ranges, and application resources can be obtained from CAP-XX by using the contact details below or on our web site at www.cap-xx.com. CAP-XX will gladly discuss specific requirements, and our Applications Engineers will work together with you to develop a solution that meets your needs.

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