

SF Guard 12V - 4.5Ah | VRLA Battery

Applications

- Uninterruptible Power Supplies (UPS)
- Electric Power Systems (EPS)
- Emergency backup power supplies
- Electronic apparatus and equipment
- Communication power supplies
- DC power supplies
- Auto control system



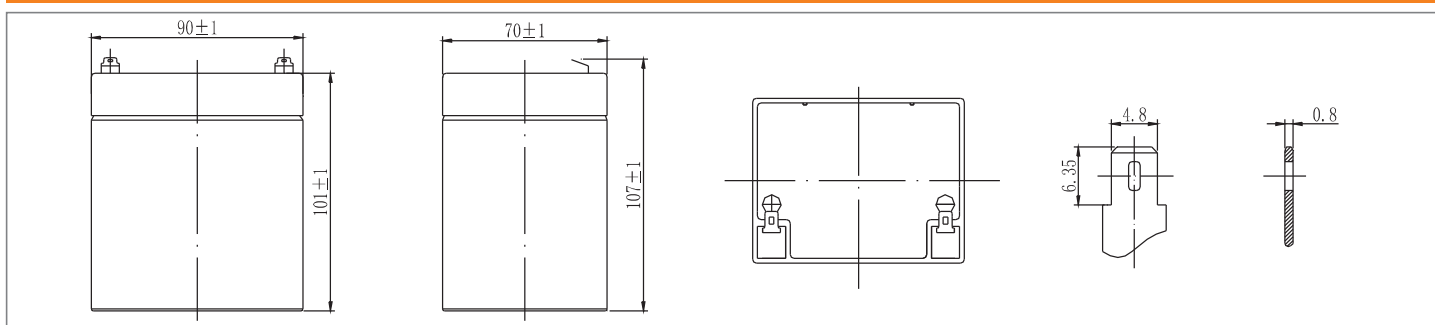
Specifications

Nominal Voltage	12 V	
Number of cells	6	
Design Life	5 years	
Dimensions	Length	90 mm
	Width	70 mm
	Height	101 mm
	Total Height	107 mm
Approx. Weight	1.55 kg	
Nominal Capacity (25°C)	20 hours rate (0.225 A, 10.5 V)	4.50 Ah
	10 hours rate (0.43 A, 10.5 V)	4.30 Ah
	5 hours rate (0.69 A, 10.5 V)	3.45 Ah
	1 hour rate (2.96 A, 9.6 V)	2.96 Ah
Max. Discharge Current (25°C)	67.5 A (5s)	
Internal Resistance	41.5 mOhms	
Fully Charged battery (25°C)		
Self-Discharge	3% of capacity declined per month at 20°C (average)	
Operating Temperature Range	Discharge	-20~60°C
	Charge	-10~60°C
	Storage	-20~60°C
Short Circuit Current	225 A	
Charge Methods:	Cycle use	2.30-2.35 Vpc
	Maximum charging current	1.8 A
	Temperature compensation	-30 mV/°C
	Standby use	2.23-2.27 Vpc
Constant Voltage Charge (25°C)	Temperature compensation	-20 mV/°C

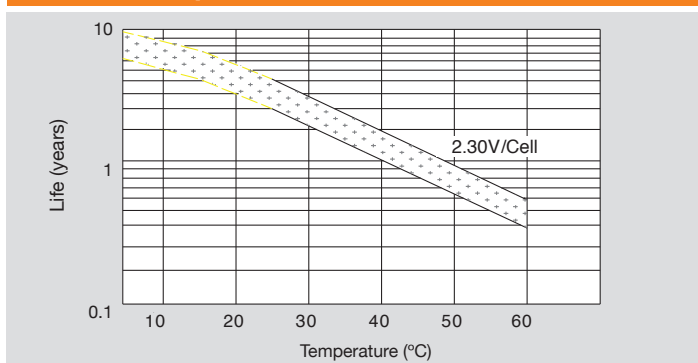
Battery Construction

Component	Positive Plate	Negative Plate	Container	Cover	Safety Valve	Terminal	Separator	Electrolyte
Raw material	Lead dioxide	Lead	ABS	ABS	Rubber	Copper	Fiberglass	Sulfuric acid

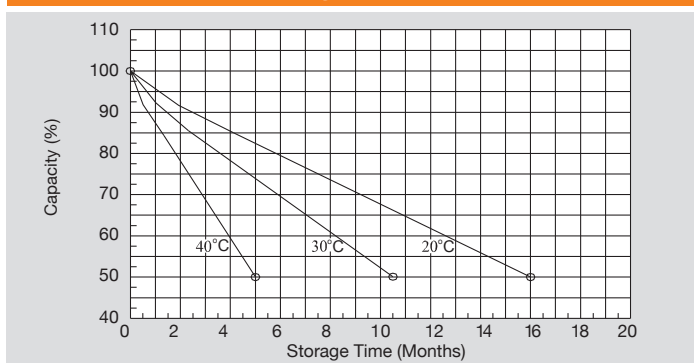
Dimensions



Temperature Effects on Float Life

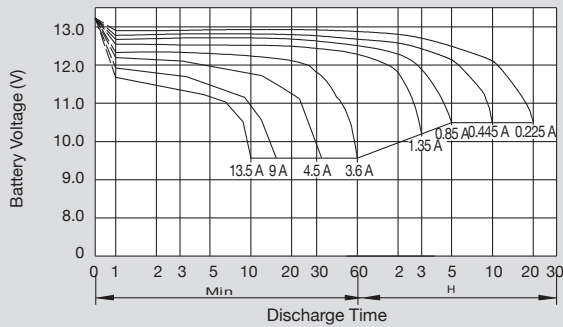


Self Discharge Characteristics

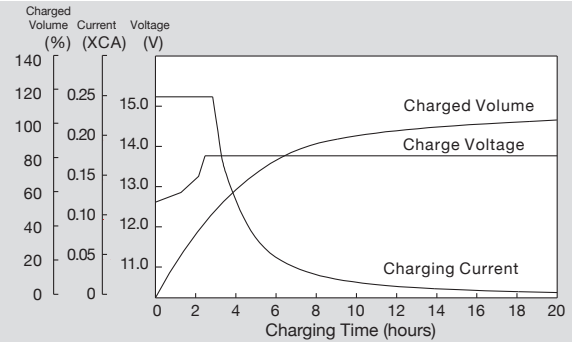


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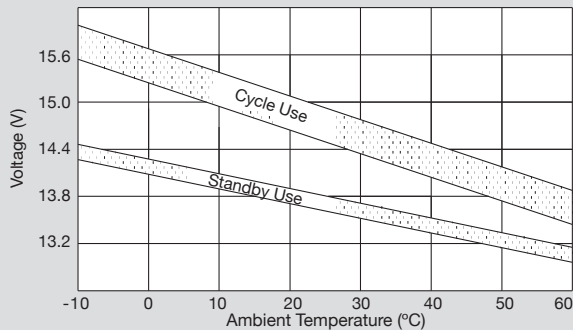
Discharge Characteristics (25°C)



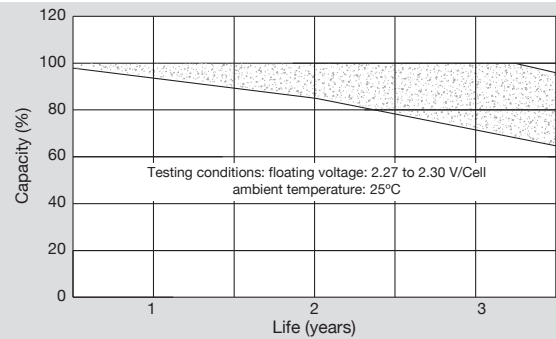
Constant Voltage Charging Characteristic (0.25 CA, 25°C)



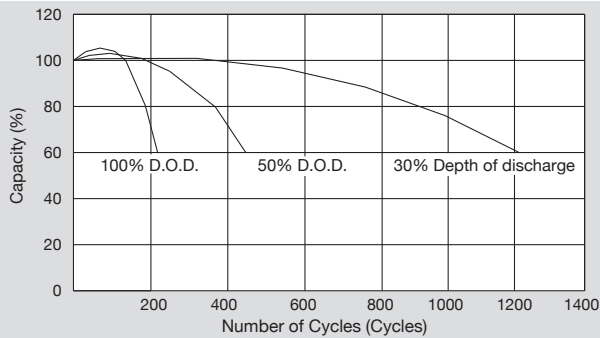
Relationship Between Charging Voltage and Temperature



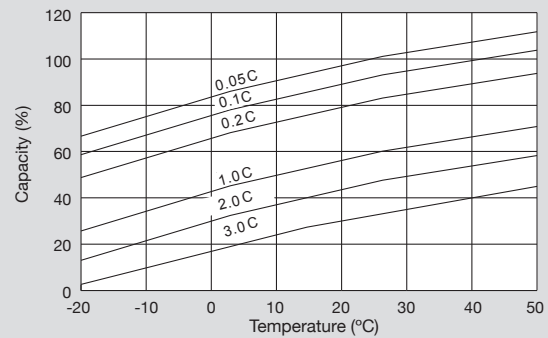
Life Characteristics of Standby Use



Cycle Service Life in Relation to Depth of Discharge



Temperature Effects on Capacity



Constant Current Discharge (Amperes) at 25°C

End Voltage (Volts/Cell)	5 min	10 min	15 min	30 min	1 h	3 h	5 h	10 h	20 h
1.60 V	15.3	12.4	8.64	4.63	2.96	1.20	0.76	0.46	0.233
1.65 V	14.5	11.8	8.26	4.44	2.86	1.16	0.74	0.45	0.231
1.70 V	13.6	11.2	7.97	4.25	2.74	1.12	0.71	0.44	0.228
1.75 V	12.8	10.6	7.45	4.04	2.62	1.07	0.69	0.43	0.225
1.80 V	11.9	9.98	7.03	3.83	2.50	1.03	0.67	0.42	0.221

Constant Power Discharge (Watts/Cell) at 25°C

End Voltage (Volts/Cell)	5 min	10 min	15 min	30 min	45 min	1 h	2 h	3 h	5 h
1.60 V	30.4	21.30	16.98	9.22	7.44	5.22	3.35	2.43	1.56
1.65 V	28.5	20.10	16.02	8.76	7.10	5.01	3.24	2.37	1.54
1.70 V	26.6	18.80	15.15	8.28	6.75	4.77	3.13	2.31	1.51
1.75 V	24.8	17.60	14.19	7.80	6.38	4.54	3.01	2.24	1.47
1.80 V	22.9	16.42	13.22	7.31	6.01	4.29	2.89	2.16	1.44

(Note) The above characteristics data are average values obtained within three charge/discharge cycles not the minimum values.