

GY13R0 SNAP-IN TERMINAL SERIES datasheet

Revision 1.3, July 2023

Electrical Specifications

The GY13R0 Snap-in terminal series of supercapacitors are 3V cylindrical cells offering excellent value, providing intermediate capacitance between radial leads and LASER weld automotive supercapacitor cells.

Part numbering code

G	Y	N	vvv	dd	mmm	S	ccc	R
Model	Cylindrical	no of cells 1	Voltage 3R0 = 3V	Diameter 30 = 30mm	Length (mm) 050 = 50mm	Tolerance M \pm 20% S +50% / -20% V +30% / -10% N +20%/-0% T +25% / -5%	μF Two digits + number of zeros. 157= 150F	Lead format S = 2 pins snap-in W = 4 pins snap-in C = 2 flat tabs

Rated Voltage: 3.0V, Temperature Range: -40°C to +65°C, (40°C to +85°C @ 2.5V)

CAP-XX Part no.	Cap (F)	ESR _{DC} Max (m Ω)	ESR Max @ 1KHz (m Ω)	IL max ¹ @ 72 Hrs (mA)	Diameter (mm)	Length (mm)	Mass (gm)
GY13R022045V107S	100	12	8	0.3	22	45	21
GY13R022045V127S	120	12	8	0.3	22	45	21
GY13R022055V167S	160	12	8	0.5	22	55	30
GY13R025050V157S	150	11	7	0.5	25	50	30
GY13R030050V207S	200	10	6	0.7	30	50	36
GY13R030050V227S	220	11	7	0.7	30	50	39
GY13R030050V247S	240	11	7	0.7	30	50	40
GY13R035060V357C	350	3.6	3.1	1	35	60	73
GY13R035060V407C	400	3.3	2.9	1.2	35	60	73
GY13R035060V477C	470	3.6	3.1	1.3	35	60	73
GY13R035067V507C	500	3.5	3	1.3	35	67	76
GY13R035070V607C	600	3	2.5	1.5	35	70	88

Notes:

- DC Leakage current decays over time until it reaches equilibrium value. Value quoted is maximum after 72hrs at rated voltage and room temperature.

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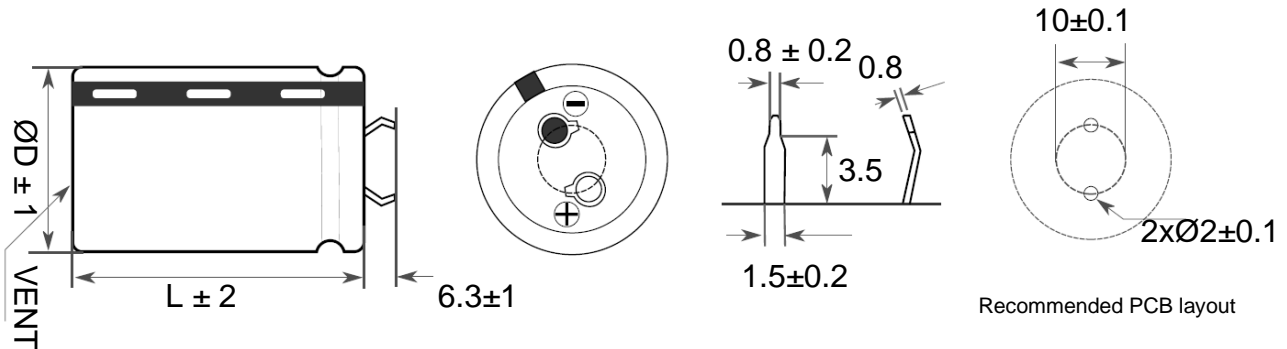
Applications:

- High power delivery
- Regenerative energy capture
- Improve the cycle life of large batteries
- Power smoothing for where fuel cells are used
- Load regulation for very high-power step changes

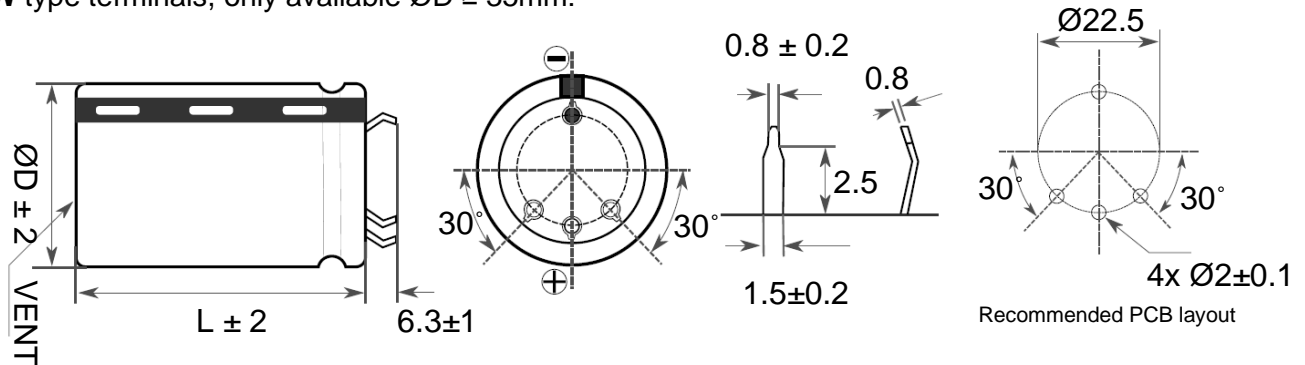
Mechanical drawing:

Note: the colour of the shrink wrap on GY13R0 product may be either Blue or Black.
All dimensions in mm

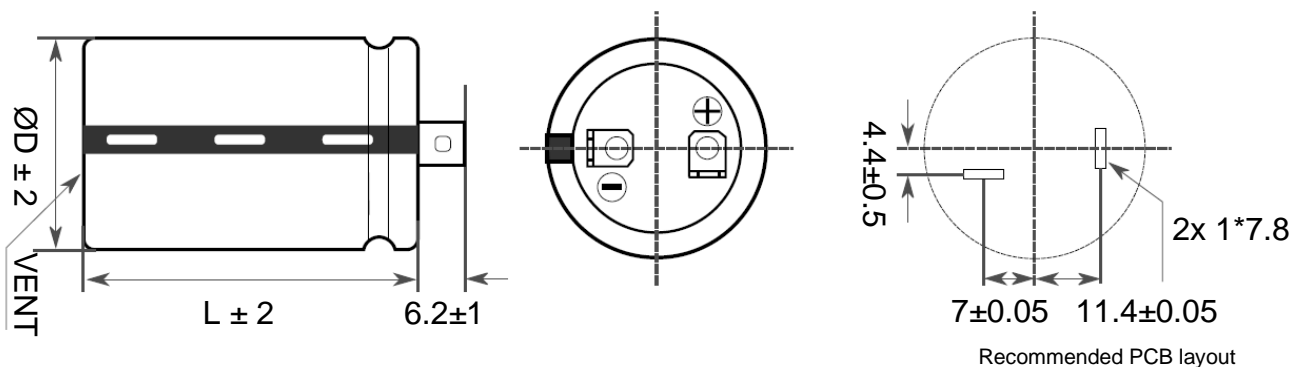
S type terminals:



W type terminals, only available $\varnothing D \geq 35\text{mm}$:



C type terminals, only available $\varnothing D \geq 35\text{mm}$:

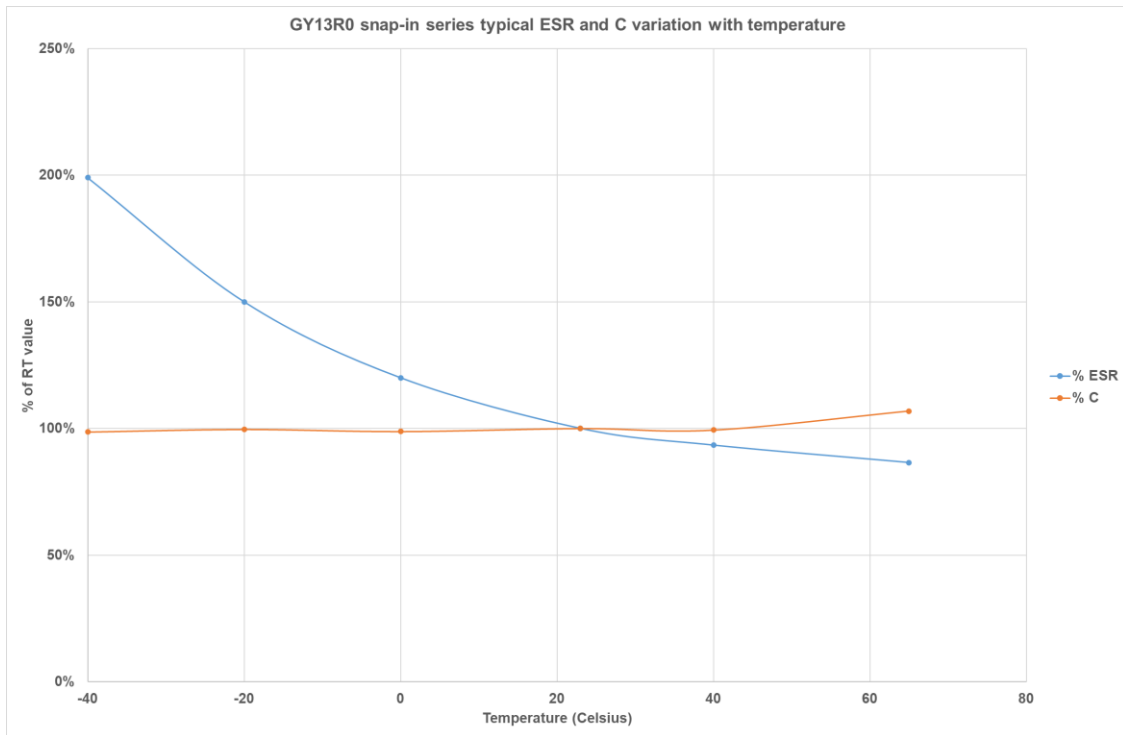


Typical long-term performance

Item		Details
Cycle Life	Test condition	Charge and discharge between V_R and $V_R/2$ at constant current for 500,000 cycles. 25°C
	$\Delta C / C_{initial}$	$\leq 30\%$
	Final ESR	≤ 2 times of initial value
Lifespan	High temperature storage	After 1000 hours storage, without charge at 70°C.
		$\Delta C / C_{initial} \leq 30\%$, $ESR_{Final} \leq 2x ESR_{initial}$
	Endurance	After 1000 hours at 3V, 65°C.
		$\Delta C / C_{initial} \leq 30\%$, $ESR_{Final} \leq 2x ESR_{initial}$
	Projected RT life	10 years ($\Delta C / C_{initial} \leq 30\%$, $ESR_{Final} \leq 4x ESR_{initial}$)

Note: The life performance of a supercapacitor is determined by the combination of voltage, temperature, and the duration at said condition. To get a more accurate estimate on ageing of a supercapacitor, please contact CAP-XX.

Variation in DC Capacitance and ESR with temperature



Storage

CAP-XX recommends storing supercapacitors in their original packaging in an air conditioned room, preferably at $< 30^{\circ}\text{C}$ and $< 50\%$ relative humidity. CAP-XX supercapacitors can be stored at any temperature not exceeding their maximum operating temperature but storage at continuous high temperature and humidity is not recommended and will cause premature ageing.

Do not store supercapacitors in the following environments:

- High temperature / high humidity
- Direct sunlight
- In direct contact with water, salt, oil or other chemicals
- In direct contact with corrosive materials, acids, alkalis, or toxic gases
- Dusty environment
- In environments subjected to shock and vibration

Soldering

When soldering it is important to not over-heat the supercapacitor to not adversely affect its performance. CAP-XX recommends that only the terminals come in contact with solder and not the supercapacitor body.

Hand Soldering

Heat transfers from the terminals into to the supercapacitor body, so the soldering iron temperature should be $< 350^{\circ}\text{C}$ soldering time should be kept to the minimum possible and be less than 7 seconds.

Wave Soldering

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The PCB should be pre-heated only from the bottom and for < 60 secs with temperature $\leq 100^{\circ}\text{C}$ on the top side of the board for PCBs $\geq 0.8\text{mm}$ thick. The table below lists suggested solder temperatures.

Solder temperature $^{\circ}\text{C}$	Suggested solder time (s)
220	7
240	7
250	5
260	3

Reflow Soldering

Reflow soldering are not recommended for this product.