

## Castle Series Battery

# CASTLE BATTERY C12V SERIES

Maintenance-free Sealed Lead-acid UPS Batteries



# Product Introduction

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 frame retardant ABS materials.

### Low Self-discharge Rate

Battery self-discharge rate is less than 2% at 20°C after 28 days.

### 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 (mΩ·T·M)	Dimensions (mm)				Weight (Kg)	Terminal
					L	W	H	TH		
C12-26	12	26	89.1	12	166	175	125	125	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	216	220	28.0	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 <sub>20</sub> @40°C 100% C <sub>20</sub> @25°C 86% C <sub>20</sub> @0°C
Float Charging Voltage	13.5V - 13.8V; Recom. 13.7V
Equalizing Charging Voltage	14.1V-14.4V; Recom. 14.1V
Float Charging Temp. Coefficient	-20mV/°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 2% (20°C)

# Constant Power Discharge

(Watts/Cell@25°C )

## C12-26

F.V. (V/cell)	Time															
	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. (V/cell)	Time															
	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. (V/cell)	Time															
	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. (V/cell)	Time															
	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 Current Discharge

(Ampere@25°C )

## C12-26

F.V. (V/cell)	Time															
	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. (V/cell)	Time															
	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

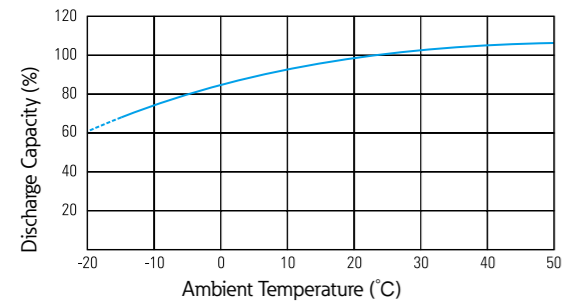
F.V. (V/cell)	Time															
	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	158	119	97.8	81.2	60.2	44.8	37.0	27.4	21.9	16.1	12.9	10.8	9.30	7.35	6.11	3.25
1.75	172	128	203	85.2	62.9	46.6	38.4	28.3	22.6	16.6	13.2	11.1	9.49	7.48	6.20	3.29
1.70	186	136	109	89.6	65.7	48.4	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

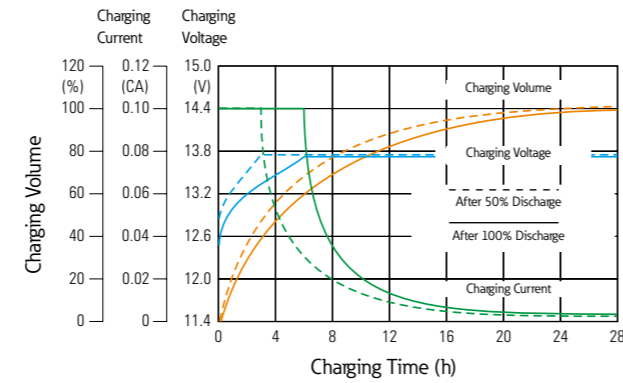
F.V. (V/cell)	Time															
	5min	10min	15min	20min	30min	45min	1H	1.5H	2H	3H	4H	5H	6H	8H	10H	20H
1.80	222	171	151	117	86.8	63.5	53.3	39.3	31.4	23.3	18.4	15.4	13.3	10.8	9.30	5.00
1.75	242	183	159	123	90.7	66.1	55.3	40.7	32.4	23.9	18.9	15.8	13.6	11.0	9.44	5.03
1.70	262	195	169	130	94.7	68.6	57.3	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

# Typical Curves

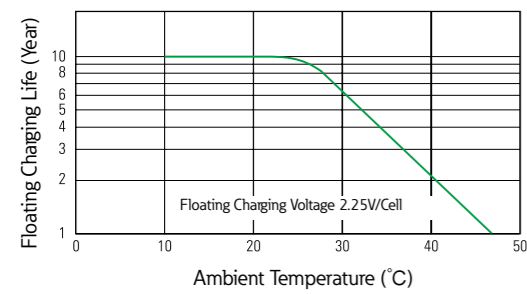
Ambient Temperature in Relation to Discharge Capacity



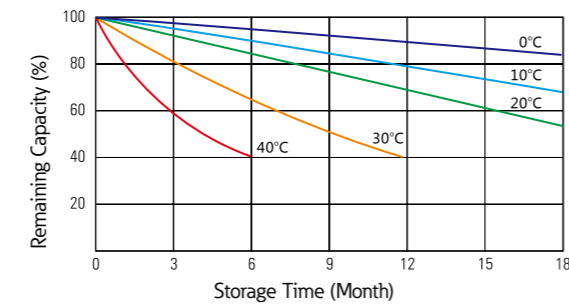
Charging Characteristics



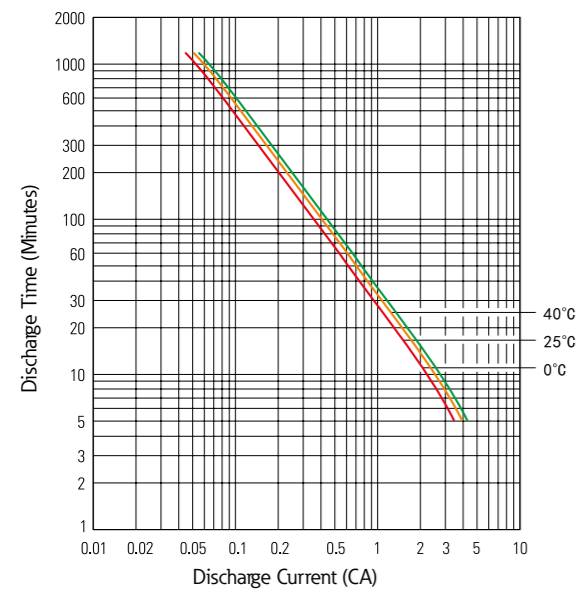
Float Charging Life Characteristics



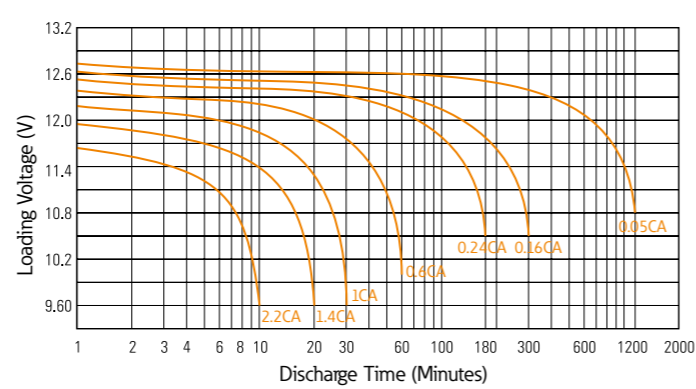
Self-discharge Characteristics



Discharge Current in Relation to Discharge Time

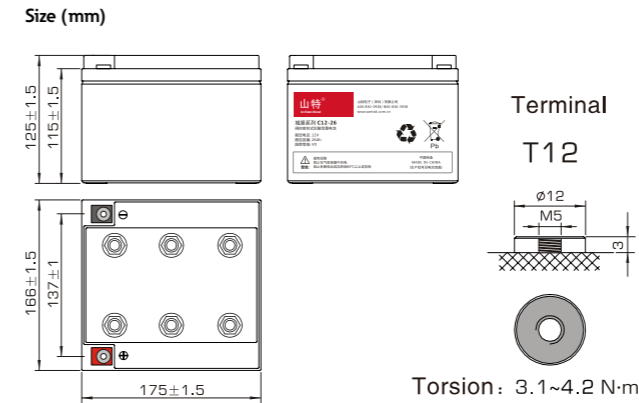


Discharge Characteristics

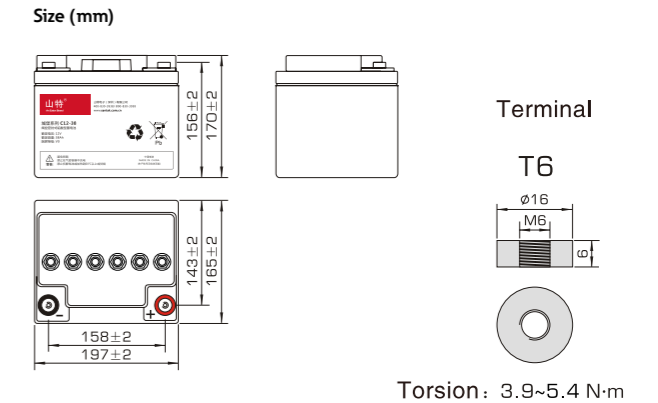


# Dimensions

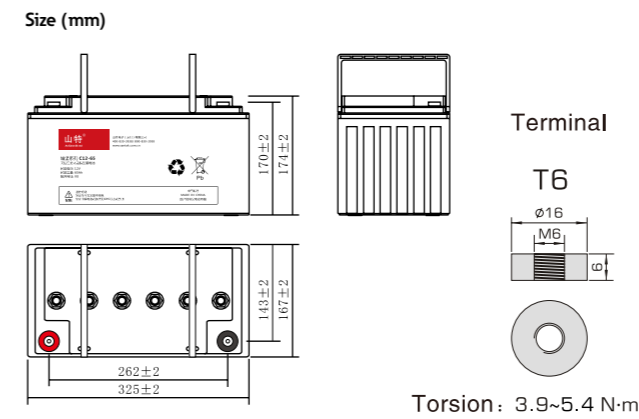
C12-26



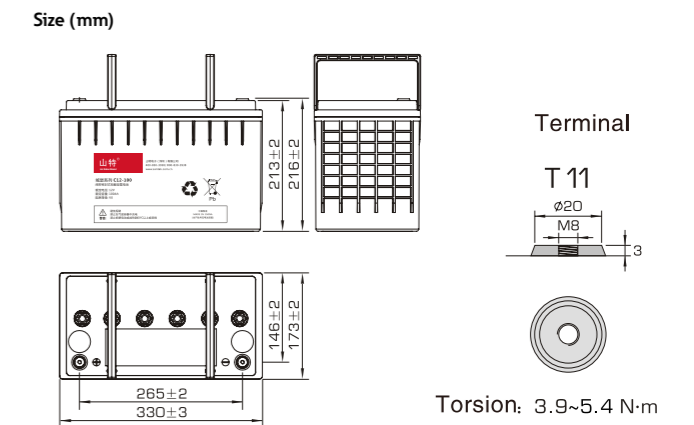
C12-38



C12-65



C12-100





# Operation and Maintenance

## • Charging

Float Charging Voltage: 13.5 – 13.8V; Recom. 13.7V

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	

Specifications are subject to change without prior notice.

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