KW Supercapacitors

Coin cells

Features and benefits

- High specific capacitance
- Low leakage current
- Long cycle life
- Eco-friendly
- Broad operating range, full specification -40 °C to +85 °C

Applications

- Electric utilitymeters
- Motor control units
- Solar inverters
- Real-Time Clock (RTC) backup
- Programmable Logic Controllers (PLCs)
- Irrigation and water control systems

Description

Eaton supercapacitors are unique, ultrahigh capacitance devices utilizing electric double layer capacitor (EDLC) construction combined with new, high performance materials. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to specific applications that range from a few microamps for several days to several milliamps formilliseconds.
All products feature low ESR for high power density with environmentally friendly materials for a green power solution. Eaton supercapacitors are maintenance-free with design lifetimes up to 20 years* and operating temperatures down to -40 °C and up to +85 °C.

*Supercapacitor lifetimes vary based on charge voltage and temperature. See Eaton's application guidelines or contact your local Eaton sales representative for more information on lifetime estimates

Powering Business Worldwide

Specifications[1]

Capacitance	0.1 F to 1.0 F
Working voltage	5.5 V
Surge voltage	6.3 V
Capacitance tolerance	-20% to +80% (+20 °C)
Operating temperature range[2]	-40 °C to +85 °C

Standard Product

Capacitance (F)	Part number	Lead length	Maximum initial ESR (Ω) (Equivalent series resistance) measured @ 1 kHz	Typical mass (g)
0.1	KW-5R5C104-R	Standard	50	3.7
0.1	KW-5R5C104H-R	Short	50	3.7
0.22	KW-5R5C224-R	Standard	50	3.7
0.22	KW-5R5C224H-R	Short	50	3.7
0.33	KW-5R5C334-R	Standard	50	3.7
0.33	KW-5R5C334H-R	Short	50	3.7
0.68	KW-5R5C684-R	Standard	30	10.2
0.68	KW-5R5C684H-R	Short	30	10.2
1.0	KW-5R5C105-R	Standard	30	10.4
1.0	KW-5R5C105H-R	Short	30	10.4

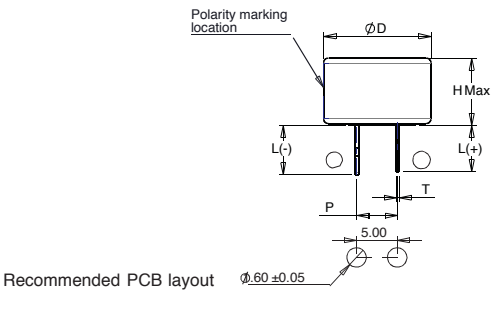
Performance

Parameter	Capacitance change (% of initial value)	ESR (% of maximum initial value)
Life — +85 °C @ 5.5 Vdc, 2000 hours	≤ 30%	≤ 200%
Storage Life — -40 °C to +85 °C, 2000 hours	≤ 30%	≤ 200%

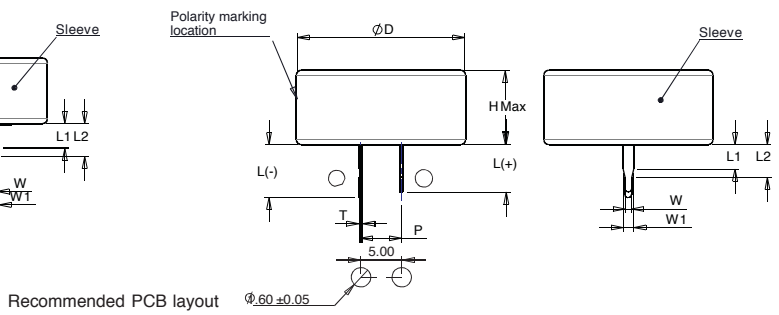
1. Testing and verification of product under end application conditions is recommended
2. Not recommended for +85 °C/85% RH applications

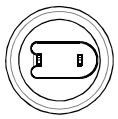
Dimensions (mm)

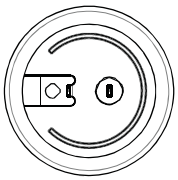
KW-5R5C104/224/334-R



KW-5R5C684/105-R







Part number	ØD Max	H Max	L(-) ±0.2	L(+) ±0.2	P ±0.3	T ±0.1	L1 ±0.1	L2 ±0.1	W ±0.06	W1 ±0.06
KW-5R5C104-R	13.5	8.30	6.1	5.7	5.0	0.4	3.0	4.0	0.8	1.3
KW-5R5C104H-R			3.3	3.3			0.9	1.9		
KW-5R5C224-R			6.1	5.7			3.0	4.0		
KW-5R5C224H-R			3.3	3.3			0.9	1.9		
KW-5R5C334-R			6.1	5.7			3.0	4.0		
KW-5R5C334H-R			3.3	3.3			0.9	1.9		
KW-5R5C684-R	21.5	8.85	6.5	5.8			3.0	4.0		
KW-5R5C684H-R			3.3	3.3			0.8	1.8		
KW-5R5C105-R			6.5	5.8			3.0	4.0		
KW-5R5C105H-R			3.3	3.3			0.8	1.8		

Part numbering system

KW	—	5	R	5	C	□	□ □	□	H*	-R
Family Code		Voltage (V) R = Decimal			Configuration	Capacitance (µF)			Short lead length	Standard product
						Value		Multiplier		
		5R5 = 5.5 V			V = Vertical H = Horizontal C=Cylindrical	Example: 474 = 47 x 10^4 µF or 0.47 F				

* If ordering standard lead length, omit "H" from part number.

Packaging information

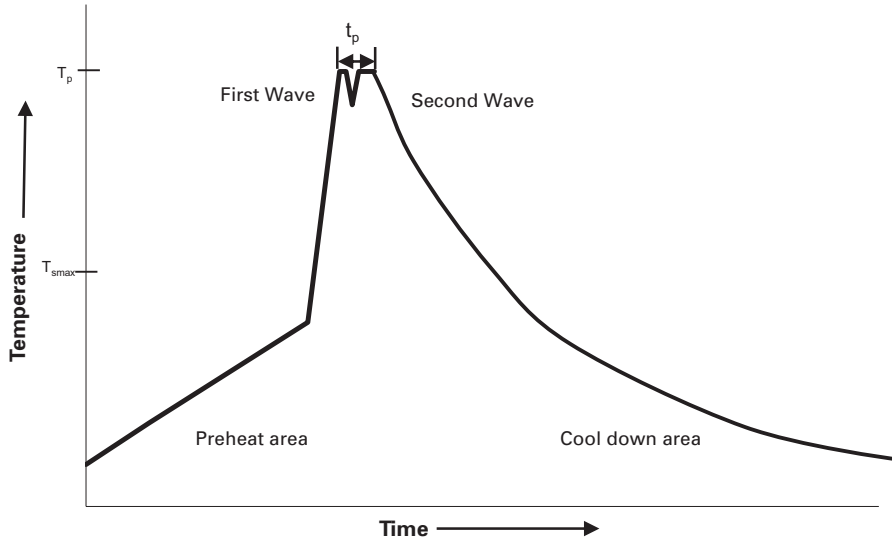
Standard bulk packaging:

- KW-5R5C104/224/334-R—400 parts
- KW-5R5C684/105-R—500 parts

Part marking

- Manufacturer
- Capacitance (F)
- Maximum operating voltage (V)
- Polarity

Wave solder profile



Profile feature	Standard SnPb solder	Lead (Pb) Free solder
Preheat and soak • Temperature max. (T_{smax})	100 °C	100 °C
• Time max.	60 seconds	60 seconds
Δ preheat to max temperature	160 °C max.	160 °C max.
Peak temperature (Tp)*	235 °C – 260 °C	250 °C – 260 °C
Time at peak temperature (t_p)	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C	4 minutes	4 minutes

Manual solder

Do not touch the supercapacitor's external sleeve with the soldering rod or the sleeve will melt or crack. The recommended temperature of the soldering rod tip is less than +260 °C (maximum: +350 °C) and the soldering duration should be less than 5 seconds. Minimize the time that the soldering iron is in direct contact with the terminals of the supercapacitor as excessive heating of the leads may lead to higher equivalent series resistance (ESR).

Reflow soldering

Do not use reflow soldering using infrared or convection oven heating methods.

Cleaning/Washing

Avoid cleaning of circuit boards, however if the circuit board must be cleaned use static or ultrasonic immersion in a standard circuit board cleaning fluid for no more than 5 minutes and a maximum temperature of +60 °C. Afterwards thoroughly rinse and dry the circuit boards. In general, treat supercapacitors in the same manner you would an aluminum electrolytic capacitor.

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