

Curva di scarica di un condensatore.

1feb2020

Analogia tra

1) scarica del condensatore

2) raffreddamento di un corpo in ambiente a temperatura costante.

alla tensione del condensatore corrisponde la sovratemperatura del corpo rispetto all'ambiente.

Voltmetro: portata 20 volt, risoluzione 0.01V.

I dati sono stati ottenuti filmando

25fps 1280x720.

Letti usando il programma Shotcut.

Il primo dato della serie e' il primo valore variato a partire da quello di carica massima.

Grafico a mano

Scala

$x=t$ 1cm:100 L=15cm,

1mm:10. Per posizionare i secondi, vanno arrotondati ai multipli di 10.

$y=V$ 0.8cm:1 L=18cm,

1mm:0.125

cronometro						
N	[min] t	[s] t	[s] t	[volt] V	[s] Δt	[volt] ΔV
0	0	52.79	0	19.22		
1	0	53.18	0.39	19.18	0.39	-0.04
2	0	53.58	0.79	19.14	0.4	-0.04
3	0	53.98	1.19	19.09	0.4	-0.05
4	0	54.48	1.69	19.05	0.5	-0.04
5	0	54.87	2.08	19.01	0.39	-0.04
6	0	55.34	2.55	18.96	0.47	-0.05
7	0	55.64	2.85	18.92	0.3	-0.04
8	0	56.18	3.39	18.88	0.54	-0.04
9	0	56.58	3.79	18.83	0.4	-0.05
10	0	56.98	4.19	18.79	0.4	-0.04
11	0	57.48	4.69	18.75	0.5	-0.04
12	0	57.87	5.08	18.71	0.39	-0.04
13	0	58.37	5.58	18.67	0.5	-0.04
14	0	58.69	5.9	18.62	0.32	-0.05
15	0	59.18	6.39	18.58	0.49	-0.04
16	0	59.58	6.79	18.54	0.4	-0.04
17	0	59.98	7.19	18.5	0.4	-0.04
18	1	0.49	7.7	18.46	0.51	-0.04
19	1	0.89	8.1	18.42	0.4	-0.04
20	1	1.37	8.58	18.38	0.48	-0.04
21	1	1.69	8.9	18.34	0.32	-0.04
22	1	2.18	9.39	18.3	0.49	-0.04
23	1	2.58	9.79	18.26	0.4	-0.04
24	1	2.98	10.19	18.22	0.4	-0.04
25	1	3.39	10.6	18.18	0.41	-0.04
26	1	3.84	11.05	18.15	0.45	-0.03
27	1	4.27	11.48	18.11	0.43	-0.04
28	1	4.68	11.89	18.07	0.41	-0.04
29	1	5.08	12.29	18.03	0.4	-0.04
30	1	5.58	12.79	17.99	0.5	-0.04
31	1	17.08	24.29	17.01	11.5	-0.98
32	1	28.08	35.29	16.01	11	-1
33	1	43.58	50.79	15.01	15.5	-1
34	1	58.49	65.7	14	14.91	-1.01
35	2	14.69	81.9	13	16.2	-1
36	2	31.84	99.05	12.01	17.15	-0.99
37	2	50.98	118.19	11	19.14	-1.01
38	3	11.89	139.1	10	20.91	-1
39	3	22.88	150.1	9.5	10.99	-0.5
40	3	34.08	161.3	9	11.2	-0.5
41	3	47.37	174.6	8.51	13.29	-0.49
42	4	0.58	187.8	8.01	13.21	-0.5
43	4	15.08	202.3	7.5	14.5	-0.51

44	4	30.08	217.3	7.01	15	-0.49
45	4	46.34	233.6	6.51	16.26	-0.5
46	5	3.87	251.1	6.01	17.53	-0.5
47	5	22.99	270.2	5.5	19.12	-0.51
48	5	44.34	291.6	5	21.35	-0.5
49	6	7.33	314.5	4.5	22.99	-0.5
50	6	32.98	340.2	4	25.65	-0.5
51	7	2.89	370.1	3.5	29.91	-0.5
52	7	19.29	386.5	3.25	16.4	-0.25
53	7	36.68	403.9	3	17.39	-0.25
54	7	56.37	423.6	2.75	19.69	-0.25
55	8	17.24	444.5	2.5	20.87	-0.25
56	8	40.84	468.1	2.25	23.6	-0.25
57	9	6.84	494.1	2	26	-0.25
58	9	36.84	524.1	1.75	30	-0.25
59	10	11.34	558.6	1.5	34.5	-0.25
60	10	52.98	600.2	1.25	41.64	-0.25
61	11	43.34	650.6	1	50.36	-0.25
62	12	7.29	674.5	0.9	23.95	-0.1
63	12	33.89	701.1	0.8	26.6	-0.1
64	13	4.08	731.3	0.7	30.19	-0.1
65	13	39.98	767.2	0.6	35.9	-0.1
66	14	21.37	808.6	0.5	41.39	-0.1
67	15	13.08	860.3	0.4	51.71	-0.1
68	15	44.34	891.6	0.35	31.26	-0.05
69	16	20.58	927.8	0.3	36.24	-0.05
70	17	2.98	970.2	0.25	42.4	-0.05
71	17	55.84	1023	0.2	52.86	-0.05
72	18	20.08	1047	0.18	24.24	-0.02
73	18	50.18	1077	0.16	30.1	-0.02
74	19	21.34	1109	0.14	31.16	-0.02
75	19	58.48	1146	0.12	37.14	-0.02
76	20	44.18	1191	0.1	45.7	-0.02
77	21	8.18	1215	0.09	24	-0.01
78	21	41.93	1249	0.08	33.75	-0.01
79	22	10.68	1278	0.07	28.75	-0.01
80	22	49.08	1316	0.06	38.4	-0.01
81	23	33.95	1361	0.05	44.87	-0.01
82	24	29.48	1417	0.04	55.53	-0.01
83	25	5.48	1453	0	36	-0.04

Scarica condensatore, tensione in funzione del tempo

