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Valve Regulated lead Acid Battery (VRLA)
Safe and reliable power solution





Technical Characteristic

The Front Terminal series batteries have been optimized for various industries, particularly telecommunications, through modifications to the terminal structure, special formulations in the lead plates, and extended lifespan in both AGM and VRLA models.

Main Features:

- Compatible with standard 19 and 23 inch cabinets
- Maintenance-free thanks to oxygen recombination technology
- Features a shield structure and self-adjusting valves
- Enhanced lifespan through a special lead paste formulation
- Easy installation and periodic inspections facilitated by terminal location indicators
- Equipped with a protective terminal cover to prevent short circuits
- Utilizes high-quality AGM separators to extend life cycle
- Battery body reinforced with ABS for increased resistance (with optional flame retardant properties)
- Low self-discharge enabled by high-purity raw materials

Obtaining domestic and international certificates and approvals serves as evidence of the sustainable quality of these products, including compliance with CE, IEC, ISO9001, ISO14001, and ISO18001 standards, as well as approval from telecommunications companies.

Front Terminal 12V batteries are available in capacities ranging from 100 to 200 amp hours, boasting a lifespan of 10 years under ideal conditions.

Scope of Application:

- Devices within the telecommunication network
- Power supply for special power networks or local power grids
- UPSs and standby power supplies
- Power plant systems
- Rail transportation systems
- Marine systems



Technical characteristic

The GP series (General Purpose) batteries, available in AGM and VRLA types, offer stable quality and high reliability across various applications.

Main Features:

- Maintenance-free operation: utilizing open oxygen combination technology
- Shield structure: reinforced by self-adjusting valves
- Low self-discharge: facilitated by lead-calcium alloy grids in the lead plates
- High-quality AGM separators: ensuring an extended life cycle
- ABS body: enhances battery body resistance, with the option to increase flame retardancy
- High-purity raw materials: result in a low internal discharge rate

Over time, these batteries have earned domestic and international certificates and approvals, including ISO18001, ISO14001, CE, IEC, and ISO9001 standards, as well as approvals from telecommunications, oil companies, traffic control entities, public and private banks, among others.

The GP series 12-volt batteries are available in capacities ranging from 9 to 200 ampere-hours, boasting a lifespan of over 5 years under ideal conditions.

Scope of Application:

- General usage
- Uninterruptible Power Supplies (UPS)
- Emergency Power Systems (EPS)
- Emergency Lighting
- Rail Transportation Systems
- Air Navigation Systems
- Security Systems
- Electronic Devices and Equipment
- Communication Power Supply
- DC Power Supply
- Automatic Control Systems

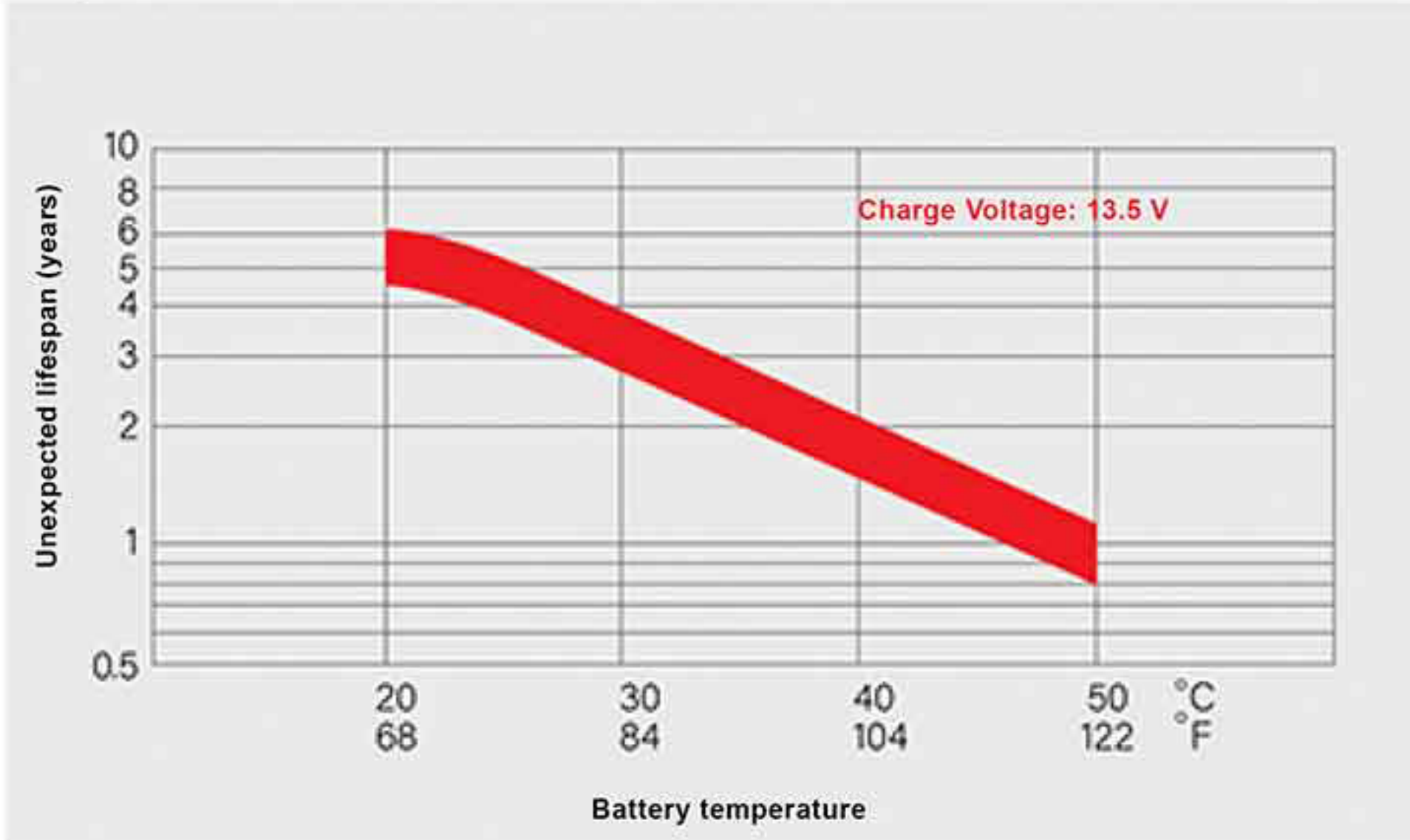




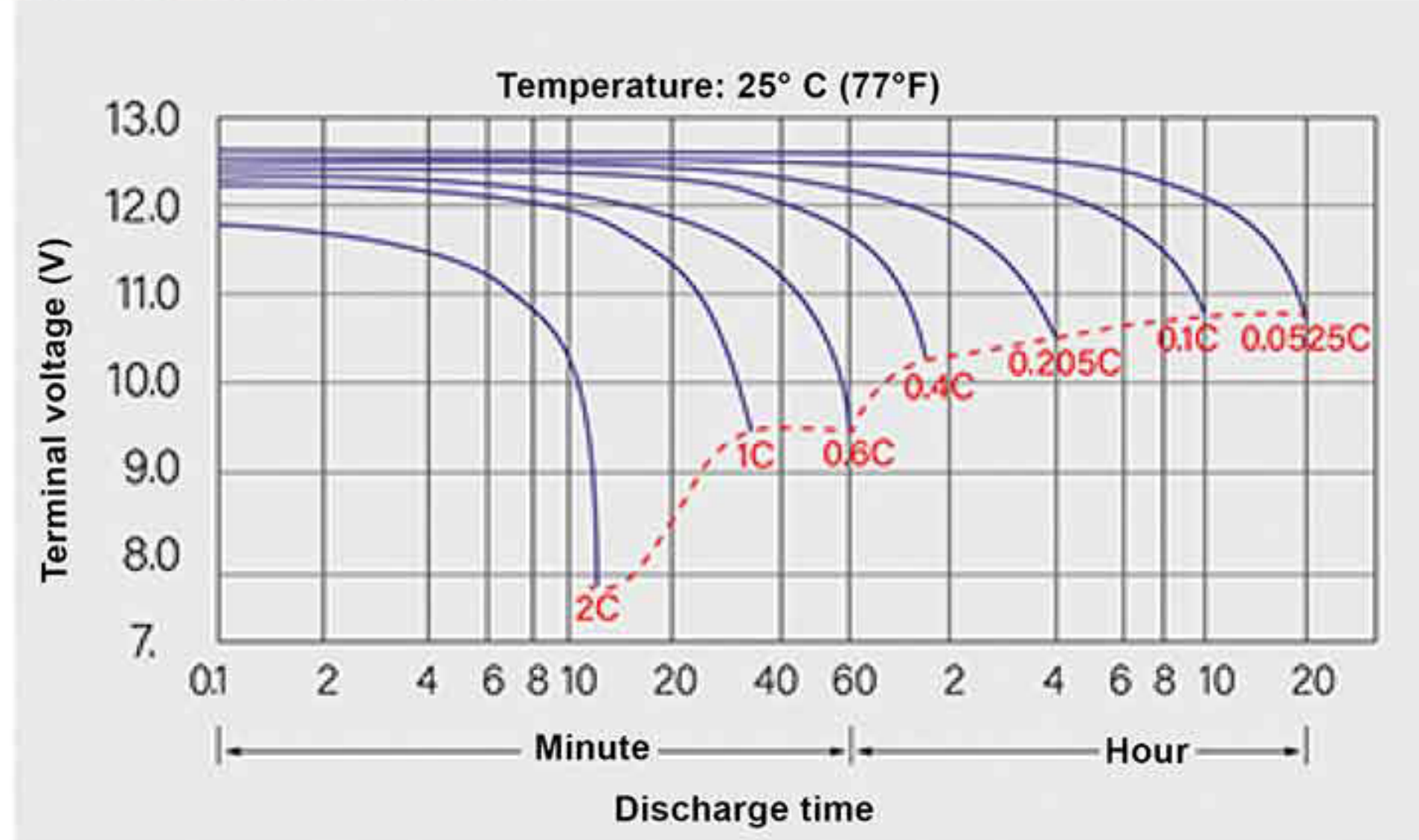
12V-9Ah GP



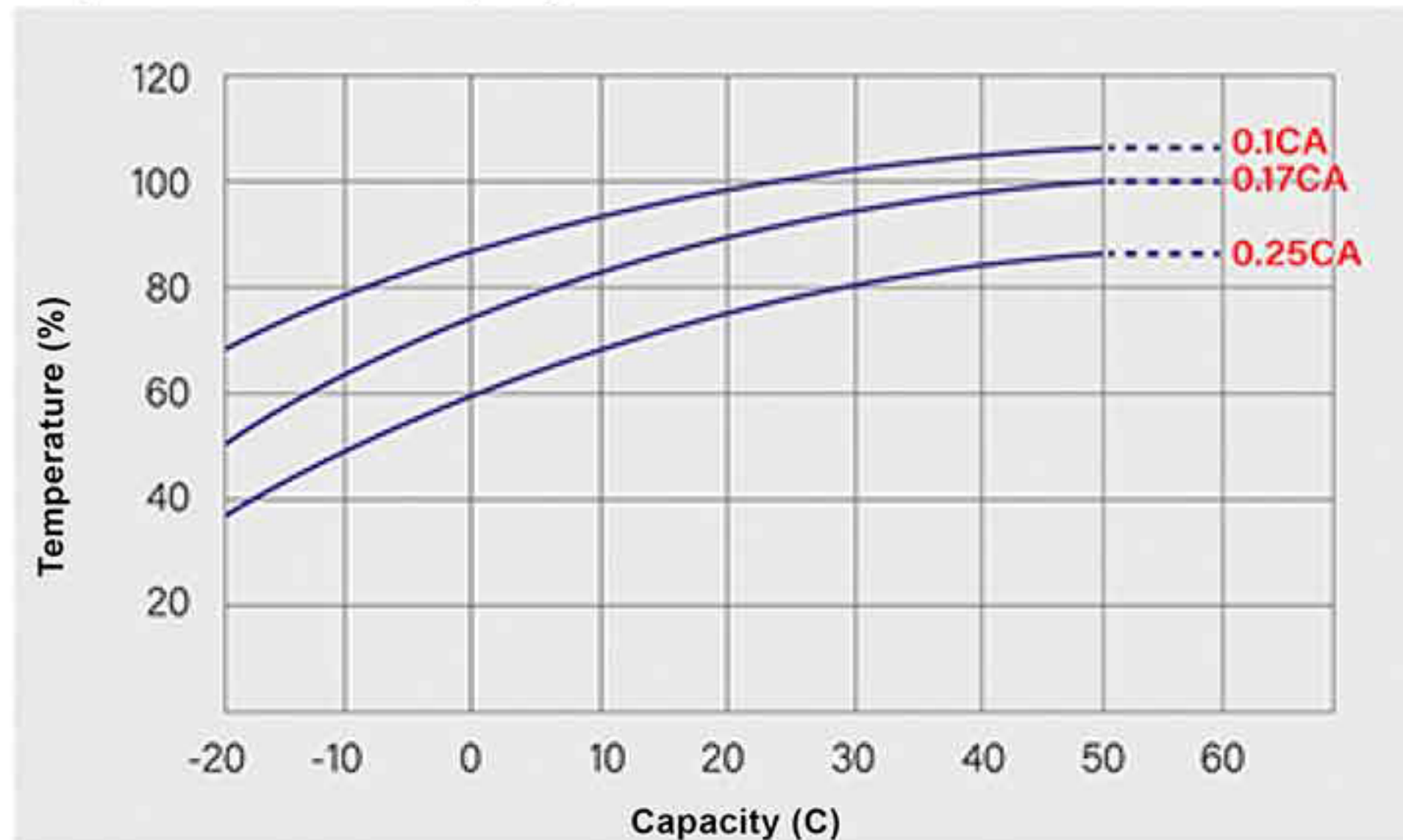
Temperature effects on float life



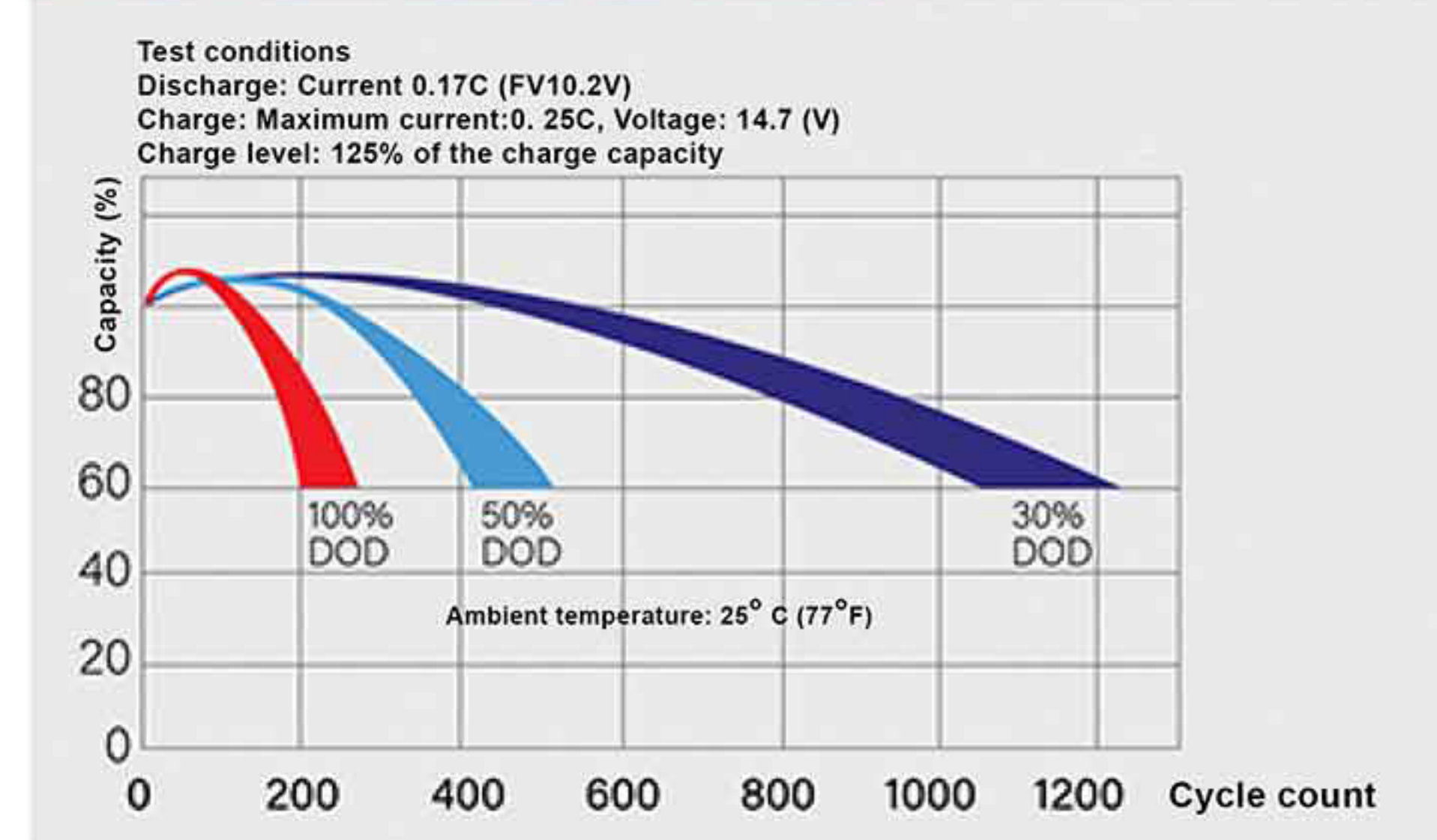
Discharge characteristic curve



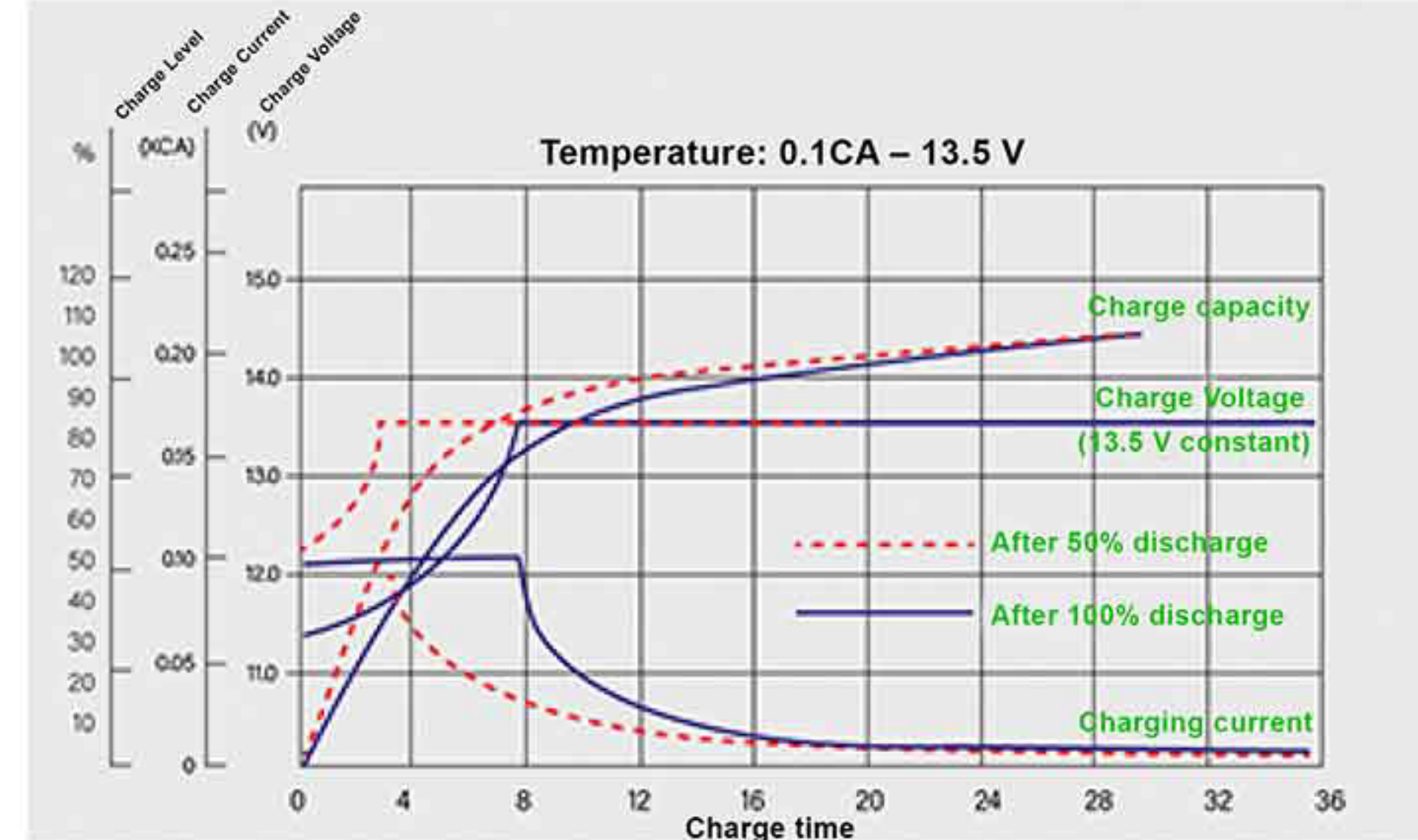
Temperature effects on Capacity



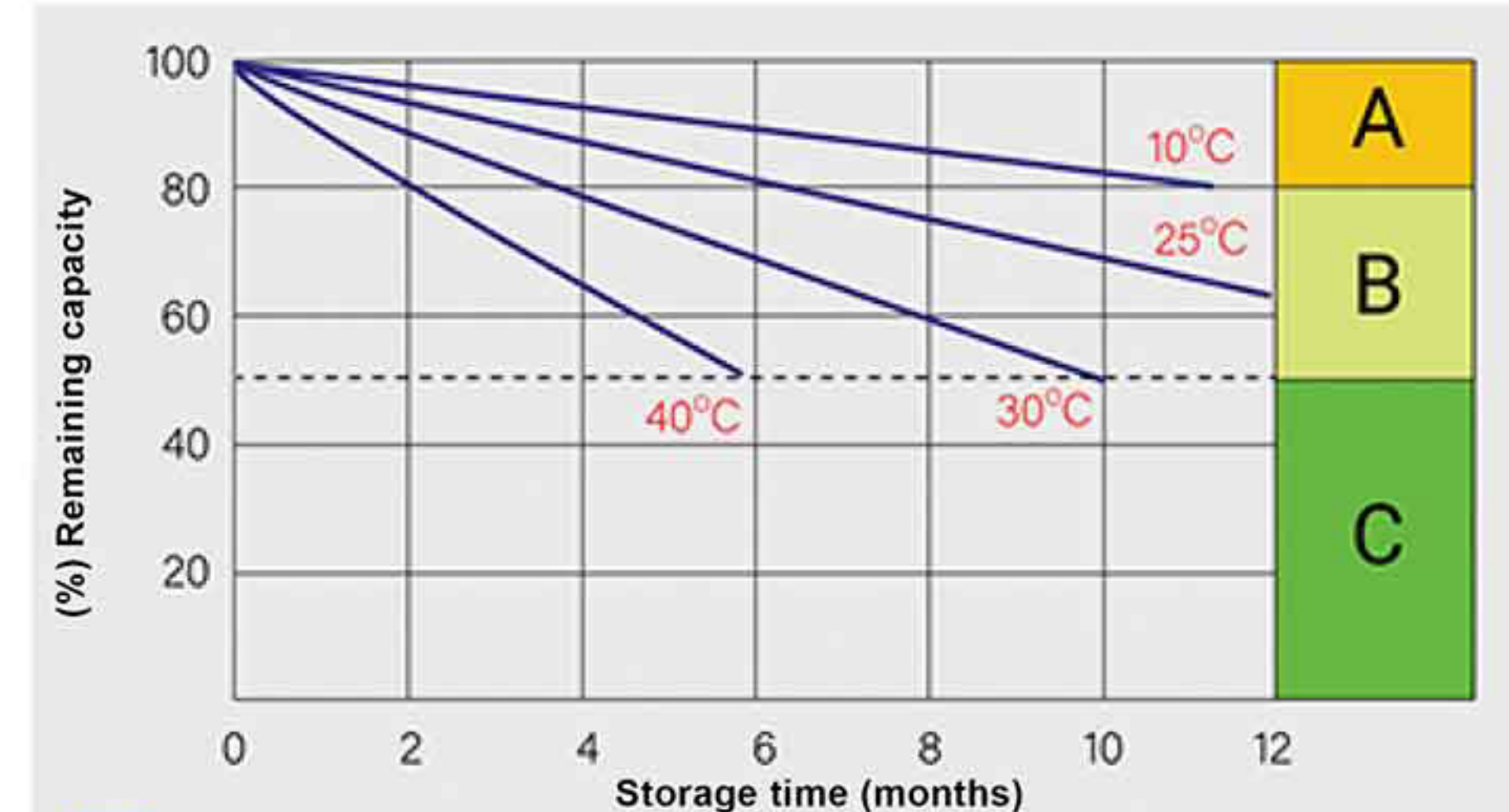
Cycle service life in relation to depth of discharge



Charge characteristic curve



Self-discharge characteristic curve



- A** No need for supplementary charging
If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity.
A battery should never be left to its own devices until it reaches this stage



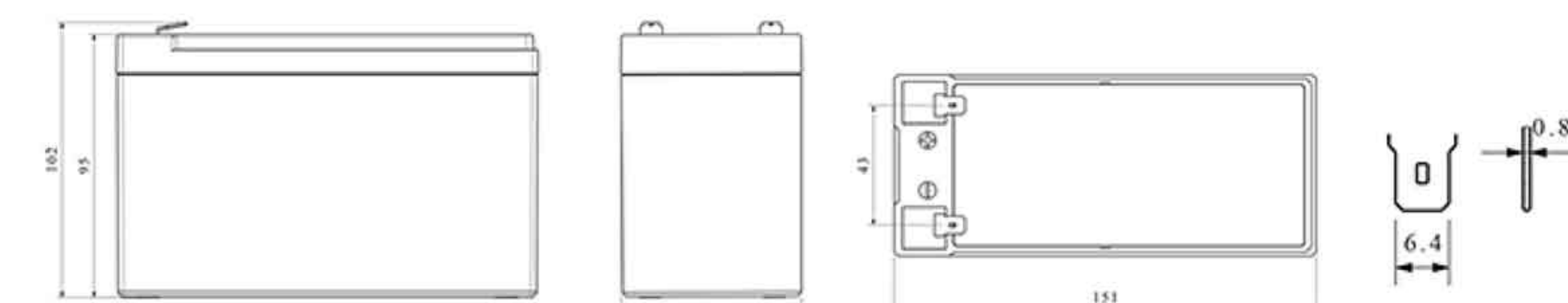
The constant discharge current (in Amperes) at 77 degrees Fahrenheit											
F.V/Time	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	10 h	20 h
10.8V	30.6	19.3	15.8	9.16	5.86	3.31	2.39	1.92	1.62	0.90	0.46
10.5V	32.4	20.4	16.7	9.52	6.04	3.40	2.47	1.98	1.68	0.92	0.47
10.2V	33.9	21.4	17.3	9.75	6.17	3.46	2.49	1.99	1.69	0.92	0.47
9.90V	35.3	22.3	18.0	10.10	6.32	3.49	2.50	2.01	1.70	0.93	0.47
9.60V	36.4	23.0	18.4	10.30	6.42	3.51	2.52	2.02	1.71	0.93	0.48

The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit											
F.V/Time	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	10 h	20 h
10.8V	341	218	180	105	67.8	38.9	28.4	22.8	19.4	10.8	5.550
10.5V	364	230	190	109	69.9	39.8	29.3	23.5	20.1	11.0	5.660
10.2V	378	241	198	112	71.3	40.5	29.5	23.7	20.2	11.1	5.690
9.90V	394	251	204	115	73.2	40.8	29.7	23.8	20.3	11.2	5.730
9.60V	406	259	210	117	74.3	41.0	30.0	24.0	20.4	11.2	5.750



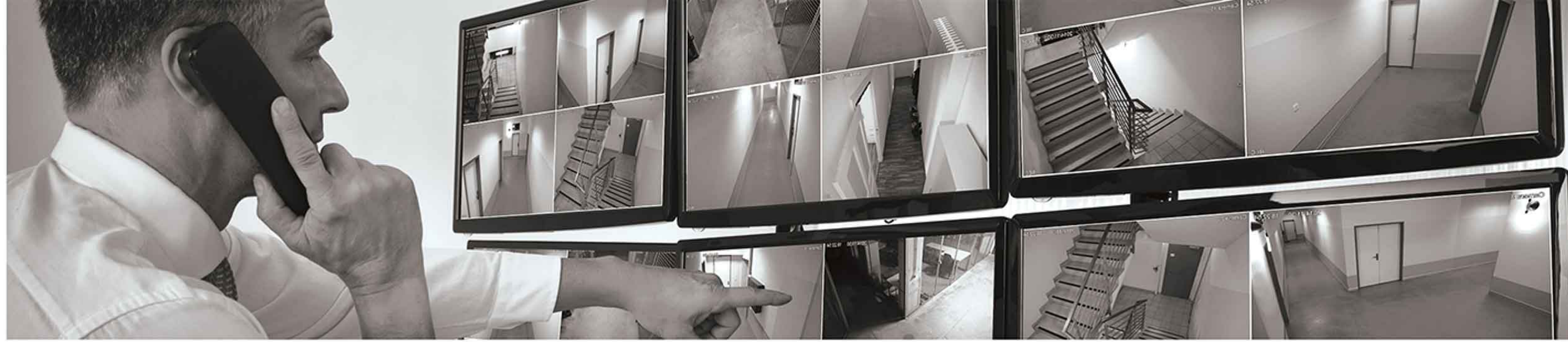
12V-9Ah GP

Specifications	
12V	Nominal Voltage
9AH	Nominal Capacity
151 ± 2mm (5.95 inches)	Dimensions
65 ± 1mm (2.56 inches)	
93.5 ± 1mm (3.68 inches)	
99 ± 1mm (3.90 inches)	
2.45 kg (5.10lbs)	Approximate Weight
T2	Terminal
ABS (V0 optional)	Type Body Material
9.00 AH/0.45A	Nominal Capacity
7.93 AH/0.793A	
7.15 AH/1.43A	
6.36 AH/2.12A	
5.31 AH/5.31A	
127.5A (5s)	Maximum Discharge Current
18mΩ	Internal Resistance (Approximate)
-15 ~ 50°C (5 ~ 122°F)	Operating Temperature Range
-10 ~ 40°C (14 ~ 104°F)	
-15 ~ 40°C (5 ~ 104°F)	
25 ± 3°C (77 ± 5°F)	Nominal Operating Temperature
(77°F) 25°C At Temperature 14.4V ~ 15.0V Voltage -30mV/°C Temperature Correction Coefficient	Equalize Charging
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage -20mV/°C Temperature Correction Coefficient	Float Charging
2.7A	Maximum Charge Current
103%	Temperature Effects on Capacity
100%	
86%	
Series GP batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter	Self-discharge

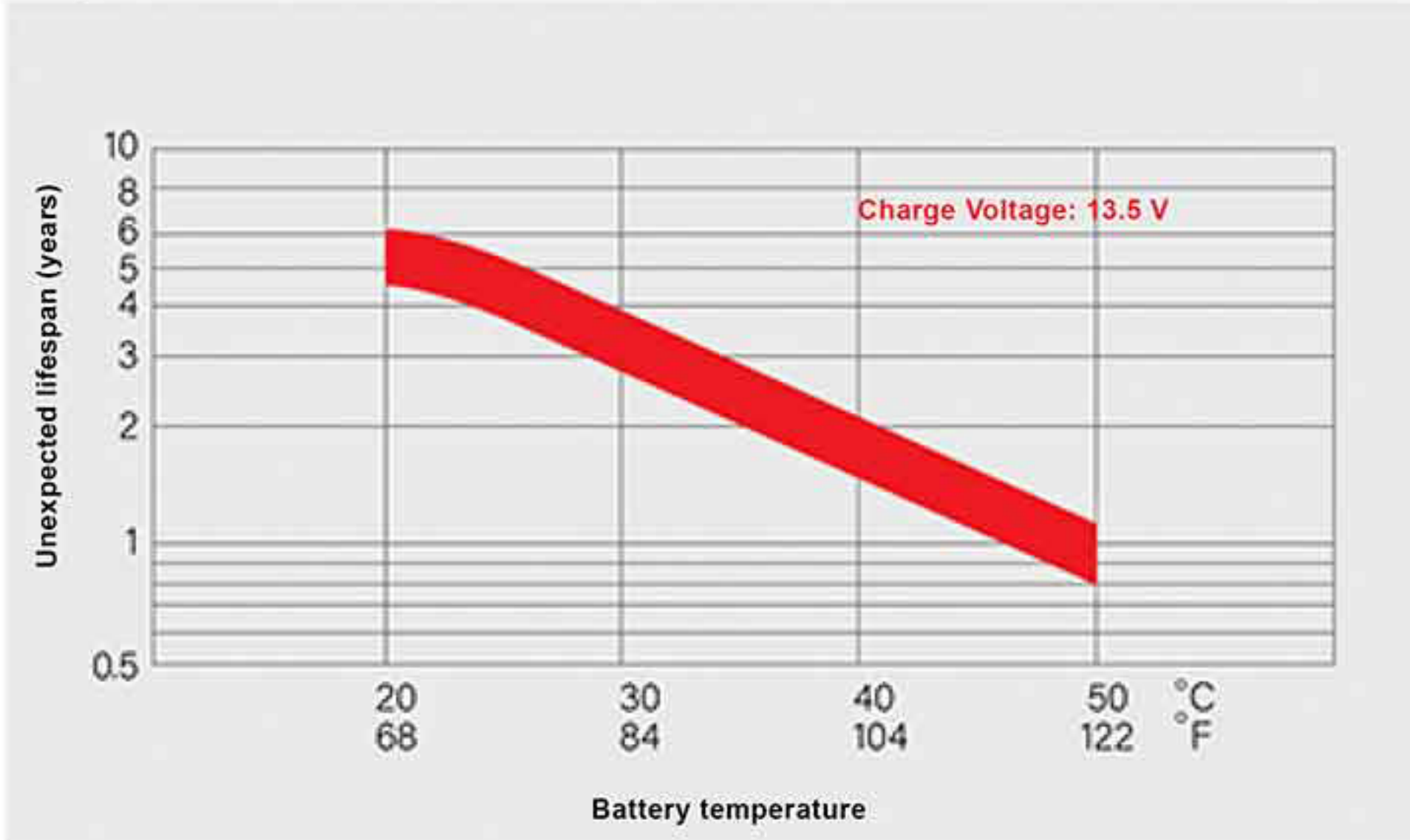




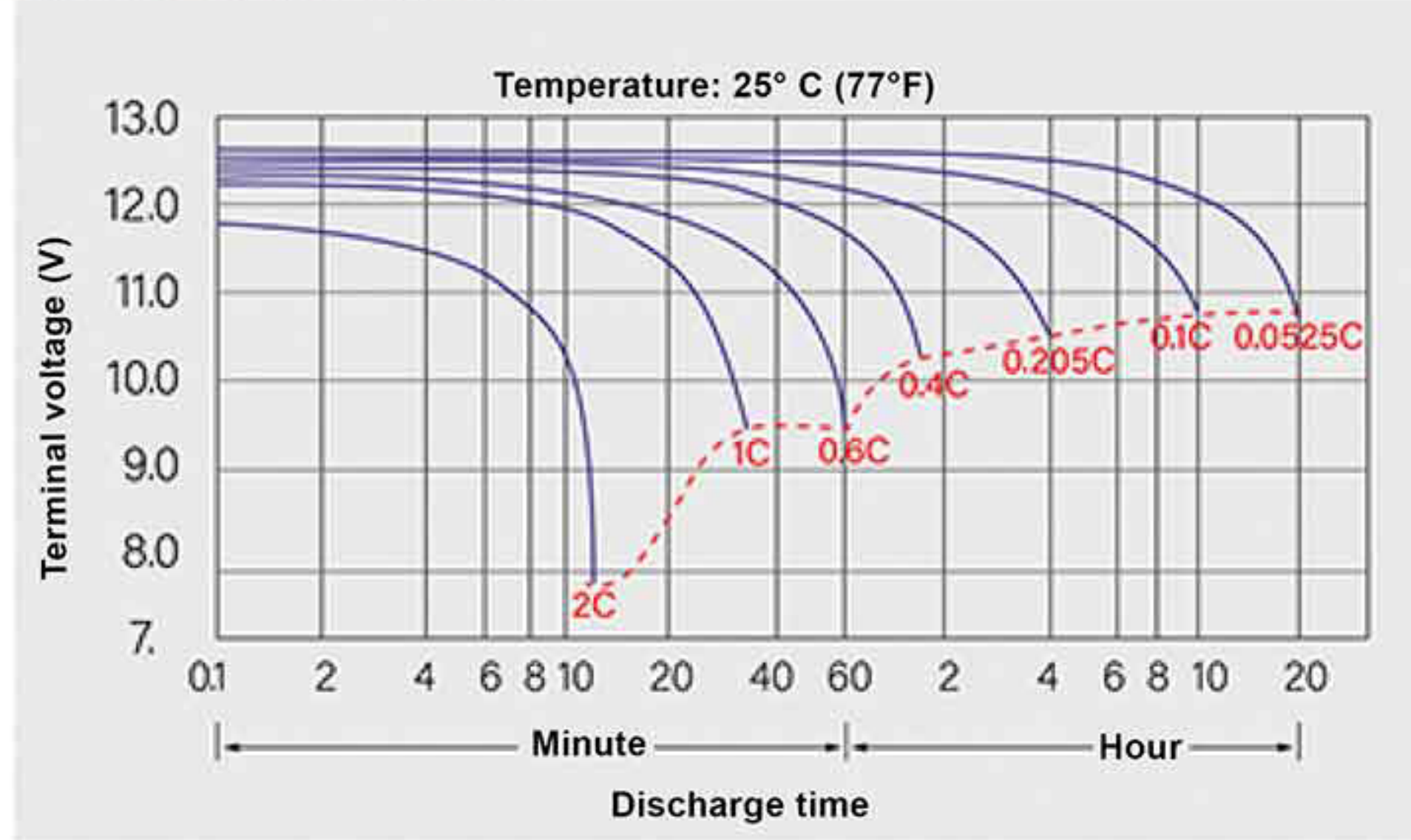
12V-12Ah GP



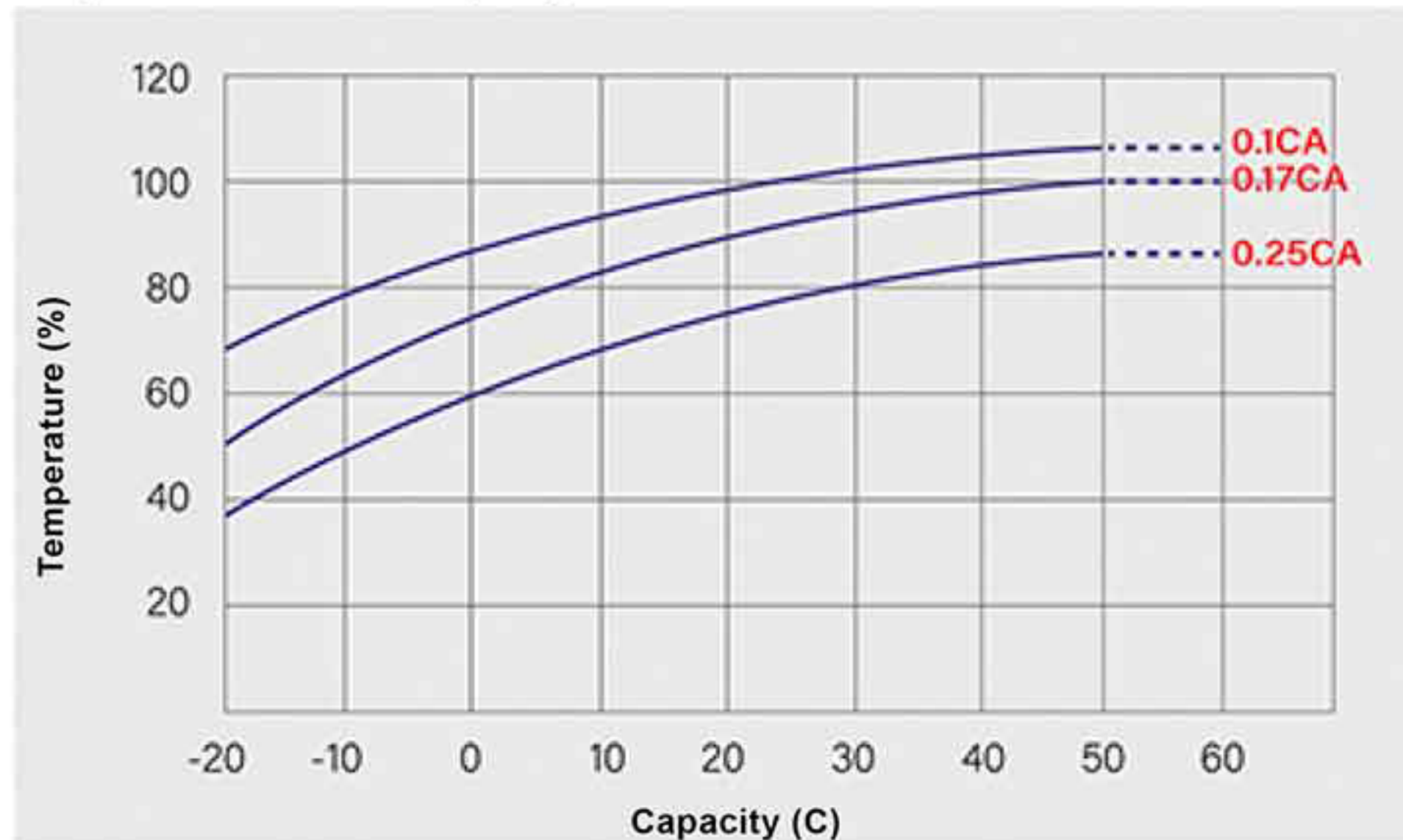
Temperature effects on float life



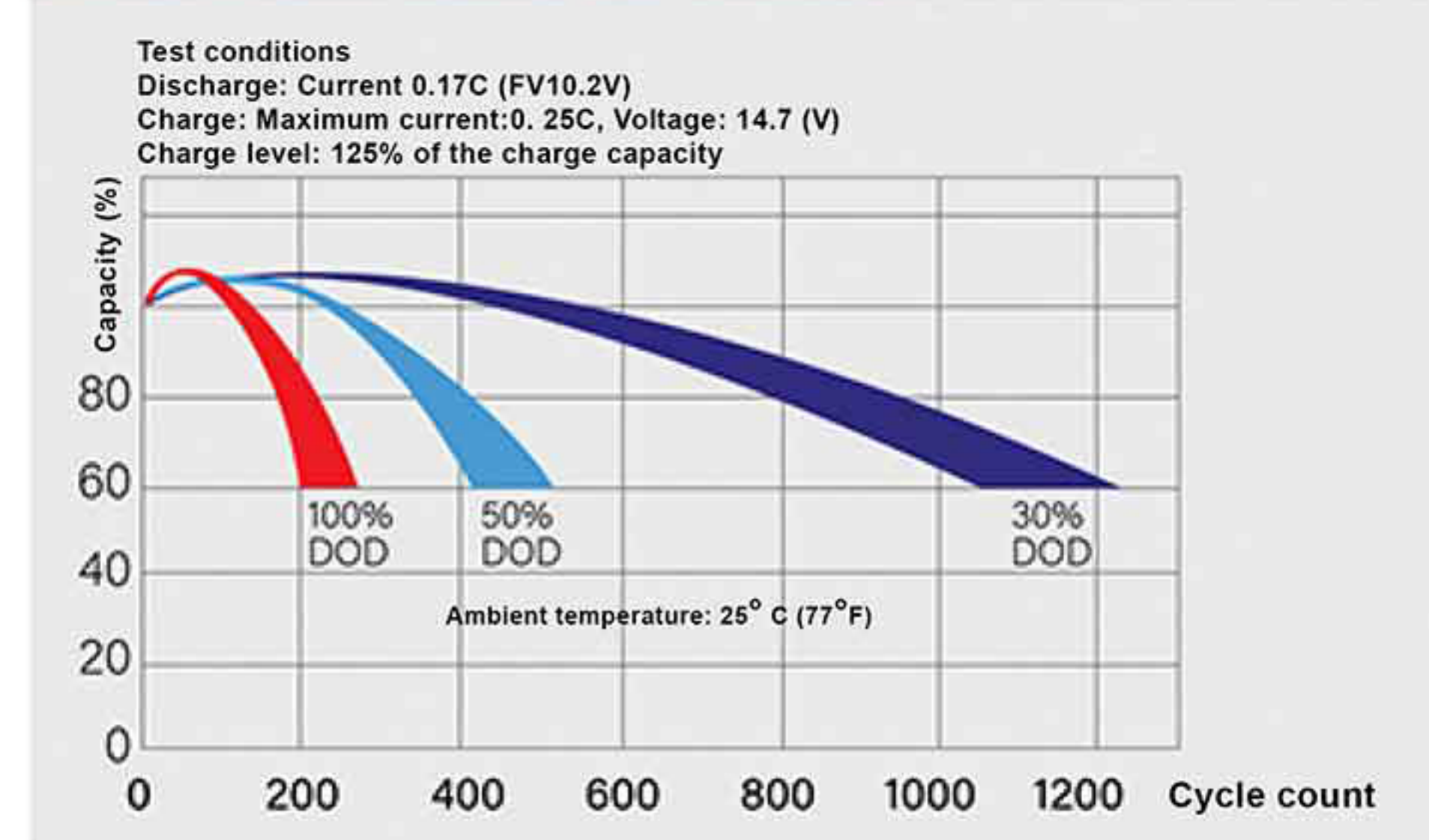
Discharge characteristic curve



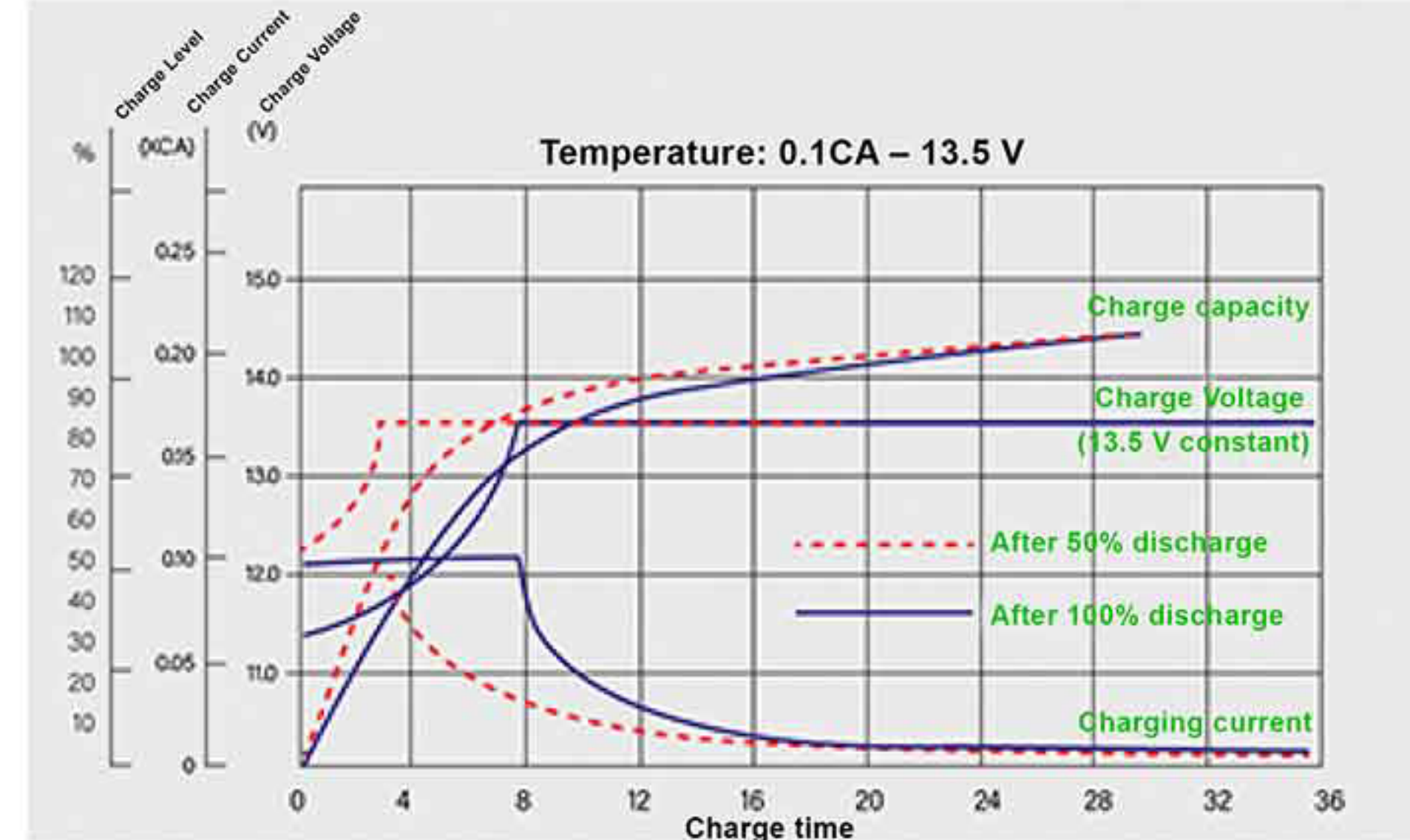
Temperature effects on Capacity



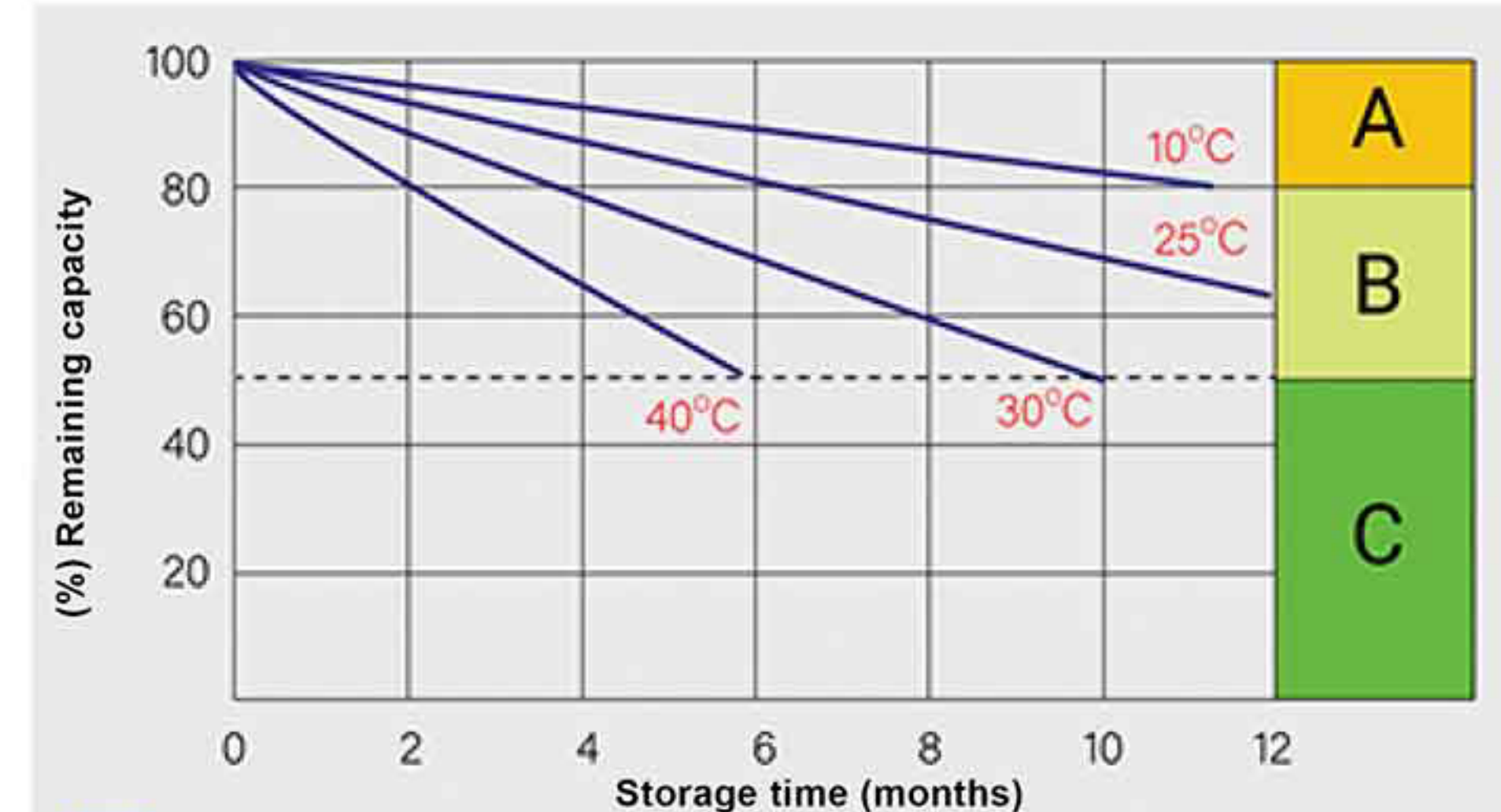
Cycle service life in relation to depth of discharge



Charge characteristic curve



Self-discharge characteristic curve



- A** No need for supplementary charging
If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity.
A battery should never be left to its own devices until it reaches this stage



The constant discharge current (in Amperes) at 77 degrees Fahrenheit

F.V/Time	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	10 h	20 h
10.8V	30.7	22.4	17.6	11.5	6.76	3.90	3.00	2.42	1.99	1.12	0.600
10.5V	34.6	24.6	19.2	11.9	7.07	4.04	3.06	2.48	2.04	1.15	0.606
10.2V	38.1	26.9	20.5	12.4	7.29	4.14	3.15	2.54	2.09	1.17	0.617
9.90V	42.0	29.0	21.8	13.1	7.46	4.20	3.28	2.63	2.15	1.19	0.625
9.60V	46.3	31.5	23.3	13.8	7.54	4.38	3.38	2.71	2.22	1.21	0.629

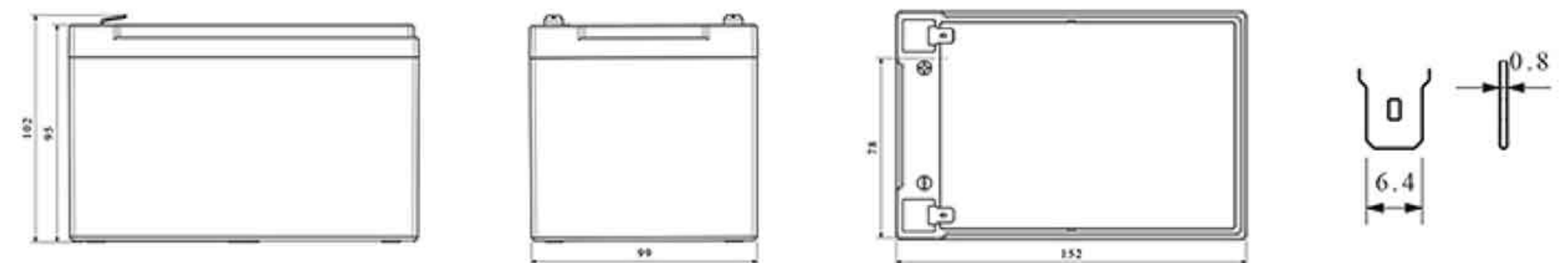
The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit

F.V/Time	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	10 h	20 h
10.8V	333.0	245.4	193.8	129.0	78.0	45.06	34.92	28.26	23.28	13.26	7.14
10.5V	367.2	265.8	209.4	133.2	81.0	46.56	35.46	28.80	23.82	13.56	7.20
10.2V	393.6	282.6	220.2	137.4	83.4	47.64	36.36	29.52	24.36	13.86	7.32
9.90V	427.8	302.4	232.2	144.0	84.6	48.06	37.74	30.42	24.96	14.10	7.38
9.60V	460.8	321.0	244.8	151.2	85.2	49.86	38.70	31.26	25.68	14.22	7.44



12V-12Ah GP

		Specifications
12V		Nominal Voltage
12AH		Nominal Capacity
151 ± 2mm (5.95 inches)	Length	Dimensions
98 ± 1mm (3.86 inches)	Width	
95 ± 1mm (3.74 inches)	Height	
101 ± 1mm (3.98 inches)	Total Height with Terminals	Approximate Weight
3.50 kg (7.72lbs)		
T2		Terminal
ABS (V0 optional)		Type Body Material
12.0 AH/0.60A	(20hr, 10.8V, 25°C/77°F)	Nominal Capacity
11.2 AH/1.12A	(10hr, 10.8V, 25°C/77°F)	
10.2 AH/2.04A	(5hr, 10.5V, 25°C/77°F)	
9.2 AH/3.06A	(3hr, 10.5V, 25°C/77°F)	
7.54 AH/7.54A	(1hr, 9.60V, 25°C/77°F)	
180A (5s)		Maximum Discharge Current
14mΩ		Internal Resistance (Approximate)
-15 ~ 50°C (5 ~ 122°F)	Discharging	Operating Temperature Range
-10 ~ 40°C (14 ~ 104°F)	Charging	
-15 ~ 40°C (5 ~ 104°F)	Storage	
25±3°C (77±5°F)		Nominal Operating Temperature
(77°F) 25°C At Temperature 14.4V ~ 15.0V Voltage -30mV/°C Temperature Correction Coefficient		Equalize Charging
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage -20mV/°C Temperature Correction Coefficient		Float Charging
3.6A		Maximum Charge Current
103%	40°C (104°F)	Temperature Effects on Capacity
100%	25°C (77°F)	
86%	0°C (32°F)	
Series GP batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter		Self-discharge

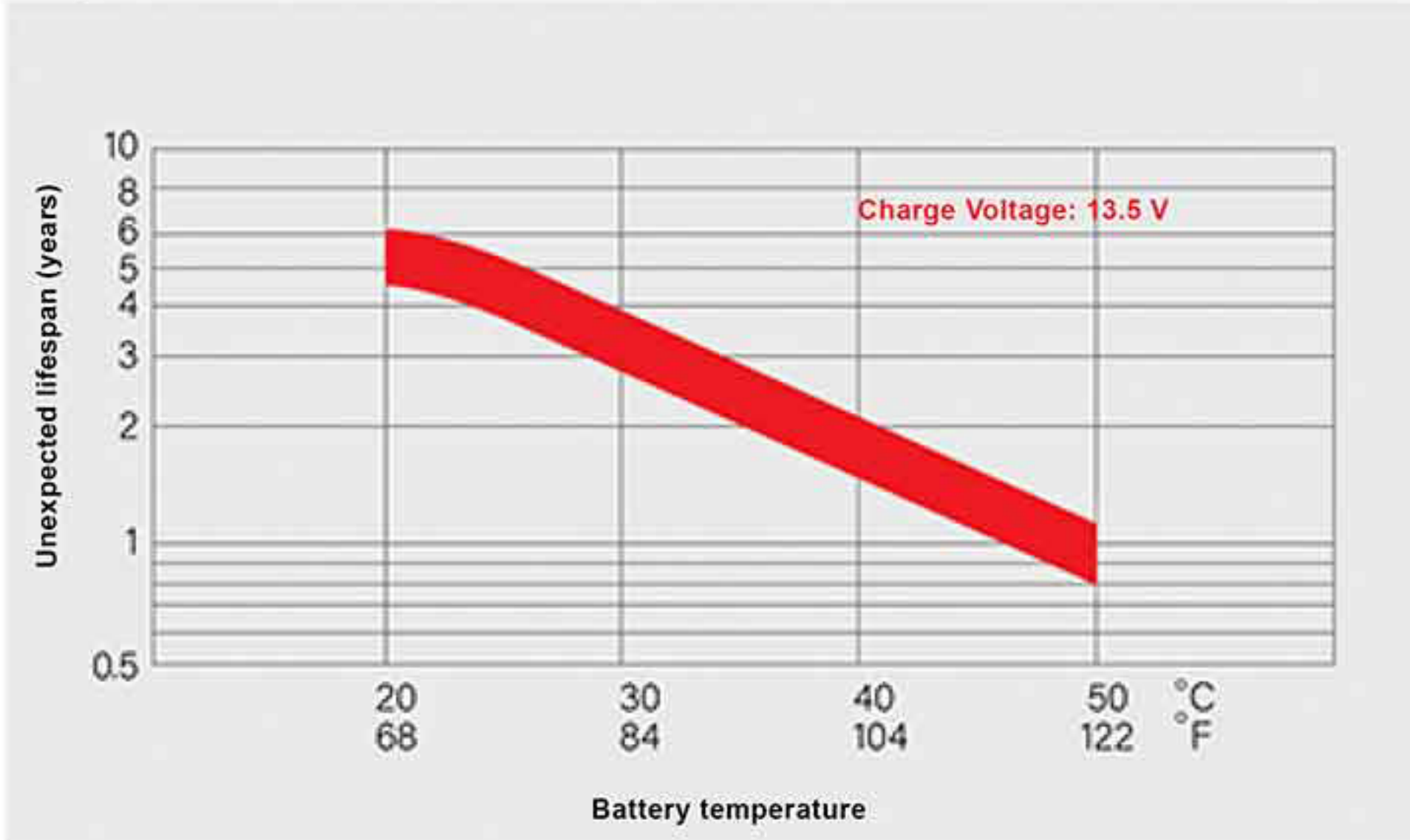




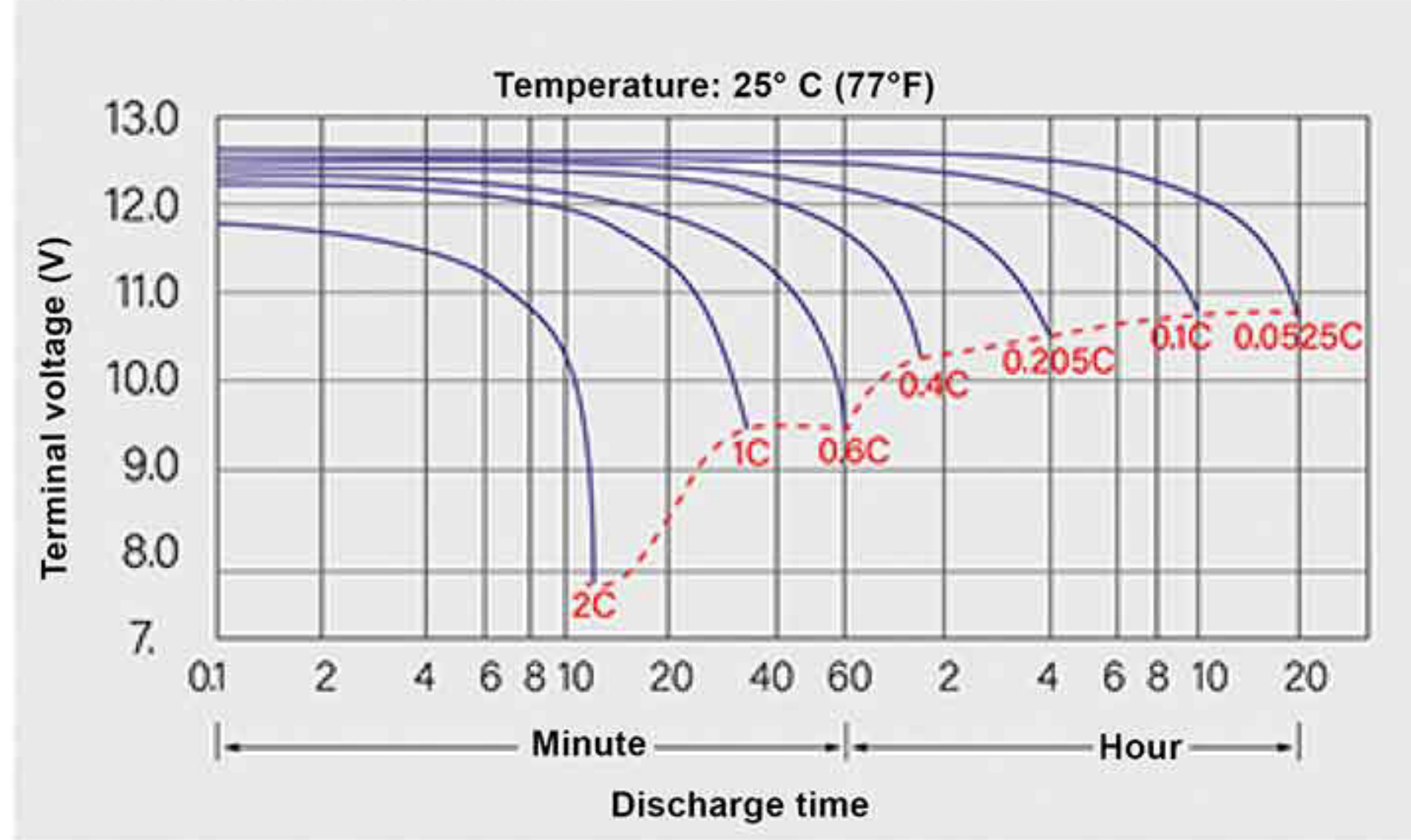
12V-18Ah GP



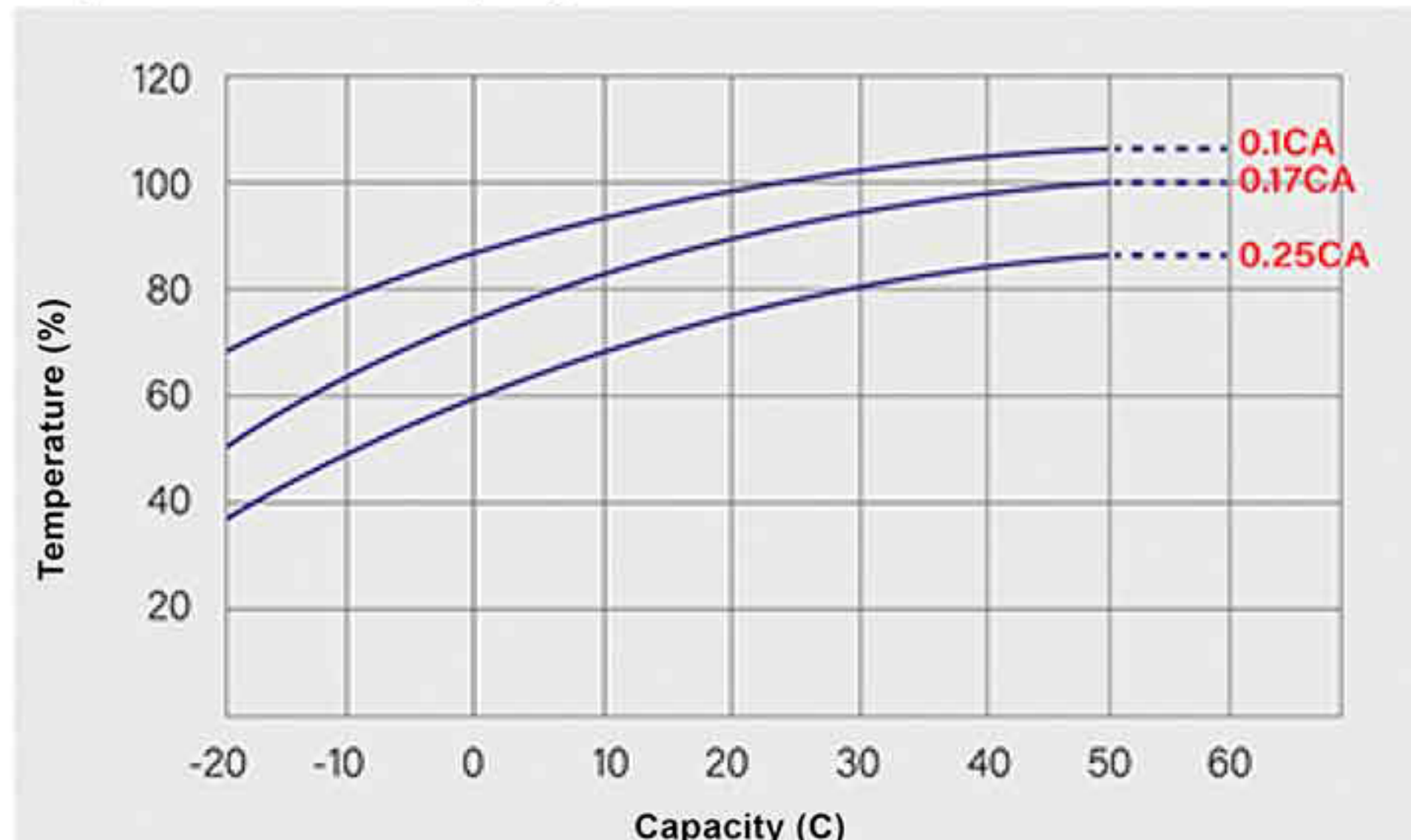
Temperature effects on float life



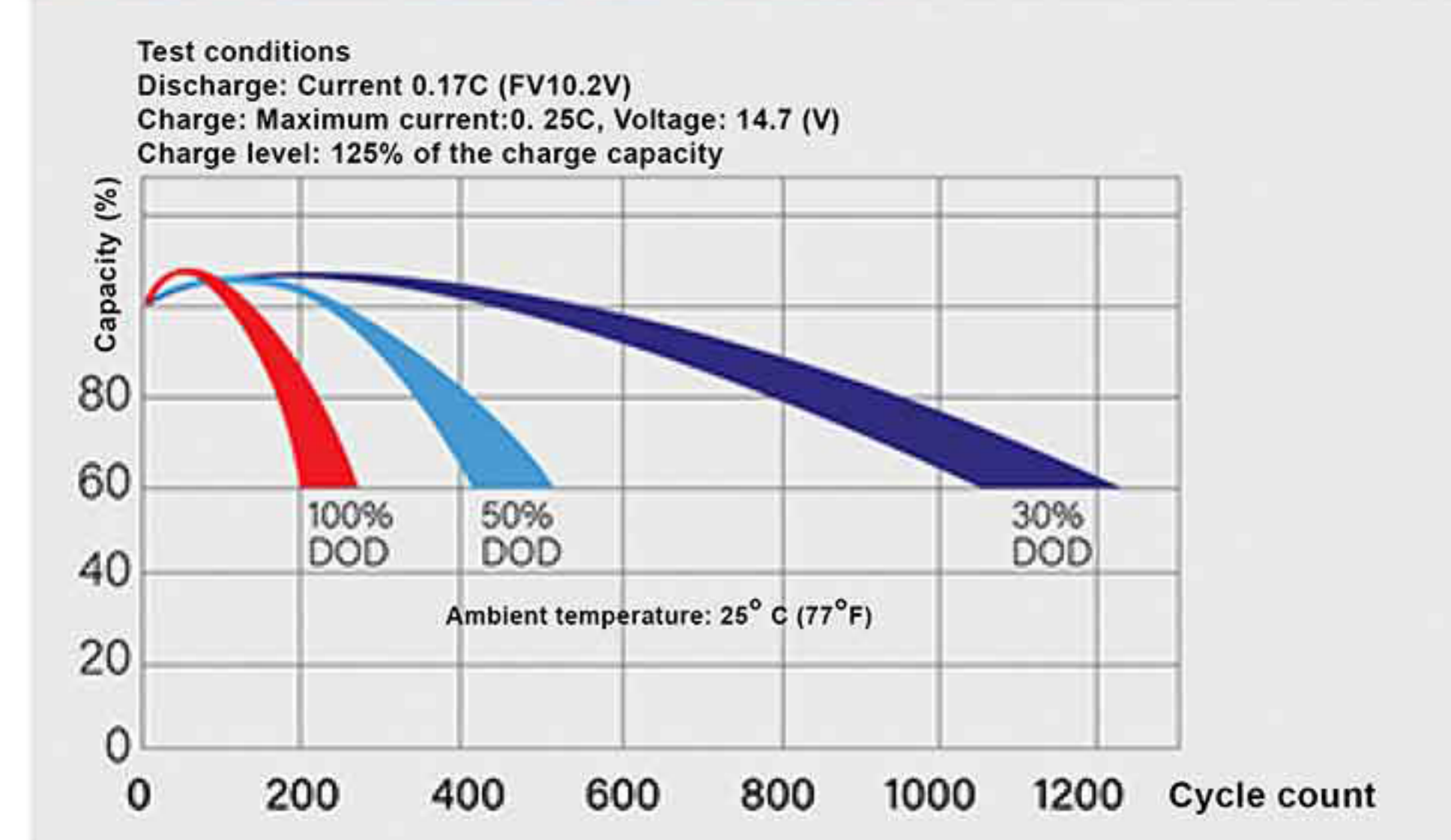
Discharge characteristic curve



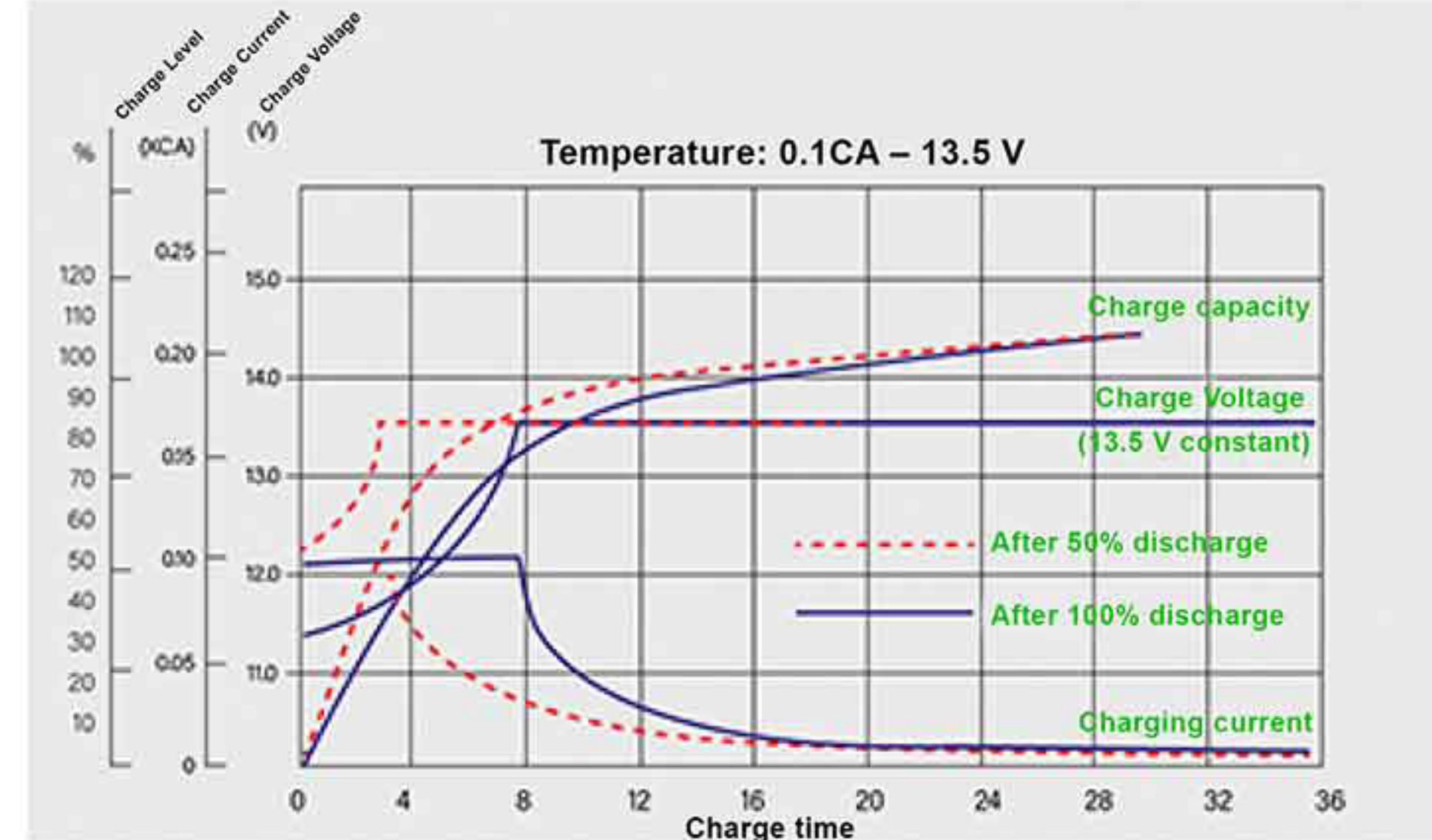
Temperature effects on Capacity



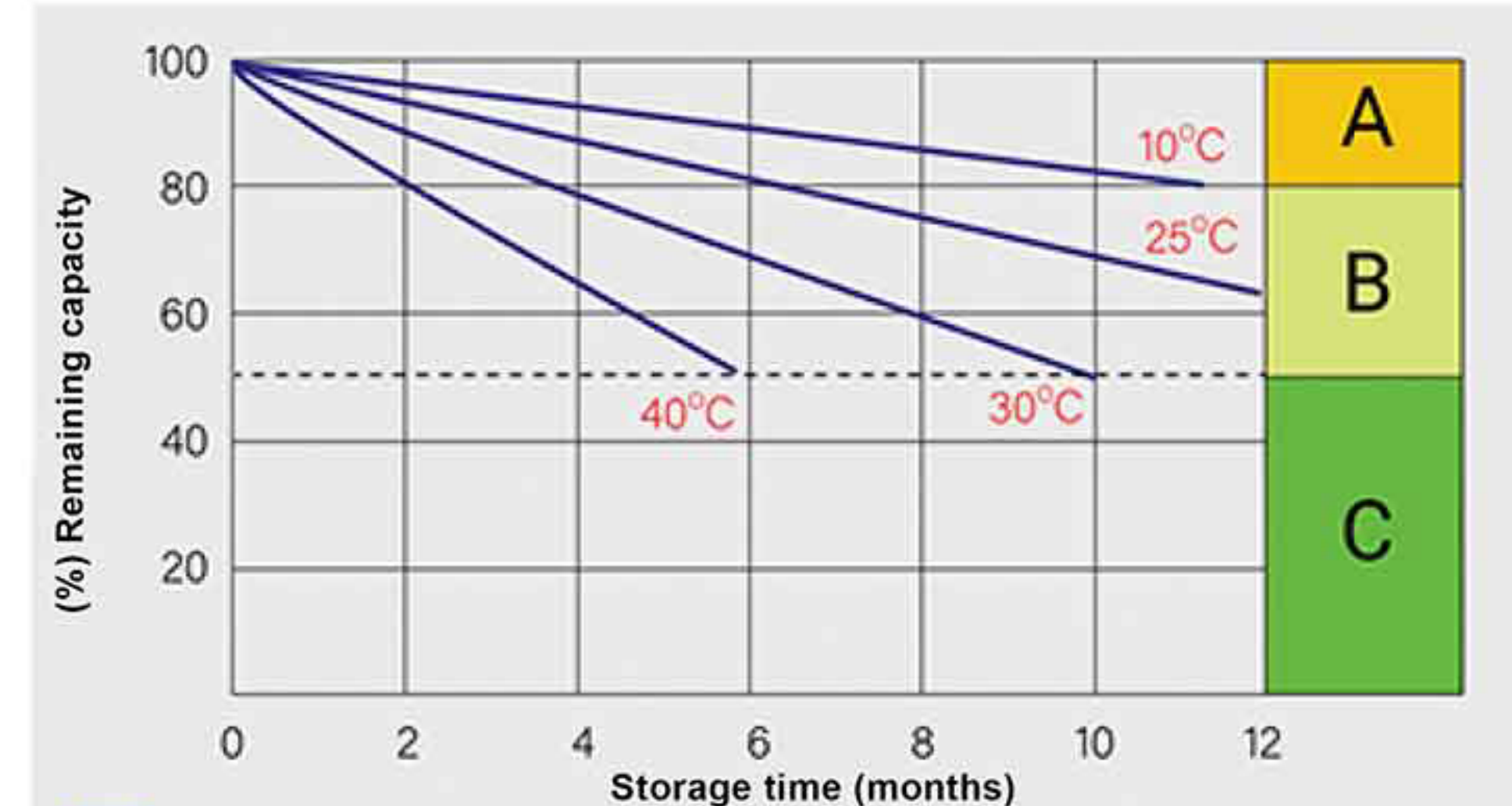
Cycle service life in relation to depth of discharge



Charge characteristic curve



Self-discharge characteristic curve



- A** No need for supplementary charging
If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity.
A battery should never be left to its own devices until it reaches this stage



12V-18Ah GP

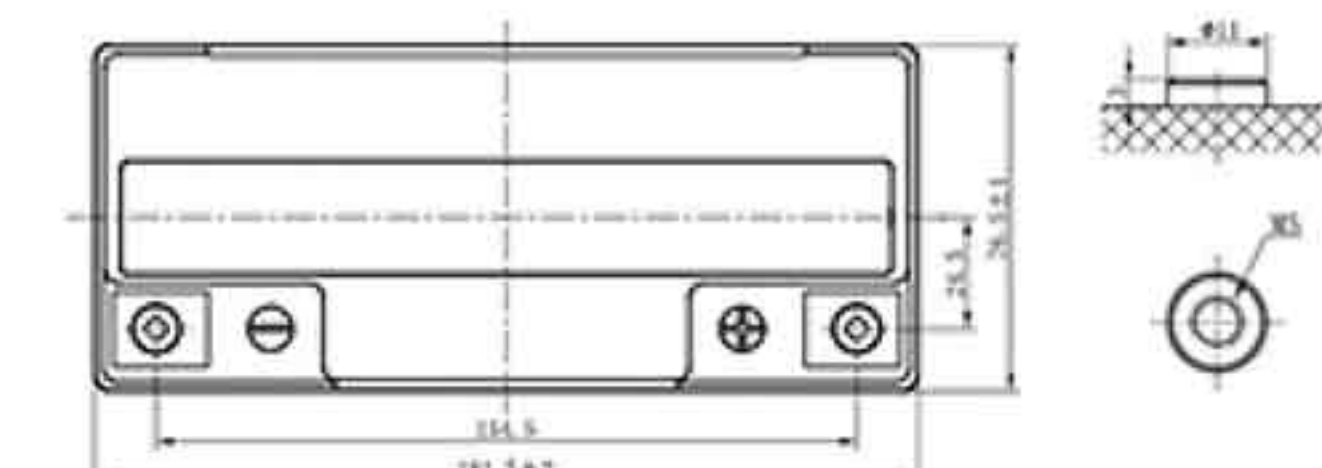
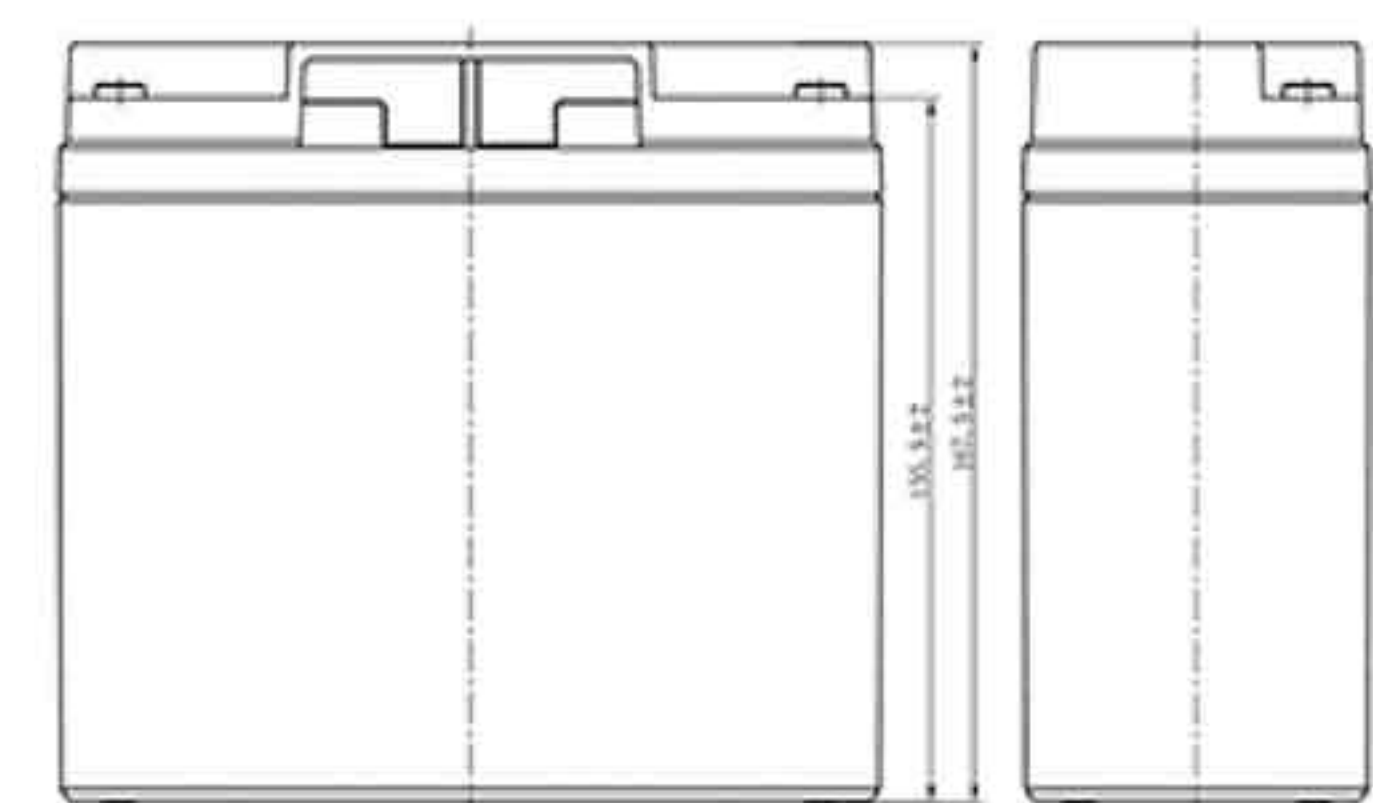
The constant discharge current (in Amperes) at 77 degrees Fahrenheit

F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	50.40	40.90	23.70	14.80	8.74	6.31	5.04	4.29	2.77	2.37	1.27
10.5V	53.40	43.10	24.60	15.30	8.96	6.50	5.20	4.42	2.86	2.42	1.30
10.2V	55.80	44.70	25.20	15.60	9.10	6.55	5.24	4.45	2.88	2.43	1.31
9.90V	58.20	46.40	26.00	16.00	9.18	6.59	5.27	4.48	2.90	2.44	1.31
9.60V	60.00	47.50	26.50	16.30	9.24	6.63	5.30	4.51	2.92	2.45	1.32

The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit

F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	569	466	271	172	102	74.9	60.1	51.2	33.3	28.4	15.3
10.5V	602	492	282	177	105	77.2	61.9	52.8	34.3	29.0	15.6
10.2V	629	509	289	181	106	77.8	62.4	53.1	34.6	29.2	15.7
9.90V	656	529	298	185	107	78.3	62.8	53.5	34.8	29.3	15.8
9.60V	677	542	304	188	108	78.8	63.2	53.8	35.0	29.5	15.8

12V		Specifications	
18AH		Nominal Voltage	
181.5 ± 2mm (7.14 inches)		Nominal Capacity	
76.5 ± 1mm (3.03 inches)	Length	Dimensions	
167.5 ± 2mm (6.59 inches)	Width		
167.5 ± 2mm (6.59 inches)	Height		
167.5 ± 2mm (6.59 inches)		Total Height with Terminals	
5 kg (11lbs)		Approximate Weight	
T12		Terminal	
ABS (V0 optional)		Type Body Material	
18.0 AH/0.9A	(20hr, 10.8V, 25°C/77°F)	Nominal Capacity	
16.7 AH/1.67A	(10hr, 10.8V, 25°C/77°F)		
15.1 AH/3.03A	(5hr, 10.5V, 25°C/77°F)		
13.5 AH/4.49A	(3hr, 10.5V, 25°C/77°F)		
11.1 AH/11.1A	(1hr, 9.60V, 25°C/77°F)		
270A (5s)		Maximum Discharge Current	
16mΩ		Internal Resistance (Approximate)	
-15 ~ 50°C (5 ~ 122°F)	Discharging	Operating Temperature Range	
-10 ~ 40°C (14 ~ 104°F)	Charging		
-15 ~ 40°C (5 ~ 104°F)	Storage		
25 ± 3°C (77 ± 5°F)		Nominal Operating Temperature	
(77°F) 25°C At Temperature 14.4V ~ 15.0V		Equalize Charging	
-30mV/°C Temperature Correction Coefficient			
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage		Float Charging	
-20mV/°C Temperature Correction Coefficient			
5.4A		Maximum Charge Current	
103%	40°C (104°F)	Temperature Effects on Capacity	
100%	25°C (77°F)		
86%	0°C (32°F)		
Series GP batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter			Self-discharge



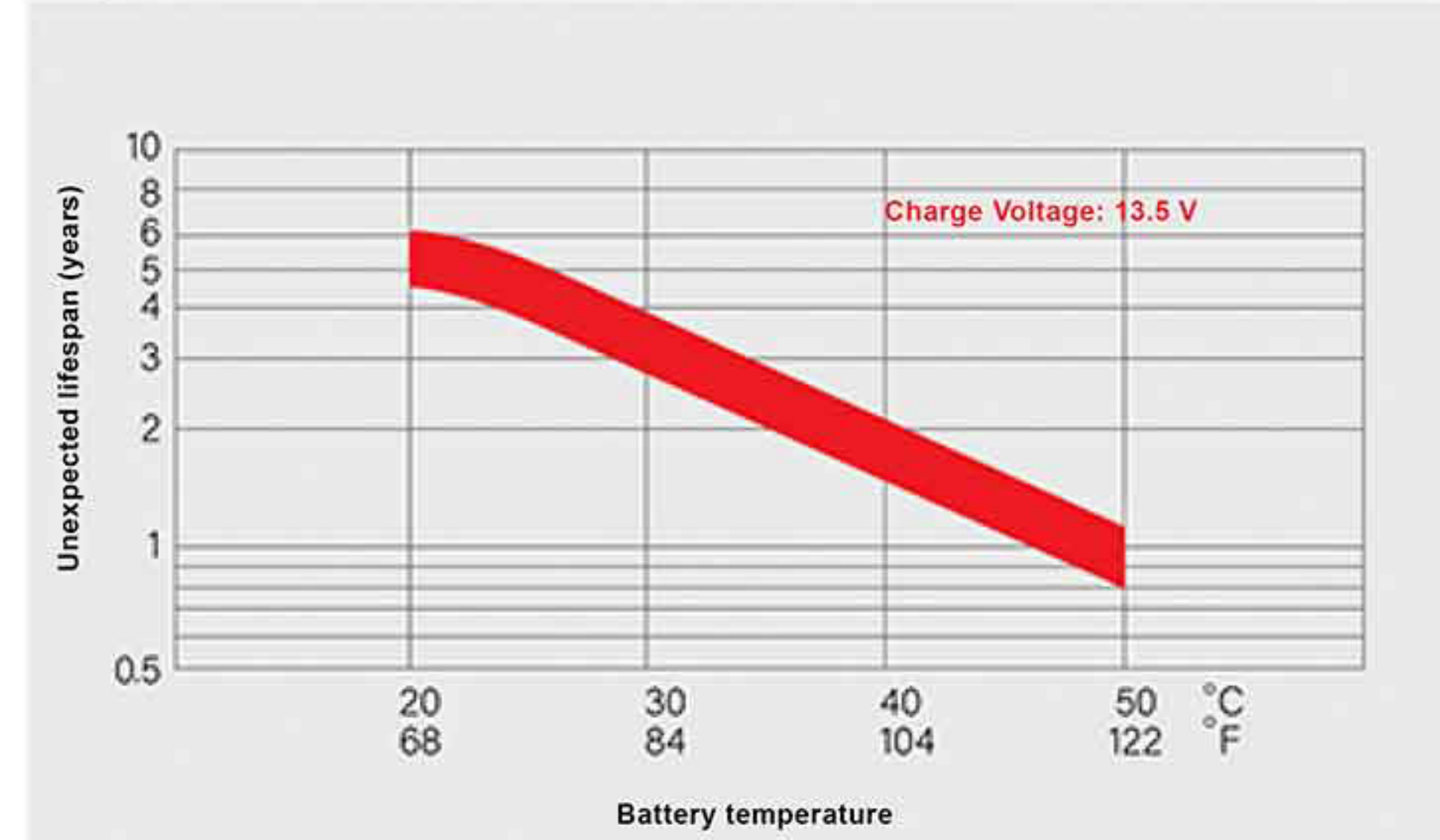


12V-28Ah GP

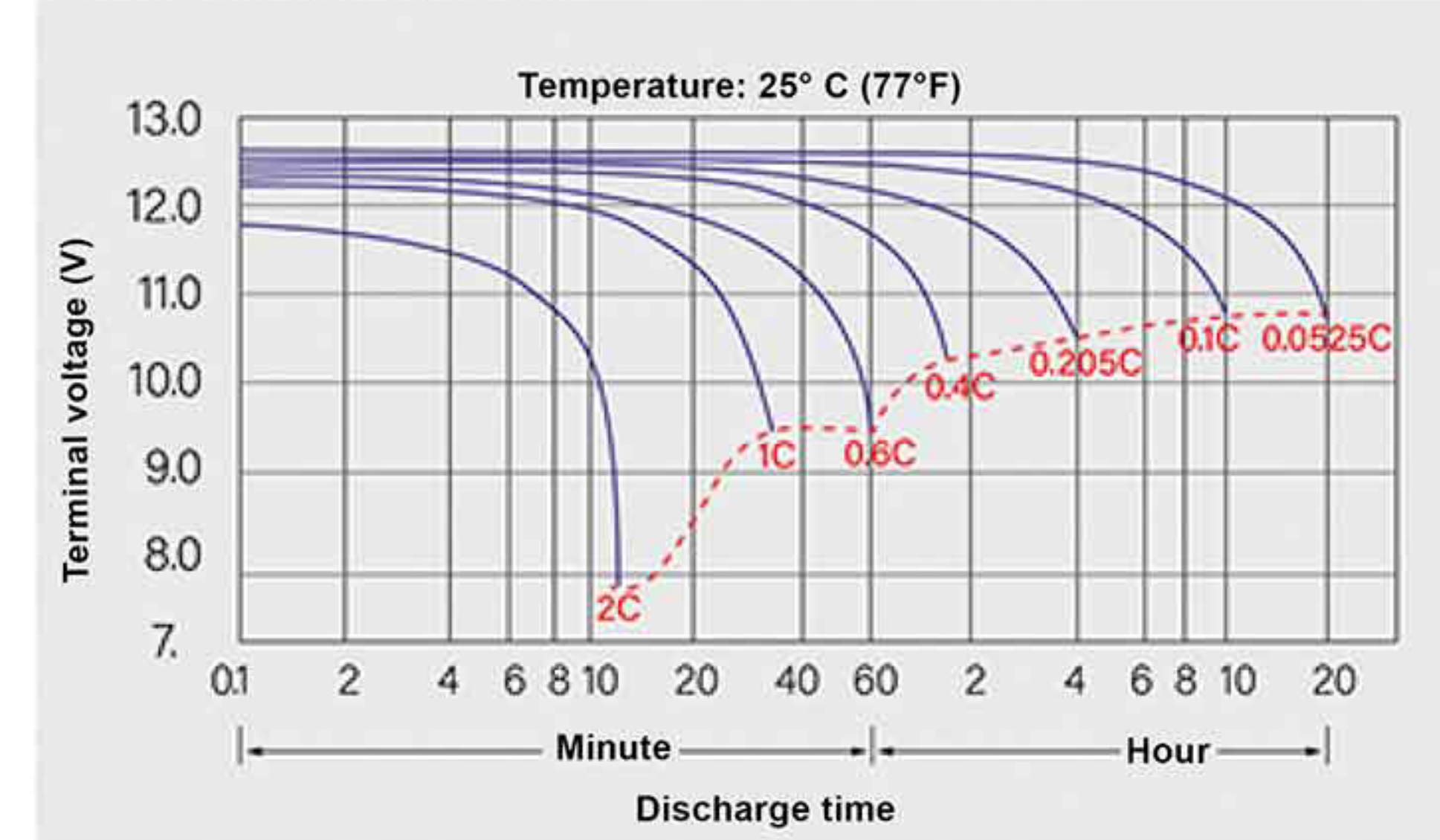


12V-28Ah GP

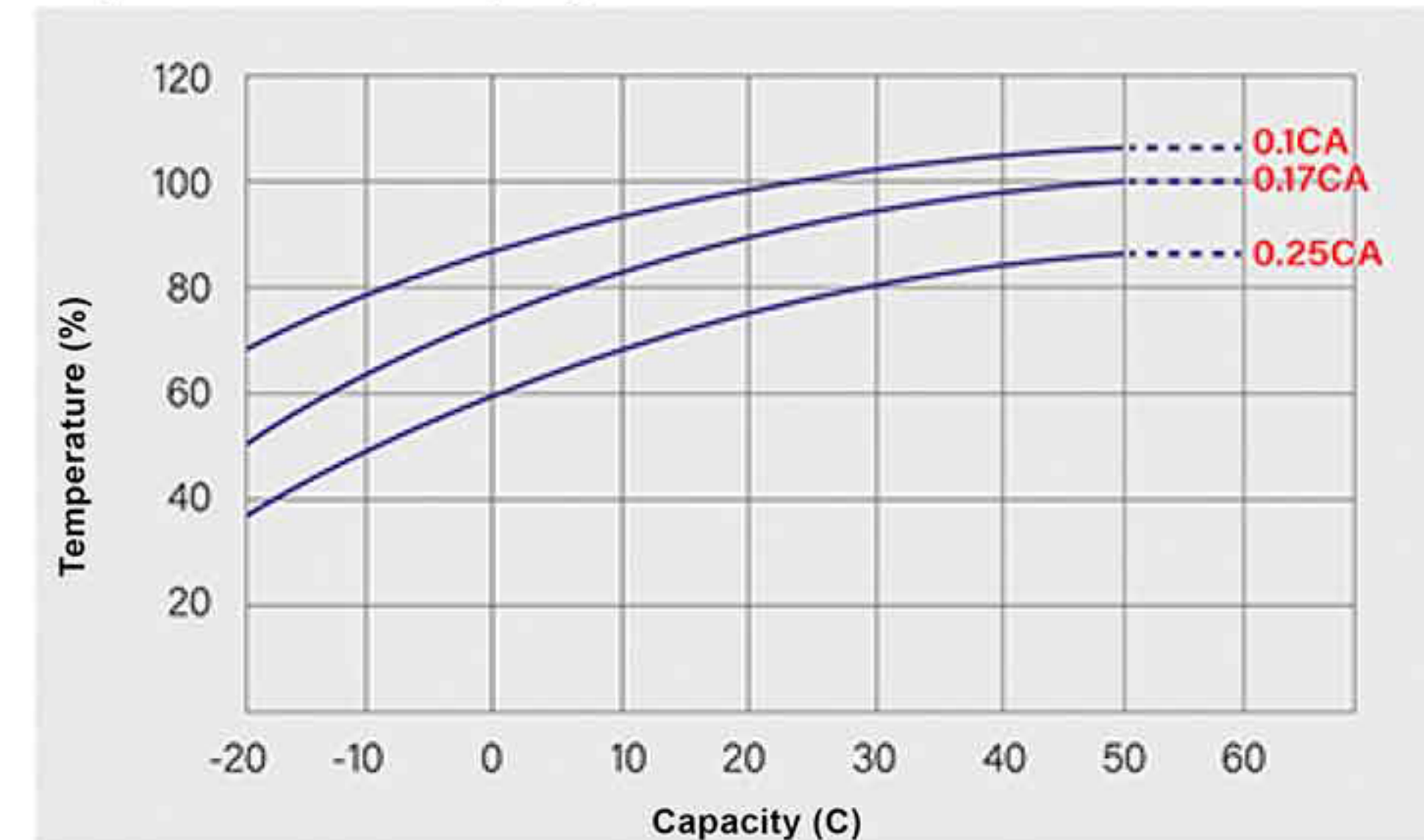
Temperature effects on float life



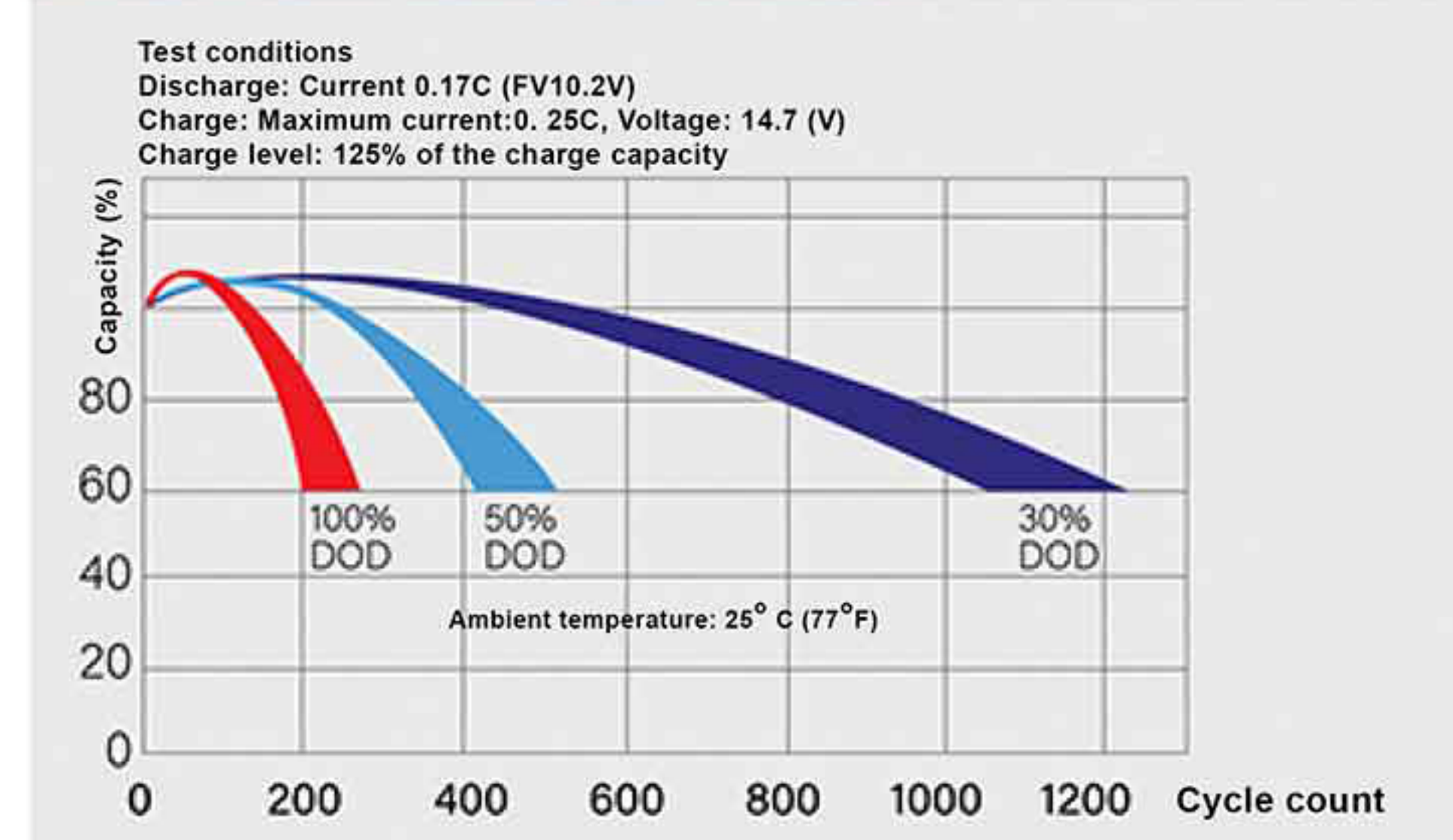
Discharge characteristic curve



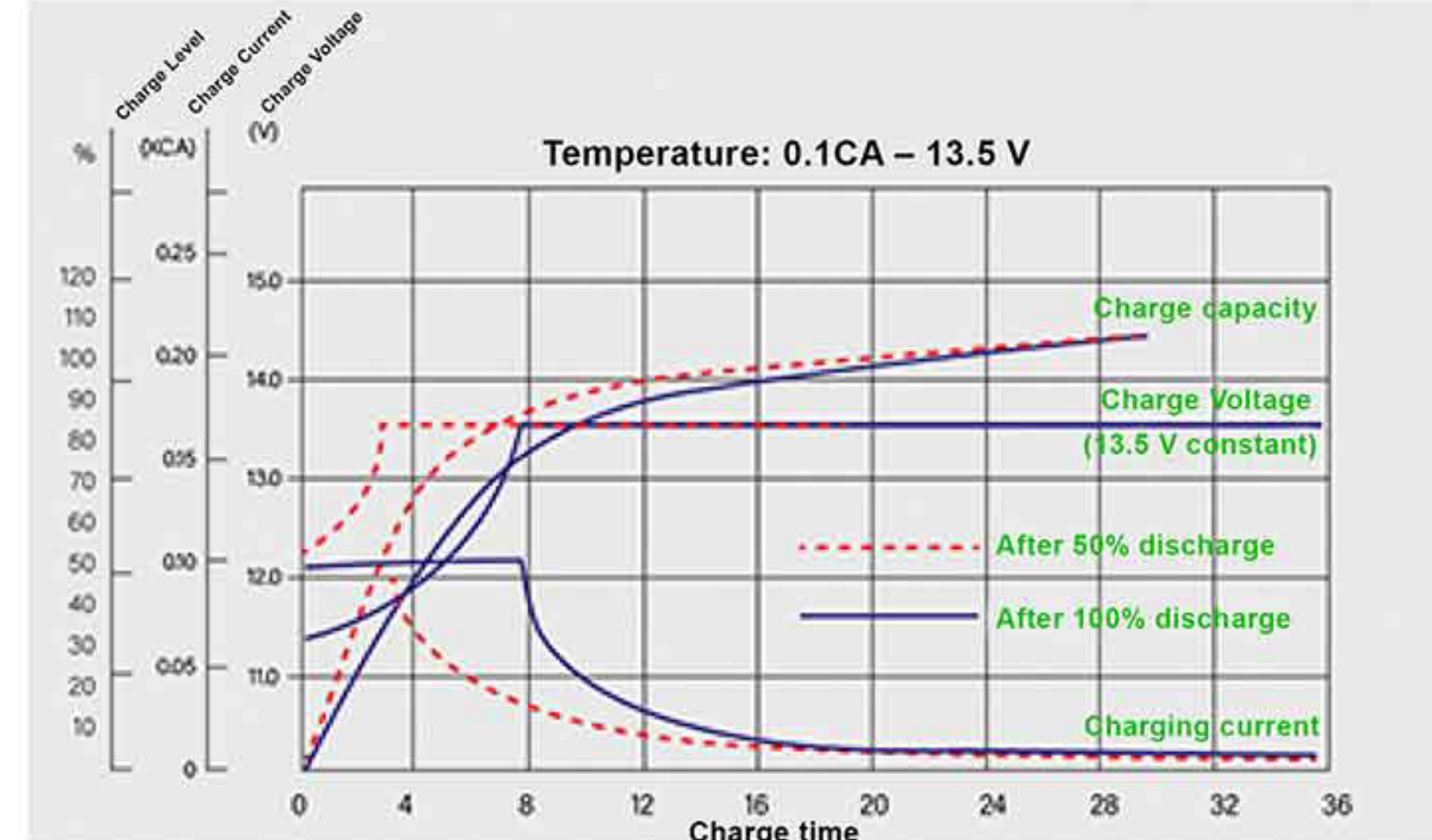
Temperature effects on Capacity



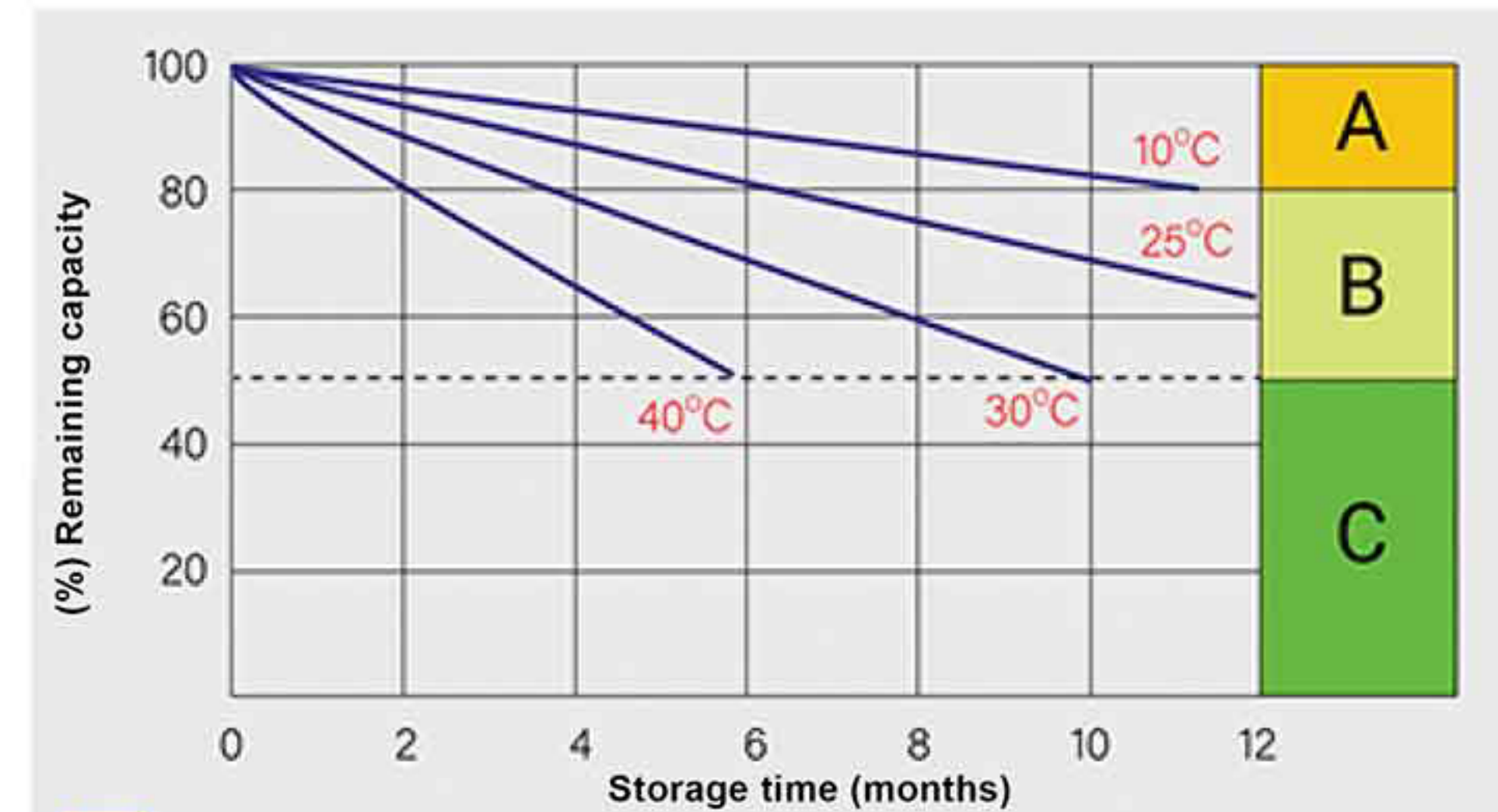
Cycle service life in relation to depth of discharge



Charge characteristic curve



Self-discharge characteristic curve



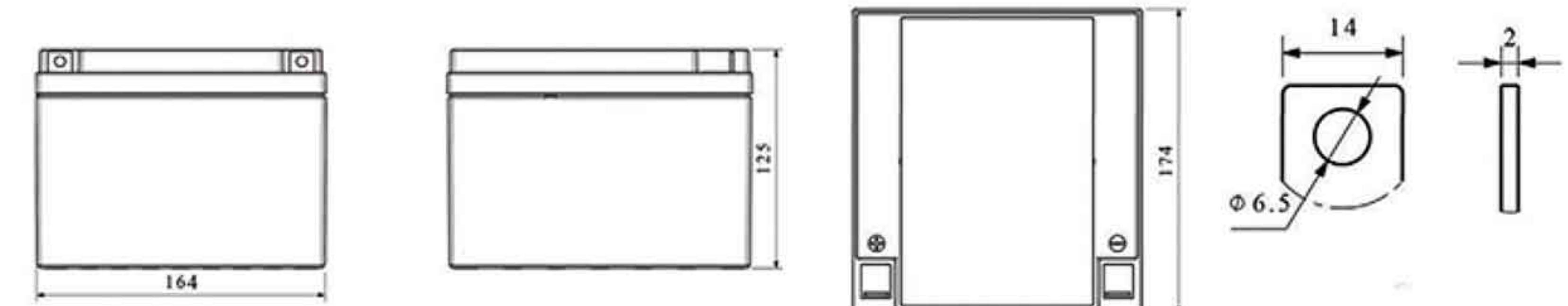
- A** No need for supplementary charging
If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity.
A battery should never be left to its own devices until it reaches this stage



The constant discharge current (in Amperes) at 77 degrees Fahrenheit											
F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	50.40	40.90	23.70	14.80	8.74	6.31	5.04	4.29	2.77	2.37	1.35
10.5V	53.40	43.10	24.60	15.30	8.96	6.50	5.20	4.42	2.86	2.42	1.40
10.2V	55.80	44.70	25.20	15.60	9.10	6.55	5.24	4.45	2.88	2.43	1.43
9.90V	58.20	46.40	26.00	16.00	9.18	6.59	5.27	4.48	2.90	2.44	1.45
9.60V	60.00	47.50	26.50	16.30	9.24	6.63	5.30	4.51	2.92	2.45	1.47

The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit											
F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	569	466	271	172	102	74.9	60.1	51.2	33.3	28.4	15.3
10.5V	602	492	282	177	105	77.2	61.9	52.8	34.3	29.0	15.6
10.2V	629	509	289	181	106	77.8	62.4	53.1	34.6	29.2	15.7
9.90V	656	529	298	185	107	78.3	62.8	53.5	34.8	29.3	15.8
9.60V	677	542	304	188	108	78.8	63.2	53.8	35.0	29.5	15.8

Specifications	
12V	Nominal Voltage
28AH	Nominal Capacity
164 ± 2mm (6.5 inches)	Length
165± 2mm (6.49 inches)	Width
125± 2mm (4.92 inches)	Height
125± 2mm (4.92 inches)	Total Height with Terminals
8.1 kg (17.6lbs)	Approximate Weight
T12	Terminal
ABS (V0 optional)	Type Body Material
27.0 AH/1.35A	(20hr, 10.8V, 25°C/77°F)
23.7 AH/2.37A	(10hr, 10.8V, 25°C/77°F)
22.1 AH/4.42A	(5hr, 10.5V, 25°C/77°F)
19.5 AH/6.5A	(3hr, 10.5V, 25°C/77°F)
16.3 AH/16.3A	(1hr, 9.60V, 25°C/77°F)
360A (5s)	Maximum Discharge Current
12mΩ	Internal Resistance (Approximate)
-15 ~ 50°C (5 ~ 122°F)	Discharging
-10 ~ 40°C (14 ~ 104°F)	Charging
-15 ~ 40°C (5 ~ 104°F)	Storage
25±3°C (77±5°F)	Nominal Operating Temperature
(77°F) 25°C	14.4V ~15.0V
-30mV/°C	Equalize Charging
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage	Float Charging
-20mV/°C Temperature Correction Coefficient	
8.4A	Maximum Charge Current
103%	40°C (104°F)
100%	25°C (77°F)
86%	0°C (32°F)
Series GP batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter	
	Self-discharge

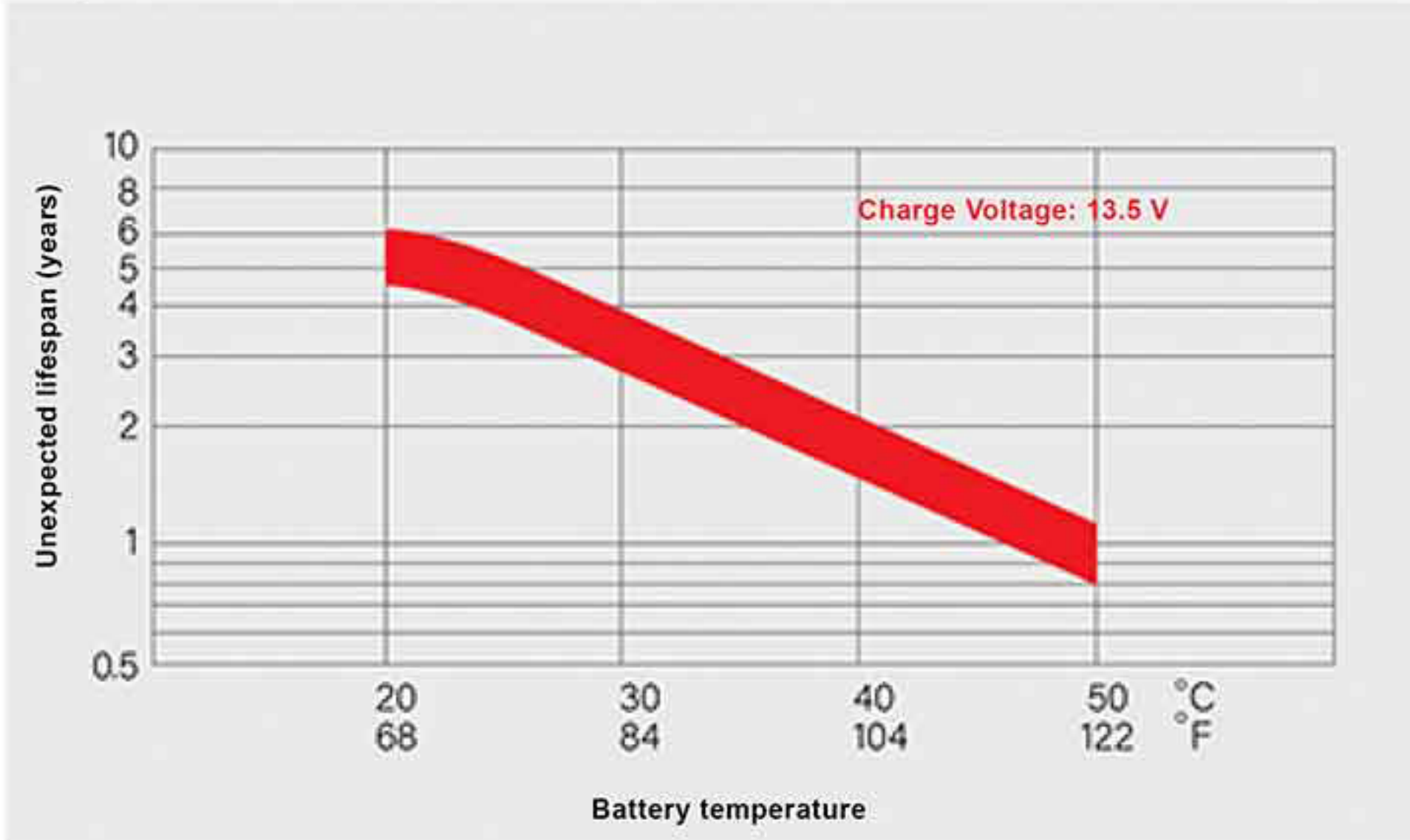




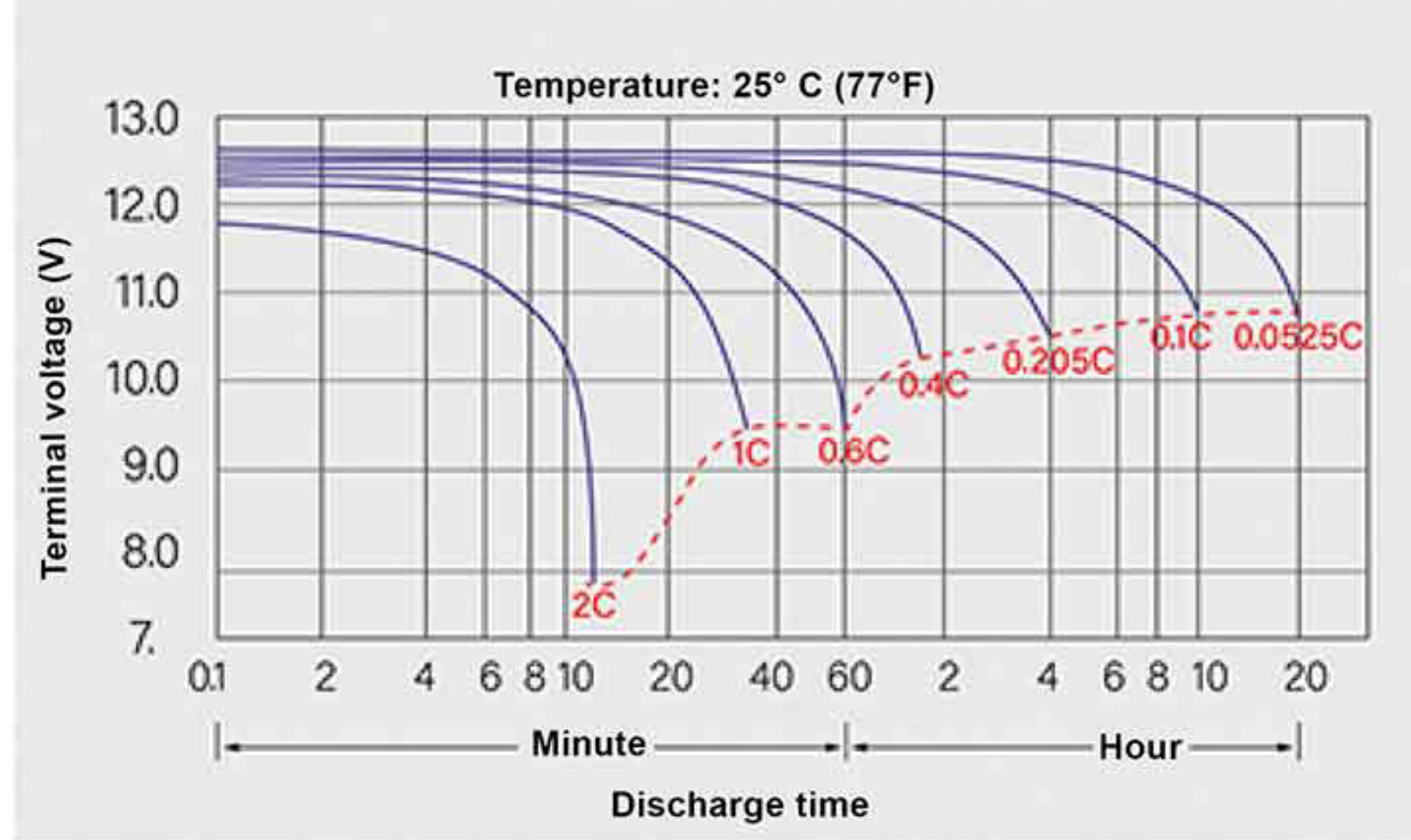
12V-42Ah GP



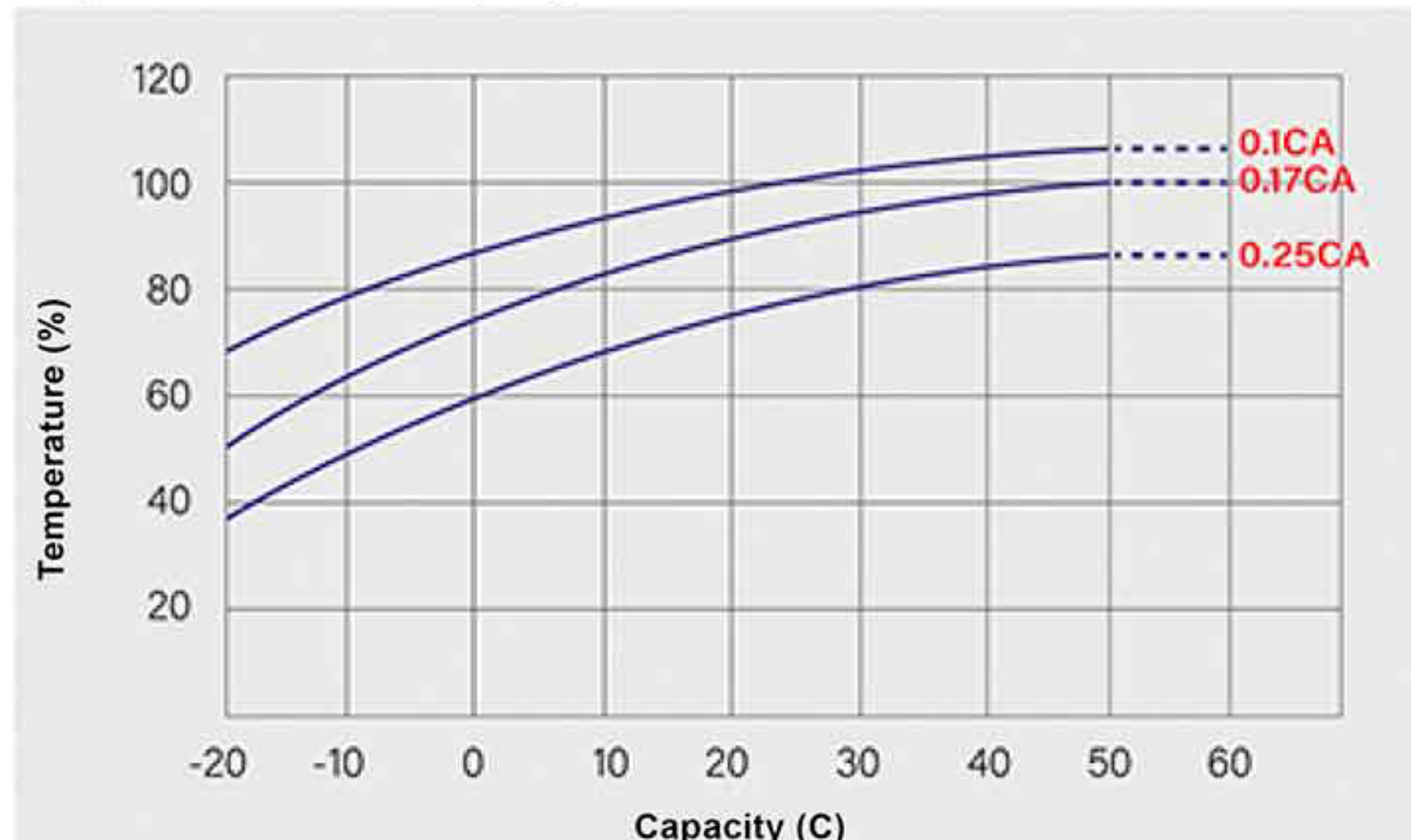
Temperature effects on float life



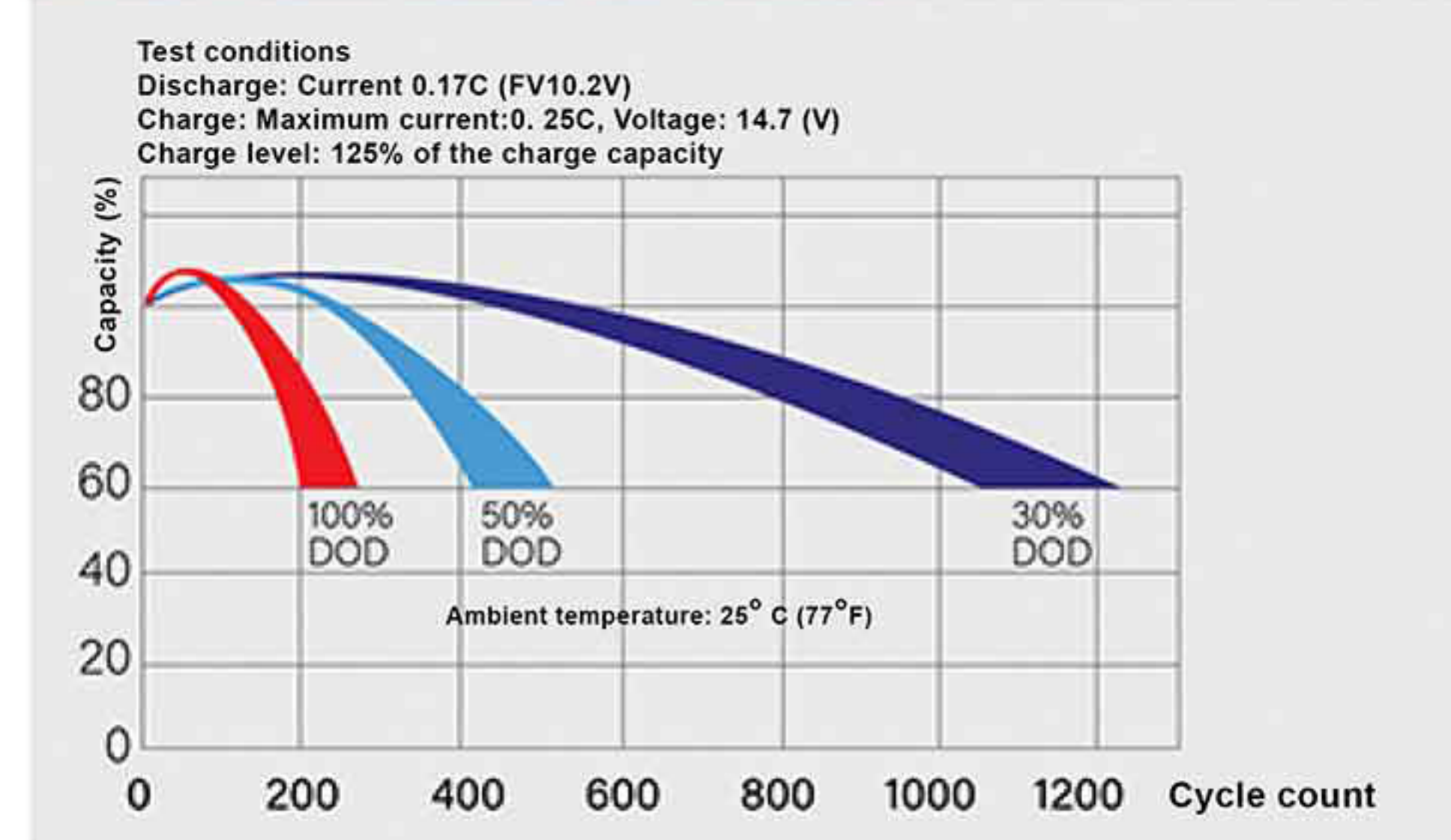
Discharge characteristic curve



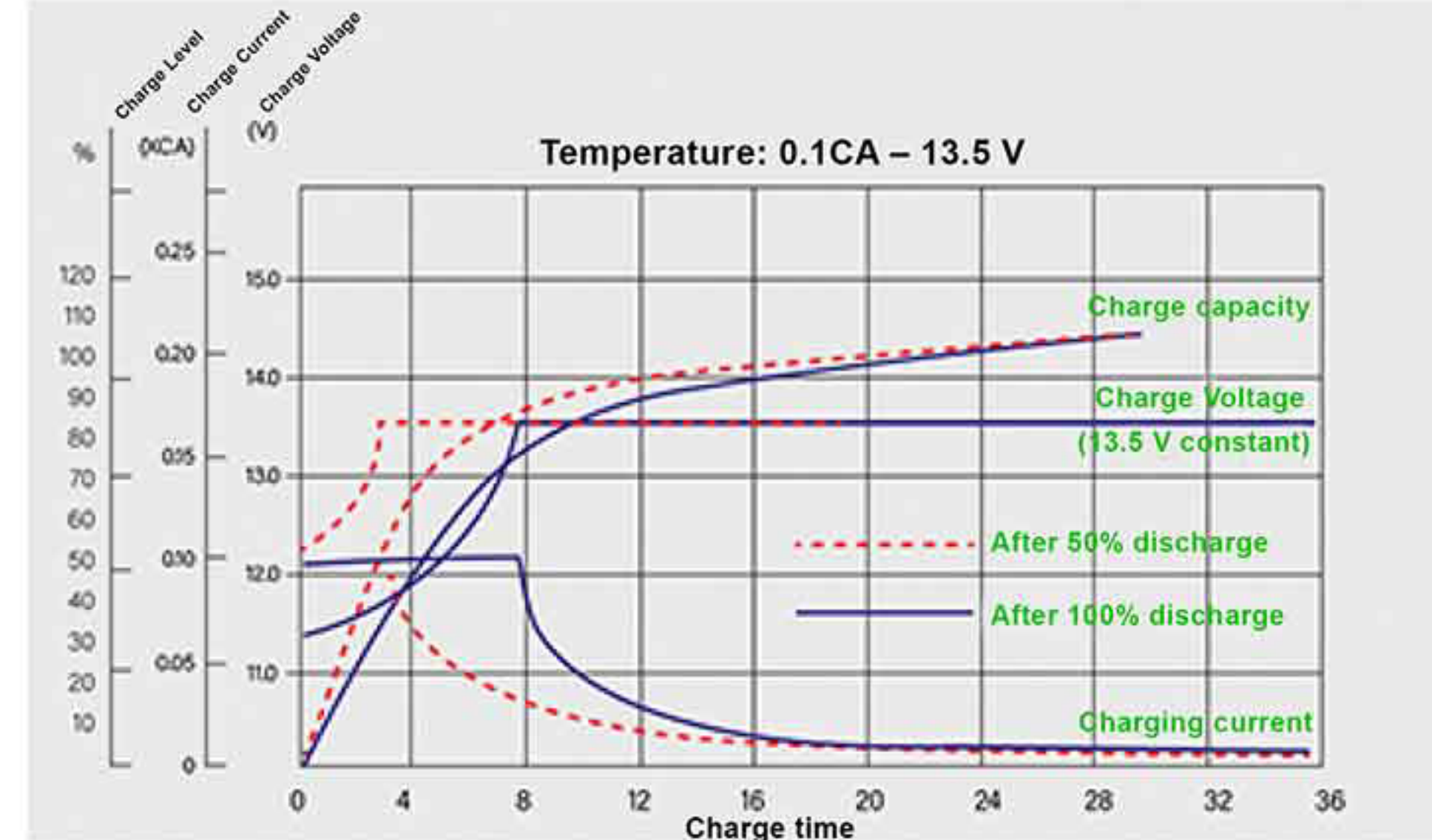
Temperature effects on Capacity



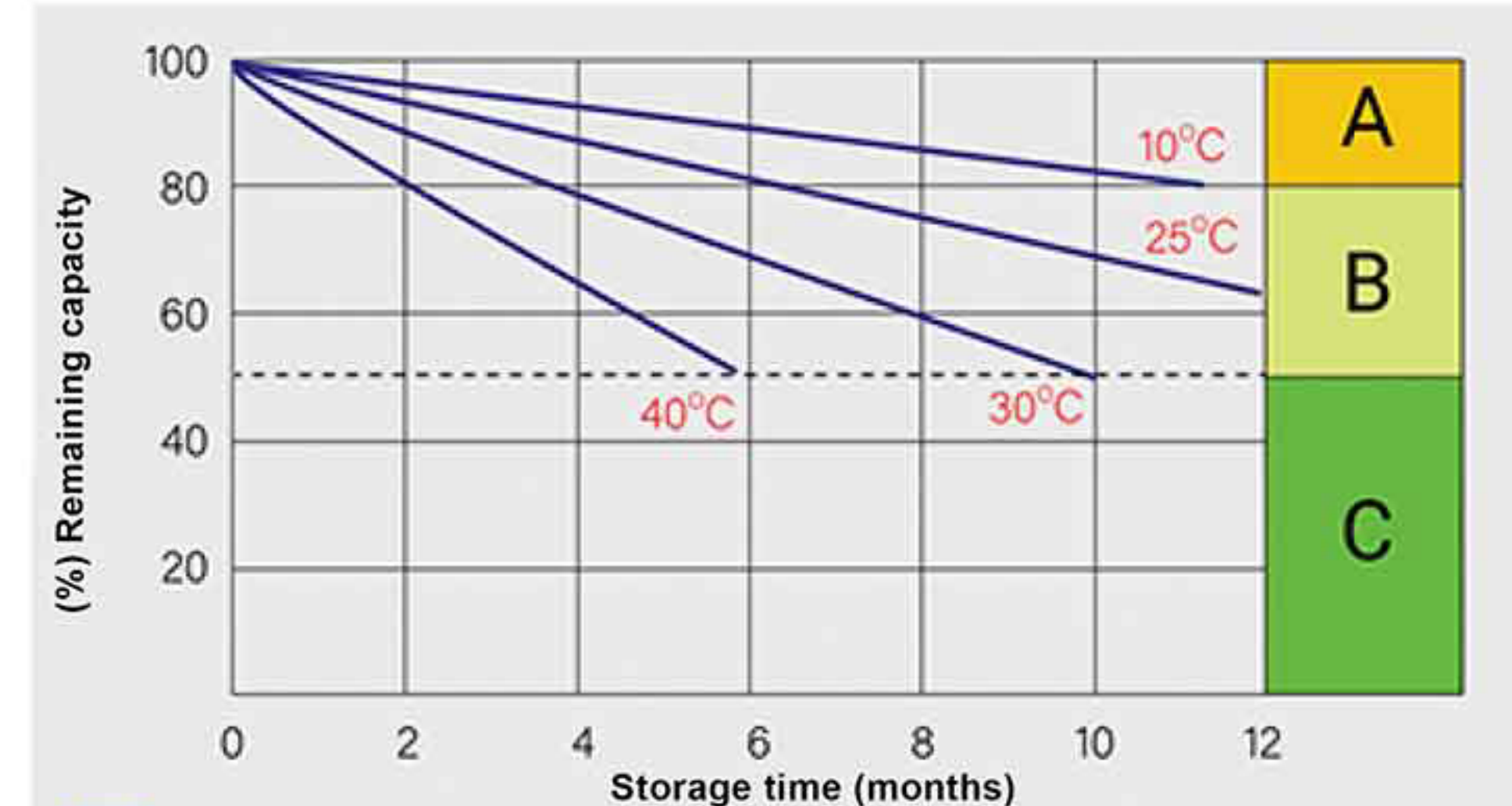
Cycle service life in relation to depth of discharge



Charge characteristic curve



Self-discharge characteristic curve



- A** No need for supplementary charging
If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity.
A battery should never be left to its own devices until it reaches this stage



The constant discharge current (in Amperes) at 77 degrees Fahrenheit

F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	70.6	56.8	35.7	22.6	13.8	9.7	7.95	6.79	4.66	4.00	2.10
10.5V	74.8	59.9	37.1	23.3	14.2	10.0	8.20	7.00	4.80	4.03	2.11
10.2V	78.1	62.0	38.0	23.8	14.4	10.1	8.26	7.05	4.83	4.05	2.13
9.90V	81.5	64.4	39.2	24.4	14.5	10.1	8.31	7.10	4.87	4.06	2.13
9.60V	84.0	66.0	40.0	24.8	14.6	10.2	8.36	7.14	4.90	4.07	2.14

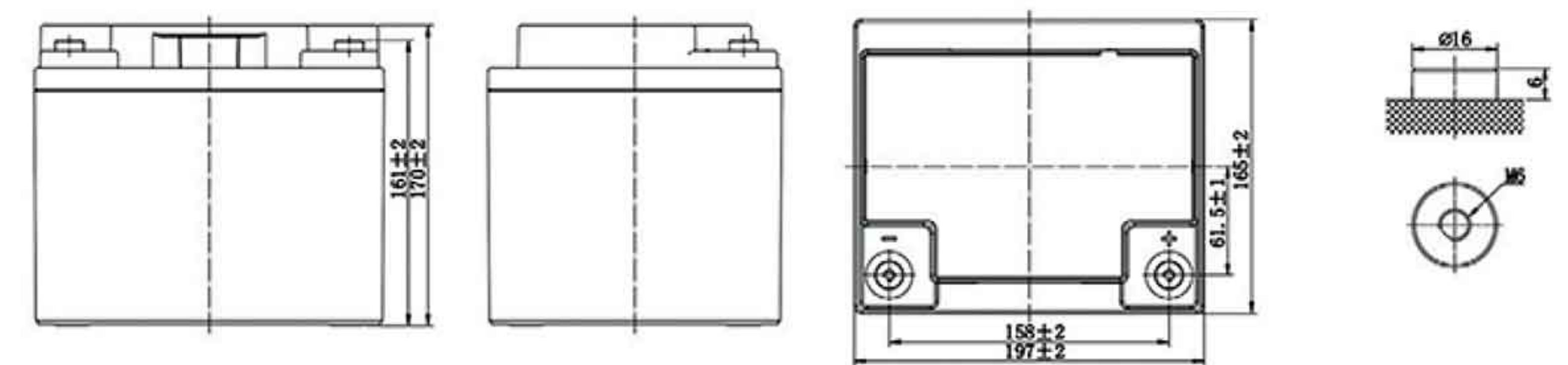
The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit

F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	762	623	401	258	160	114	93.5	80.3	55.3	47.8	25.2
10.5V	807	658	416	266	164	118	96.4	82.7	57.0	48.1	25.4
10.2V	844	681	426	271	167	118	97.1	83.3	57.4	48.4	25.5
9.90V	880	707	440	278	168	119	97.8	83.9	57.8	48.5	25.6
9.60V	907	725	449	283	169	120	98.4	84.4	58.2	48.6	25.7



12V-42Ah GP

Specifications	
12V	Nominal Voltage
42AH	Nominal Capacity
197 ± 2mm (7.76 inches)	Dimensions
165 ± 2mm (6.5 inches)	
170 ± 2mm (6.69 inches)	
170 ± 2mm (6.69 inches)	
12.2 kg (26.9lbs)	Approximate Weight
T6	Terminal
ABS (V0 optional)	Type Body Material
42.0 AH/2.1A	Nominal Capacity
(20hr, 10.8V, 25°C/77°F)	
40.0 AH/4A	
(10hr, 10.8V, 25°C/77°F)	
35.0 AH/7A	
(5hr, 10.5V, 25°C/77°F)	
30.0 AH/10A	Nominal Capacity
(3hr, 10.5V, 25°C/77°F)	
24.8 AH/24.8A	(1hr, 9.60V, 25°C/77°F)
456A (5s)	Maximum Discharge Current
8.5mΩ	Internal Resistance (Approximate)
-15 ~ 50°C (5 ~ 122°F)	Operating Temperature Range
-10 ~ 40°C (14 ~ 104°F)	
-15 ~ 40°C (5 ~ 104°F)	Operating Temperature Range
25 ± 3°C (77 ± 5°F)	
(77°F) 25°C At Temperature 14.4V ~ 15.0V Voltage	Equalize Charging
-30mV/°C Temperature Correction Coefficient	
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage	Float Charging
-20mV/°C Temperature Correction Coefficient	
12.6A	Maximum Charge Current
103%	Temperature Effects on Capacity
100%	
86%	
Series GP batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge.	Self-discharge
For higher temperatures, the storage time will be shorter	

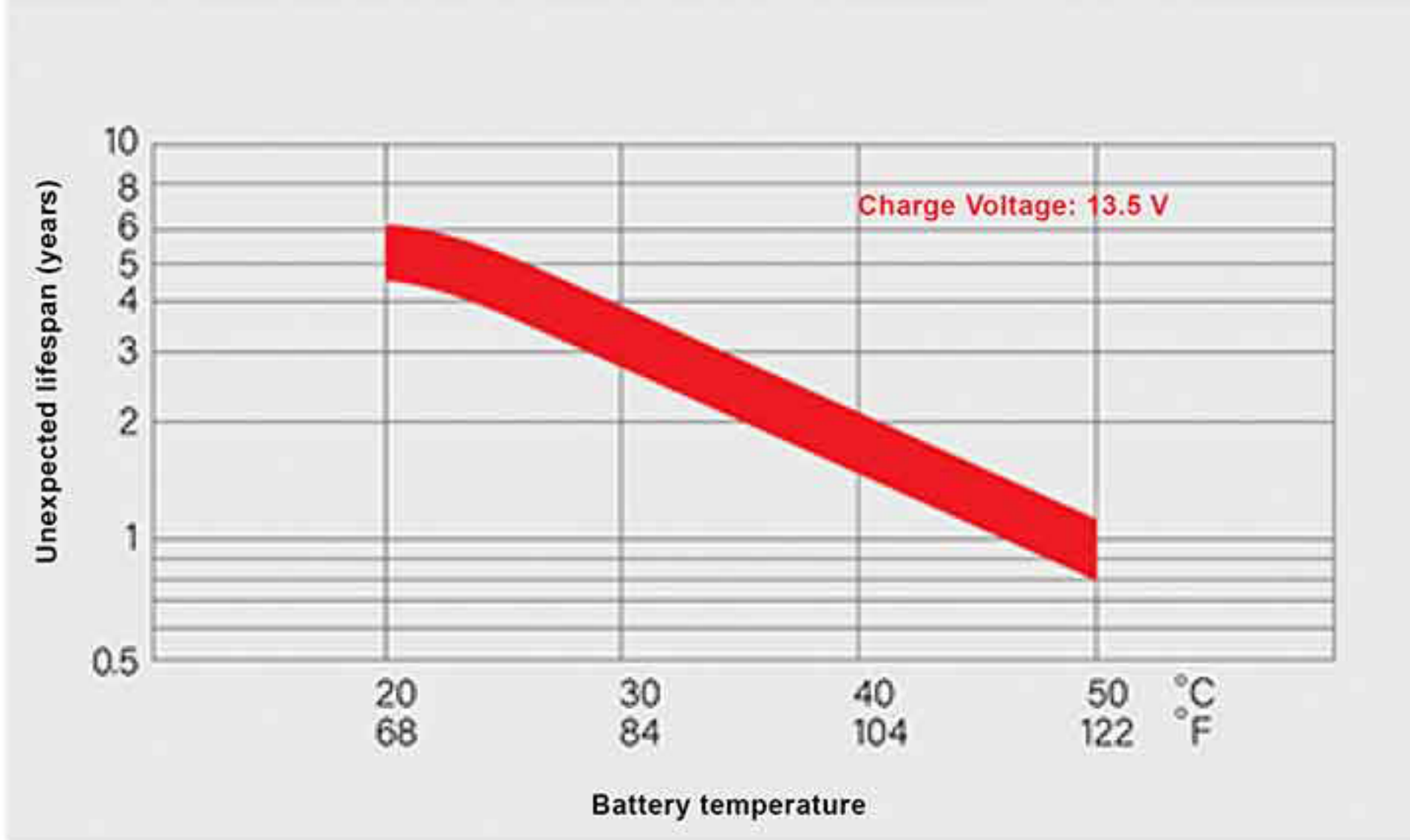




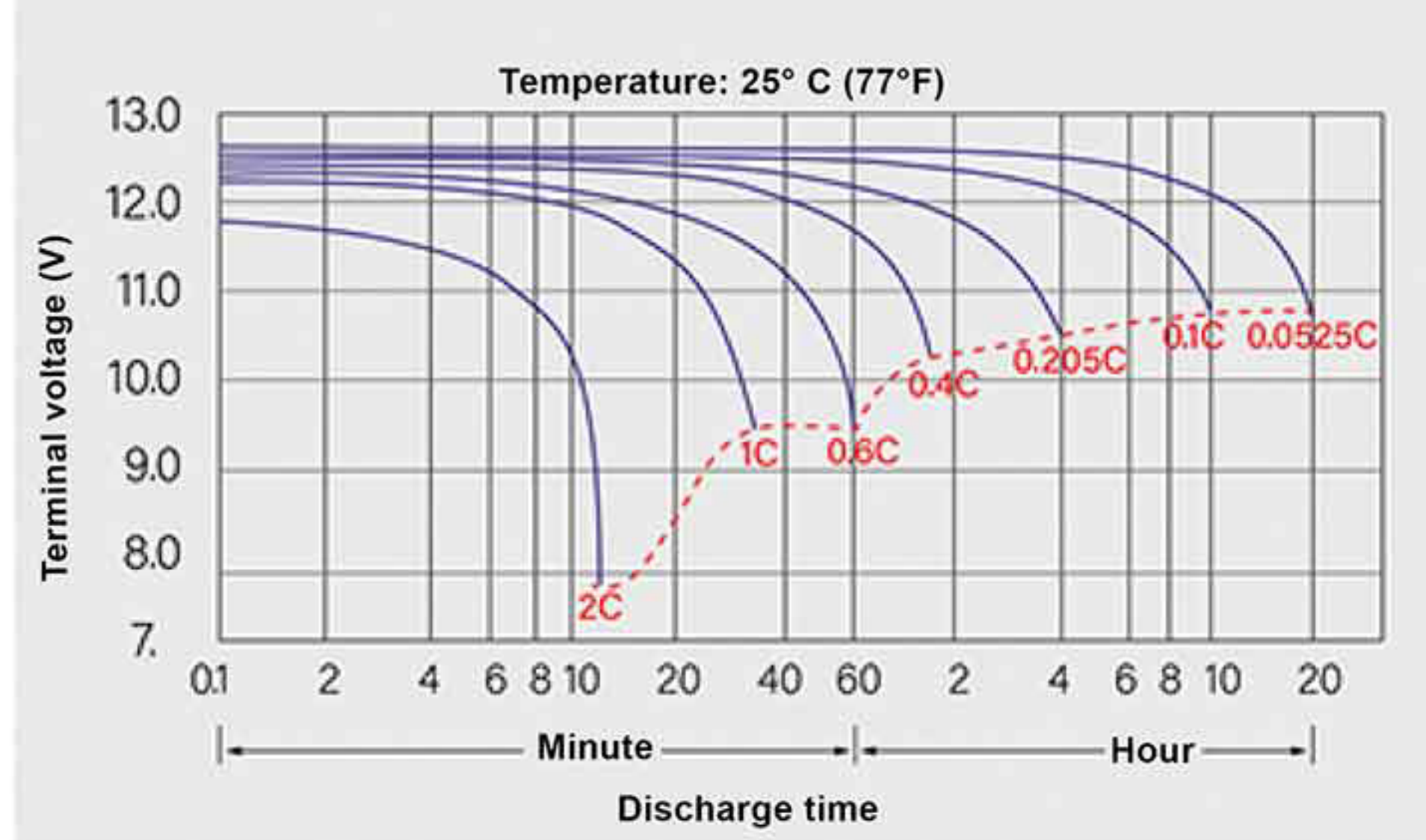
12V-65Ah GP



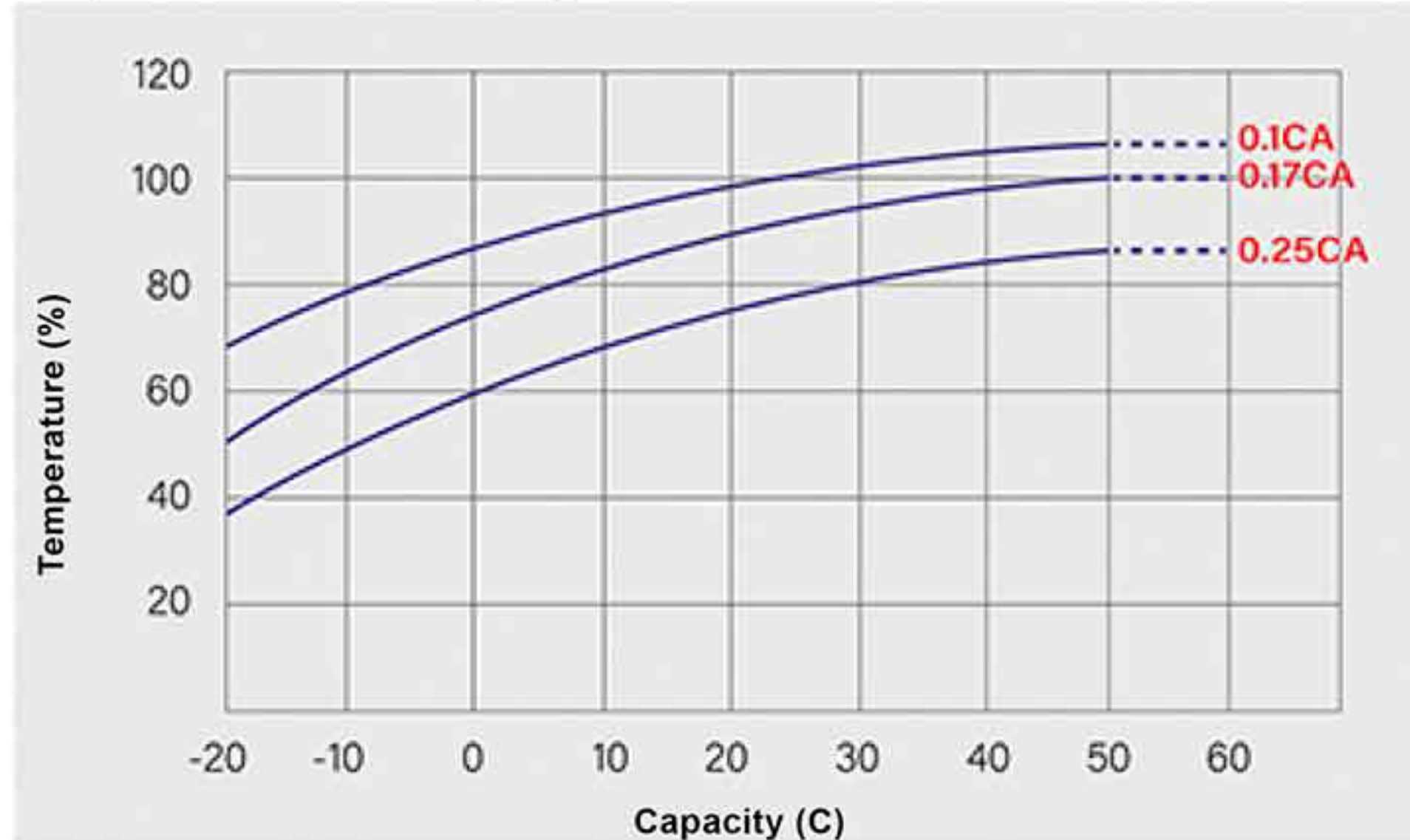
Temperature effects on float life



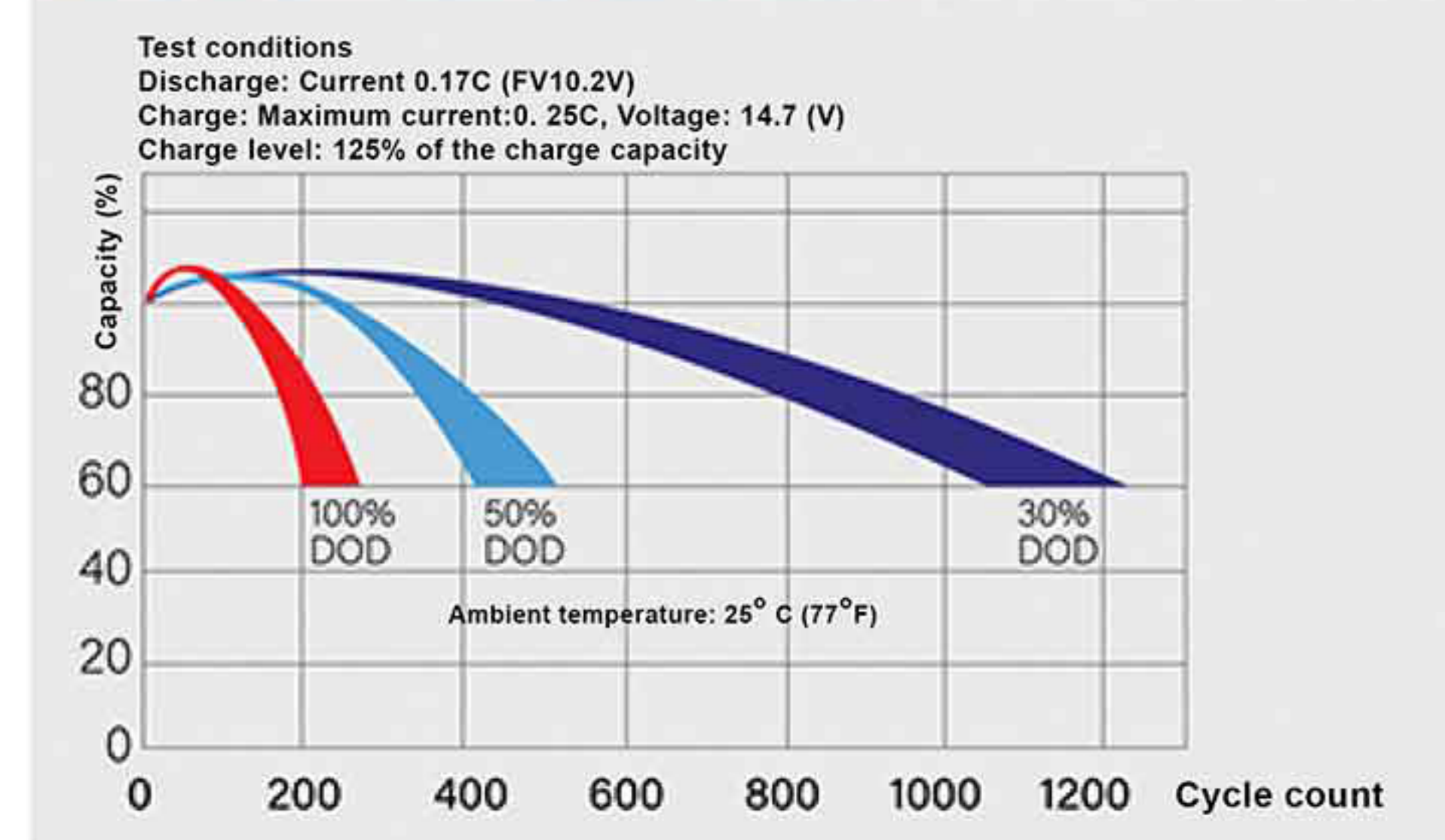
Discharge characteristic curve



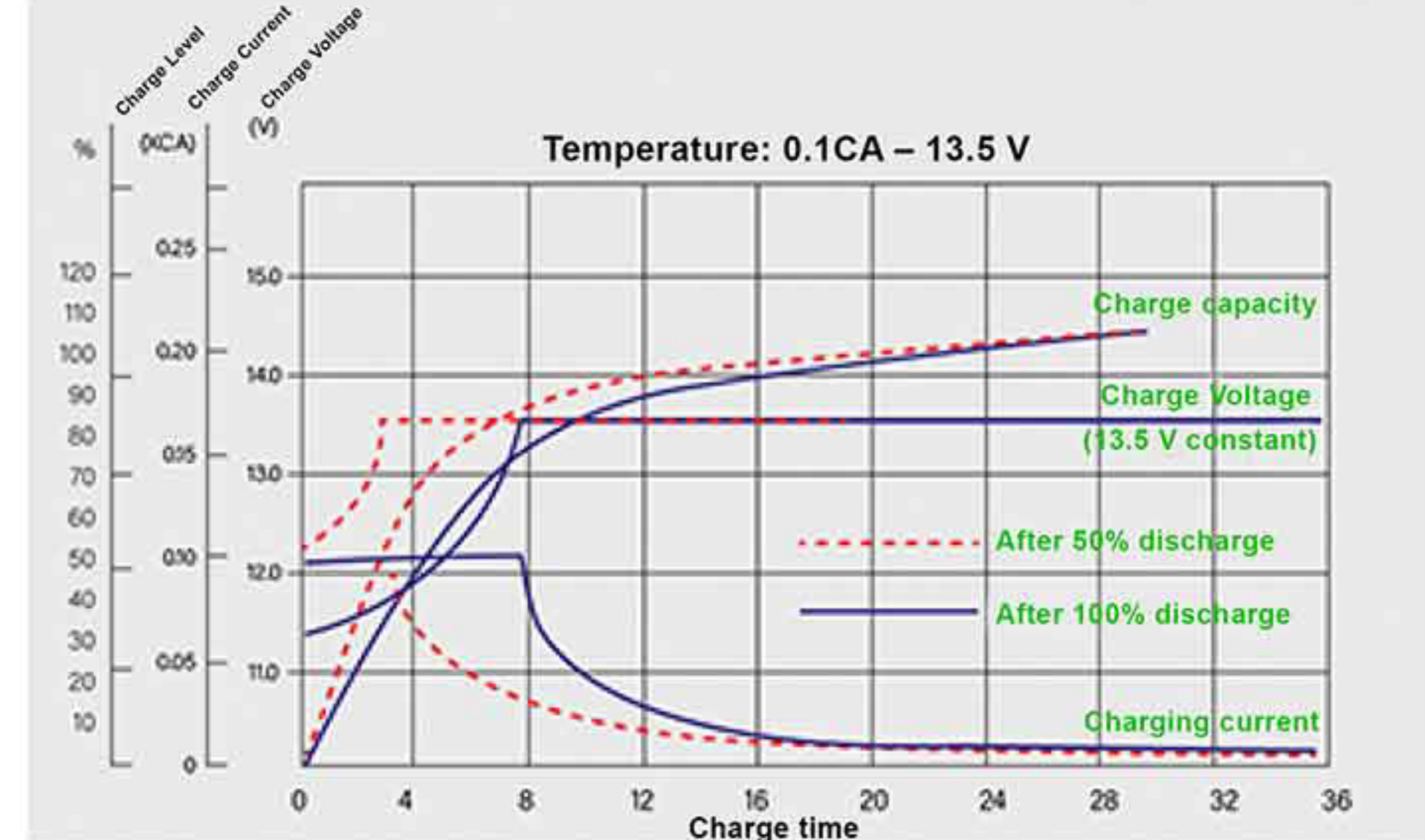
Temperature effects on Capacity



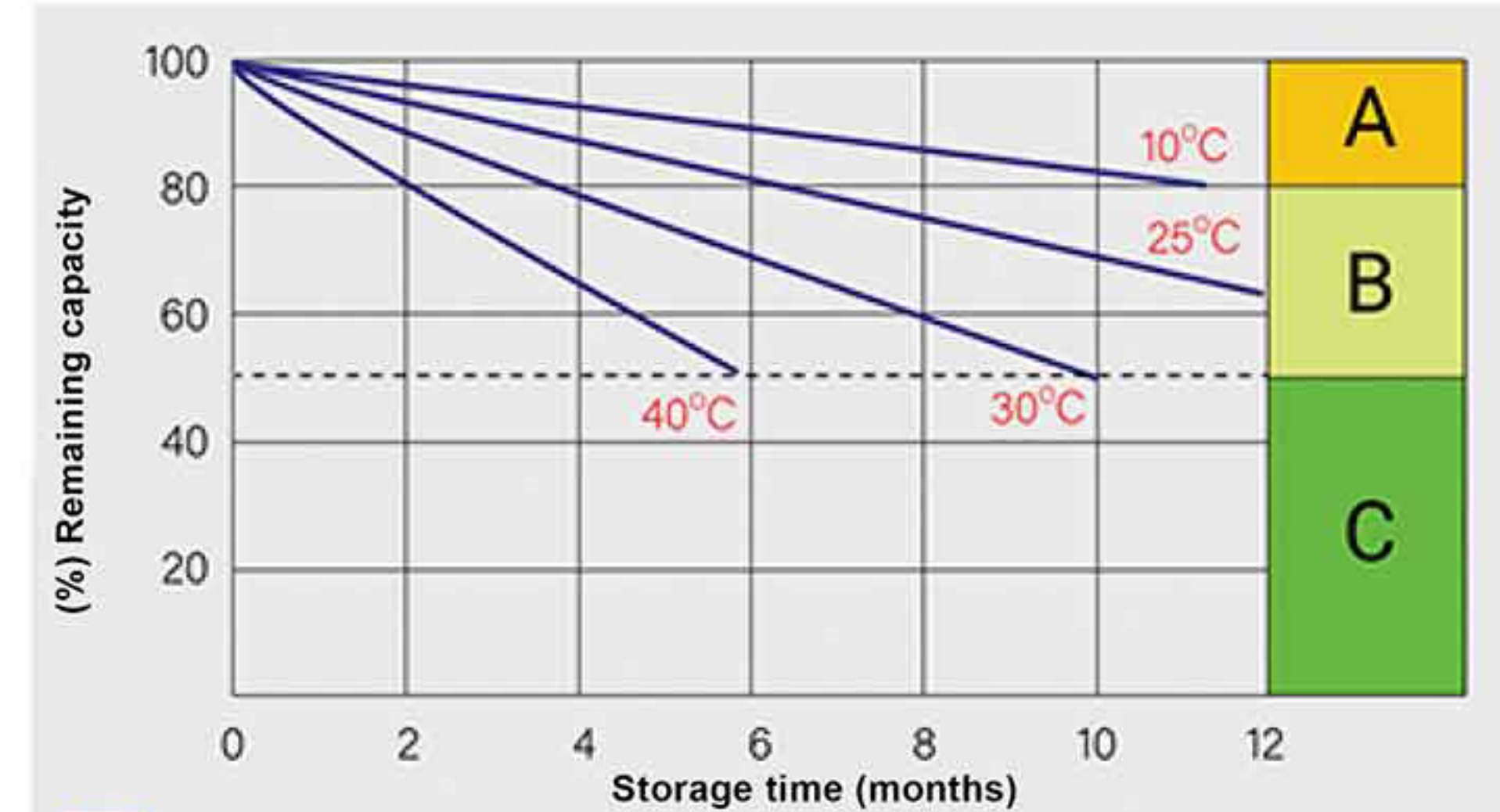
Cycle service life in relation to depth of discharge



Charge characteristic curve



Self-discharge characteristic curve



- A** No need for supplementary charging
If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity.
A battery should never be left to its own devices until it reaches this stage

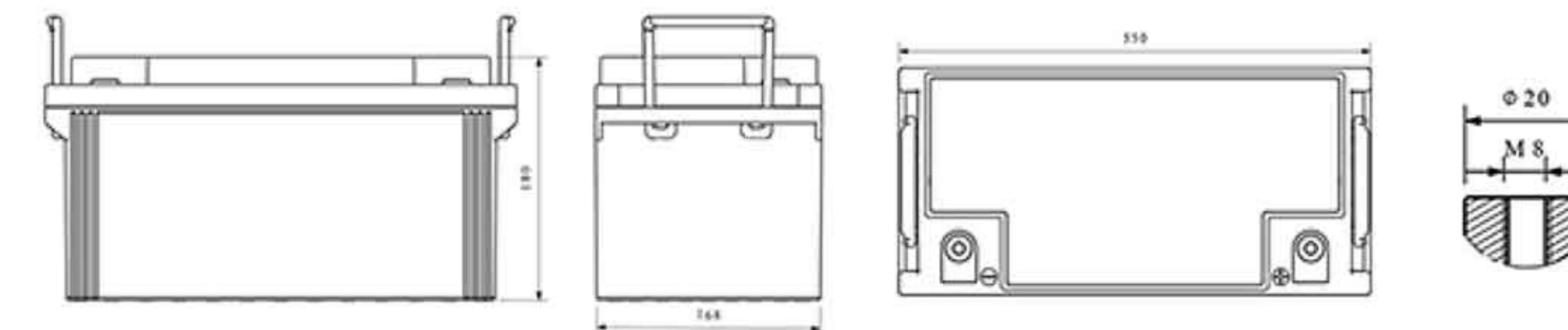


12V- 65Ah GP

12V		65AH		Specifications	
				Nominal Voltage	
				Nominal Capacity	
348 ± 3mm (13.7 inches)		Length		Dimensions	
167 ± 2mm (6.57 inches)		Width			
178 ± 2mm (7.01 inches)		Height			
178 ± 2mm (7.01 inches)		Total Height with Terminals			
20.0 kg (44.1 lbs)				Approximate Weight	
T6				Terminal	
ABS (V0 optional)				Type Body Material	
70 AH/3.5A	(20hr ,10.8V,25°C/77°F)			Nominal Capacity	
65 AH/6.50A	(10hr ,10.8V,25°C/77°F)				
57 AH/11.4A	(5hr ,10.5V,25°C/77°F)				
48.9 AH/16.3A	(3hr ,10.5V,25°C/77°F)				
40.3 AH/40.3A	(1hr ,9.60V,25°C/77°F)				
780A (5s)				Maximum Discharge Current	
7.3mΩ				Internal Resistance (Approximate)	
-15 ~ 50°C (5 ~ 122°F)		Discharging		Operating Temperature Range	
-10 ~ 40°C (14 ~ 104°F)		Charging			
-15 ~ 40°C (5 ~ 104°F)		Storage			
25±3°C (77±5°F)				Nominal Operating Temperature	
(77°F) 25°C At Temperature 14.4V ~15.0V Voltage				Equalize Charging	
-30mV/°C Temperature Correction Coefficient					
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage				Float Charging	
-20mV/°C Temperature Correction Coefficient					
103%		40°C (104°F)		Temperature Effects on Capacity	
100%		25°C (77°F)			
86%		0°C (32°F)			
Series GP batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter				Self-discharge	

The constant discharge current (in Amperes) at 77 degrees Fahrenheit											
F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	115	92.2	58.0	36.8	22.5	15.8	12.9	11.0	7.57	6.50	3.50
10.5V	121	97.4	60.3	37.9	23.0	16.3	13.3	11.4	7.80	6.55	3.54
10.2V	127	101.0	61.8	38.7	23.4	16.4	13.4	11.5	7.85	6.58	3.56
9.90V	132	105.0	63.7	39.7	23.6	16.5	13.5	11.5	7.91	6.60	3.57
9.60V	137	107.0	65.0	40.3	23.8	16.6	13.6	11.6	7.96	6.62	3.57

The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit											
F.V/Time	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	1238	1013	651	419	260	185	152	130	89.9	77.6	41.0
10.5V	1312	1069	676	432	267	191	157	134	92.7	78.2	41.2
10.2V	1371	1107	693	441	271	192	158	135	93.3	78.6	41.5
9.90V	1430	1149	715	453	273	194	159	136	94.0	78.9	41.6
9.60V	1474	1178	729	459	275	195	160	137	94.5	79.0	41.7

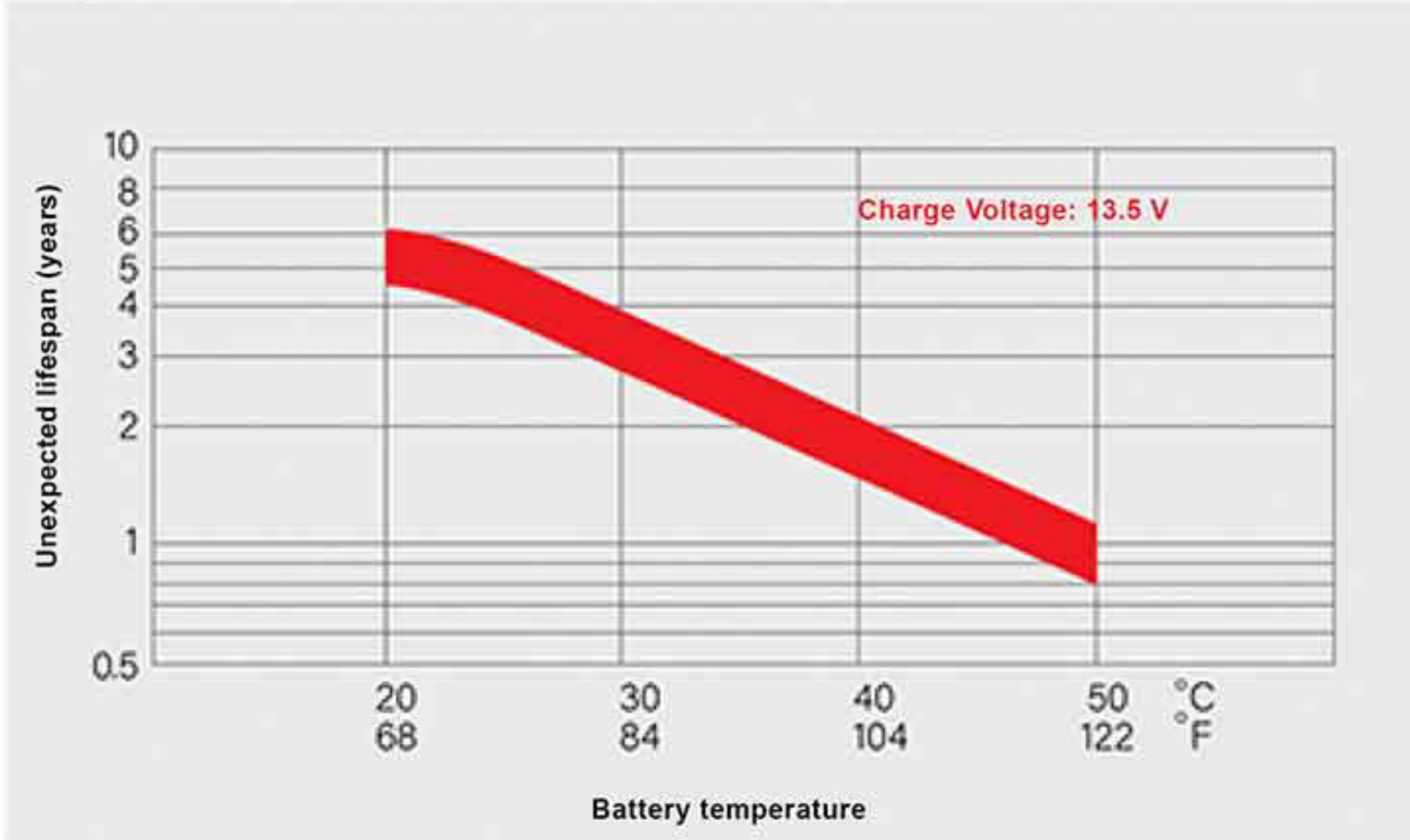




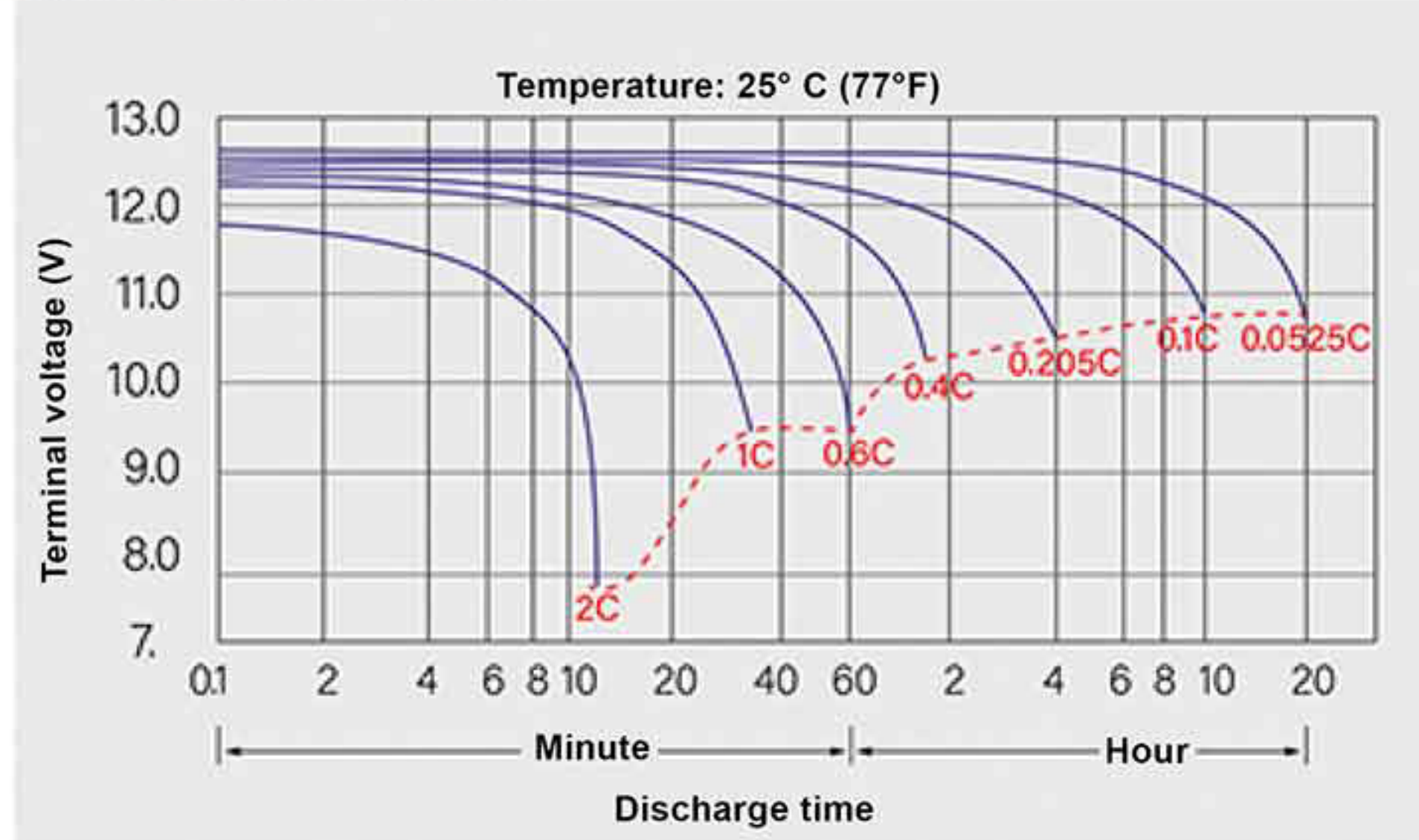
12V-100Ah GP



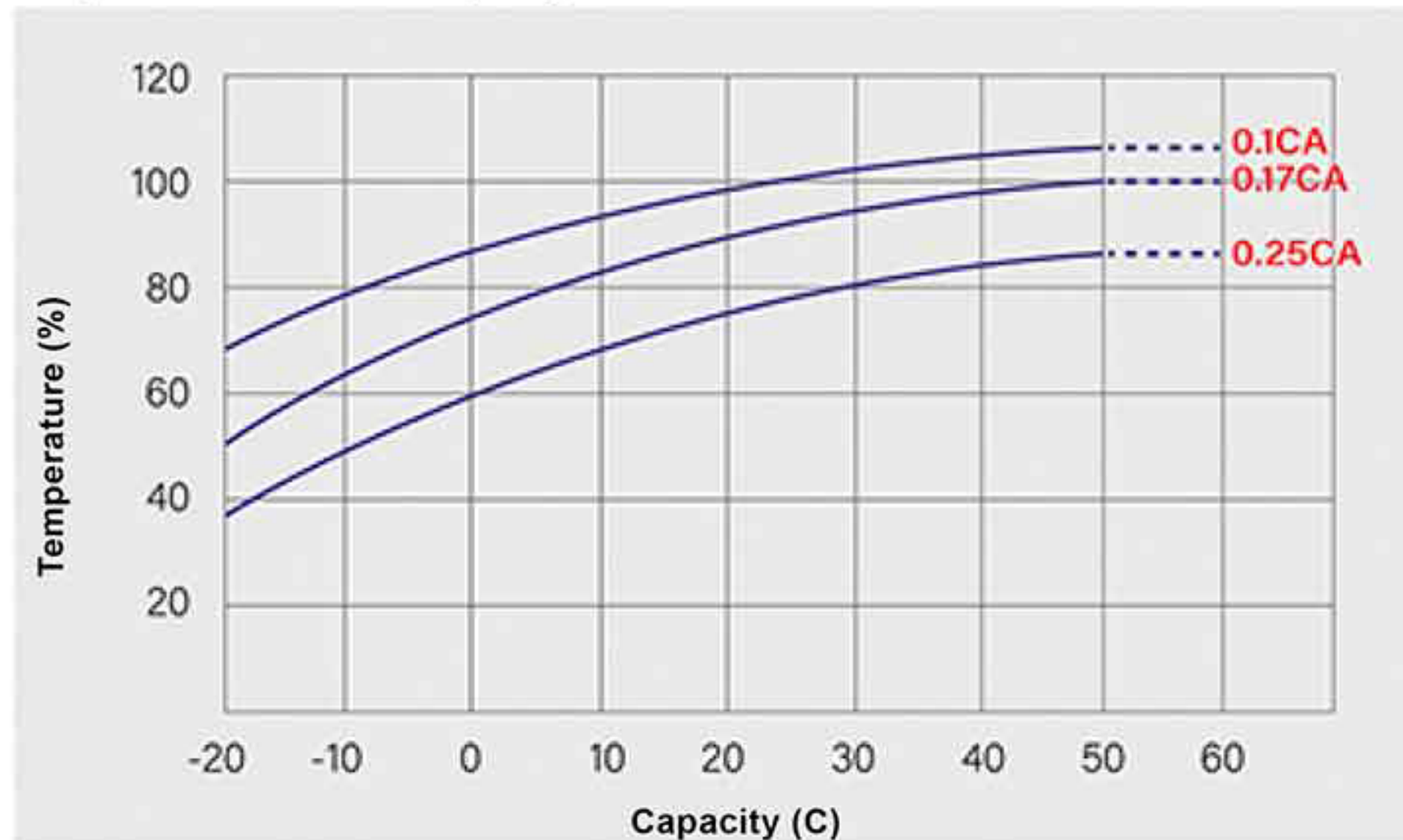
Temperature effects on float life



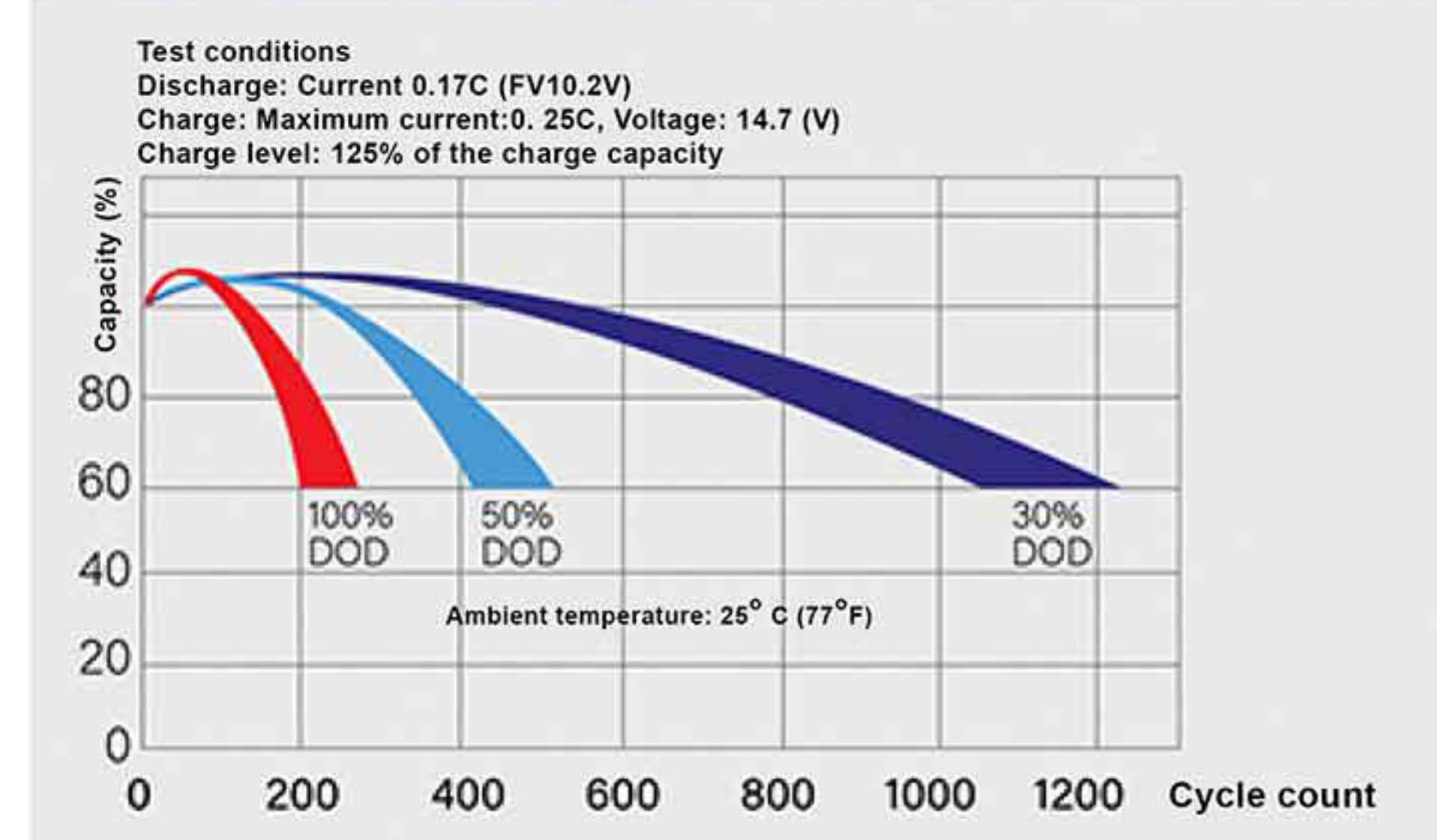
Discharge characteristic curve



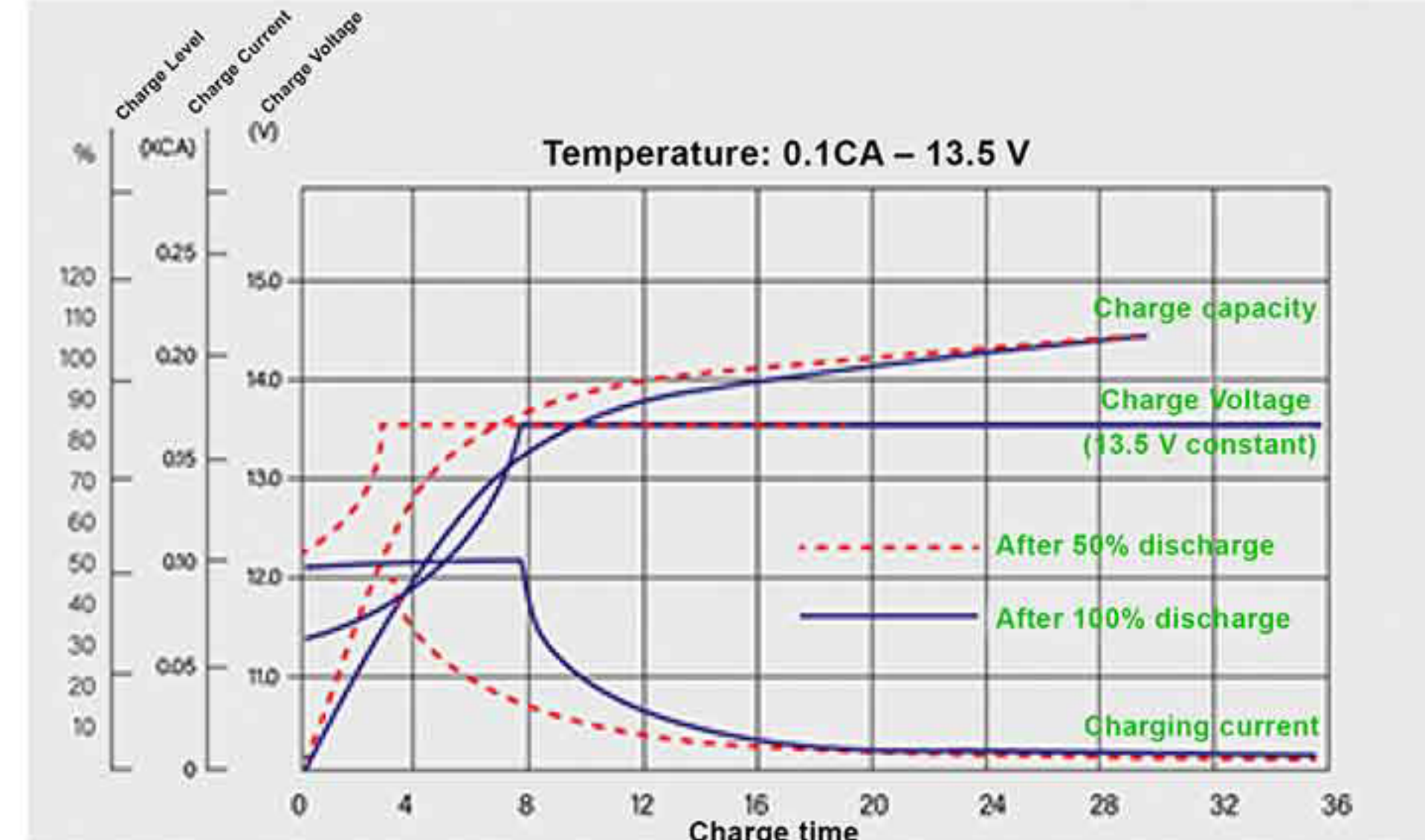
Temperature effects on Capacity



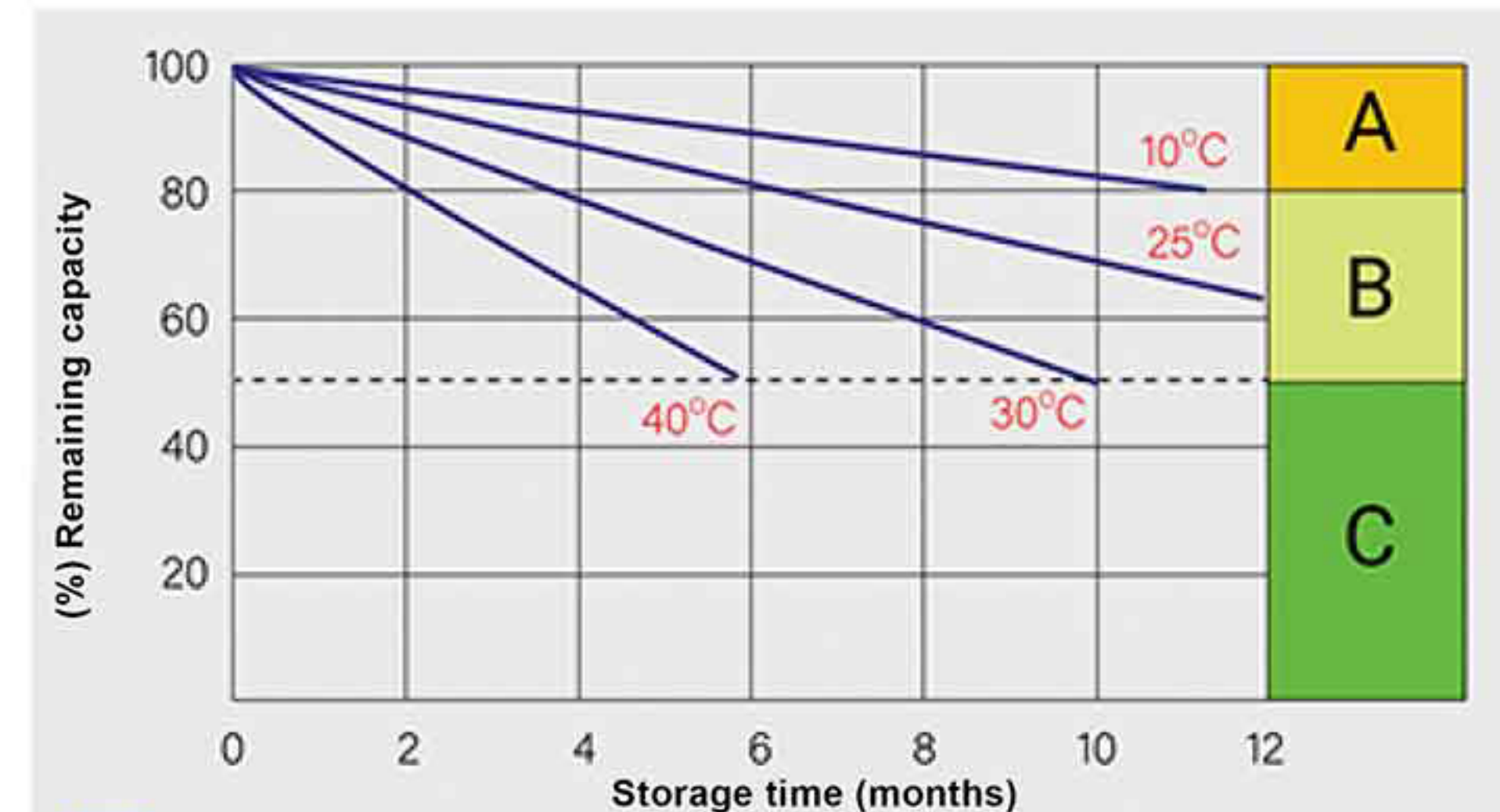
Cycle service life in relation to depth of discharge



Charge characteristic curve



Self-discharge characteristic curve



- A** No need for supplementary charging
If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.8V/Cell.
2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity.
A battery should never be left to its own devices until it reaches this stage

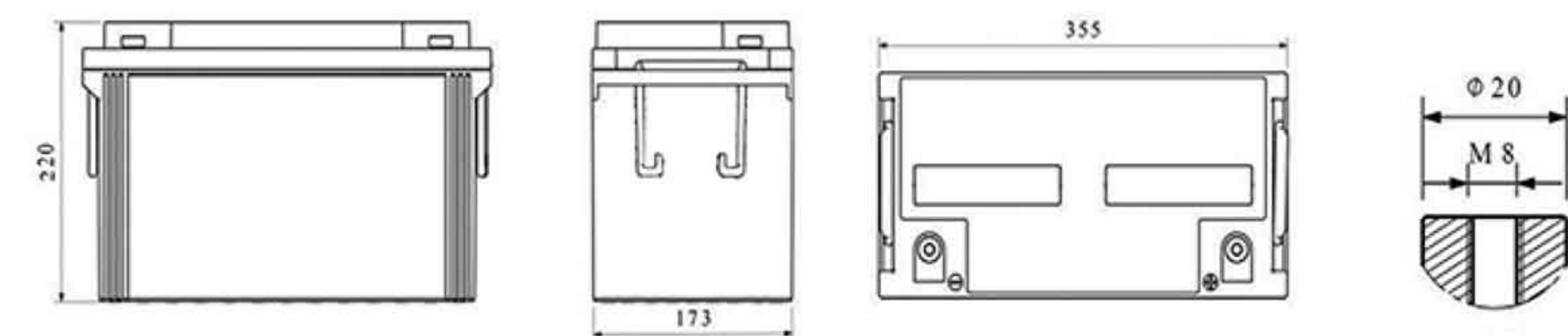


12V-100Ah GP

The constant discharge current (in Amperes) at 77 degrees Fahrenheit											
F.V/Time	15 min	20 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	166.9	130.2	90.1	54.5	30.9	25.0	19.9	16.9	11.8	10.0	5.25
10.5V	174.2	135.8	94.0	57.8	32.3	25.5	20.7	17.4	12.0	10.1	5.30
10.2V	176.3	137.5	95.2	60.5	33.5	26.3	21.2	17.7	12.2	10.2	5.36
9.90V	179.0	139.7	96.7	62.6	34.5	27.1	21.7	18.0	12.3	10.3	5.41
9.60V	181.8	141.8	98.1	63.3	35.1	27.5	22.0	18.3	12.4	10.4	5.46

The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit											
F.V/Time	15 min	20 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	1836	1432	991	533	336	254	206	189	121	100	52
10.5V	1914	1494	1034	561	348	262	213	195	123	101	53
10.2V	1939	1513	1047	586	357	269	219	199	124	102	53
9.90V	1969	1536	1063	612	367	277	224	201	125	103	54
9.60V	1999	1559	1079	636	375	283	227	204	127	105	55

Specifications	
12V	Nominal Voltage
100 AH	Nominal Capacity
356±3mm (14.01 inches)	Length
173± 2mm (6.81 inches)	Width
212 ± 3mm (8.39 inches)	Height
220 ± 3mm (8.66 inches)	Total Height with Terminals
27.5 kg (60.5lbs)	Approximate Weight
T11	Terminal
ABS (V0 optional)	Type Body Material
105.0 AH/5.25A	(20hr ,10.8V,25°C/77°F)
100.0 AH/10.0A	(10hr ,10.8V,25°C/77°F)
87.0 AH/17.4A	(5hr ,10.5V,25°C/77°F)
76.5 AH/25.5A	(3hr ,10.5V,25°C/77°F)
62.6 AH/62.6A	(1hr ,9.60V,25°C/77°F)
1000A (5s)	Maximum Discharge Current
4.9mΩ	Internal Resistance (Approximate)
-15 ~ 50°C (5 ~ 122°F)	Discharging
-10 ~ 40°C (14 ~ 104°F)	Charging
-15 ~ 40°C (5 ~ 104°F)	Storage
25±3°C (77±5°F)	Nominal Operating Temperature
(77°F) 25°C At Temperature 14.4V ~15.0V Voltage -30mV/°C Temperature Correction Coefficient	Equalize Charging
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage -20mV/°C Temperature Correction Coefficient	Float Charging
30.0A	Maximum Charge Current
103%	40°C (104°F)
100%	25°C (77°F)
86%	0°C (32°F)
Series GP batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter	Self-discharge

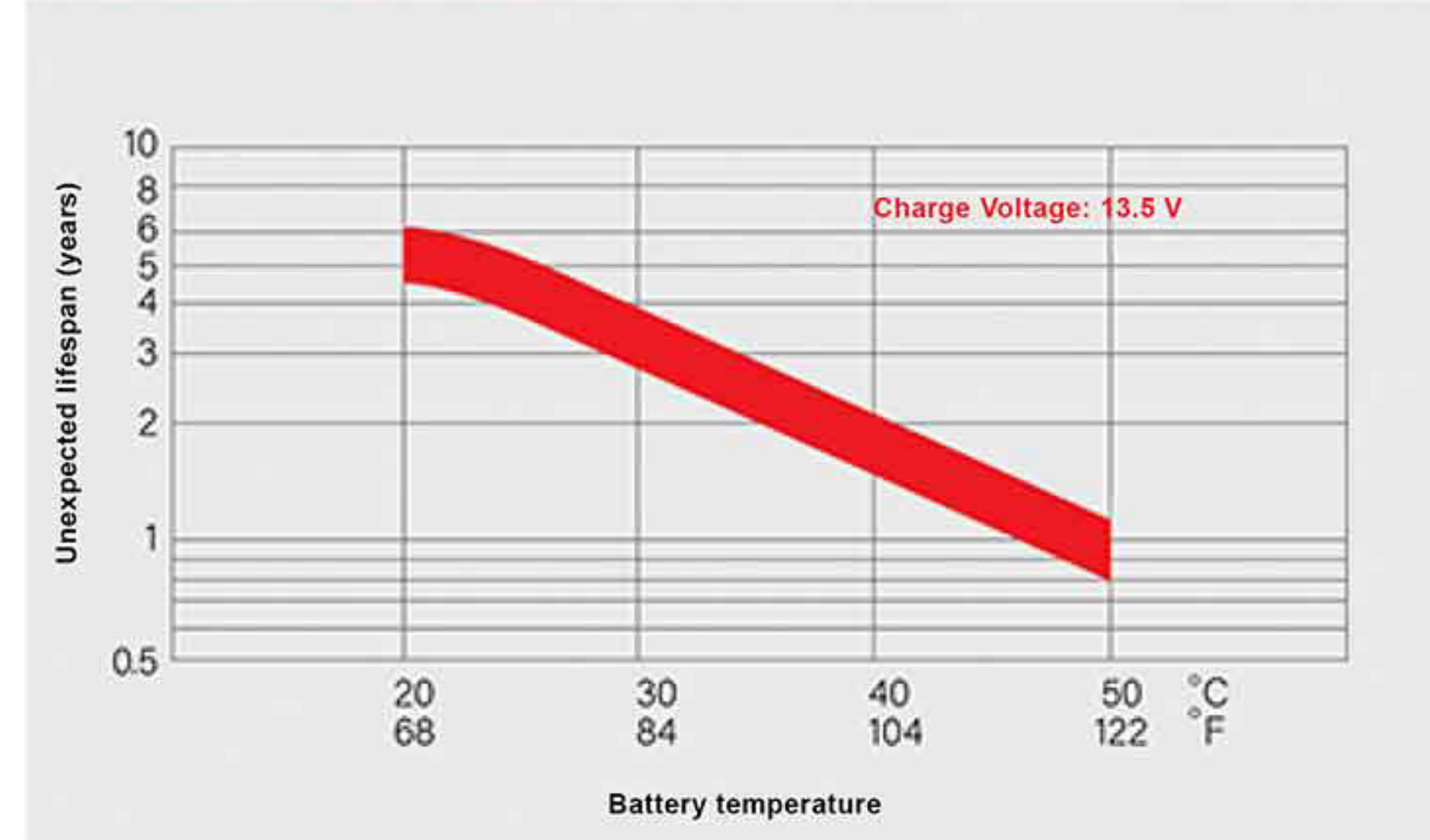




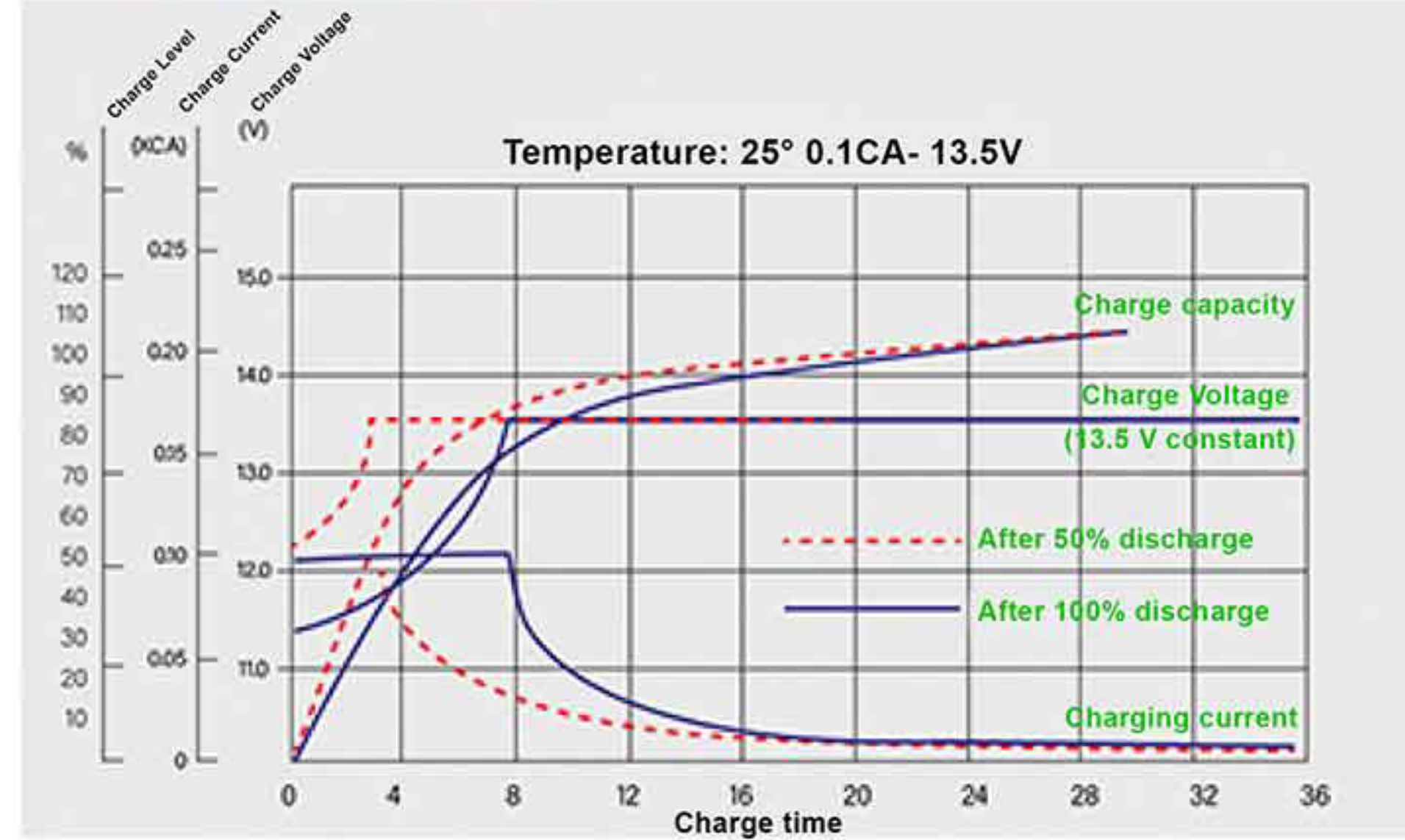
12V-100Ah FT



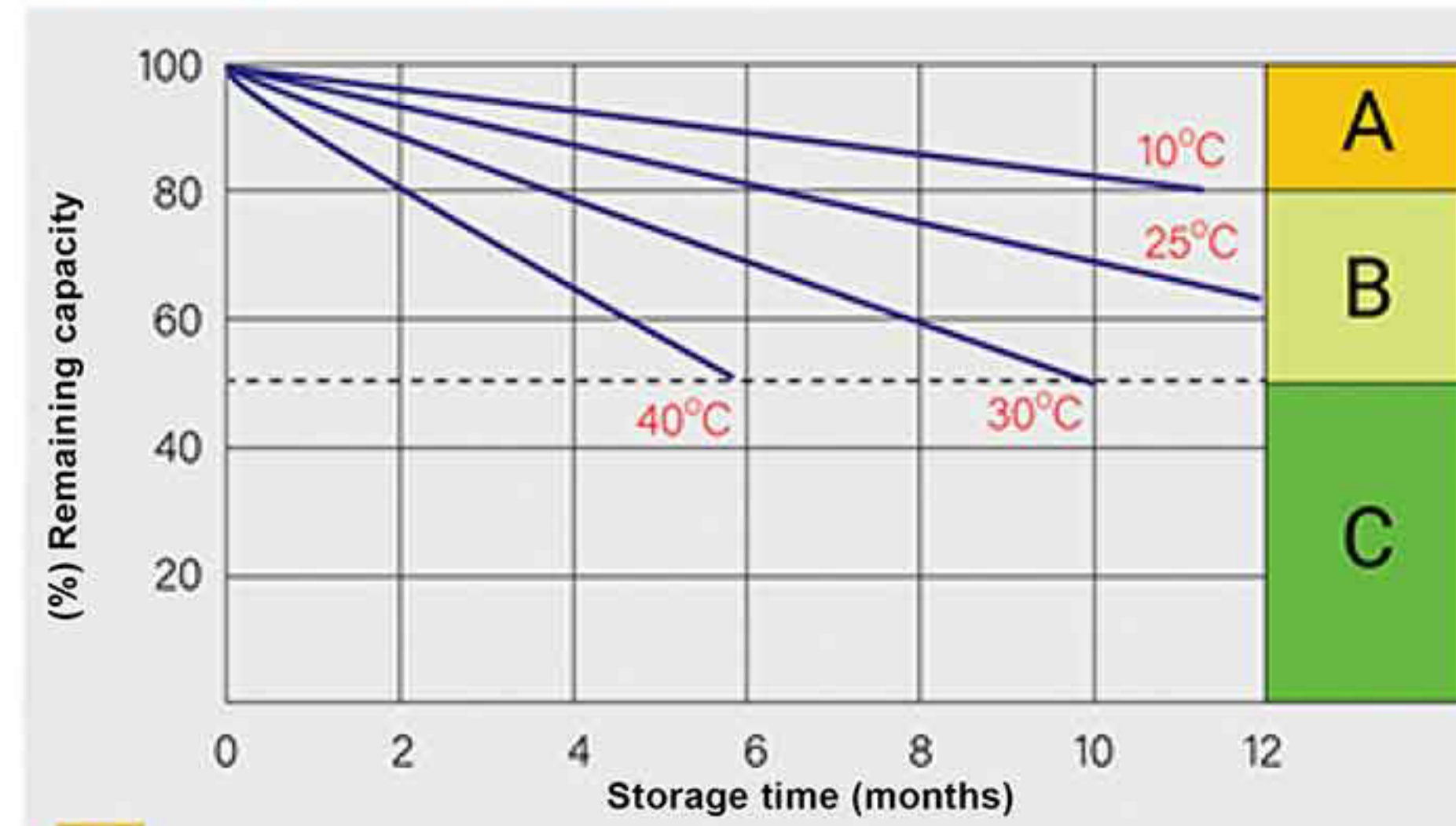
Temperature effects on float life



Float Charge characteristic curve

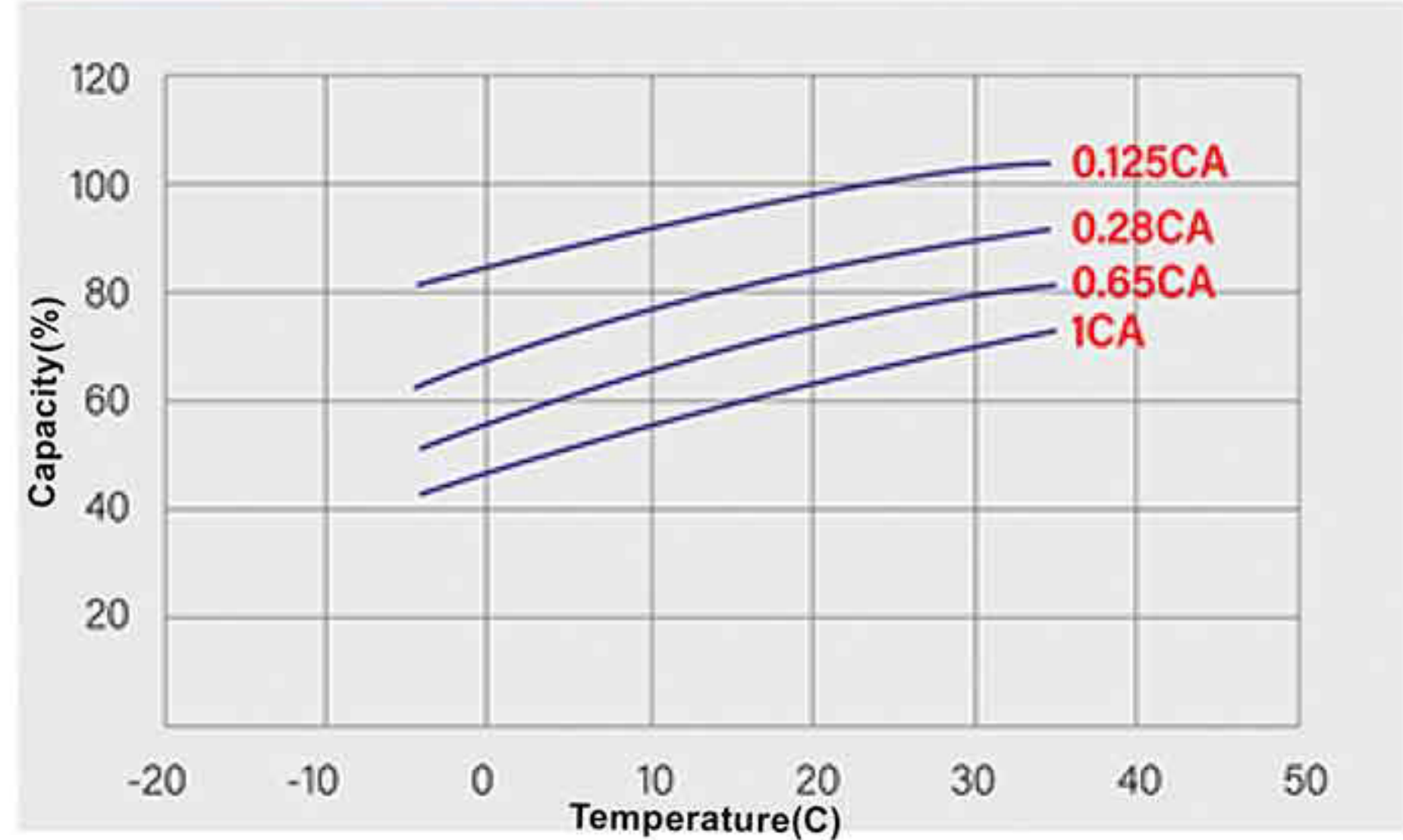


Self-discharge characteristic curve

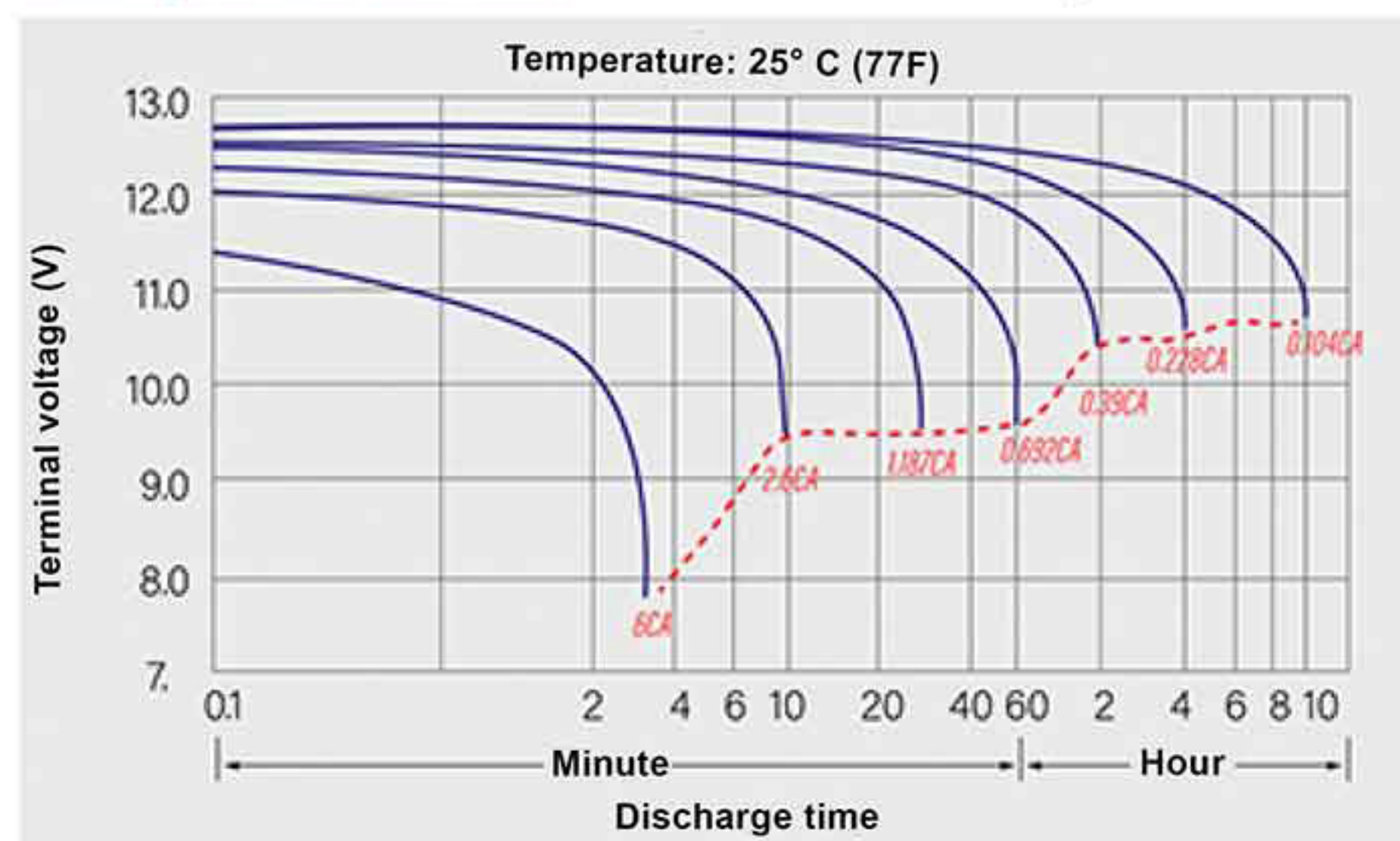


- A** No need for supplementary charging. If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
 - 1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
 - 2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
 - 3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity. A battery should never be left to its own devices until it reaches this stage.

Temperature effects on Capacity



Discharge characteristic curve

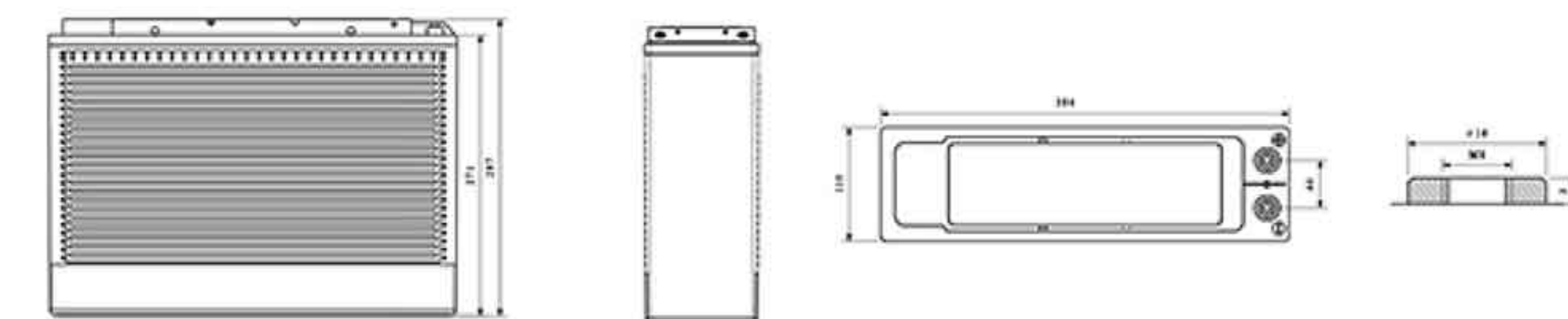


12V-100Ah FT

		Specifications
12V		Nominal Voltage
100AH		Nominal Capacity
335 ± 2mm (13.1 inches)	Length	Dimensions
110 ± 2mm (4.3 inches)	Width	
288 ± 2mm (11.3 inches)	Height	
288 ± 2mm (11.3 inches)	Total Height with Terminals	
32 kg(70.5 lbs)		Approximate Weight
T6		Terminal
ABS		Type Body Material
106.0 AH/5.30A	(20hr, 10.8V, 25°C/77°F)	Nominal Capacity
100.0 AH/10.0A	(10hr, 10.8V, 25°C/77°F)	
95.2 AH/11.9A	(8hr, 10.5V, 25°C/77°F)	
87.0 AH/17.4A	(5hr, 10.5V, 25°C/77°F)	
64.4 AH/64.4A	(1hr, 9.60V, 25°C/77°F)	
1000A (5s)		Maximum Discharge Current
5.5 mΩ		Internal Resistance (Approximate)
-15 ~ 50°C (5 ~ 122°F)	Discharging	Operating Temperature Range
-10 ~ 40°C (14 ~ 104°F)	Charging	
-15 ~ 40°C (5 ~ 104°F)	Storage	
25±3°C (77±5°F)		Nominal Operating Temperature
(77°F) 25°C At Temperature 14.4V ~ 15.0V Voltage		Equalize Charging
-30mV/°C Temperature Correction Coefficient		
(77°F) 25°C At Temperature 13.5V ~ 13.8V Voltage		Float Charging
-20mV/°C Temperature Correction Coefficient		
30A		Maximum Charge Current
103%	40°C (104°F)	Temperature Effects on Capacity
100%	25°C (77°F)	
86%	0°C (32°F)	
Series FT batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter		Self-discharge

The constant discharge current (in Amperes) at 77 degrees Fahrenheit												
F.V/Time	15 min	20 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h	
10.8V	146.8	127.2	99.6	60.9	35.2	25.7	20.5	17.2	11.9	10.00	5.30	
10.5V	158.0	135.6	103.2	62.7	36.0	26.1	20.8	17.4	12.1	10.10	5.35	
10.2V	165.6	141.0	106.4	62.7	36.5	26.5	21.1	17.6	12.2	10.20	5.38	
9.90V	171.2	144.0	108.8	64.4	37.0	26.7	21.3	17.8	12.3	10.30	5.41	
9.60V	176.0	148.2	111.4	65.0	37.4	27.0	21.5	18.1	12.5	10.40	5.44	

The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit												
F.V/Time	15 min	20 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h	
10.8V	1639.2	1432.8	1133.4	708.6	411.0	302.4	241.8	203.4	141.6	120.0	63.48	
10.5V	1743.0	1512.6	1165.2	726.0	418.8	306.0	244.2	205.2	143.4	121.2	64.02	
10.2V	1801.2	1561.2	1194.6	735.0	423.6	309.6	247.2	206.4	145.2	121.8	64.38	
9.90V	1854.6	1588.2	1218.6	741.0	429.0	311.4	249.0	208.8	146.4	123.0	64.68	
9.60V	1869.0	1611.6	1231.8	746.4	430.2	313.2	250.2	211.2	147.6	124.2	64.92	

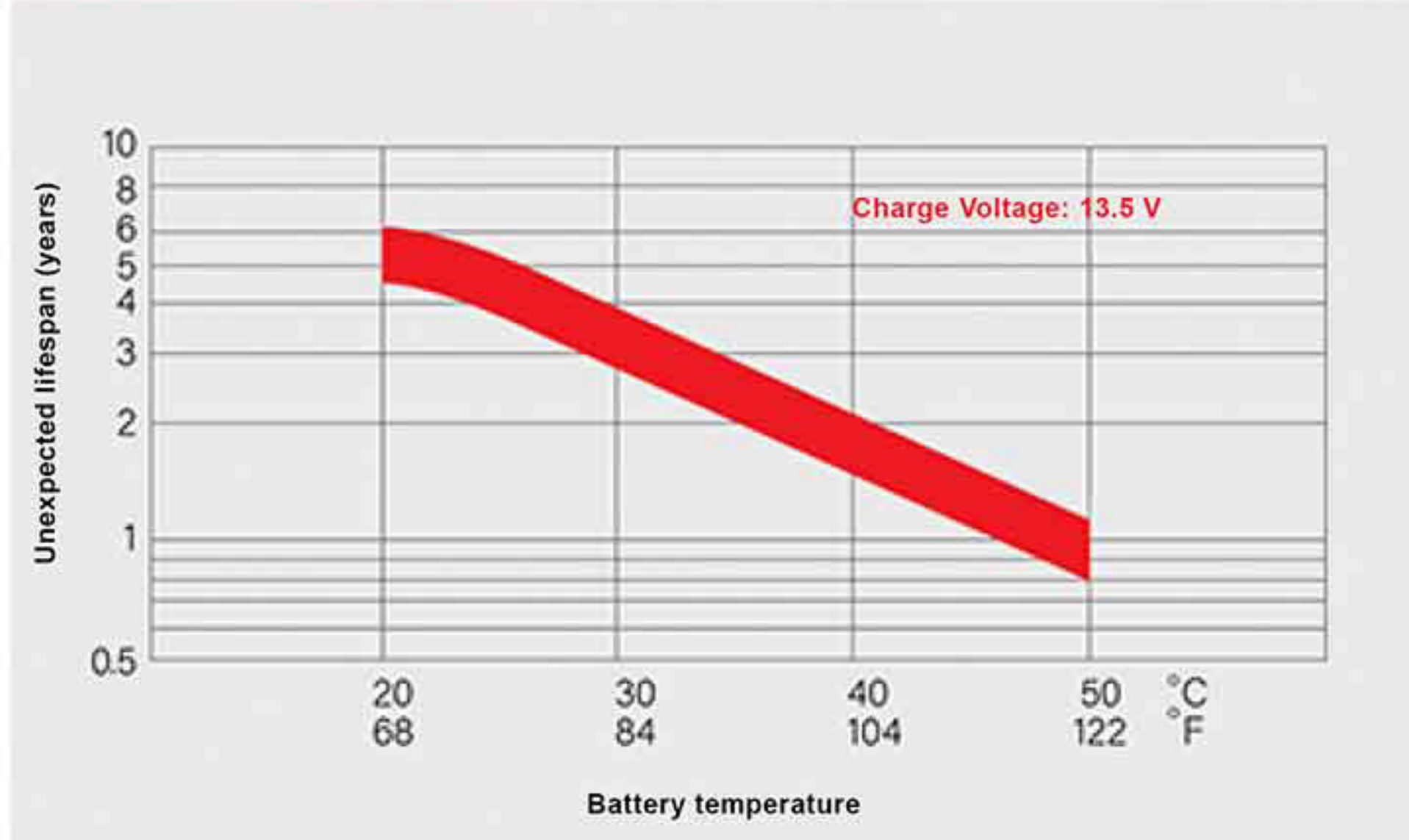




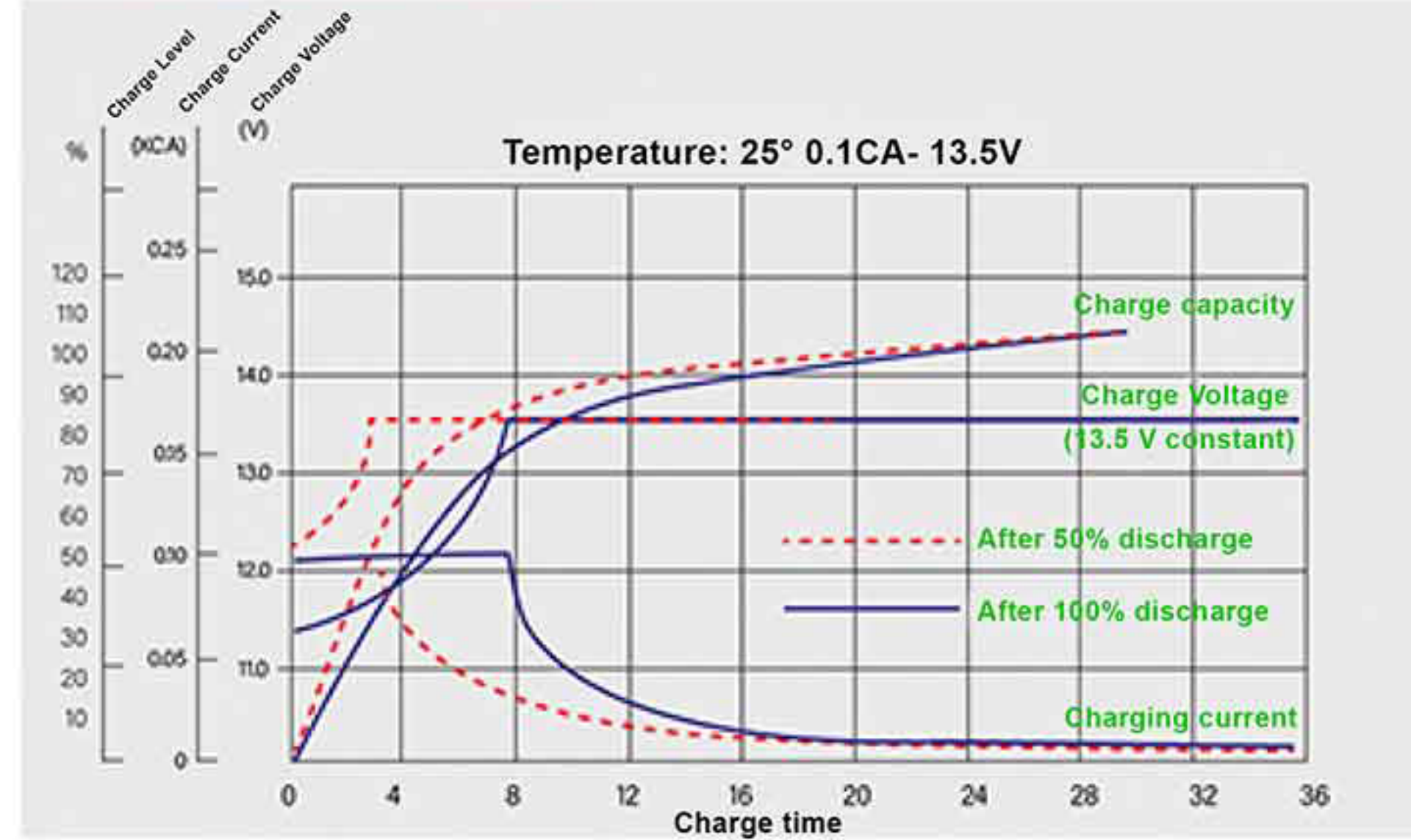
12V-155Ah FT



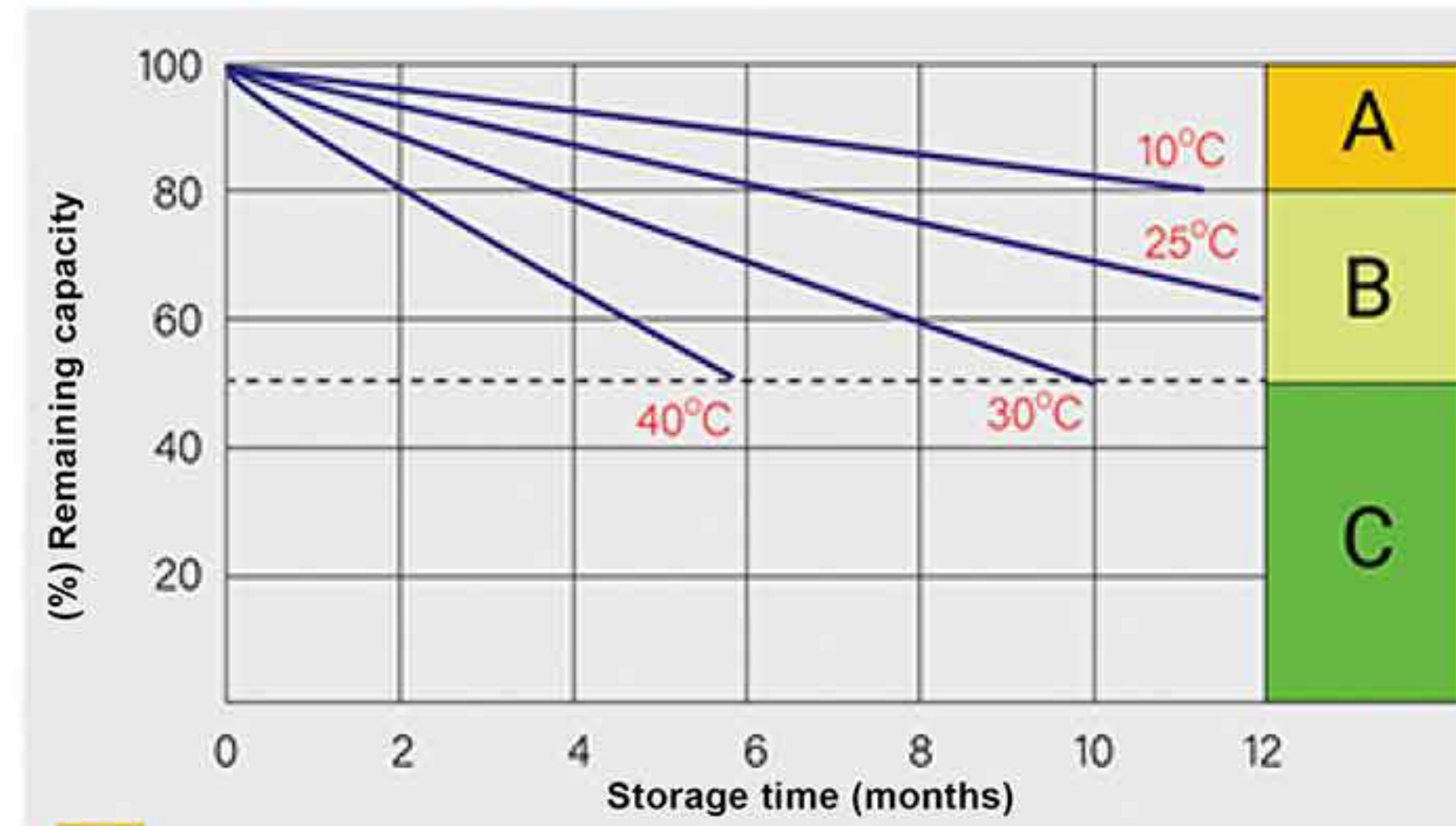
Temperature effects on float life



Float Charge characteristic curve

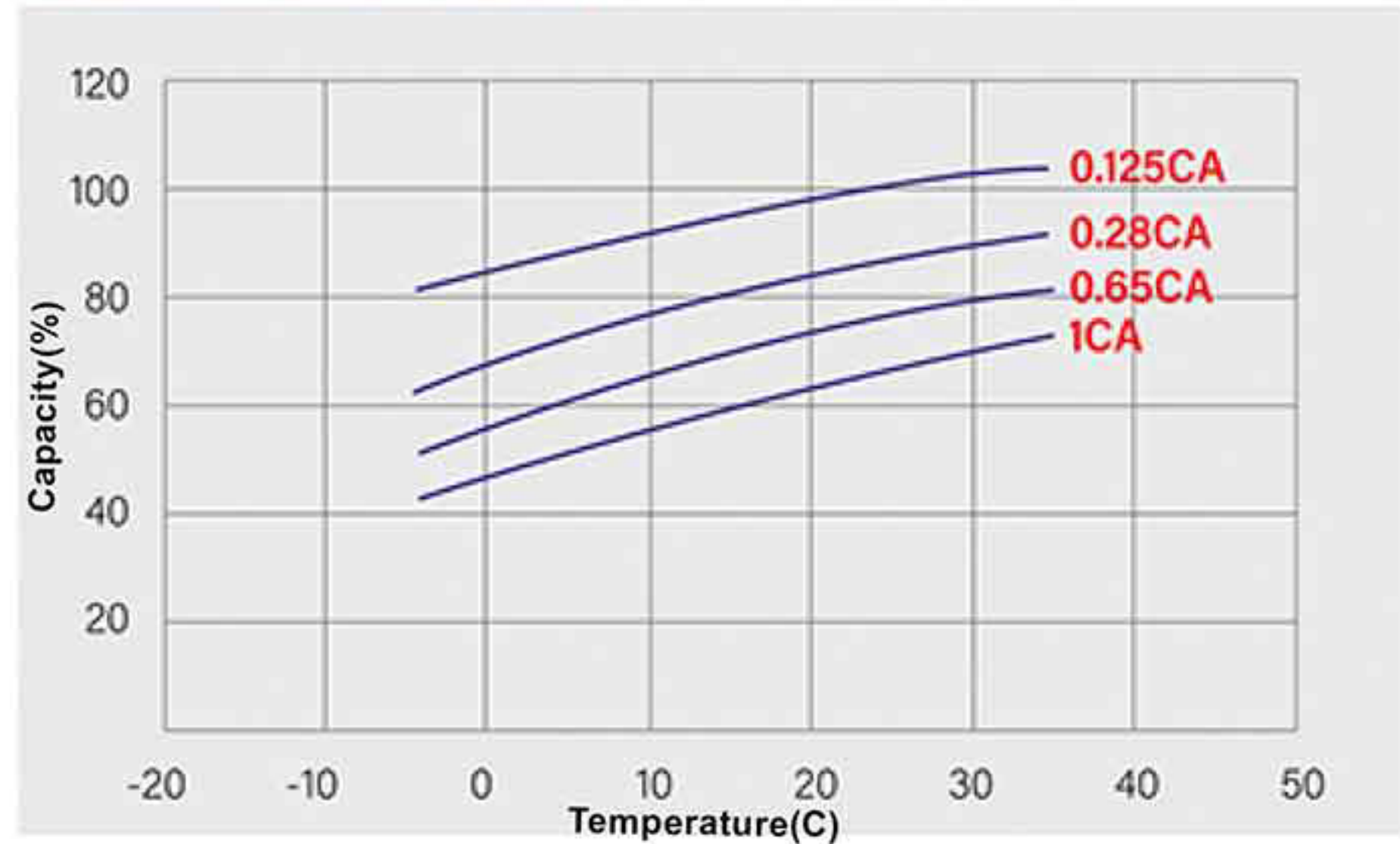


Self-discharge characteristic curve

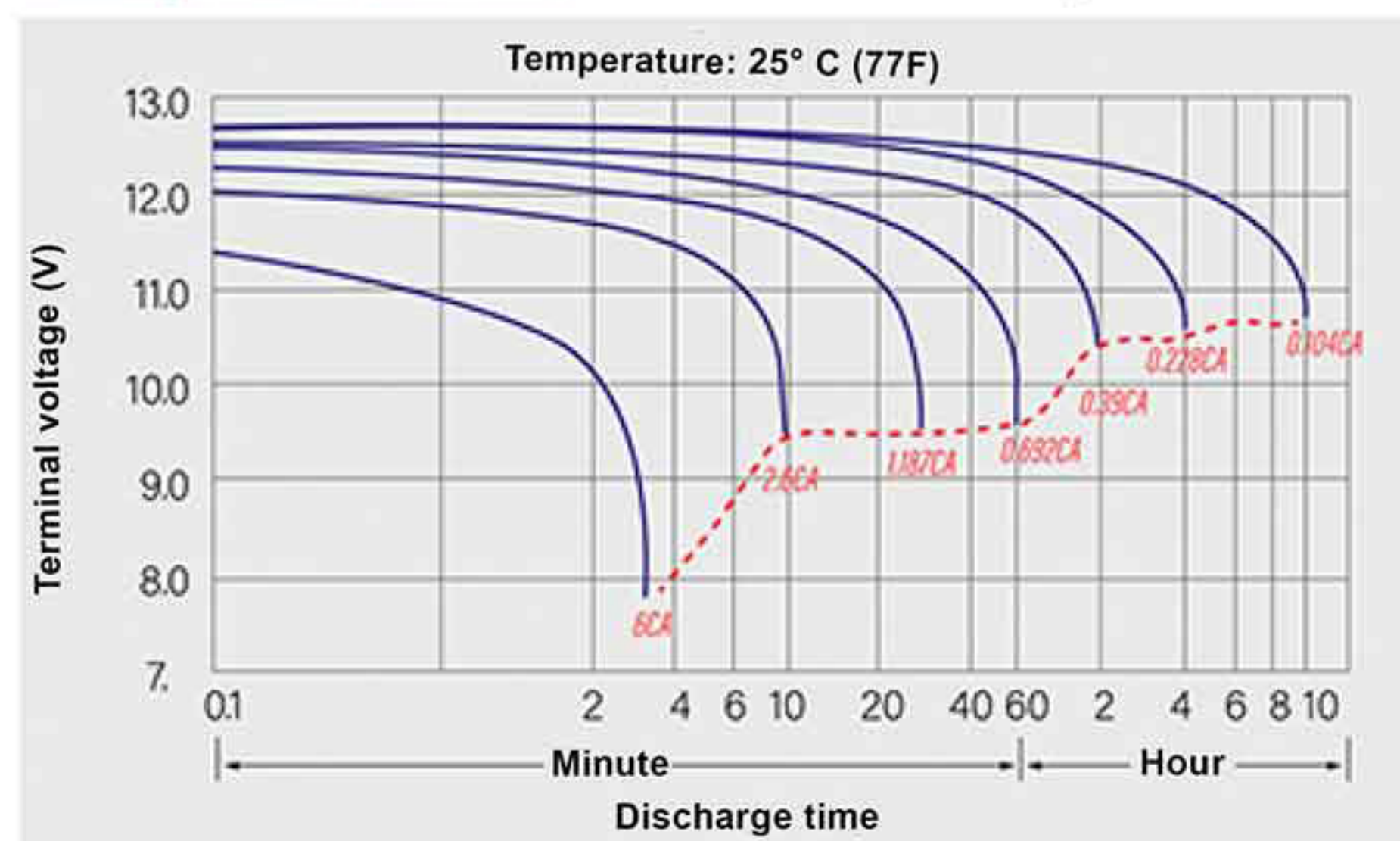


- A** No need for supplementary charging. If you require 100% capacity, perform supplementary charging before use.
- B** Supplementary charging is required before use. The following steps outline the recommended procedure for supplementary charging:
 - 1- Charge for more than 3 days with a limited current of 0.25CA and a constant voltage of 13.5V/Cell.
 - 2- Charge for more than 20 hours with a limited current of 0.25CA and a constant voltage of 14.7V/Cell.
 - 3- Charge for 8 to 10 hours with a limited current of 0.05CA.
- C** Supplementary charging may not be able to restore battery capacity. A battery should never be left to its own devices until it reaches this stage.

Temperature effects on Capacity



Discharge characteristic curve

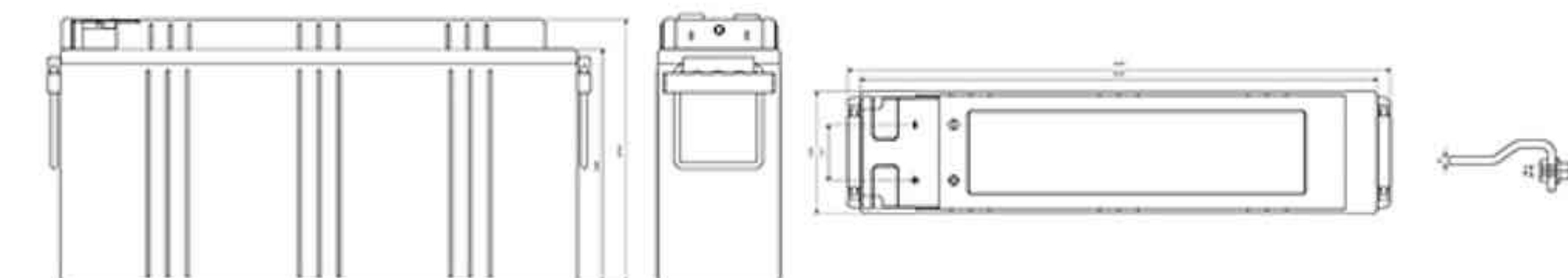


12V-155Ah FT

The constant discharge current (in Amperes) at 77 degrees Fahrenheit											
F.V/Time	15 min	20 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	229	199	154.8	91.4	52.7	38.6	30.8	25.8	17.8	15.0	7.94
10.5V	243	208	159.3	94.1	53.9	39.2	31.2	26.1	18.1	15.2	8.02
10.2V	253	215	164.4	95.6	54.7	39.7	31.6	26.4	18.3	15.3	8.07
9.90V	264	222	167.1	97.5	55.4	40.1	31.9	26.7	18.5	15.5	8.12
9.60V	272	228	170.4	99.0	56.1	40.6	32.2	27.1	18.7	15.6	8.16

The constant power discharge (in Watts per cell) at 77 degrees Fahrenheit											
F.V/Time	15 min	20 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
10.8V	2559	2250	1762	1063	616.8	453.6	363.0	304.8	213.0	179.4	95.4
10.5V	2680	2329	1798	1089	628.2	459.0	366.6	307.8	215.4	181.2	96.0
10.2V	2754	2386	1846	1103	635.4	464.4	370.8	309.6	217.8	183.0	96.6
9.90V	2860	2457	1872	1123	643.2	467.4	373.8	313.8	219.6	184.8	97.2
9.60V	2892	2485	1884	1129	645.6	469.8	375.0	316.8	221.4	186.0	97.8

Specifications		
12V	Nominal Voltage	
155AH	Nominal Capacity	
558 ± 2mm (21.9 inches)	Dimensions	
125 ± 2mm (4.9 inches)		
270 ± 2mm (10.6 inches)		
270 ± 2mm (10.6 inches)		
45.5 kg(100.3 lbs)	Approximate Weight	
T6	Terminal	
ABS	Type Body Material	
158.8 AH/7.94A	Nominal Capacity	
(20hr ,10.8V,25°C/77°F)		
150.0 AH/15.0A		
(10hr ,10.8V,25°C/77°F)		
142.4 AH/17.8A		
(8hr ,10.8V,25°C/77°F)		
130.5 AH/26.1A	Nominal Capacity	
(5hr ,10.5V,25°C/77°F)		
97.5 AH/97.5A	(1hr ,9.60V,25°C/77°F)	
1200A (5s)	Maximum Discharge Current	
4.15 mΩ	Internal Resistance (Approximate)	
-15 ~ 50°C (5 ~ 122°F)	Operating Temperature Range	
-10 ~ 40°C (14 ~ 104°F)		
-15 ~ 40°C (5 ~ 104°F)		
25±3°C (77±5°F)	Nominal Operating Temperature	
(77°F) 25°CAt Temperature14.4V ~ 15.0V Voltage	Equalize Charging	
-30mV/°CTemperature Correction Coefficient		
(77°F) 25°CAt Temperature13.5V ~ 13.8V Voltage	Float Charging	
-20mV/°CTemperature Correction Coefficient		
46.5A	Maximum Charge Current	
103%	Temperature Effects on Capacity	
100%		
86%		
Series FT batteries can be stored at 77 degrees Fahrenheit for up to 6 months before requiring recharge. For higher temperatures, the storage time will be shorter		Self-discharge





WEST STAR

*Your Business,
Our Energy*

