



## S4,5

4.5 Ah | 12 V | 20 h

### Specifications

Voltage	12 V
Nominal Capacity	4.5 Ah @ 20 hour-rate
Number of Cells	6
Internal Resistance	Approx. 45 mΩ
Design Life	6 to 8 years (float charging)
Short Circuit Current	234 A
Self Discharge	Monthly rate < 3% @ 25 °C Recharge after 6 months Charge before using

### Temperature Ranges

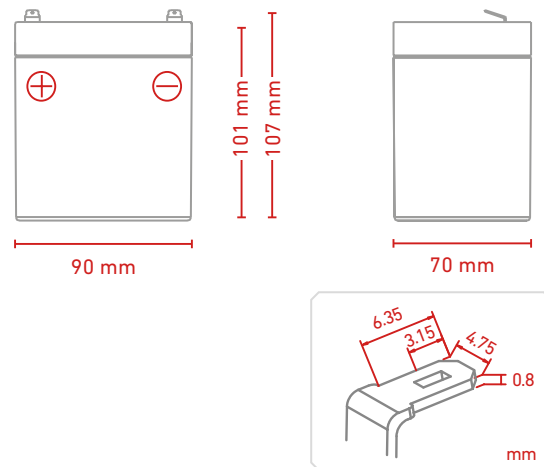
Normal Operation	25 °C ± 5 °C
Discharging	-20 °C to 60 °C
Charging	0 °C to 50 °C
Storage	-20 °C to 60 °C

### Mechanical Specifications

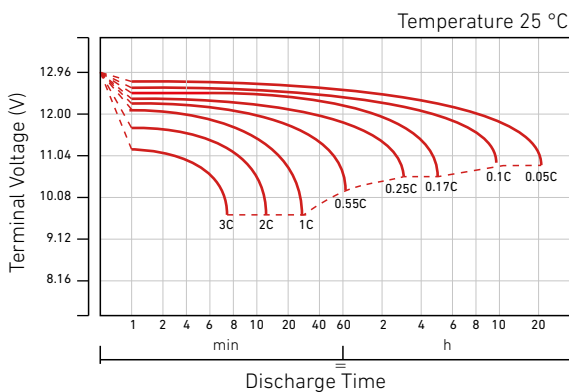
Measurements (L x W x H)	90 x 70 x 101 mm
Weight	Approx. 1.30 kg
Terminals	F1
Case material	A.B.S. UL94-HB, UL94-V0 Optional

### Charging & Discharging

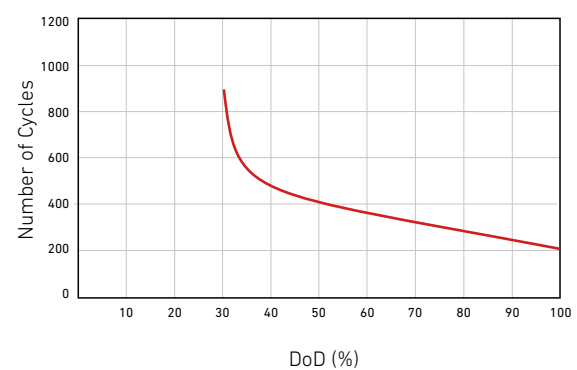
Max. Charging Current	1.35 A
Max. Discharge Current	45 A (5 sec)
Standby Use Voltage	13.7 V to 13.9 V @ 25 °C Temperature Compensation: -3mV/°C/Cell
Cycle Use Voltage	14.6 V to 14.8 V @ 25 °C Temperature Compensation: -4mV/°C/Cell
Reference Capacity	C3 3.5 Ah C5 3.9 Ah C10 4.2 Ah C20 4.5 Ah



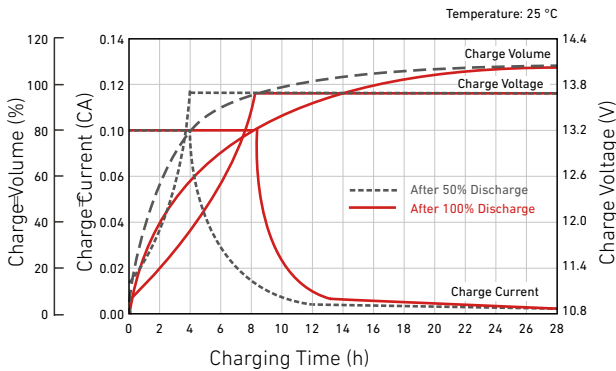
### Discharge Characteristics Curve



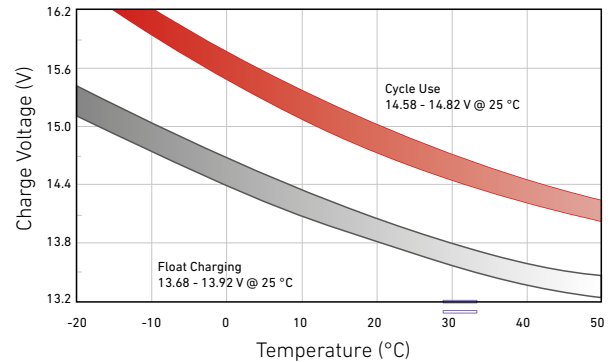
### Cycle Life in Relation to Depth of Discharge



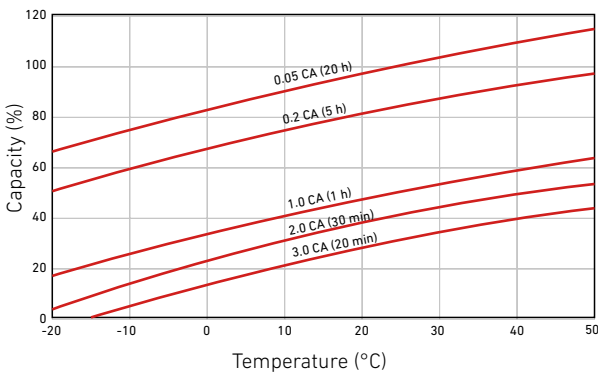
**Discharge Characteristics Curve For Standby Use**



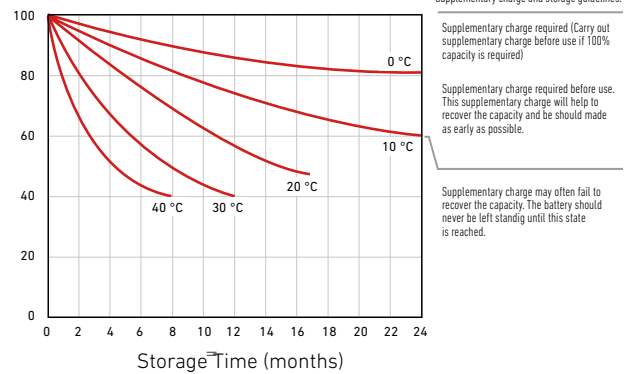
**Relationship Between Charging Voltage and Temperature**



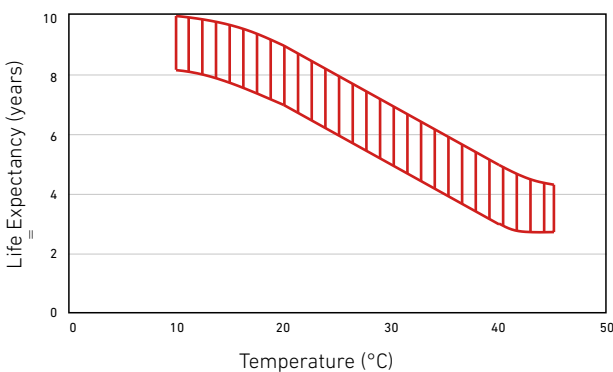
**Temperature Effects on Capacity**



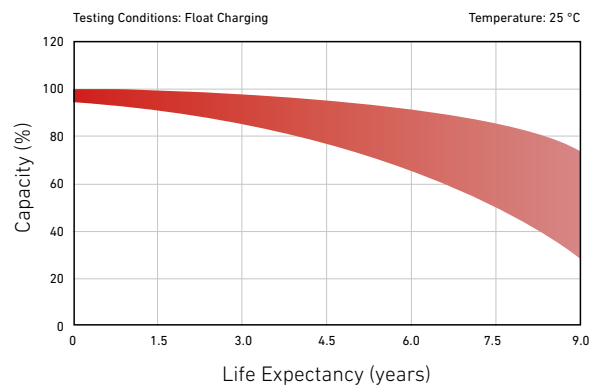
**Storage Characteristics**



**Effect of Temperature on Long-Term Life**



**Life Characteristics of Standby Use**



**Constant Current Discharge Characteristics: A (25 °C)**

F.V	Time											
	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V	17,84	11,64	8,584	4,968	2,870	1,694	1,231	0,980	0,828	0,553	0,450	0,234
1.65 V	17,20	11,29	8,359	4,859	2,817	1,669	1,215	0,968	0,818	0,547	0,446	0,232
1.70 V	16,36	10,83	8,063	4,714	2,747	1,636	1,193	0,952	0,805	0,540	0,440	0,230
1.75 V	15,28	10,25	7,678	4,526	2,654	1,592	1,164	0,930	0,788	0,530	0,433	0,227
1.80 V	13,92	9,494	7,183	4,281	2,533	1,535	1,126	0,902	0,766	0,517	0,423	0,222
1.85 V	12,25	8,553	6,558	3,968	2,378	1,460	1,076	0,865	0,737	0,500	0,409	0,216

**Constant Power Discharge Characteristics: WPC (25 °C)**

F.V	Time											
	5 min	10 min	15 min	30 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h	20 h
1.60 V	30,71	20,08	15,23	9,16	5,45	3,26	2,39	1,91	1,62	1,10	0,90	0,47
1.65 V	30,39	19,99	15,14	9,09	5,40	3,23	2,37	1,90	1,61	1,09	0,89	0,47
1.70 V	29,23	19,40	14,74	8,87	5,29	3,18	2,33	1,87	1,59	1,08	0,88	0,46
1.75 V	27,79	18,68	14,24	8,60	5,13	3,11	2,29	1,83	1,56	1,06	0,87	0,45
1.80 V	25,76	17,61	13,51	8,22	4,92	3,01	2,22	1,78	1,52	1,03	0,85	0,45
1.85 V	23,08	16,15	12,51	7,70	4,65	2,88	2,13	1,72	1,47	1,00	0,82	0,44