



SANTAK® CASTLE SERIES BATTERY

CASTLE BATTERY C12V SERIES

Maintenance-free Sealed Lead-acid
UPS Batteries



CASTLE C12V SERIES BATTERIES

CASTLE C12V series batteries adopt unique and advanced technology and production processes. They are being designed with more focus on compatibility with UPS and system optimization. Compared to other batteries on the market, CASTLE C12V series batteries can provide longer float charging life time and more powerful discharging characteristics. It is an ideal product for UPS backup application.

APPLICATIONS

UPS, Telecom, Security Standby Power Supply, Medical Instruments, and so on.

PRODUCT FEATURES

Long-life Design

The advanced grid manufacturing technology leads to a highly improved grid corrosion resistance. The battery design life is over 10 years at floating condition.

Excellent High Rate Discharge Performance

Due to a special plate design and a terminal design, together with an advanced formulation and a welding process, the high rate discharge performance is significantly increased with the ensuring of enough battery capacity.

Flame Retardant

The battery containers and lids are manufactured with UL94-V0 level flame retardant ABS materials.

Low Self-discharge Rate

Battery self-discharge rate is less than 3% at 25°C after one month.

High Consistency

Thanks to the automatic production process and the resulting high productivity, Santak batteries have good performance in plate and battery consistency. They are more suitable for being used in series in UPS application.

Best Compatibility With UPS

The product design work was done to achieve a perfect combination with UPS and whole system cost optimization.

Convenient Installation And Maintenance

The embedded terminal design makes the installation and maintenance work simple and convenient. It also increases the high current trafficability performance.



SPECIFICATIONS

Item No.	Voltage (V)	Capacity /Ah (C20@25°C)	W/cell 1.67V@15min	Internal Resistance (m Ω)	Dimensions (mm)				Weight (Kg)	Terminal
					L	W	H	TH		
C12-18	12	18	61.7	16.2	181.5	77	167.5	167.5	5.4	M5
C12-26	12	26	89.1	14	166	175	133	133	7.8	M5
C12-38	12	38	123	9.0	197	165	170	170	11.4	M6
C12-65	12	65	210	6.5	325	167	174	174	19.2	M6
C12-100	12	100	324	4.0	330	173	213	219	28	M8
C12-120	12	120	336	4.0	408	177	225	225	32.3	M8
C12-150	12	150	420	3.5	483	170	238.5	238.5	41.5	M8
C12-200	12	200	647	3.2	522	240	218	224	57.1	M8
C12-225	12	246	700.4	2.5	522	240	218	224	63.5	M8



BATTERY CHARACTERISTICS

Design life	10 years
Operating Temperature Range	Charge: 0°C ~40°C Discharging: -20°C ~55°C Storage: -15°C ~50°C
Capacity Affected by Temperature	103% C ₂₀ @40°C 100% C ₂₀ @25°C 86% C ₂₀ @0 °C
Float Charging Voltage	13.5V - 13.8V; Recom. 13.65V
Equalizing Charging Voltage	14.1V-14.4V; Recom. 14.1V
Float Charging Temp. Coefficient	-18mV/ °C
Recycling Usage Temp. Coefficient	-30mV/ °C
Max. Charging Current	0.3CA
Max AC ripple (charger)	Less than 2%
Monthly Self Discharge Rate	less than 3% per month (25°C)

CONSTANT POWER DISCHARGE (WATTS/CELL@25°C)

C12-18

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	99.1	69.7	54.6	44.3	32.86	24.19	20.33	15.09	12.05	9.00	7.12	5.94	5.10	4.05	3.31	1.79
1.75	106.7	73.8	57.2	46.1	34.06	24.98	20.93	15.50	12.35	9.20	7.27	6.06	5.19	4.11	3.35	1.81
1.70	114.0	77.8	59.8	48.0	35.23	25.73	21.55	15.93	12.67	9.43	7.43	6.18	5.29	4.18	3.40	1.83
1.67	118.0	80.1	61.7	49.0	35.93	26.17	21.90	16.15	12.84	9.55	7.51	6.24	5.34	4.21	3.43	1.84
1.60	128.6	85.7	64.7	51.5	37.50	27.23	22.74	16.74	13.28	9.84	7.72	6.40	5.47	4.30	3.49	1.87

C12-26

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	143	101	78.8	64.0	47.5	34.9	29.4	21.8	17.4	13.0	10.3	8.58	7.36	5.84	4.78	2.58
1.75	154	107	82.6	66.5	49.2	36.1	30.2	22.4	17.8	13.3	10.5	8.75	7.50	5.94	4.84	2.61
1.70	165	112	86.3	69.3	50.9	37.2	31.1	23.0	18.3	13.6	10.7	8.92	7.64	6.03	4.91	2.64
1.67	171	116	89.1	70.8	51.9	37.8	31.6	23.3	18.5	13.8	10.8	9.01	7.72	6.09	4.95	2.66
1.60	186	124	93.4	74.4	54.2	39.3	32.9	24.2	19.2	14.2	11.2	9.25	7.90	6.21	5.04	2.71

C12-38

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	173	132	109	90.6	67.5	50.4	41.8	31.0	24.9	18.4	14.7	12.4	10.7	8.47	7.06	3.77
1.75	185	139	114	94.1	69.9	52.0	43.0	31.9	25.5	18.8	15.1	12.6	10.9	8.60	7.16	3.82
1.70	198	147	119	98.0	72.3	53.6	44.3	32.8	26.2	19.3	15.4	12.9	11.1	8.74	7.26	3.86
1.67	204	151	123	100	73.8	54.5	45.0	33.2	26.5	19.5	15.6	13.0	11.2	8.82	7.31	3.89
1.60	219	160	128	105	76.9	56.7	46.7	34.4	27.4	20.1	16.0	13.4	11.5	9.00	7.45	3.96

C12-65



F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	295	225	186	155	115	86.2	71.5	53.1	42.5	31.5	25.2	21.2	18.3	14.5	12.1	6.46
1.75	317	239	195	161	120	89.0	73.6	54.5	43.6	32.2	25.7	21.6	18.6	14.7	12.2	6.53
1.70	338	251	203	168	124	91.6	75.8	56.0	44.8	33.0	26.3	22.0	19.0	14.9	12.4	6.61
1.67	349	258	210	171	126	93.2	77.0	56.8	45.4	33.4	26.6	22.3	19.2	15.1	12.5	6.66
1.60	375	274	219	180	132	97.0	80.0	58.9	46.9	34.4	27.3	22.9	19.6	15.4	12.7	6.77

C12-100

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	415	322	287	224	166	122	103	76.3	61.1	45.5	36.1	30.2	26.2	21.3	18.4	9.79
1.75	446	342	300	233	172	126	106	78.3	62.6	46.5	36.9	30.8	26.7	21.6	18.6	9.91
1.70	475	359	313	243	178	130	109	80.5	64.2	47.7	37.7	31.4	27.2	22.0	18.9	10.0
1.67	497	370	324	248	182	132	111	81.6	65.1	48.3	38.1	31.7	27.4	22.2	19.0	10.1
1.60	528	392	338	260	190	138	115	84.6	67.3	49.8	39.2	32.6	28.1	22.6	19.4	10.3

CONSTANT POWER DISCHARGE (WATTS/CELL@25°C)

C12-120

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	472	361	297	250	191	144	123	92.7	74.4	55.9	44.7	37.5	32.6	25.8	21.5	11.8
1.75	507	382	311	260	198	149	127	95.3	76.2	57.2	45.7	38.3	33.2	26.2	21.8	11.9
1.70	541	402	325	271	204	153	131	97.9	78.3	58.6	46.6	39.0	33.8	26.6	22.1	12.1
1.67	559	414	336	277	208	156	133	99.3	79.3	59.3	47.2	39.4	34.2	26.9	22.3	12.1
1.60	601	439	351	290	217	162	138	103	82.0	61.1	48.5	40.5	35.0	27.4	22.7	12.3

C12-150

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	590	451	371	312	238	180	154	116	93.0	69.9	55.9	46.9	40.7	32.2	26.9	14.7
1.75	634	478	389	325	247	186	159	119	95.3	71.5	57.1	47.8	41.5	32.8	27.2	14.9
1.70	676	503	406	338	256	192	164	122	97.8	73.2	58.3	48.8	42.3	33.3	27.6	15.1
1.67	699	517	420	346	261	195	166	124	99.1	74.1	59.0	49.3	42.7	33.6	27.8	15.2
1.60	751	548	438	362	272	203	173	129	102	76.4	60.6	50.6	43.7	34.3	28.3	15.4

C12-200

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	908	693	572	477	355	265	220	163	131	97.0	77.6	65.2	56.3	44.6	37.1	19.9
1.75	976	734	599	495	368	274	226	168	134	99.2	79.2	66.5	57.3	45.3	37.7	20.1
1.70	1040	773	626	516	381	282	233	172	138	101.0	80.9	67.8	58.4	46.0	38.2	20.3
1.67	1075	795	647	527	388	287	237	175	140	102.0	81.8	68.5	58.9	46.4	38.5	20.5
1.60	1155	842	675	553	405	298	246	181	144	106	84.1	70.3	60.4	47.4	39.2	20.8

C12-225

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	984	752	619	521	397	300	257	193	143	117	93.1	78.2	67.9	53.7	44.8	24.5
1.75	1057	797	648	541	412	310	265	199	155	119	95.1	79.7	69.1	54.6	45.4	24.8
1.70	1126	838	677	564	426	319	273	204	159	122	97.2	81.3	70.5	55.5	46.0	25.1
1.67	1165	862	700	576	434	325	277	207	163	124	98.3	82.1	71.2	56.0	46.4	25.3
1.60	1251	914	731	604	453	338	288	214	165	127	101	84.3	72.9	57.1	47.2	25.7

CONSTANT CURRENT DISCHARGE (AMPERE@25°C)

C12-18

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	52.7	36.8	28.7	23.2	17.15	12.57	10.53	7.78	6.19	4.61	3.64	3.03	2.59	2.05	1.67	0.90
1.75	57.5	39.4	30.3	24.4	17.92	13.08	10.92	8.04	6.38	4.73	3.73	3.10	2.65	2.09	1.70	0.91
1.70	62.2	42.0	32.1	25.6	18.71	13.58	11.32	8.32	6.59	4.87	3.82	3.17	2.70	2.13	1.73	0.92
1.67	65.0	43.6	33.1	26.4	19.18	13.88	11.56	8.47	6.70	4.95	3.87	3.21	2.74	2.15	1.74	0.93
1.60	71.6	47.2	35.5	28.1	20.27	14.60	12.12	8.84	6.98	5.13	4.00	3.30	2.81	2.20	1.78	0.95

C12-26

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	76.1	53.1	41.4	33.5	24.8	18.2	15.2	11.2	8.95	6.66	5.25	4.37	3.74	2.96	2.42	1.30
1.75	83.0	56.9	43.8	35.2	25.9	18.9	15.8	11.6	9.22	6.84	5.38	4.47	3.82	3.02	2.46	1.32
1.70	89.9	60.7	46.3	37.0	27.0	19.6	16.4	12.0	9.52	7.04	5.52	4.57	3.90	3.07	2.49	1.33
1.67	93.9	63.0	47.8	38.1	27.7	20.1	16.7	12.2	9.68	7.14	5.59	4.63	3.95	3.10	2.52	1.34
1.60	104	68.1	51.2	40.6	29.3	21.1	17.5	12.8	10.1	7.41	5.78	4.77	4.06	3.18	2.57	1.37

C12-38

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	92.2	69.6	57.2	47.5	35.2	26.2	21.6	16.0	12.8	9.44	7.53	6.32	5.43	4.29	3.57	1.90
1.75	101	74.7	60.5	49.8	36.8	27.2	22.4	16.5	13.2	9.69	7.71	6.46	5.55	4.37	3.63	1.92
1.70	109	79.6	63.9	52.4	38.4	28.3	23.3	17.1	13.6	9.97	7.91	6.61	5.67	4.45	3.68	1.95
1.67	114	82.5	65.9	53.9	39.4	28.9	23.8	17.4	13.8	10.1	8.02	6.69	5.74	4.50	3.72	1.96
1.60	125	89.3	70.7	57.4	41.6	30.4	24.9	18.2	14.4	10.5	8.28	6.89	5.90	4.60	3.80	2.00

C12-65

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	158	119	97.8	81.2	60.2	44.8	37.0	27.4	21.9	16.1	12.9	10.8	9.30	7.35	6.11	3.25
1.75	172	128	203	85.2	62.9	46.6	38.4	28.3	22.6	16.6	13.2	11.1	9.49	7.48	6.20	3.29
1.70	186	136	109	89.6	65.7	48.4	39.8	29.3	23.3	17.1	13.5	11.3	9.70	7.61	6.30	3.33
1.67	195	141	113	92.2	67.4	49.4	40.6	29.8	23.7	17.3	13.7	11.4	9.81	7.69	6.36	3.36
1.60	215	153	121	98.2	71.2	52.0	42.6	31.1	24.6	18.0	14.2	11.8	10.1	7.87	6.49	3.42

C12-100

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	222	171	151	117	86.8	63.5	53.3	39.3	31.4	23.3	18.4	15.4	13.3	10.8	9.30	5.00
1.75	242	183	159	123	90.7	66.1	55.3	40.7	32.4	23.9	18.9	15.8	13.6	11.0	9.44	5.03
1.70	262	195	169	130	94.7	68.6	57.3	42.0	33.4	24.6	19.4	16.1	13.9	11.2	9.59	5.05
1.67	274	202	174	133	97.1	70.2	58.5	42.8	33.9	25.0	19.6	16.3	14.0	11.3	9.68	5.09
1.60	302	219	186	142	103	73.8	61.3	44.7	35.4	25.9	20.3	16.8	14.4	11.6	9.88	5.18

CONSTANT CURRENT DISCHARGE (AMPERE@25°C)

C12-120

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	252	191	156	131	100	75	64	48	38	28.6	22.8	19.1	16.6	13.1	10.9	5.9
1.75	275	205	165	138	104	78	66	50	39	29.4	23.4	19.6	16.9	13.3	11.0	6.0
1.70	298	218	175	145	109	81	69	51	41	30.3	24.0	20.0	17.3	13.6	11.2	6.1
1.67	311	226	180	149	111	83	70	52	41	30.7	24.3	20.3	17.5	13.7	11.3	6.1
1.60	343	245	193	158	118	87	74	54	43	32	25.1	20.9	18.0	14.0	11.6	6.2

C12-150

F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	315	239	195	164	124	94	80	60	48	35.8	28.5	23.9	20.7	16.4	13.6	7.4
1.75	344	256	207	172	130	97	83	62	49	36.8	29.3	24.5	21.2	16.7	13.8	7.5
1.70	373	273	218	181	136	101	86	64	51	37.8	30.0	25.0	21.6	17.0	14.0	7.6
1.67	389	283	225	186	139	103	88	65	52	38.4	30.4	25.3	21.9	17.1	14.1	7.7
1.60	429	306	242	198	147	109	92	68	54	40	31.4	26.1	22.5	17.5	14.4	7.8

C12-200

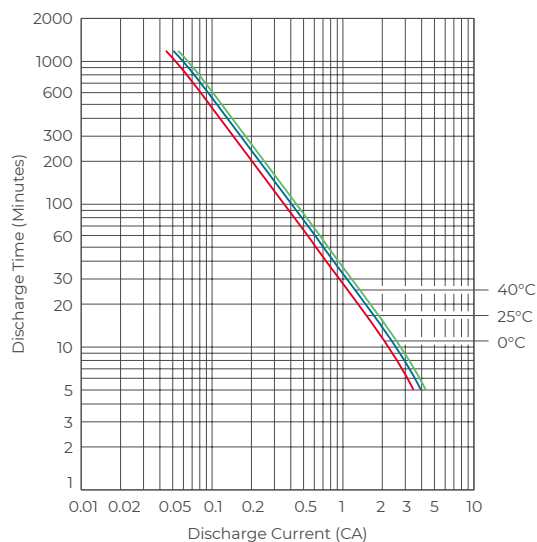
F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	485	366	301	250	185	138	114	84.2	67.3	49.7	39.6	33.2	28.6	22.6	18.8	10.0
1.75	530	393	318	262	194	142	118	87.1	69.4	51.0	40.5	34.0	29.2	23.0	19.1	10.1
1.70	573	419	336	276	202	149	122	90.0	71.6	52.5	41.7	34.8	29.8	23.4	19.4	10.3
1.67	599	434	347	284	207	152	125	91.6	72.8	53.3	42.2	35.2	30.2	23.7	19.6	10.3
1.60	660	470	372	302	219	160	131	95.7	75.8	55.2	43.6	36.3	31.0	24.2	20.0	10.5

C12-225

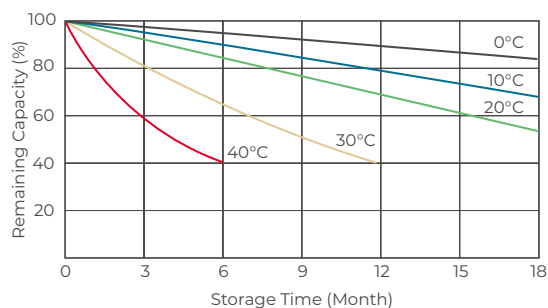
F.V.	Time															
(V/cell)	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	526	398	326	273	185	156	133	99.7	79.7	59.7	47.6	39.8	34.5	27.3	22.6	12.3
1.75	574	426	345	286	194	162	138	103	82.1	61.3	48.8	40.8	35.3	27.8	23.0	12.5
1.70	621	455	364	301	202	169	143	107	84.8	63.0	50.0	41.7	36.0	28.2	23.4	12.7
1.67	649	471	376	310	207	172	146	108	86.2	64.0	50.7	42.2	36.4	28.5	23.6	12.8
1.60	715	510	403	330	219	181	153	113	89.8	66.3	52.4	43.5	37.5	29.2	24.1	13.0

TYPICAL CURVES

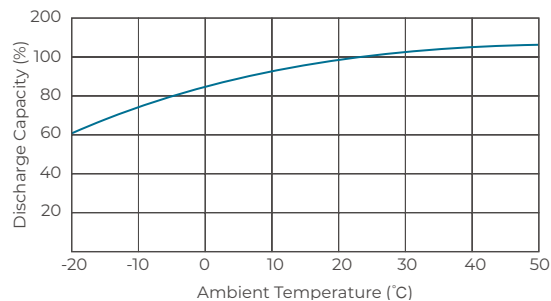
DISCHARGE CURRENT IN RELATION TO DISCHARGE TIME



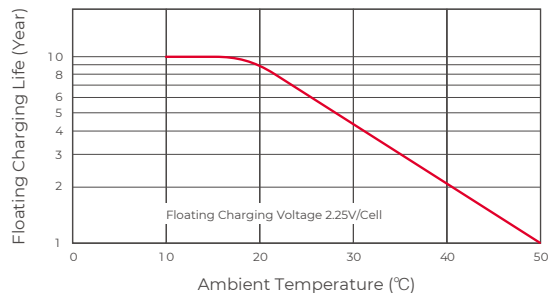
SELF-DISCHARGE CHARACTERISTICS



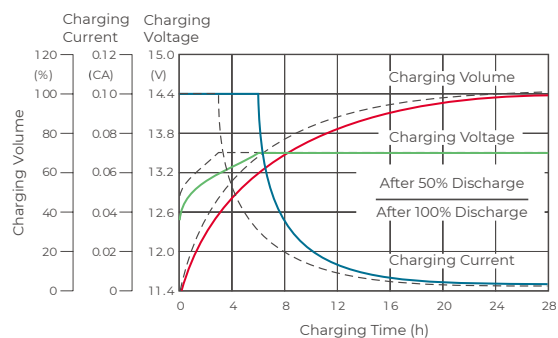
AMBIENT TEMPERATURE IN RELATION TO DISCHARGE CAPACITY



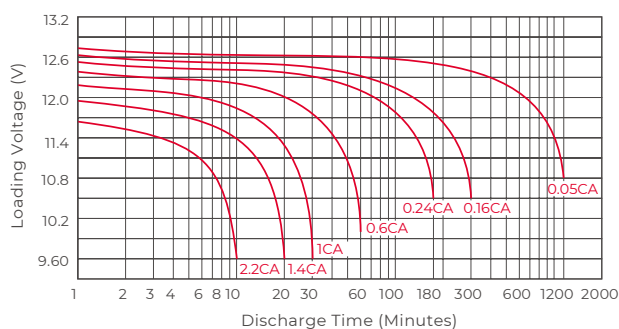
FLOAT CHARGING LIFE CHARACTERISTICS



CHARGING CHARACTERISTICS



DISCHARGE CHARACTERISTICS





OPERATION AND MAINTENANCE

CHARGING

Float Charging Voltage: 13.5 – 13.8V; Recom. 13.65V Equalizing Charging Voltage: 14.1 – 14.4V; Recom. 14.1V.

DAILY MAINTENANCE

In order to control the operation status of battery and equipment, please follow below methods periodically to check the battery and record.

Frequency	Inspection and Maintenance Items
Monthly	Battery pack overall float charging voltage, battery appearance, battery temperature, connecting parts, safety valve.
Quarterly	Battery pack overall float charging voltage, each battery float charging voltage, battery appearance, battery temperature, connecting parts, safety valve.
Annually	Battery pack overall float charging voltage, each battery float charging voltage, battery appearance, battery temperature, connecting parts, safety valve. Discharge test (discharge 30~40% of the nominal capacity and pick out the laggard batteries.)

PROBLEMS AND PROCESSING METHODS

Problems	Processing Methods	Remarks
Leakage	Replace	
Broken	Replace	
On Fire	Replace	Please use dry powder extinguisher
Abnormal appearance	contact supplier	
Over high temperature	Please check the charging and discharging parameters or replace the faulty battery	
Insufficient Capacity	Equalizing charging the single battery for more than 24 hours	Replace if the capacity is still insufficient
Single Battery Voltage too low	Equalizing charging the single battery for more than 24 hours	