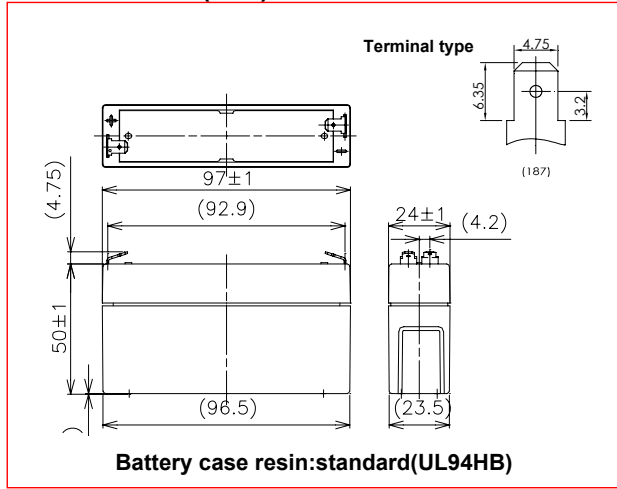


**LC-R061R3**

For main and standby power supplies  
 Expected trickle life:3~5 years at 25°C, approx.5 years at 20°C



**Dimensions(mm)**



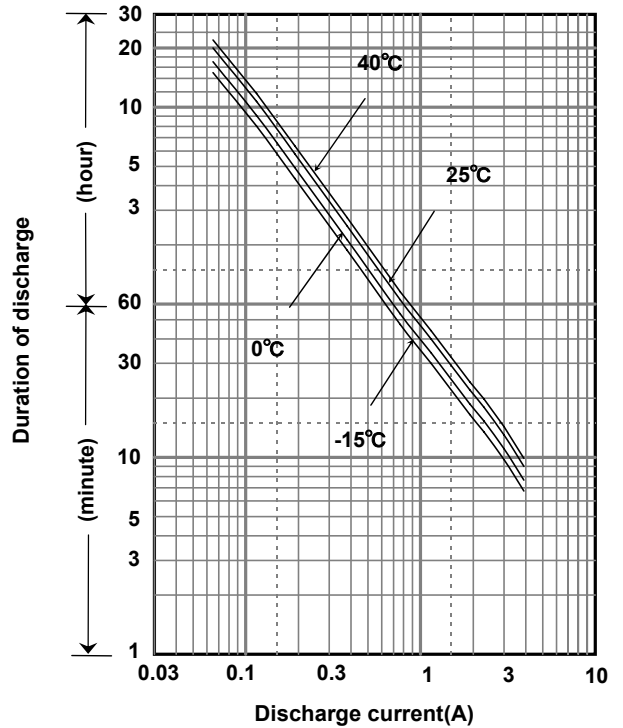
**Specification**

Nominal Voltage	6V	
Nominal Capacity(20HR)	1.3Ah	
Dimensions	Length	97 mm
	Width	24 mm
	Height	50 mm
	Total height	55 mm
Approx. Mass	0.25 kg	
Terminal	Faston 187	

**Characteristics**

Capacity (25 °C)	20 hour rate	1.3Ah
	10 hour rate	1.2Ah
	5 hour rate	1.05Ah
	1 hour rate	0.85Ah
Internal Resistance	Fully charged battery (25 °C)	50 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

**Duration of discharge vs. discharge current**



**Watt Table(25°C)**

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	39.1	30.8	20.1	15.4	12.9	9.61	6.78	5.42	3.73	2.89	2.15	1.65	1.36	1.10	0.726	0.393	0.328
4.95V	36.2	28.9	19.7	15.3	12.7	9.51	6.74	5.42	3.66	2.86	2.14	1.64	1.35	1.09	0.723	0.392	0.327
5.1V	33.4	27.1	19.2	15.0	12.5	9.40	6.68	5.32	3.58	2.79	2.12	1.63	1.34	1.08	0.715	0.391	0.326
5.25V	29.7	24.3	17.8	13.9	11.8	9.19	6.57	5.21	3.51	2.69	2.08	1.62	1.33	1.07	0.712	0.390	0.325
5.4V	25.1	21.4	15.9	13.0	11.5	8.87	6.47	5.10	3.41	2.57	2.04	1.60	1.30	1.05	0.704	0.388	0.323

**Ampere Table(25°C)**

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	7.02	5.53	3.59	2.67	2.22	1.64	1.16	0.921	0.632	0.488	0.361	0.276	0.228	0.183	0.121	0.0655	0.0547
4.95V	6.52	5.18	3.52	2.65	2.18	1.63	1.15	0.921	0.619	0.484	0.359	0.274	0.226	0.182	0.120	0.0654	0.0545
5.1V	6.01	4.86	3.43	2.60	2.15	1.61	1.14	0.903	0.607	0.471	0.356	0.273	0.224	0.181	0.119	0.0652	0.0543
5.25V	5.34	4.35	3.18	2.42	2.04	1.57	1.12	0.885	0.594	0.455	0.350	0.271	0.222	0.178	0.119	0.0650	0.0542
5.4V	4.51	3.85	2.83	2.26	1.99	1.52	1.10	0.867	0.578	0.433	0.343	0.267	0.217	0.176	0.117	0.0646	0.0538

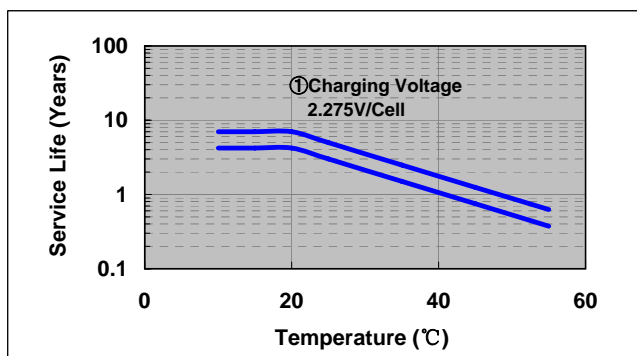
### Charging Method (25°C)

Cycle use	Control voltage:7.25-7.45V;Initial current:0.52A or smaller
Trickle use	Control voltage:6.8-6.9V;Initial current:0.195A or smaller

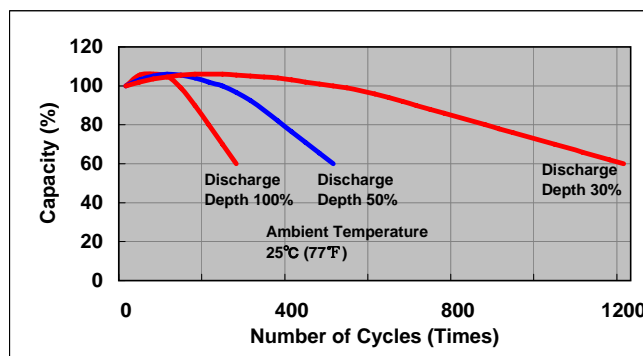
### Cut off voltage

Discharge current	0.065A-0.26A	0.26A-0.65A	0.65A-1.3A	1.3A-2.6A	2.6A-3.9A
Cut off voltage(V)	5.25	5.1	4.95	4.65	4.35

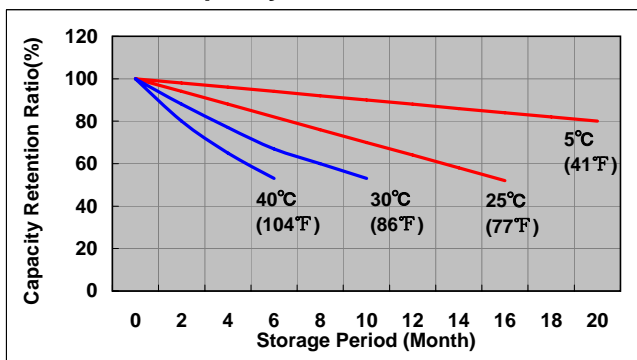
### Influence of Temperature on Trickle life



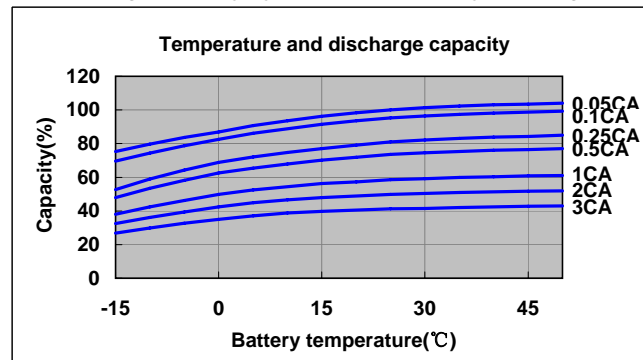
### Cycle life vs. Depth of discharge



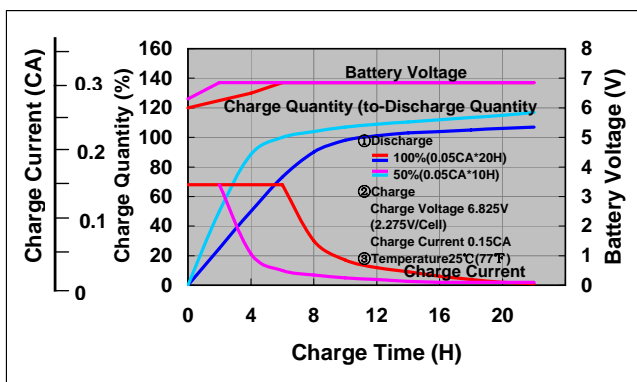
### Residual capacity test result



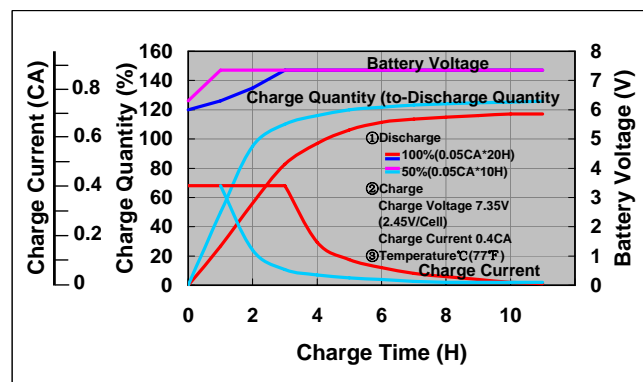
### Discharge capacity by temperature and by discharge current



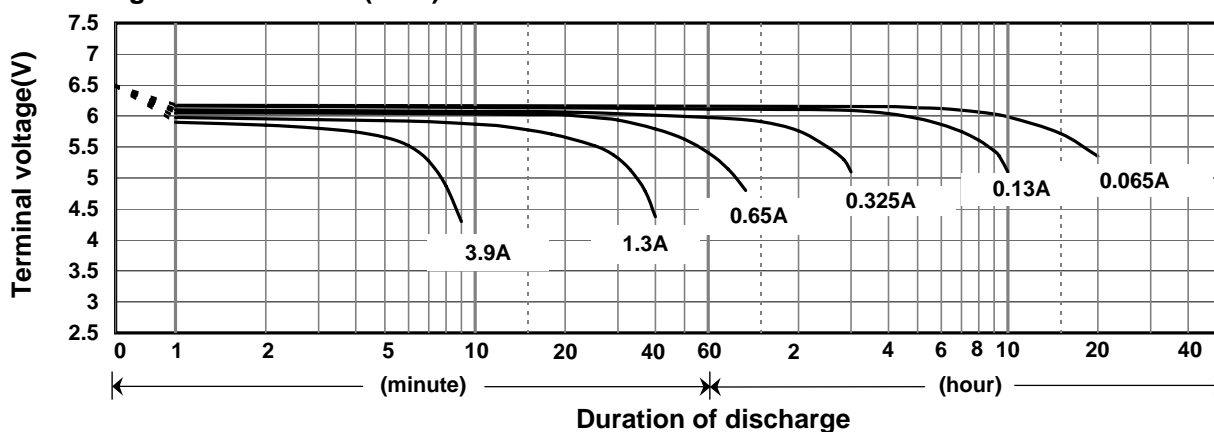
### Constant-voltage constant-current charge characteristics for Trickle use



### Constant-voltage constant-current charge characteristics for Cycle use



### Discharge characteristics(25°C)



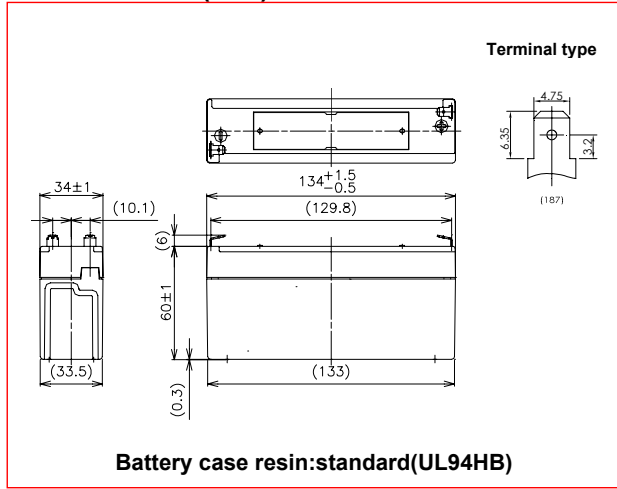
# LC-R063R4

For main and standby power supplies  
 Expected trickle life: 3~5 years at 25°C, approx. 5 years at 20°C



Contents indicated (including the recycle marking, etc) are subject to change without notice.

## Dimensions(mm)



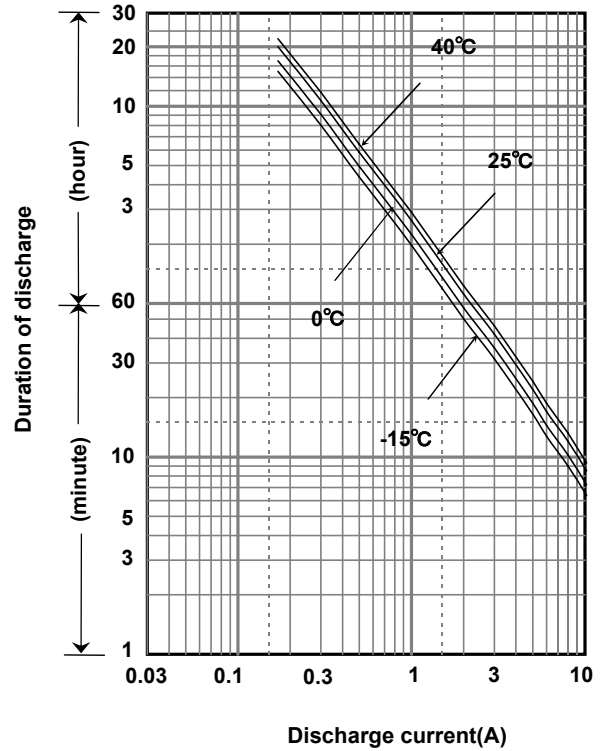
## Specification

Nominal Voltage	6V	
Nominal Capacity(20HR)	3.4Ah	
Dimensions	Length	134 mm
	Width	34 mm
	Height	60 mm
	Total height	66 mm
Approx. Mass	0.60 kg	
Terminal	Faston 187	

## Characteristics

Capacity (25 °C)	20 hour rate	3.4Ah
	10 hour rate	3.0Ah
	5 hour rate	2.7Ah
	1 hour rate	2.1Ah
Internal Resistance	Fully charged battery (25 °C)	30 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

## Duration of discharge vs. discharge current



## Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	102	80.6	52.6	40.2	33.7	25.1	17.7	14.2	9.76	7.55	5.62	4.32	3.56	2.86	1.90	1.03	0.858
4.95V	94.8	75.6	51.6	39.9	33.1	24.9	17.6	14.2	9.56	7.49	5.59	4.29	3.54	2.85	1.89	1.03	0.856
5.1V	87.4	70.8	50.2	39.1	32.6	24.6	17.5	13.9	9.37	7.30	5.54	4.26	3.51	2.83	1.87	1.02	0.853
5.25V	77.7	63.4	46.5	36.4	30.9	24.0	17.2	13.6	9.17	7.04	5.45	4.23	3.48	2.80	1.86	1.02	0.850
5.4V	65.6	56.1	41.5	33.9	30.1	23.2	16.9	13.4	8.92	6.71	5.34	4.18	3.39	2.75	1.84	1.01	0.844

## Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	18.4	14.4	9.40	6.99	5.81	4.30	3.02	2.41	1.65	1.27	0.944	0.722	0.595	0.478	0.316	0.171	0.143
4.95V	17.0	13.6	9.21	6.94	5.71	4.25	3.00	2.41	1.62	1.27	0.940	0.718	0.590	0.476	0.315	0.171	0.143
5.1V	15.7	12.7	8.97	6.80	5.62	4.20	2.97	2.36	1.59	1.23	0.930	0.713	0.586	0.472	0.312	0.170	0.142
5.25V	14.0	11.4	8.31	6.33	5.34	4.11	2.93	2.31	1.55	1.19	0.916	0.708	0.581	0.467	0.310	0.170	0.142
5.4V	11.8	10.1	7.41	5.90	5.19	3.97	2.88	2.27	1.51	1.13	0.897	0.699	0.567	0.459	0.307	0.169	0.141

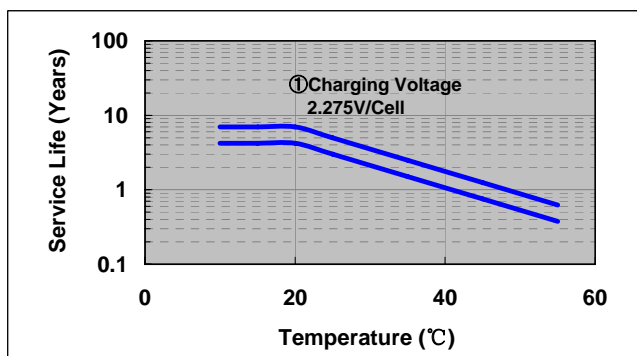
### ■ Charging Method (25°C)

Cycle use	Control voltage:7.25-7.45V;Initial current:1.36A or smaller
Trickle use	Control voltage:6.8-6.9V;Initial current:0.51A or smaller

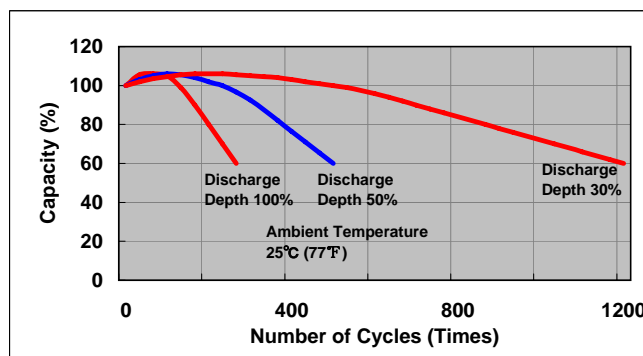
### ■ Cut off voltage

Discharge current	0.17A-0.68A	0.68A-1.7A	1.7A-3.4A	3.4A-6.8A	6.8A-10.2A
Cut off voltage(V)	5.25	5.1	4.95	4.65	4.35

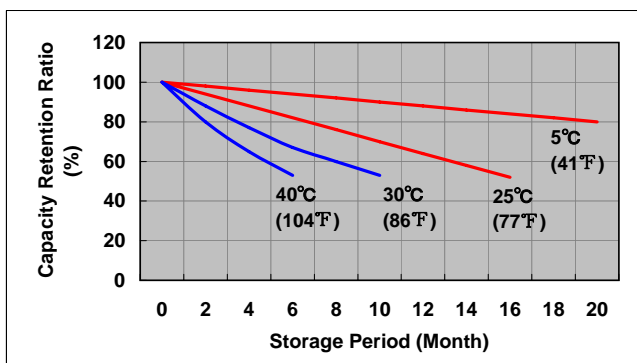
### ■ Influence of Temperature on Trickle life



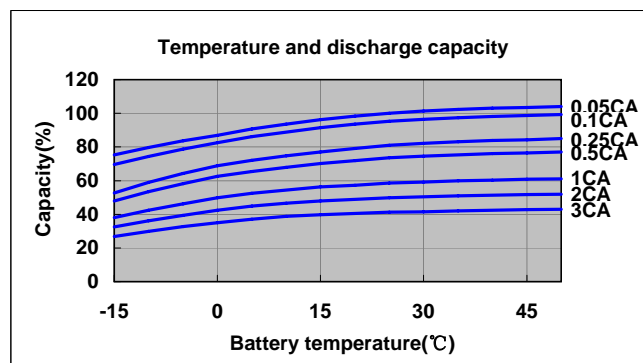
### ■ Cycle life vs. Depth of discharge



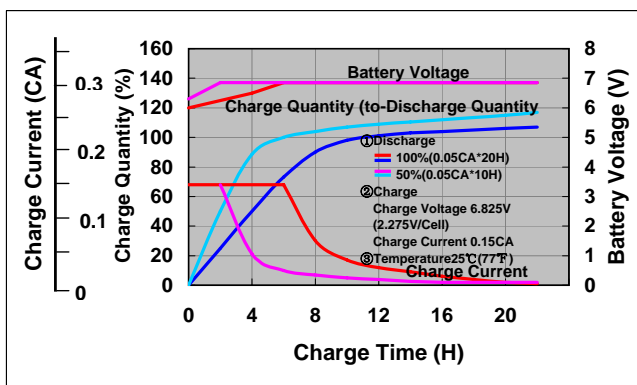
### ■ Residual capacity test result



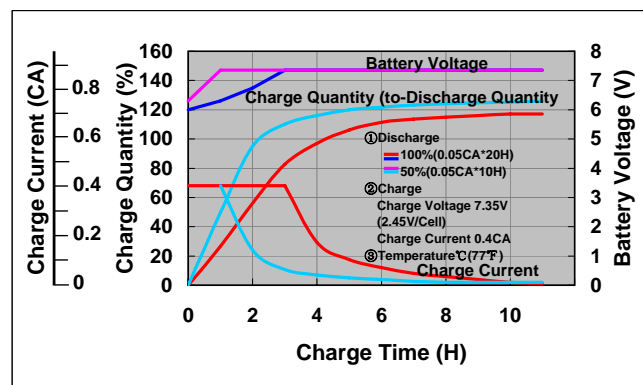
### ■ Discharge capacity by temperature and by discharge current



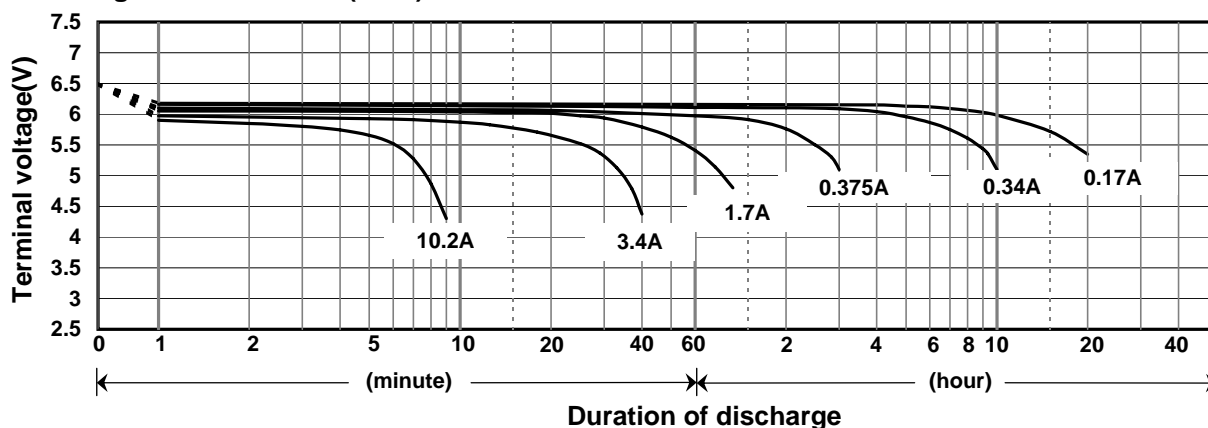
### ■ Constant-voltage constant-current charge characteristics for Trickle use



### ■ Constant-voltage constant-current charge characteristics for Cycle use



### ■ Discharge characteristics(25°C)



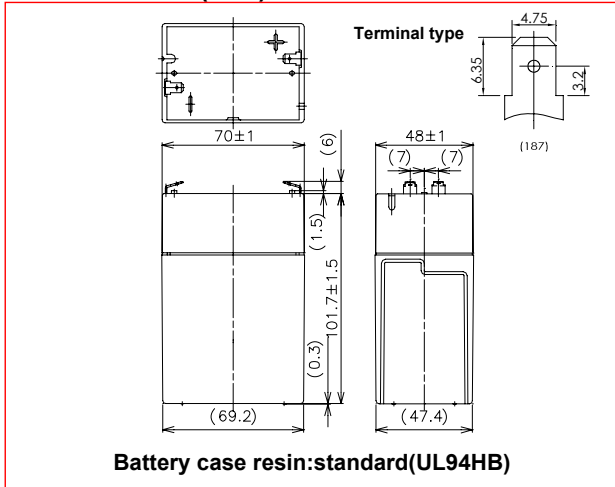
**LC-R064R5**

For standby power supplies  
Expected trickle life:3~5 years at 25°C, approx.5 years at 20°C



Contents indicated (including the recycle marking, etc) are subject to change without notice.

**Dimensions(mm)**



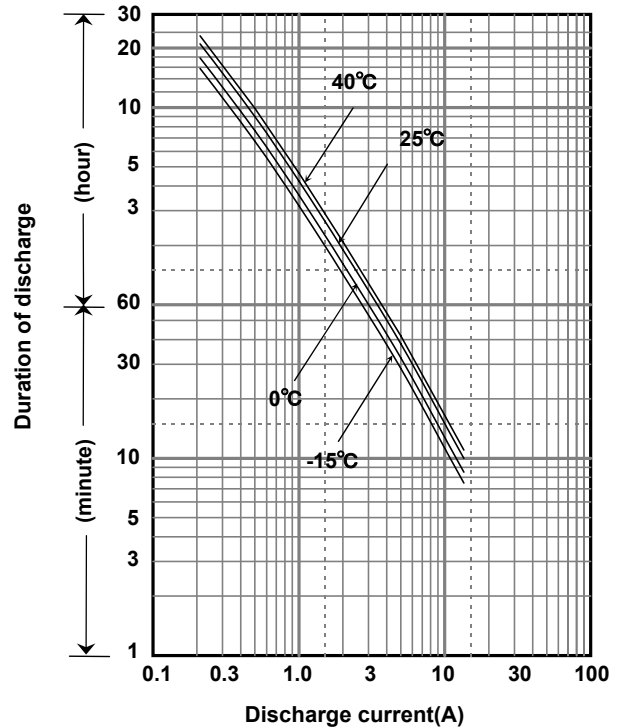
**Specification**

Nominal Voltage	6V	
Nominal Capacity(20HR)	4.5Ah	
Dimensions	Length	70 mm
	Width	48 mm
	Height	102 mm
	Total height	108 mm
Approx. Mass	0.70 kg	
Terminal	Faston 187	

**Characteristics**

Capacity (25 °C)	20 hour rate	4.5Ah
	10 hour rate	4.0Ah
	5 hour rate	3.6Ah
	1 hour rate	2.8Ah
Internal Resistance	Fully charged battery (25 °C)	20 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

**Duration of discharge vs. discharge current**



**Watt Table(25°C)**

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	135	107	69.7	53.2	44.6	33.3	23.5	18.8	12.9	9.99	7.44	5.71	4.72	3.79	2.51	1.36	1.136
4.95V	125	100	68.3	52.8	43.9	32.9	23.3	18.8	12.7	9.92	7.40	5.68	4.68	3.78	2.50	1.36	1.133
5.1V	116	93.7	66.5	51.8	43.1	32.5	23.1	18.4	12.4	9.66	7.33	5.64	4.64	3.75	2.48	1.35	1.129
5.25V	103	84.0	61.6	48.2	41.0	31.8	22.7	18.0	12.1	9.32	7.21	5.60	4.60	3.70	2.46	1.35	1.125
5.4V	86.9	74.2	55.0	44.9	39.9	30.7	22.4	17.7	11.8	8.88	7.07	5.53	4.49	3.64	2.44	1.34	1.118

**Ampere Table(25°C)**

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	24.3	19.1	12.4	9.25	7.69	5.69	4.00	3.19	2.19	1.69	1.25	0.956	0.788	0.633	0.419	0.227	0.189
4.95V	22.6	17.9	12.2	9.19	7.56	5.63	3.98	3.19	2.14	1.68	1.24	0.950	0.781	0.630	0.417	0.226	0.189
5.1V	20.8	16.8	11.9	9.00	7.44	5.56	3.94	3.13	2.10	1.63	1.23	0.944	0.775	0.625	0.413	0.226	0.188
5.25V	18.5	15.1	11.0	8.38	7.06	5.44	3.88	3.06	2.06	1.58	1.21	0.938	0.769	0.618	0.411	0.225	0.188
5.4V	15.6	13.3	9.81	7.81	6.88	5.25	3.81	3.00	2.00	1.50	1.19	0.925	0.750	0.608	0.406	0.224	0.186

### ■ Charging Method

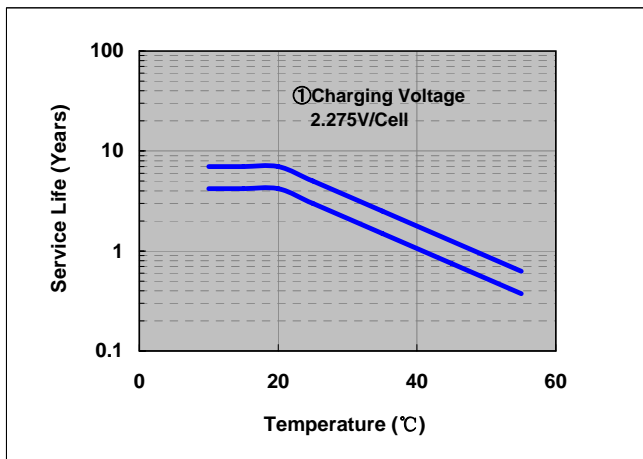
(25°C)

Trickle use	Control voltage:6.8-6.9V;Initial current:0.675A or smaller
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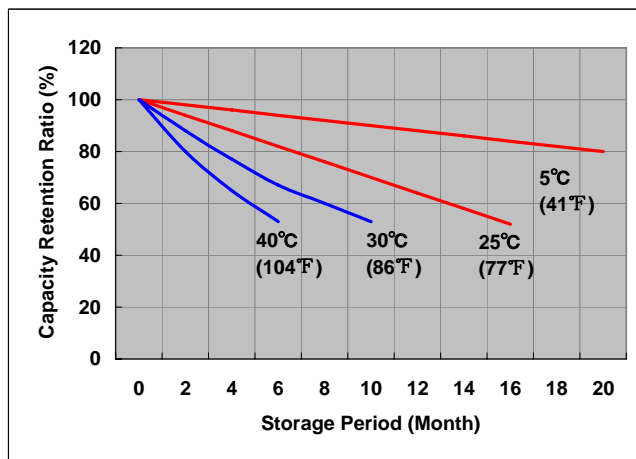
### ■ Cut off voltage

Discharge current	0.225A-0.9A	0.9A-2.25A	2.25A-4.5A	4.5A-9A	9A-13.5A
Cut off voltage (V)	5.25	5.1	4.95	4.65	4.35

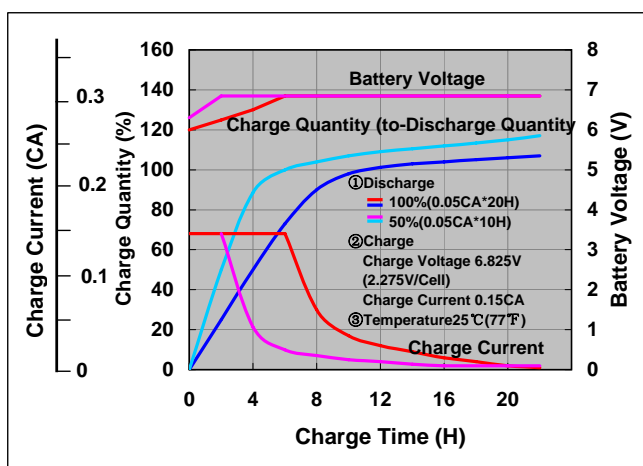
### ■ Influence of Temperature on Trickle life



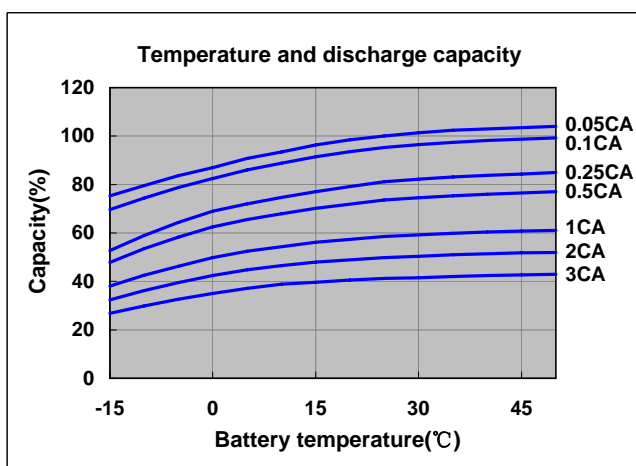
### ■ Residual capacity test result



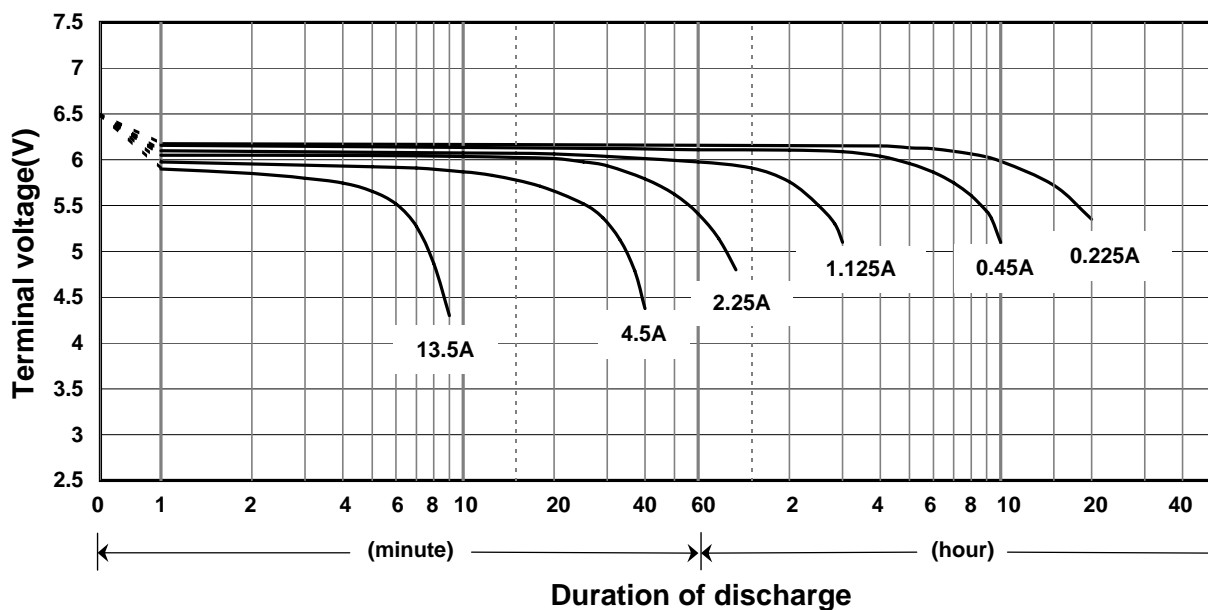
### ■ Constant-voltage and constant-current charge characteristics



### ■ Discharge capacity by temperature and by discharge current



### ■ Discharge characteristics (25°C)

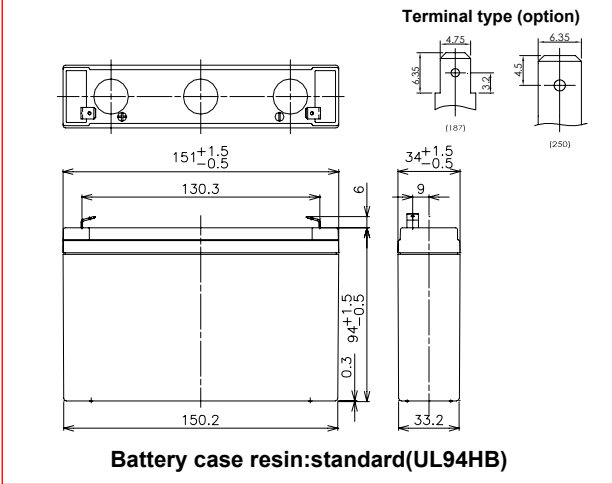


# LC-R067R2

For main and standby power supplies  
 Expected trickle life: 3~5 years at 25°C, approx. 5 years at 20°C



### ■ Dimensions(mm)



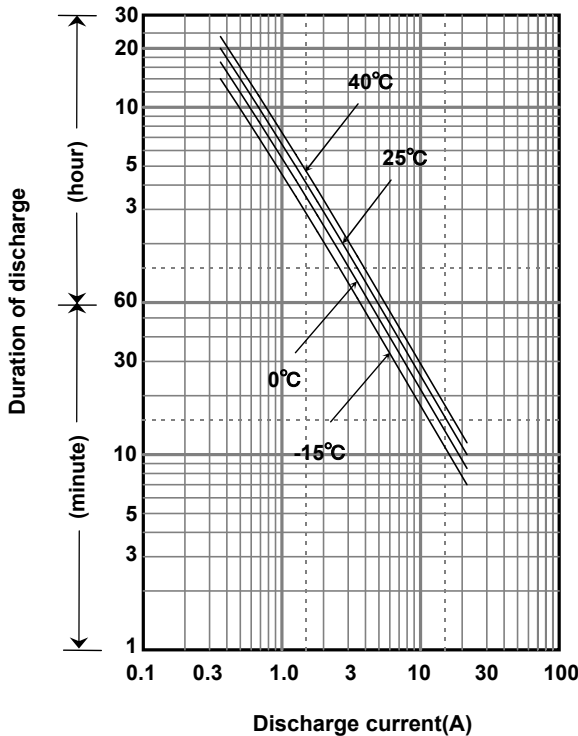
### ■ Specification

Nominal Voltage	6V	
Nominal Capacity(20HR)	7.2Ah	
Dimensions	Length	151 mm
	Width	34 mm
	Height	94 mm
	Total height	100 mm
Approx. Mass	1.30 kg	
Terminal	Faston 187 & 250	

### ■ Characteristics

Capacity (25 °C)	20 hour rate	7.2Ah
	10 hour rate	6.8Ah
	5 hour rate	6.3Ah
	1 hour rate	4.9Ah
Internal Resistance	Fully charged battery (25 °C)	11 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

### ■ Duration of discharge vs. discharge current



### ■ Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	216	171	111	85.1	71.3	53.2	37.6	30.0	20.7	16.0	11.9	9.14	7.55	6.07	4.02	2.18	1.82
4.95V	201	160	109	84.5	70.2	52.7	37.3	30.0	20.3	15.9	11.8	9.08	7.49	6.04	4.00	2.17	1.81
5.1V	185	150	106	82.8	69.0	52.1	37.0	29.5	19.8	15.5	11.7	9.02	7.43	6.00	3.96	2.17	1.81
5.25V	165	134	98.6	77.1	65.5	50.9	36.4	28.9	19.4	14.9	11.5	8.96	7.37	5.92	3.94	2.16	1.80
5.4V	139	119	87.9	71.9	63.8	49.1	35.8	28.3	18.9	14.2	11.3	8.84	7.19	5.83	3.90	2.15	1.79

### ■ Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	38.9	30.6	19.9	14.8	12.3	9.10	6.40	5.10	3.50	2.70	2.00	1.50	1.26	1.00	0.670	0.360	0.300
4.95V	36.1	28.7	18.5	14.8	12.1	9.00	6.40	5.10	3.40	2.60	2.00	1.50	1.25	1.00	0.670	0.360	0.300
5.1V	33.3	26.9	19.0	14.4	11.9	8.90	6.30	5.00	3.30	2.50	1.95	1.50	1.24	1.00	0.660	0.360	0.300
5.25V	29.6	24.1	17.6	13.4	11.3	8.70	6.20	4.90	3.30	2.50	1.95	1.50	1.23	1.00	0.660	0.360	0.300
5.4V	25.0	21.3	15.7	12.5	11.0	8.40	6.10	4.80	3.20	2.40	1.90	1.50	1.20	1.00	0.650	0.350	0.300

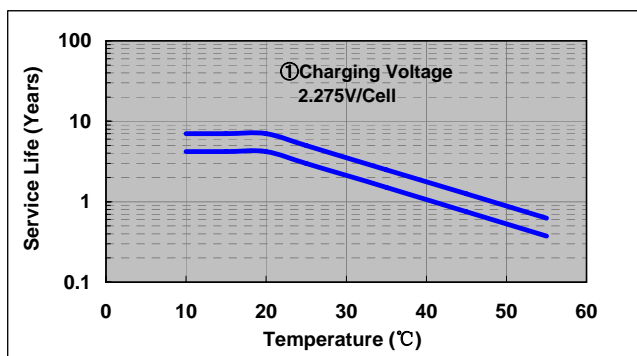
### ■ Charging Method (25°C)

Cycle use	Control voltage:7.25-7.45V;Initial current:2.88A or smaller
Trickle use	Control voltage:6.8-6.9V;Initial current:1.08A or smaller

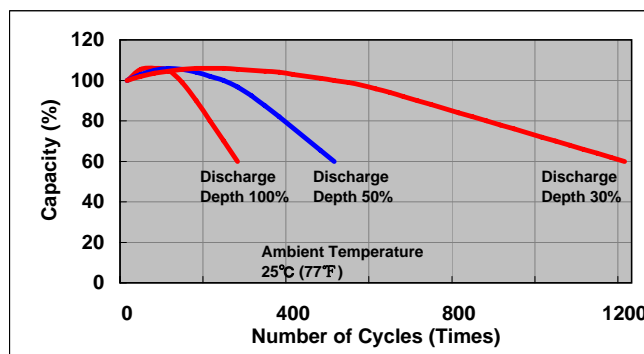
### ■ Cut off voltage

Discharge current	0.36A-1.44A	1.44A-3.6A	3.6A-7.2A	7.2A-14.4A	14.4A-21.6A
Cut off voltage(V)	5.25	5.1	4.95	4.65	4.35

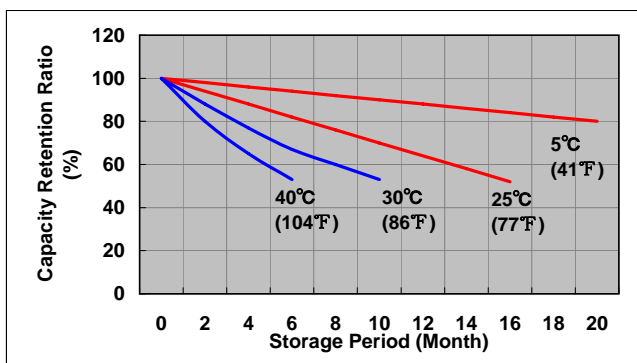
### ■ Influence of Temperature on Trickle life



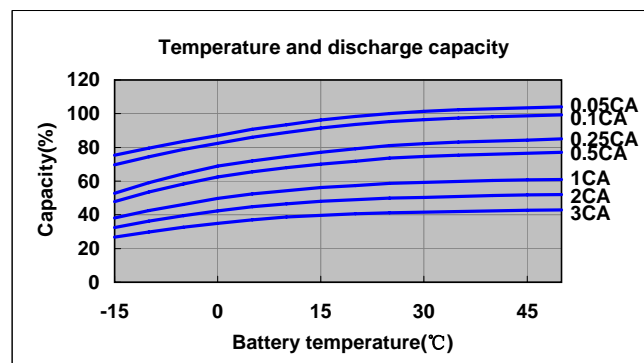
### ■ Cycle life vs. Depth of discharge



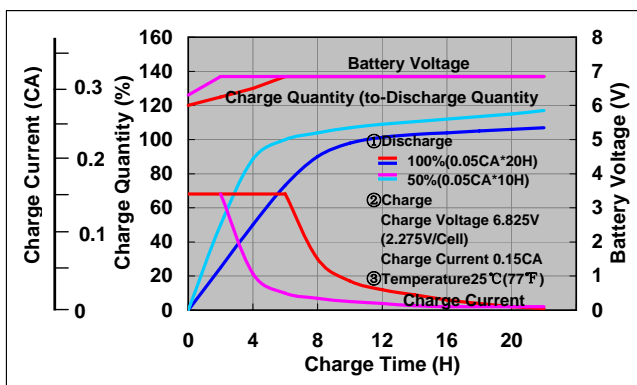
### ■ Residual capacity test result



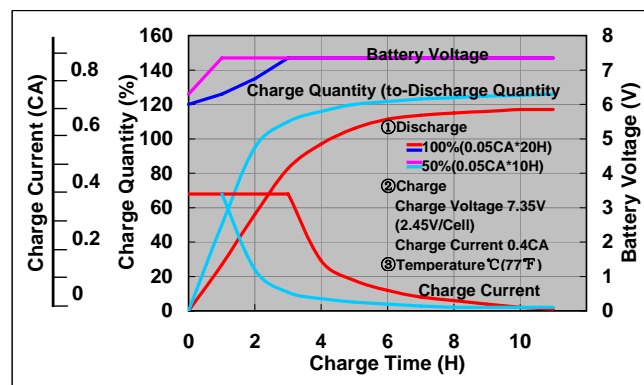
### ■ Discharge capacity by temperature and by discharge current



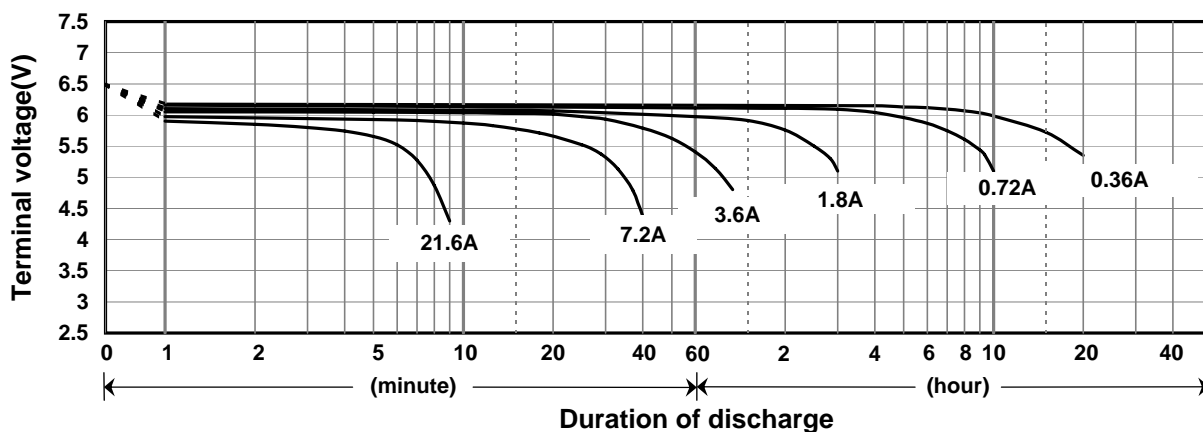
### ■ Constant-voltage constant-current charge characteristics for Trickle use



### ■ Constant-voltage constant-current charge characteristics for Cycle use



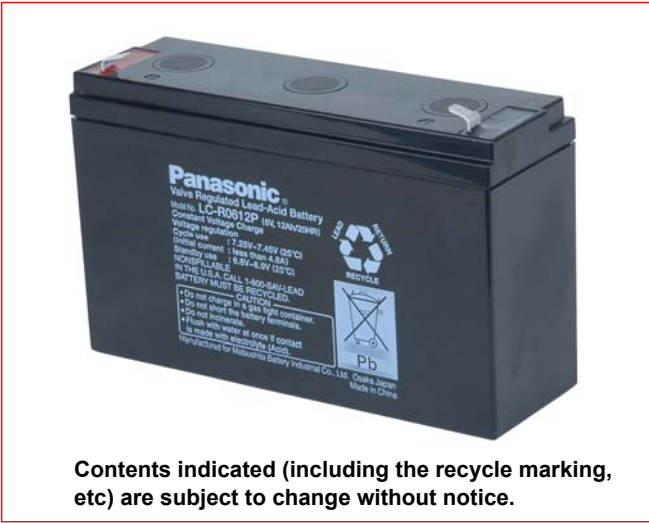
### ■ Discharge characteristics(25°C)





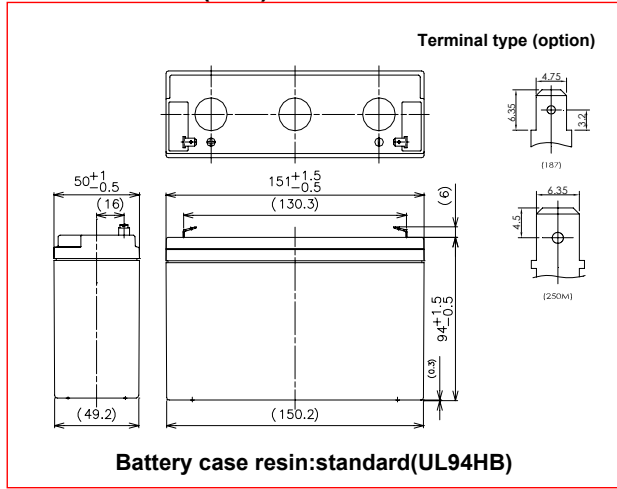
**LC-R0612**

For main and standby power supplies  
 Expected trickle life:3~5 years at 25°C, approx.5 years at 20°C



Contents indicated (including the recycle marking, etc) are subject to change without notice.

**■Dimensions(mm)**



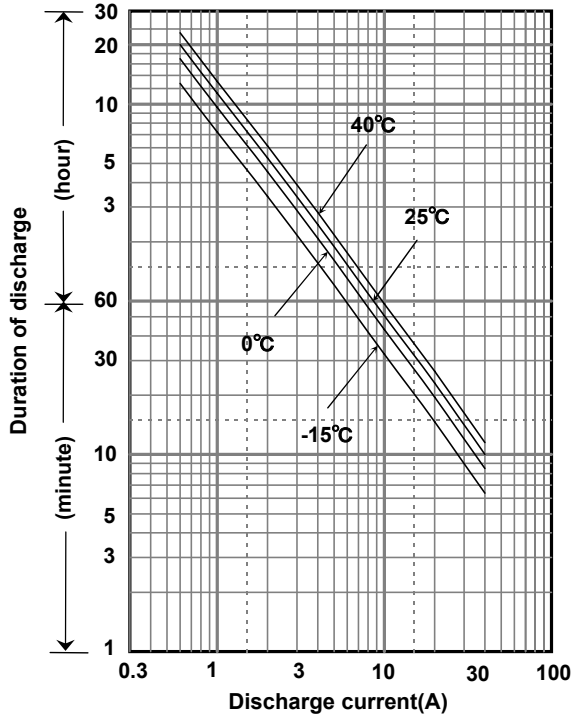
**■Specification**

Nominal Voltage	6V	
Nominal Capacity(20HR)	12Ah	
Dimensions	Length	151 mm
	Width	50 mm
	Height	94 mm
	Total height	100 mm
Approx. Mass	1.95 kg	
Terminal	Faston 187 & 250M	

**■Characteristics**

Capacity (25 °C)	20 hour rate	12Ah
	10 hour rate	11.3Ah
	5 hour rate	10.4Ah
	1 hour rate	8.1Ah
Internal Resistance	Fully charged battery (25 °C)	8 mΩ
	Temperature Dependency of Capacity (20 hour rate)	
	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

**■Duration of discharge vs. discharge current**



**■Watt Table(25°C)**

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	340	279	192	149	124	91.3	68.7	52.4	35.1	27.2	19.0	14.4	12.0	10.9	6.66	3.61	3.01
4.95V	325	269	186	144	121	88.3	67.5	51.8	35.0	27.1	18.9	14.4	12.0	10.9	6.66	3.61	3.01
5.1V	304	253	181	141	118	88.3	66.9	51.2	34.5	26.9	18.7	14.4	12.0	10.8	6.60	3.61	3.01
5.25V	278	237	171	136	115	86.0	66.3	50.1	34.2	26.6	18.4	14.3	12.0	10.8	6.60	3.60	3.00
5.4V	247	217	161	131	113	83.1	61.6	48.9	33.1	26.0	18.1	14.2	11.9	10.7	6.54	3.59	2.99

**■Ampere Table(25°C)**

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	61.1	50.1	34.3	25.9	21.3	15.6	11.7	8.90	5.95	4.60	3.20	2.41	2.01	1.81	1.11	0.602	0.502
4.95V	58.4	48.2	33.3	25.0	20.8	15.1	11.5	8.80	5.92	4.58	3.18	2.41	2.01	1.81	1.11	0.602	0.502
5.1V	54.6	45.4	32.4	24.5	20.3	15.1	11.4	8.70	5.85	4.55	3.15	2.41	2.00	1.80	1.10	0.601	0.501
5.25V	50.0	42.6	30.6	23.6	19.9	14.7	11.3	8.50	5.80	4.50	3.10	2.40	2.00	1.80	1.10	0.600	0.500
5.4V	44.5	38.9	28.7	22.7	19.4	14.2	10.5	8.30	5.60	4.40	3.05	2.38	1.99	1.79	1.09	0.598	0.498

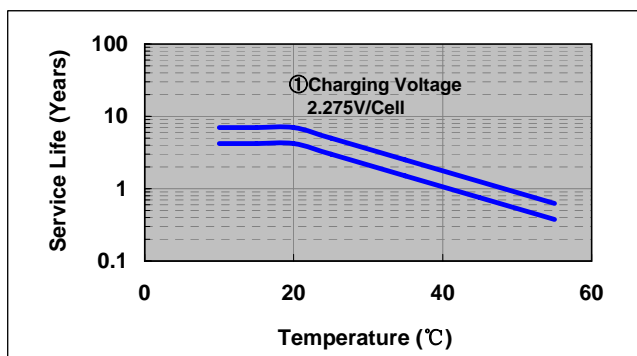
### ■ Charging Method (25°C)

Cycle use	Control voltage:7.25-7.45V;Initial current:4.8A or smaller
Trickle use	Control voltage:6.8-6.9V;Initial current:1.8A or smaller

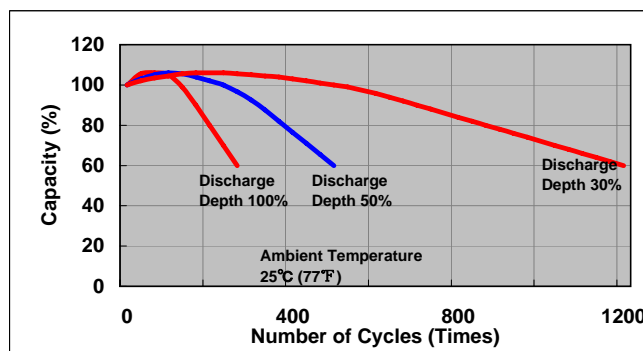
### ■ Cut off voltage

Discharge current	0.6A-2.4A	2.4A-6.0A	6.0A-12A	12A-24A	24A-36A
Cut off voltage(V)	5.25	5.1	4.95	4.65	4.35

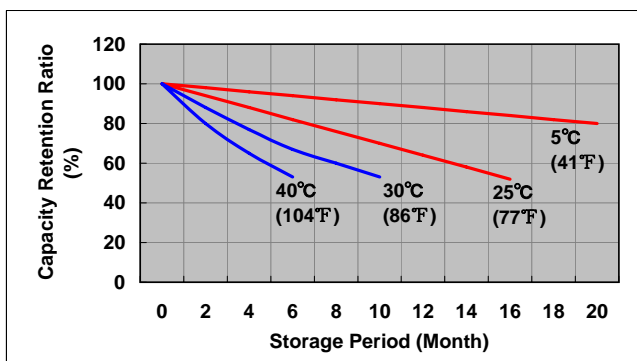
### ■ Influence of Temperature on Trickle life



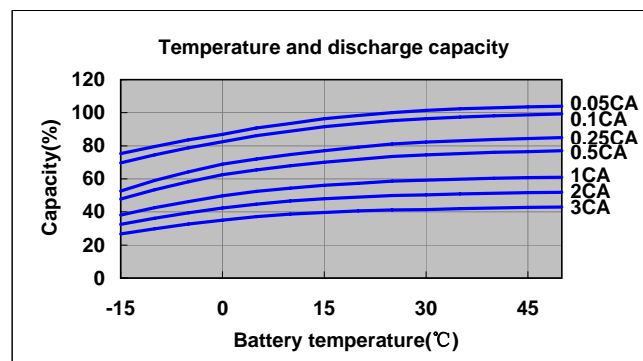
### ■ Cycle life vs. Depth of discharge



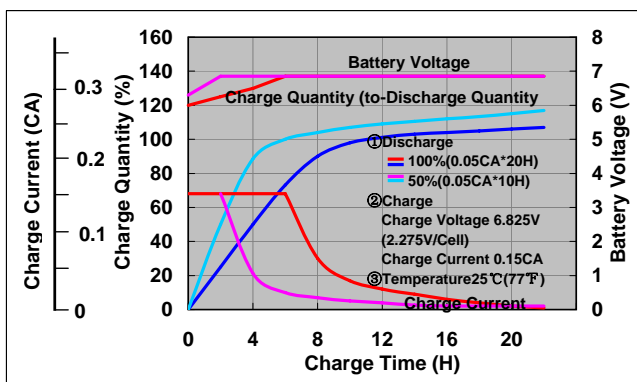
### ■ Residual capacity test result



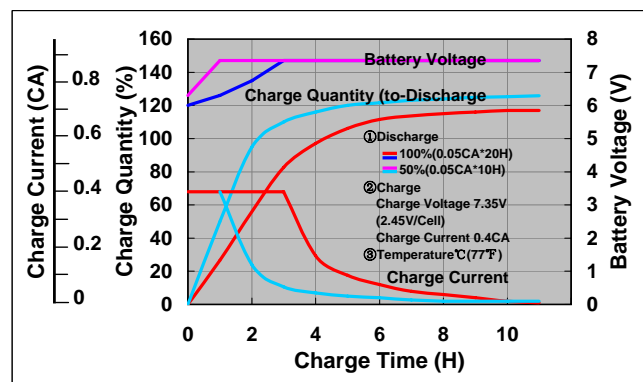
### ■ Discharge capacity by temperature and by discharge current



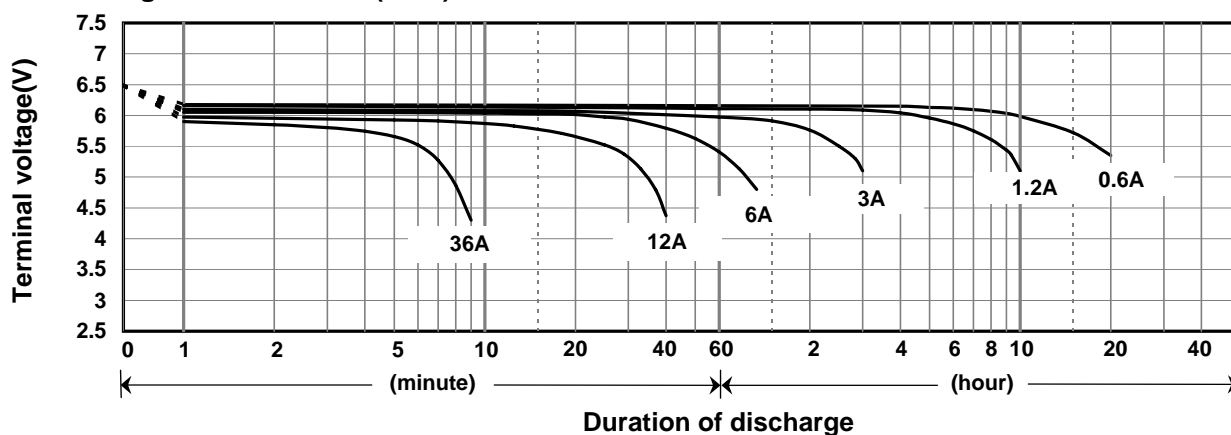
### ■ Constant-voltage constant-current charge characteristics for Trickle use



### ■ Constant-voltage constant-current charge characteristics for Cycle use

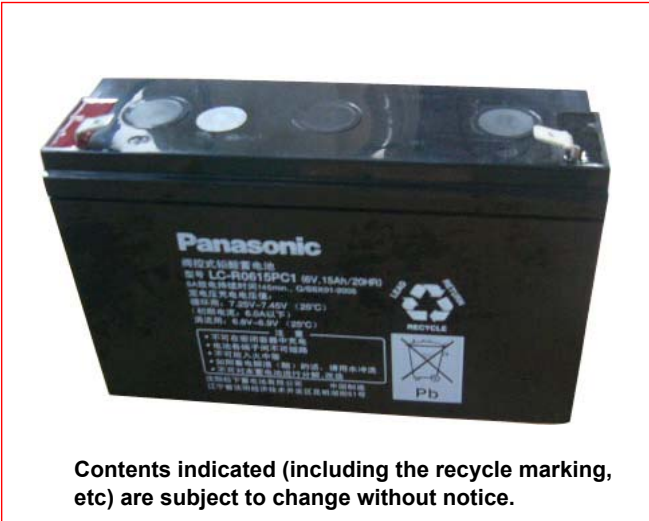


### ■ Discharge characteristics(25°C)

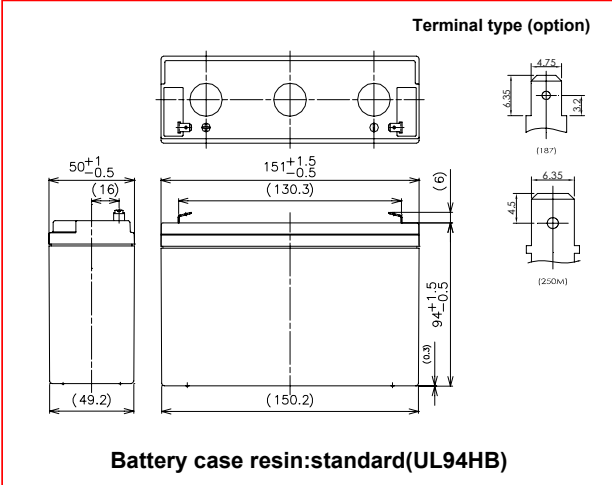


**LC-R0615**

For main and standby power supplies  
Expected trickle life:3~5 years at 25°C, approx.5 years at 20°C



**Dimensions(mm)**



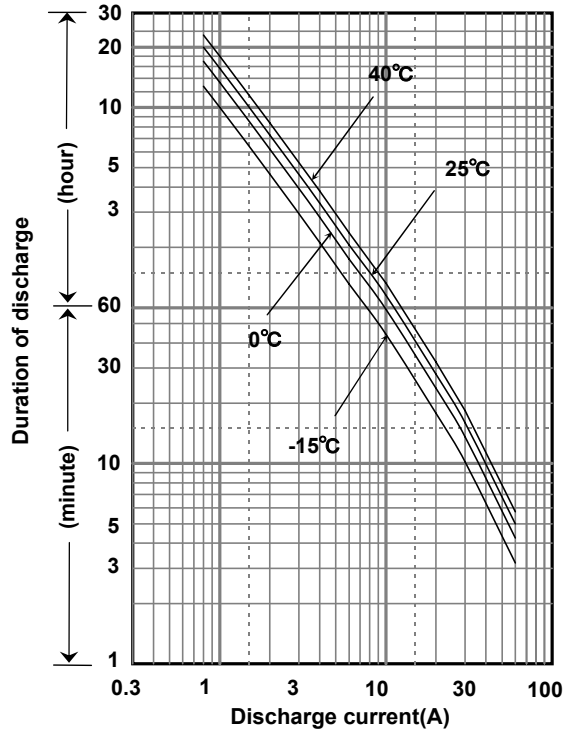
**Specification**

Nominal Voltage	6V	
Nominal Capacity(20HR)	15Ah	
Dimensions	Length	151 mm
	Width	50 mm
	Height	94 mm
	Total height	100 mm
Approx. Mass	2.05 kg	
Terminal	Faston 187 & 250M	

**Characteristics**

Capacity (25 °C)	20 hour rate	12Ah
	10 hour rate	11.3Ah
	5 hour rate	10.4Ah
	1 hour rate	8.1Ah
Internal Resistance	Fully charged battery (25 °C)	8 mΩ
	Temperature Dependency of Capacity (20 hour rate)	
	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

**Duration of discharge vs. discharge current**



**Watt Table(25°C)**

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	425	341	228	175	146	108	78.7	61.7	42.0	32.5	23.6	18.0	14.9	12.6	8.08	4.38	3.65
4.95V	399	323	222	172	143	106	77.8	61.4	41.4	32.3	23.4	17.9	14.9	12.6	8.05	4.37	3.65
5.1V	370	304	216	168	140	106	77.1	60.4	40.7	31.7	23.2	17.9	14.8	12.5	7.97	4.36	3.64
5.25V	333	277	202	159	135	103	76.1	59.1	40.1	30.9	22.8	17.8	14.7	12.4	7.95	4.35	3.62
5.4V	288	249	184	150	132	100	73.1	57.8	38.8	29.8	22.4	17.5	14.4	12.2	7.87	4.33	3.60

**Ampere Table(25°C)**

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	76.5	61.2	40.6	30.4	25.2	18.5	13.4	10.5	7.11	5.49	3.96	3.01	2.49	2.10	1.35	0.730	0.609
4.95V	71.8	58.0	39.7	29.9	24.7	18.2	13.3	10.4	7.01	5.45	3.94	3.00	2.48	2.09	1.34	0.728	0.608
5.1V	66.6	54.5	38.6	29.2	24.2	18.1	13.1	10.3	6.89	5.36	3.90	2.99	2.46	2.08	1.33	0.727	0.606
5.25V	59.9	49.8	36.1	27.6	23.3	17.6	13.0	10.0	6.78	5.22	3.84	2.97	2.45	2.07	1.33	0.725	0.604
5.4V	51.8	44.6	32.9	26.1	22.7	17.0	12.5	9.82	6.58	5.03	3.77	2.94	2.41	2.04	1.31	0.722	0.601

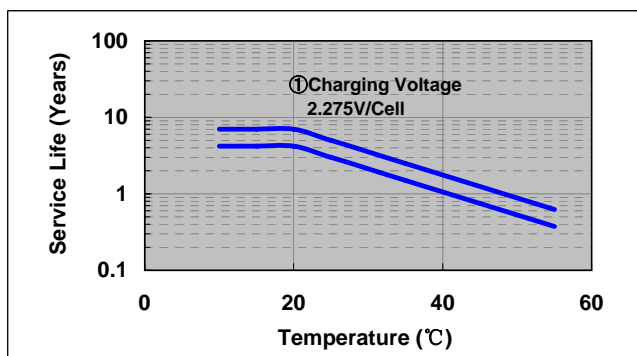
### Charging Method (25°C)

Cycle use	Control voltage:7.25-7.45V;Initial current:6A or smaller
Trickle use	Control voltage:6.8-6.9V;Initial current:2.25A or smaller

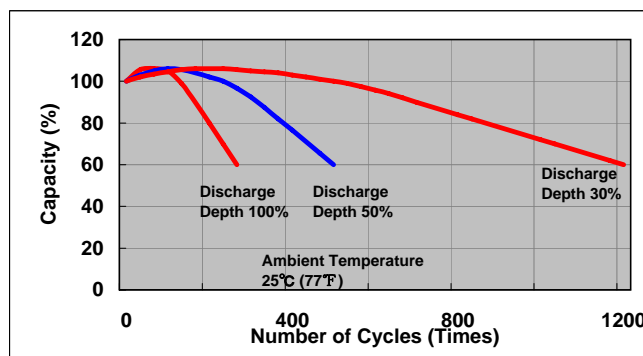
### Cut off voltage

Discharge current	0.75A-3A	3A-7.5A	7.5A-15A	15A-30A	30A-45A
Cut off voltage(V)	5.25	5.1	4.95	4.65	4.35

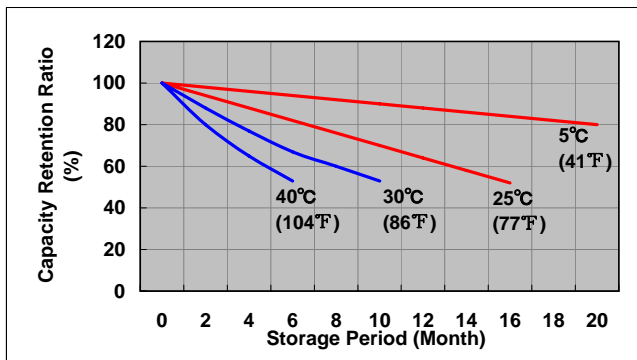
### Influence of Temperature on Trickle life



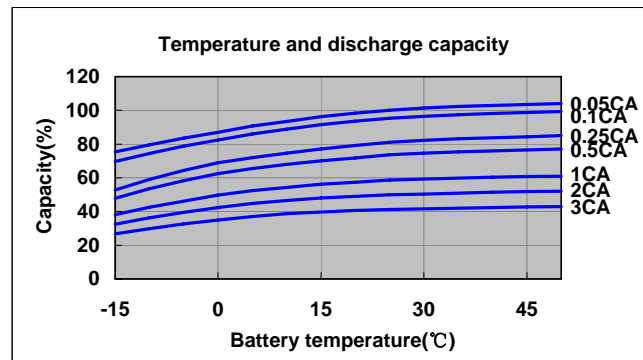
### Cycle life vs. Depth of discharge



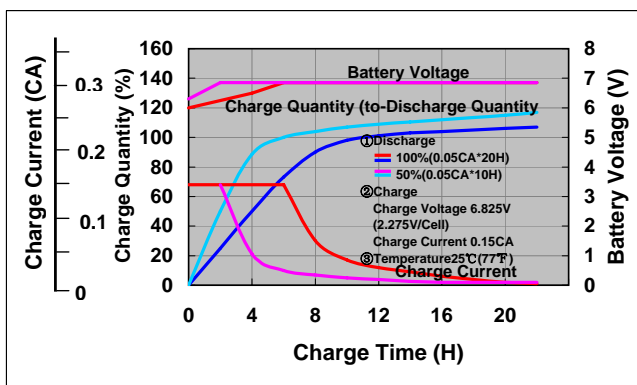
### Residual capacity test result



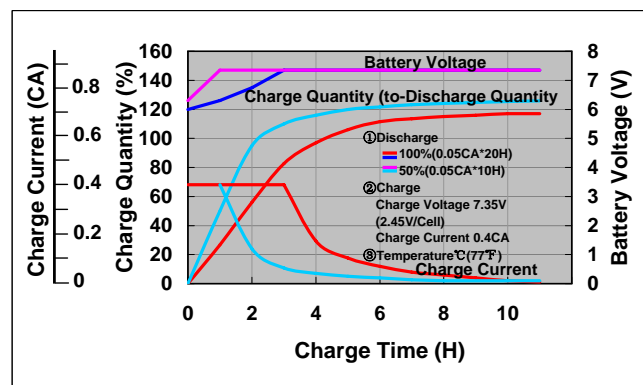
### Discharge capacity by temperature and by discharge current



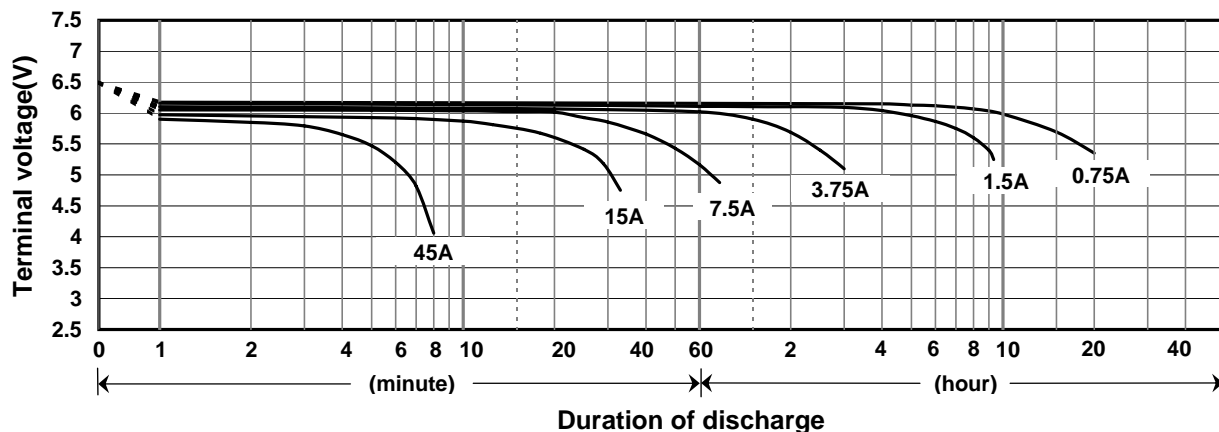
### Constant-voltage constant-current charge characteristics for Trickle use



### Constant-voltage constant-current charge characteristics for Cycle use



### Discharge characteristics(25°C)



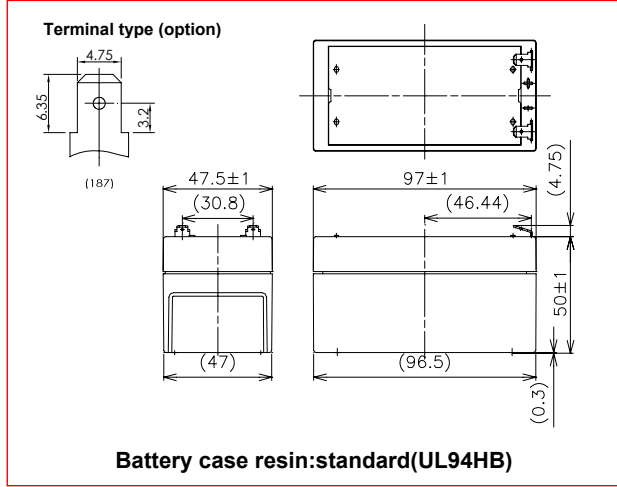
# LC-R121R3

For main and standby power supplies  
 Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



Contents indicated (including the recycle marking, etc) are subject to change without notice.

## Dimensions(mm)



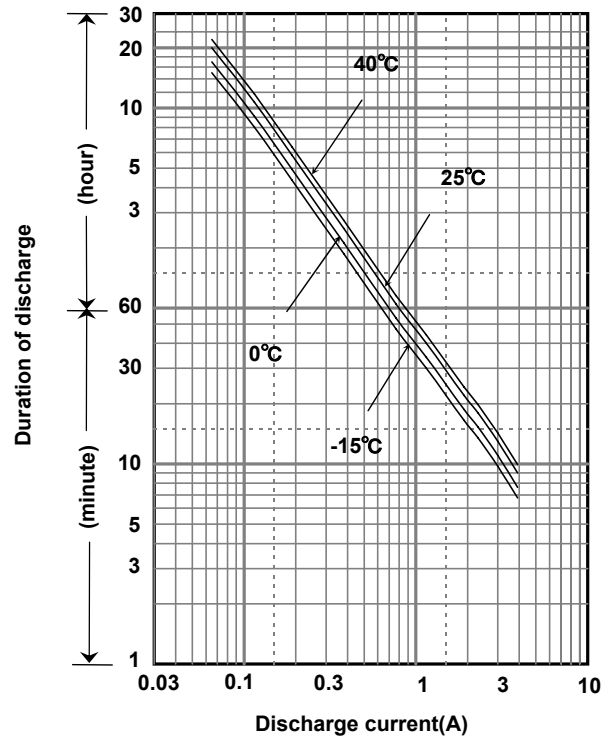
## Specification

Nominal Voltage	12V	
Rated Capacity(20HR)	1.3Ah	
Dimensions	Length	97 mm
	Width	47.5 mm
	Height	50 mm
	Total height	55 mm
Approx. Mass	0.55 kg	
Terminal	Faston 187	

## Characteristics

Capacity (25 °C)	20 hour rate	1.3Ah
	10 hour rate	1.2Ah
	5 hour rate	1.05Ah
	1 hour rate	0.85Ah
Internal Resistance	Fully charged battery (25 °C)	90 mΩ
	Temperature Dependency of Capacity (20 hour rate)	
	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

## Duration of discharge vs. discharge current



## Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	78.1	61.6	40.2	30.7	25.8	19.2	13.6	10.8	7.49	5.73	4.32	3.30	2.73	2.22	1.46	0.787	0.657
9.9V	72.5	57.8	39.4	30.5	25.3	19.0	13.5	10.8	7.34	5.68	4.30	3.28	2.70	2.21	1.45	0.784	0.654
10.2V	66.9	54.2	38.4	29.9	24.9	18.8	13.4	10.6	7.19	5.54	4.25	3.26	2.68	2.19	1.44	0.782	0.652
10.5V	59.4	48.5	35.6	27.8	23.7	18.4	13.1	10.4	7.04	5.34	4.19	3.24	2.66	2.16	1.43	0.780	0.650
10.8V	50.2	42.9	31.7	26.0	23.0	17.7	12.9	10.2	6.82	5.13	4.08	3.24	2.60	2.16	1.41	0.758	0.650

## Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	7.02	5.53	3.59	2.67	2.22	1.64	1.16	0.921	0.634	0.484	0.363	0.276	0.228	0.185	0.122	0.0655	0.0655
9.9V	6.52	5.18	3.52	2.65	2.18	1.63	1.15	0.921	0.621	0.480	0.361	0.274	0.226	0.184	0.121	0.0654	0.0545
10.2V	6.01	4.86	3.43	2.60	2.15	1.61	1.14	0.903	0.609	0.468	0.358	0.273	0.224	0.183	0.120	0.0652	0.0543
10.5V	5.34	4.35	3.18	2.42	2.04	1.57	1.12	0.885	0.596	0.451	0.352	0.271	0.222	0.181	0.119	0.0650	0.0542
10.8V	4.51	3.85	2.83	2.26	1.99	1.52	1.10	0.867	0.578	0.433	0.343	0.271	0.217	0.181	0.117	0.0632	0.0542

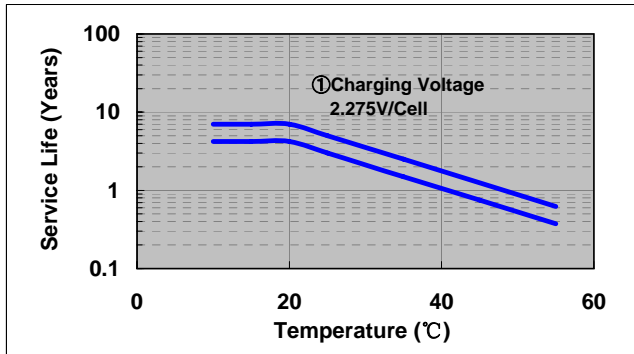
### ■ Charging Method (25°C)

Cycle use	Control voltage:14.5-14.9V;Initial current0.52A or smaller
Trickle use	Control voltage:13.6-13.8V;Initial current:1.08A or smaller

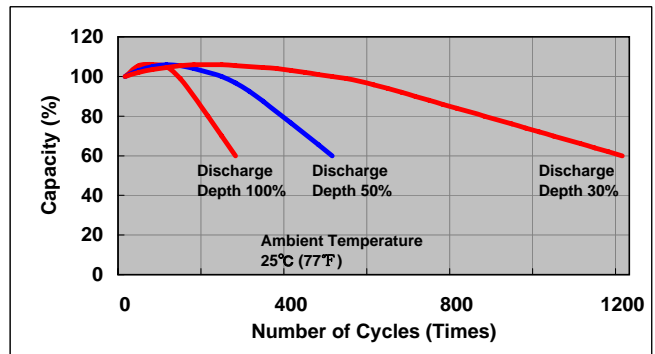
### ■ Cut off voltage

Discharge current	0.065A-0.26A	0.26A-0.65A	0.65A-1.3A	1.3A-2.6A	2.6A-3.9A
Cut off voltage(V)	10.5	10.2	9.9	9.3	8.7

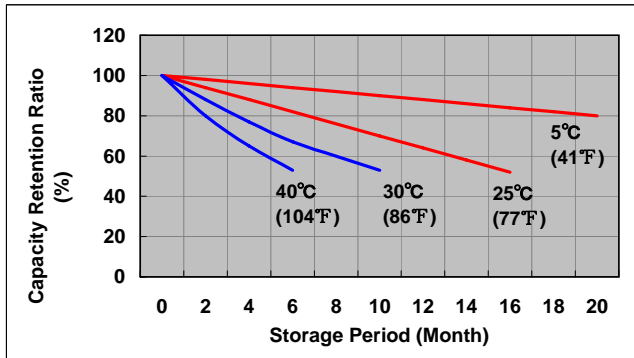
### ■ Influence of Temperature on Trickle life



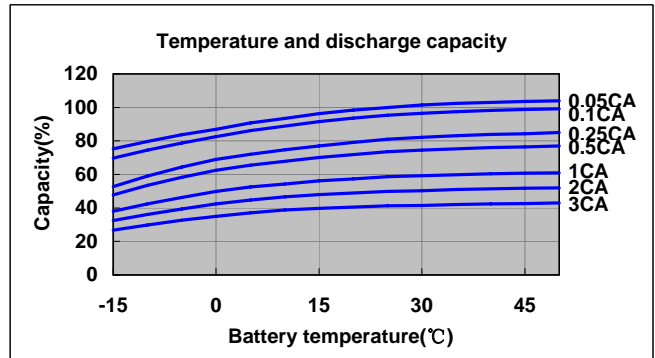
### ■ Cycle life vs. Depth of discharge



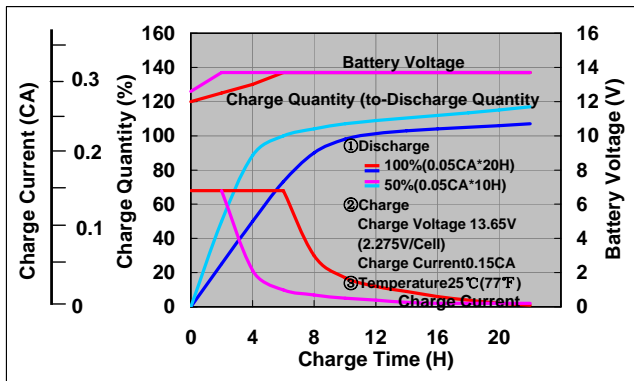
### ■ Residual capacity test result



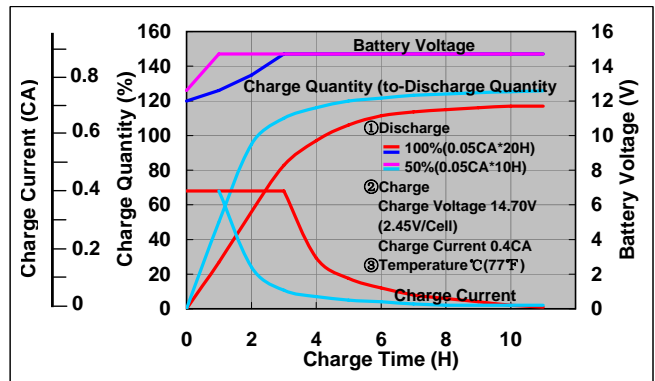
### ■ Discharge capacity by temperature and by discharge current



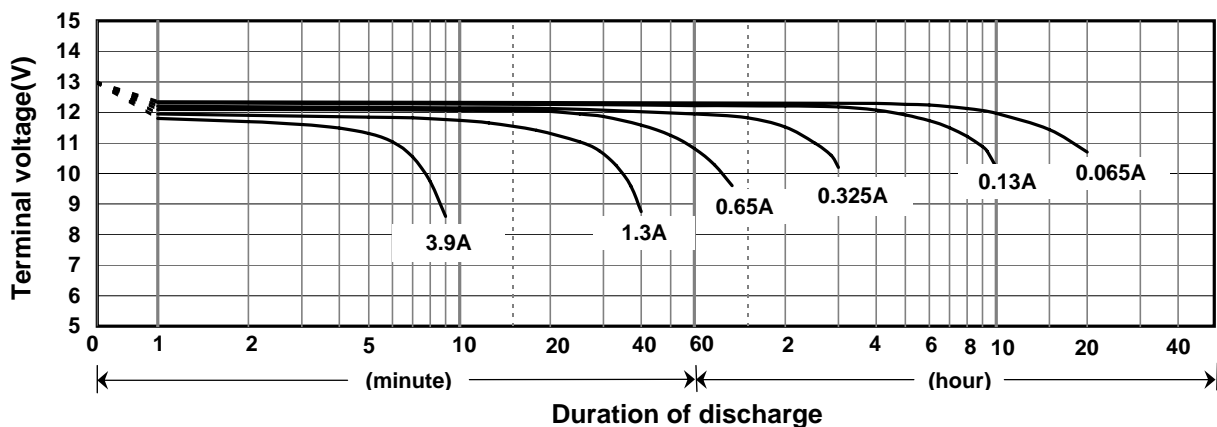
### ■ Constant-voltage constant-current charge characteristics for Trickle use



### ■ Constant-voltage constant-current charge characteristics for Cycle use



### ■ Discharge characteristics(25°C)

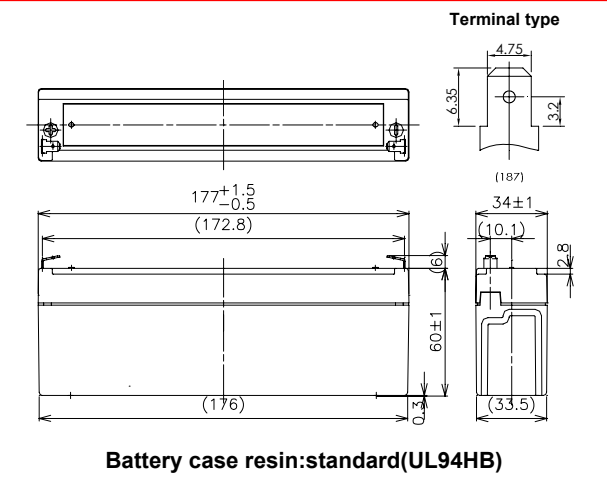


# LC-R122R2

For main and standby power supplies  
 Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



### Dimensions(mm)



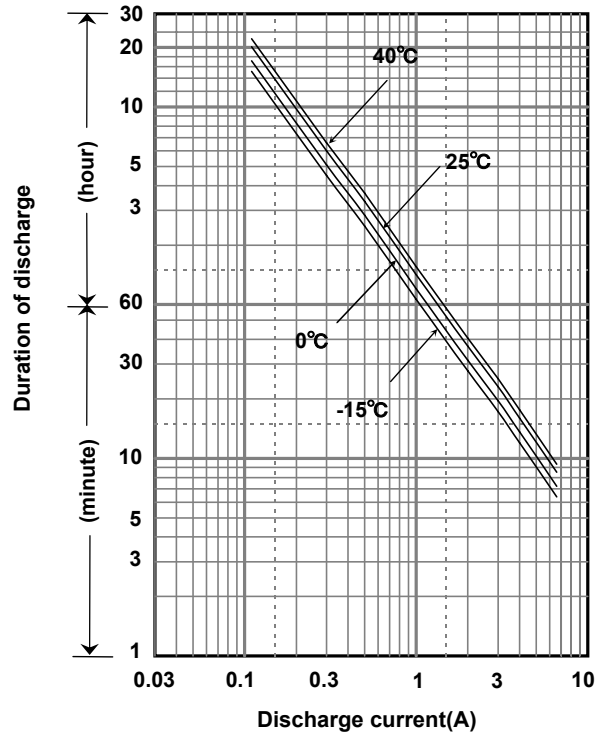
### Specification

Nominal Voltage	12V	
Rated Capacity(20HR)	2.2Ah	
Dimensions	Length	177 mm
	Width	34 mm
	Height	60 mm
	Total height	66 mm
Approx. Mass	0.80 kg	
Terminal	Faston 187	

### Characteristics

Capacity (25 °C)	20 hour rate	2.2Ah
	10 hour rate	2.0Ah
	5 hour rate	1.8Ah
	1 hour rate	1.3Ah
Internal Resistance	Fully charged battery (25 °C)	70 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

### Duration of discharge vs. discharge current



### Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	132	104	68.1	52.0	43.6	32.5	23.0	18.4	12.6	9.77	7.27	5.59	4.61	3.71	2.46	1.33	1.11
9.9V	123	97.8	66.7	51.7	42.9	32.2	22.8	18.4	12.4	9.70	7.24	5.55	4.58	3.69	2.45	1.33	1.11
10.2V	113	91.6	65.0	50.6	42.2	31.8	22.6	18.0	12.1	9.44	7.16	5.51	4.54	3.66	2.42	1.32	1.10
10.5V	101	82.1	60.2	47.1	40.1	31.1	22.2	17.6	11.9	9.12	7.05	5.48	4.50	3.62	2.41	1.32	1.10
10.8V	85	72.6	53.7	43.9	39.0	30.0	21.9	17.3	11.5	8.68	6.91	5.40	4.39	3.56	2.38	1.31	1.09

### Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	11.9	9.35	6.08	4.52	3.76	2.78	1.96	1.56	1.07	0.825	0.611	0.468	0.385	0.309	0.205	0.111	0.0926
9.9V	11.0	8.77	5.96	4.49	3.70	2.75	1.94	1.56	1.05	0.819	0.608	0.464	0.382	0.308	0.204	0.111	0.0923
10.2V	10.2	8.22	5.81	4.40	3.64	2.72	1.93	1.53	1.03	0.798	0.602	0.461	0.379	0.306	0.202	0.110	0.0920
10.5V	9.0	7.36	5.38	4.09	3.45	2.66	1.89	1.50	1.01	0.770	0.593	0.458	0.376	0.302	0.201	0.110	0.0917
10.8V	7.6	6.51	4.80	3.82	3.36	2.57	1.86	1.47	0.98	0.733	0.581	0.452	0.367	0.297	0.199	0.109	0.0911

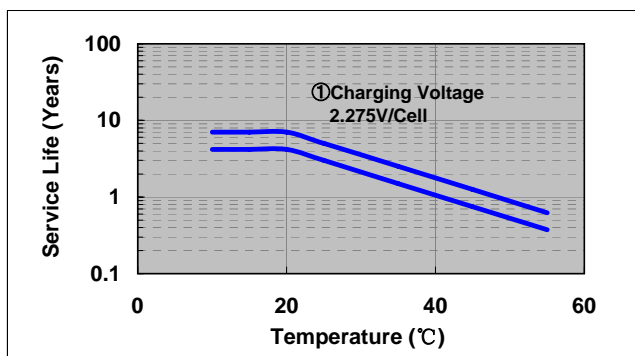
### Charging Method (25°C)

Cycle use	Control voltage:14.5-14.9V;Initial current0.88A or smaller
Trickle use	Control voltage:13.6-13.8V;Initial current:0.33A or smaller

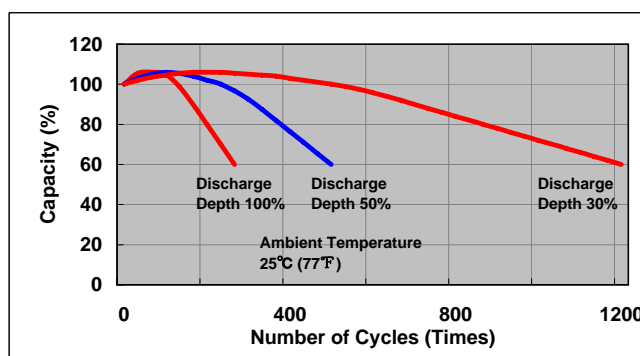
### Cut off voltage

Discharge current	0.011A-0.44A	0.44A-1.1A	1.1A-2.2A	2.2A-4.4A	4.4A-6.6A
Cut off voltage(V)	10.5	10.2	9.9	9.3	8.7

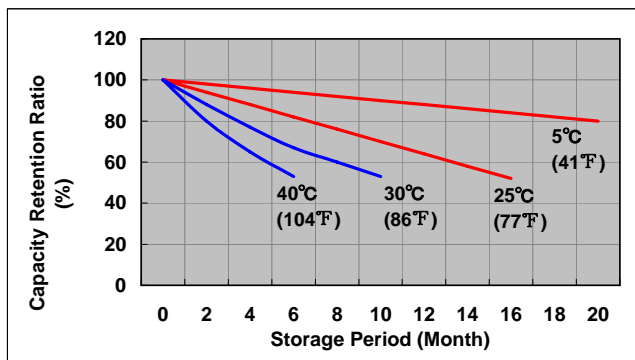
### Influence of Temperature on Trickle life



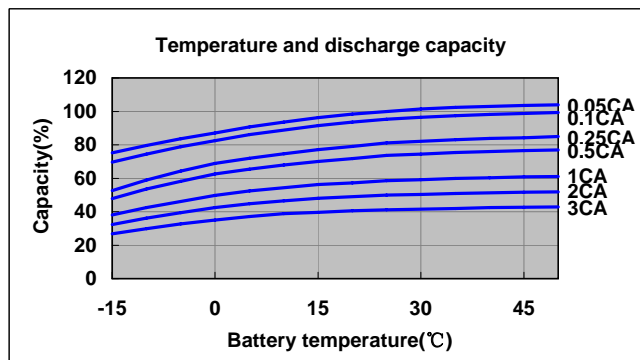
### Cycle life vs. Depth of discharge



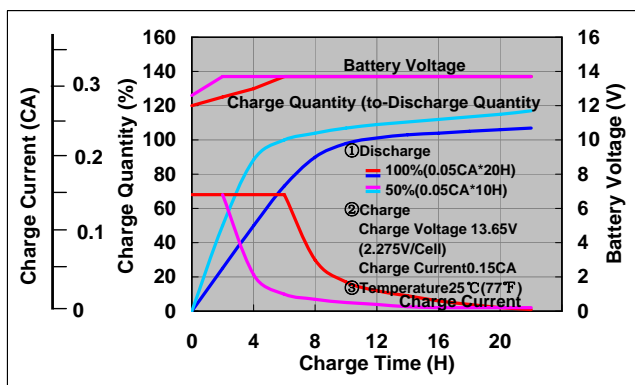
### Residual capacity test result



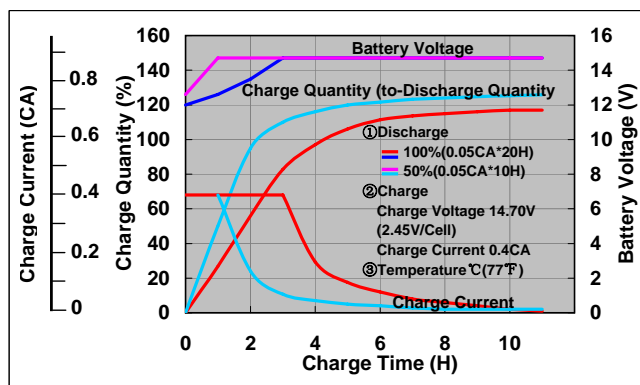
### Discharge capacity by temperature and by discharge current



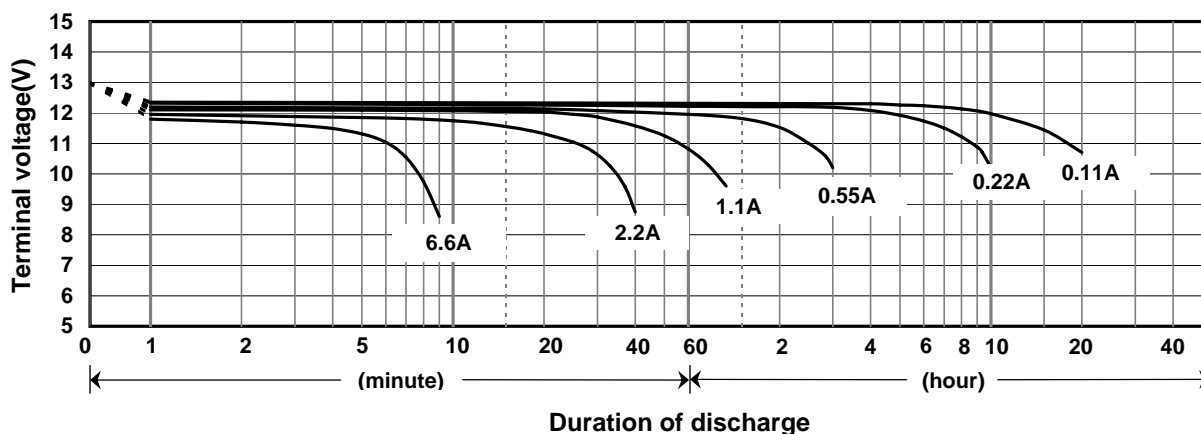
### Constant-voltage constant-current charge characteristics for Trickle use



### Constant-voltage constant-current charge characteristics for Cycle use



### Discharge characteristics(25°C)





# LC-R123R4

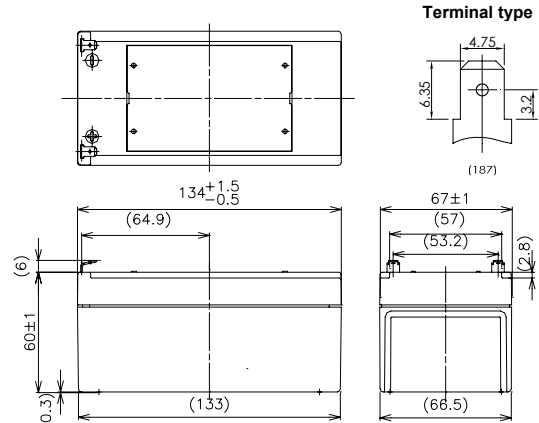
For main and standby power supplies

Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



Contents indicated (including the recycle marking, etc) are subject to change without notice.

## Dimensions(mm)

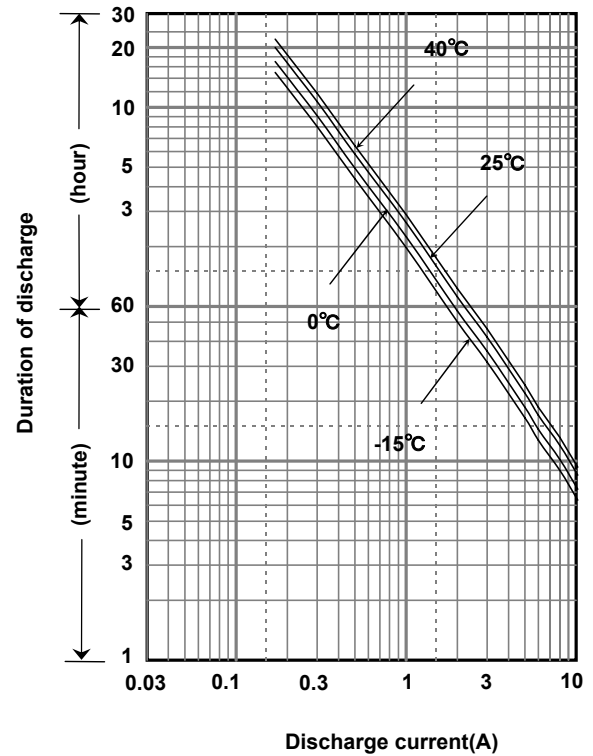


Battery case resin:standard(UL94HB)

## Specification

Nominal Voltage	12V	
Rated Capacity(20HR)	3.4Ah	
Dimensions	Length	134 mm
	Width	67 mm
	Height	60 mm
	Total height	66 mm
Approx. Mass	1.15 kg	
Terminal	Faston 187	

## Duration of discharge vs. discharge current



## Characteristics

Capacity (25 °C)	20 hour rate	3.4Ah
	10 hour rate	3.0Ah
	5 hour rate	2.7Ah
	1 hour rate	2.1Ah
Internal Resistance	Fully charged battery (25 °C)	50 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

## Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	204	161	105	80.4	67.4	50.3	35.5	28.4	19.6	15.0	11.3	8.63	7.13	5.80	3.81	2.06	1.72
9.9V	190	151	103	79.8	66.3	49.7	35.3	28.4	19.2	14.9	11.2	8.58	7.07	5.78	3.80	2.05	1.71
10.2V	175	142	100	78.2	65.2	49.2	34.9	27.8	18.8	14.5	11.1	8.52	7.01	5.73	3.76	2.05	1.71
10.5V	155	127	93	72.8	61.9	48.1	34.4	27.3	18.4	14.0	11.0	8.46	6.96	5.66	3.74	2.04	1.70
10.8V	131	112	83	67.9	60.3	46.4	33.8	26.7	17.8	13.4	10.7	8.46	6.79	5.66	3.68	1.98	1.70

## Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	18.4	14.4	9.40	6.99	5.81	4.30	3.02	2.41	1.66	1.26	0.949	0.722	0.595	0.484	0.318	0.171	0.143
9.9V	17.0	13.6	9.21	6.94	5.71	4.25	3.00	2.41	1.62	1.26	0.945	0.718	0.590	0.482	0.316	0.171	0.143
10.2V	15.7	12.7	8.97	6.80	5.62	4.20	2.97	2.36	1.59	1.22	0.935	0.713	0.586	0.478	0.313	0.170	0.142
10.5V	14.0	11.4	8.31	6.33	5.34	4.11	2.93	2.31	1.56	1.18	0.921	0.708	0.581	0.472	0.312	0.170	0.142
10.8V	11.8	10.1	7.41	5.90	5.19	3.97	2.88	2.27	1.51	1.13	0.897	0.708	0.567	0.472	0.307	0.165	0.142

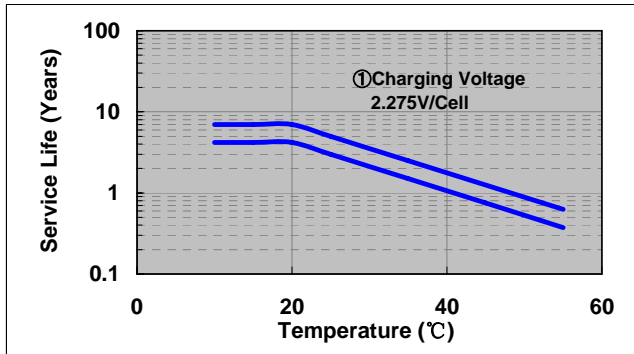
### ■ Charging Method (25°C)

Cycle use	Control voltage:14.5-14.9V;Initial current1.36A or smaller
Trickle use	Control voltage:13.6-13.8V;Initial current:0.51A or smaller

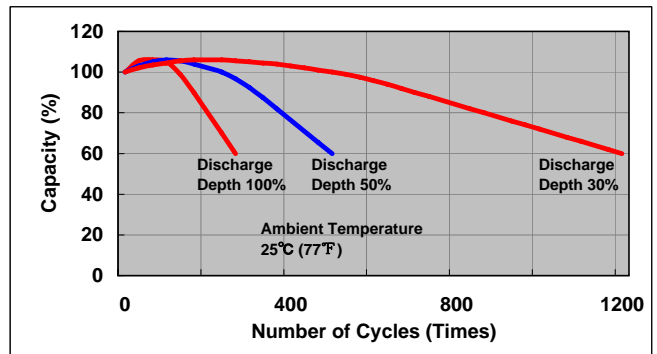
### ■ Cut off voltage

Discharge current	0.17A-0.68A	0.68A-1.7A	1.7A-3.4A	3.4A-6.8A	6.8A-10.2A
Cut off voltage(V)	10.5	10.2	9.9	9.3	8.7

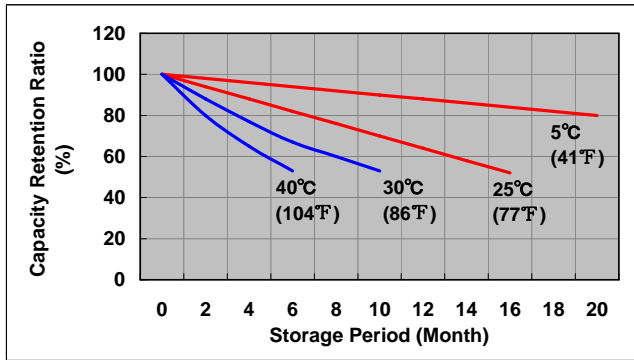
### ■ Influence of Temperature on Trickle life



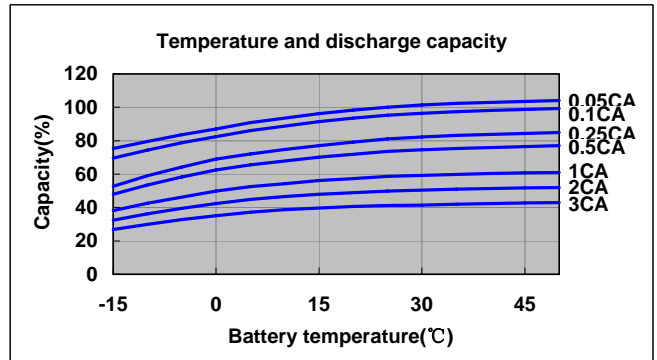
### ■ Cycle life vs. Depth of discharge



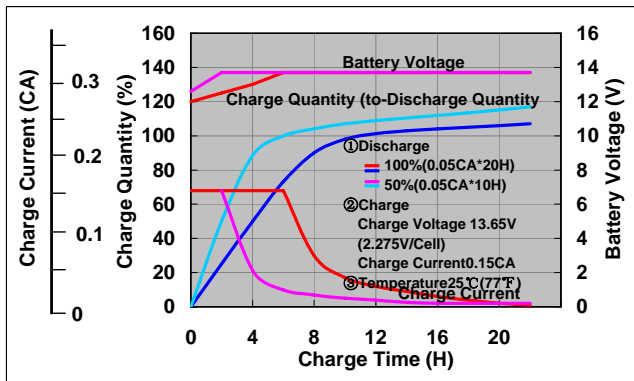
### ■ Residual capacity test result



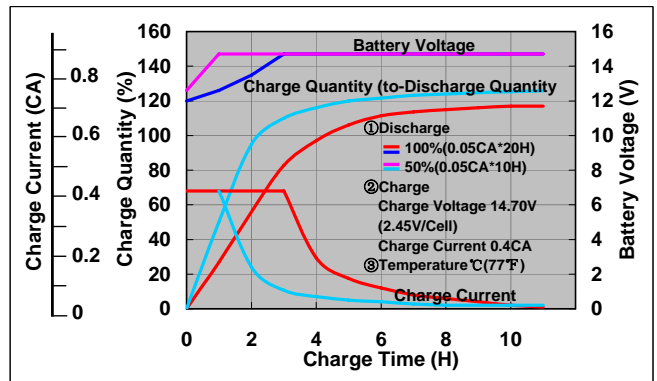
### ■ Discharge capacity by temperature and by discharge current



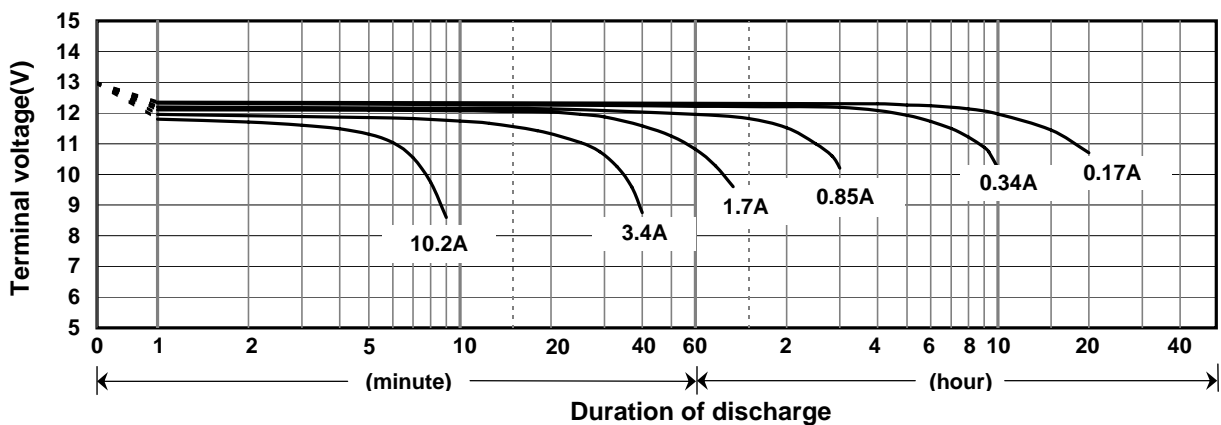
### ■ Constant-voltage constant-current charge characteristics for Trickle use



### ■ Constant-voltage constant-current charge characteristics for Cycle use



### ■ Discharge characteristics(25°C)



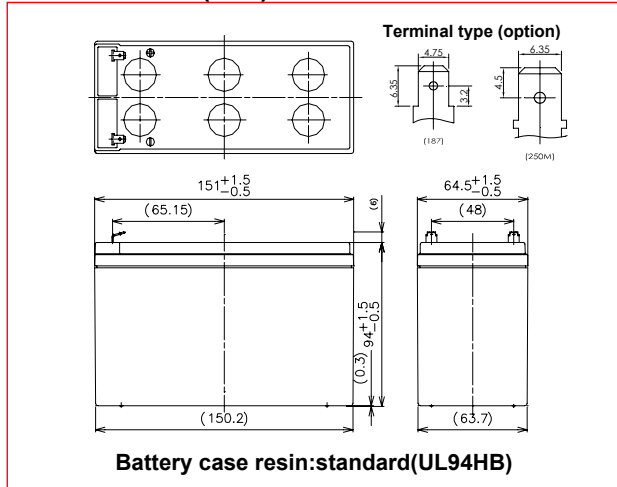
# LC-R127R2

For main and standby power supplies  
 Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



Contents indicated (including the recycle marking, etc) are subject to change without notice.

## Dimensions(mm)



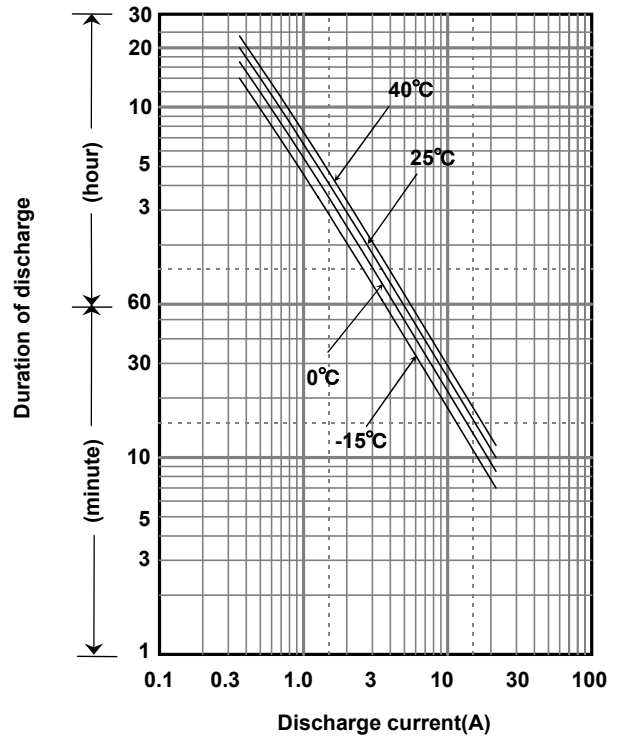
## Specification

Nominal Voltage	12V	
Rated Capacity(20HR)	7.2Ah	
Dimensions	Length	151 mm
	Width	64.5 mm
	Height	94 mm
	Total height	100 mm
Approx. Mass	2.50 kg	
Terminal	Faston 187 & 250M	

## Characteristics

Capacity (25 °C)	20 hour rate	7.2Ah
	10 hour rate	6.8Ah
	5 hour rate	6.3Ah
	1 hour rate	4.9Ah
Internal Resistance	Fully charged battery (25 °C)	21 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

## Duration of discharge vs. discharge current



## Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	433	341	223	170	143	106	75.1	60.1	41.3	32.0	23.8	18.3	15.1	12.1	8.04	4.36	3.64
9.9V	401	320	218	169	140	105	74.7	60.1	40.5	31.7	23.7	18.2	15.0	12.1	8.00	4.34	3.62
10.2V	370	300	213	166	138	104	74.0	58.9	39.7	30.9	23.4	18.0	14.9	12.0	7.92	4.33	3.61
10.5V	329	269	197	154	131	102	72.8	57.7	38.9	29.8	23.1	17.9	14.7	11.8	7.88	4.32	3.60
10.8V	278	237	176	144	128	98.3	71.6	56.5	37.8	28.4	22.6	17.7	14.4	11.7	7.80	4.30	3.58

## Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	38.9	30.6	19.9	14.8	12.3	9.10	6.40	5.10	3.50	2.70	2.00	1.53	1.26	1.012	0.670	0.363	0.303
9.9V	36.1	28.7	19.5	14.7	12.1	9.00	6.36	5.10	3.43	2.68	1.99	1.52	1.25	1.008	0.667	0.362	0.302
10.2V	33.3	26.9	19.0	14.4	11.9	8.90	6.30	5.00	3.36	2.61	1.97	1.51	1.24	1.000	0.660	0.361	0.301
10.5V	29.6	24.1	17.6	13.4	11.3	8.70	6.20	4.90	3.29	2.52	1.94	1.50	1.23	0.988	0.657	0.360	0.300
10.8V	25.0	21.3	15.7	12.5	11.0	8.40	6.10	4.80	3.20	2.40	1.90	1.48	1.20	0.972	0.650	0.358	0.298

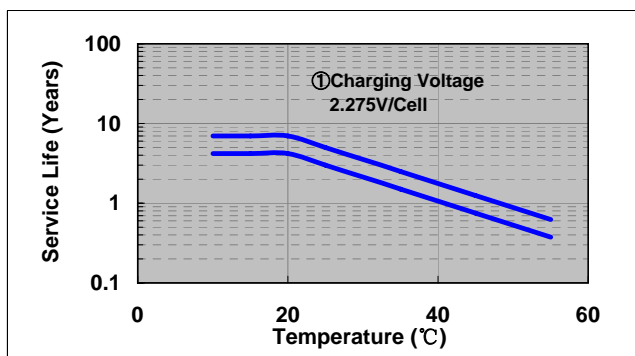
### ■ Charging Method (25°C)

Cycle use	Control voltage:14.5-14.9V;Initial current:2.88A or smaller
Trickle use	Control voltage:13.6-13.8V;Initial current:1.08A or smaller

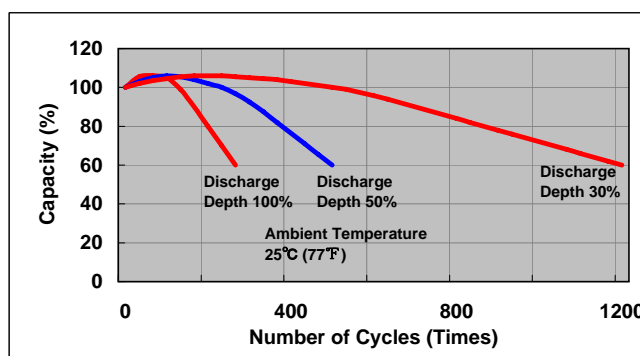
### ■ Cut off voltage

Discharge current	0.36A-1.44A	1.44A-3.6A	3.6A-7.2A	7.2A-14.4A	14.4A-21.6A
Cut off voltage(V)	10.5	10.2	9.9	9.3	8.7

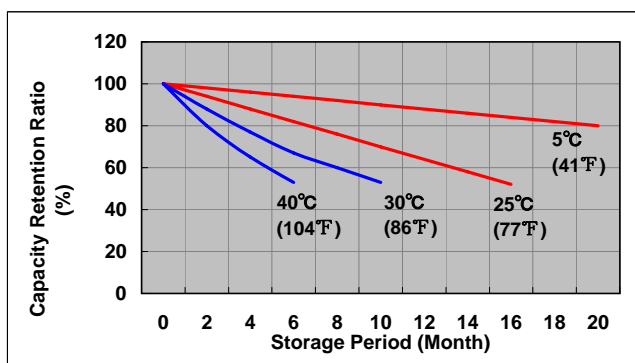
### ■ Influence of Temperature on Trickle life



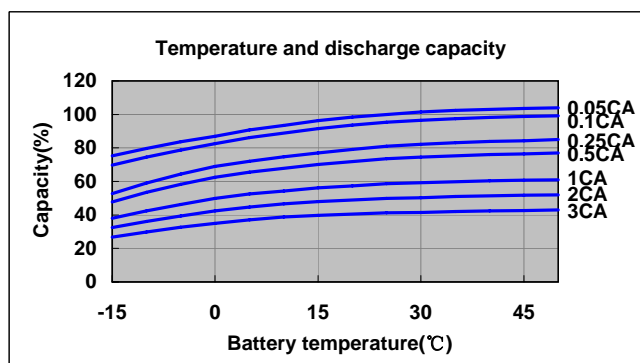
### ■ Cycle life vs. Depth of discharge



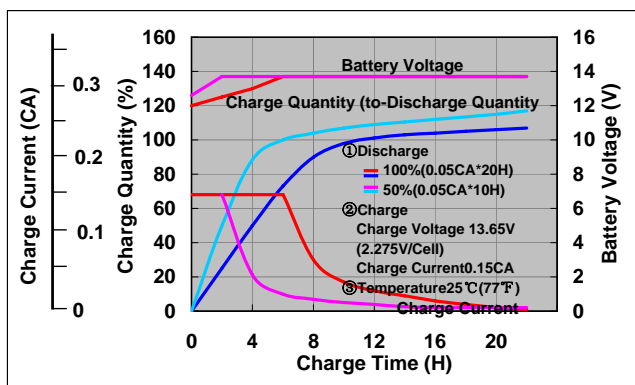
### ■ Residual capacity test result



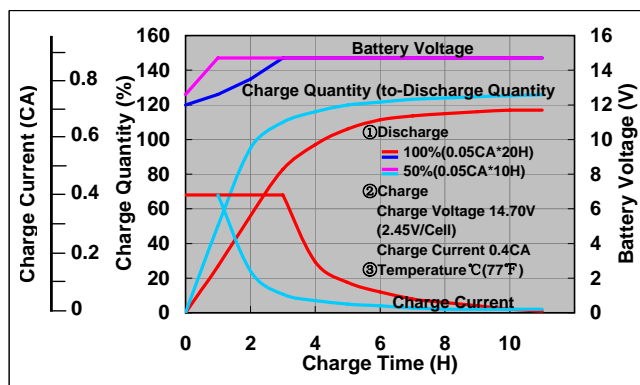
### ■ Discharge capacity by temperature and by discharge current



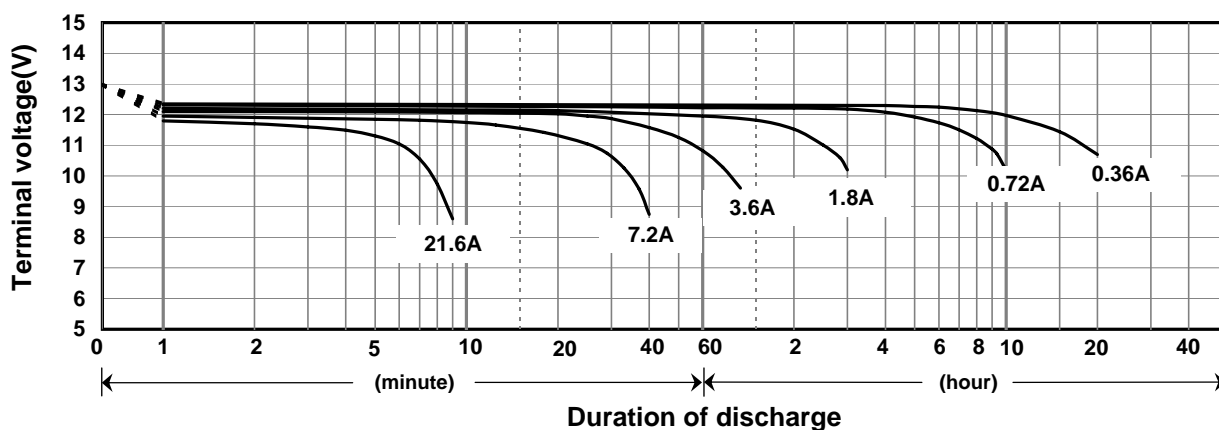
### ■ Constant-voltage constant-current charge characteristics for Trickle use



### ■ Constant-voltage constant-current charge characteristics for Cycle use



### ■ Discharge characteristics(25°C)

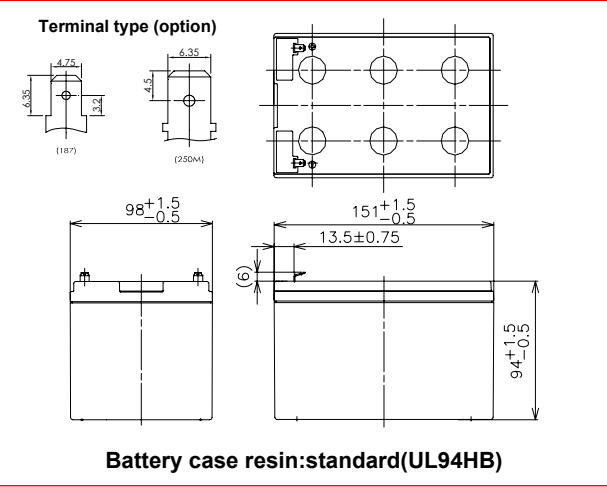


# LC-RA1212

For main and standby power supplies  
 Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



### Dimensions(mm)



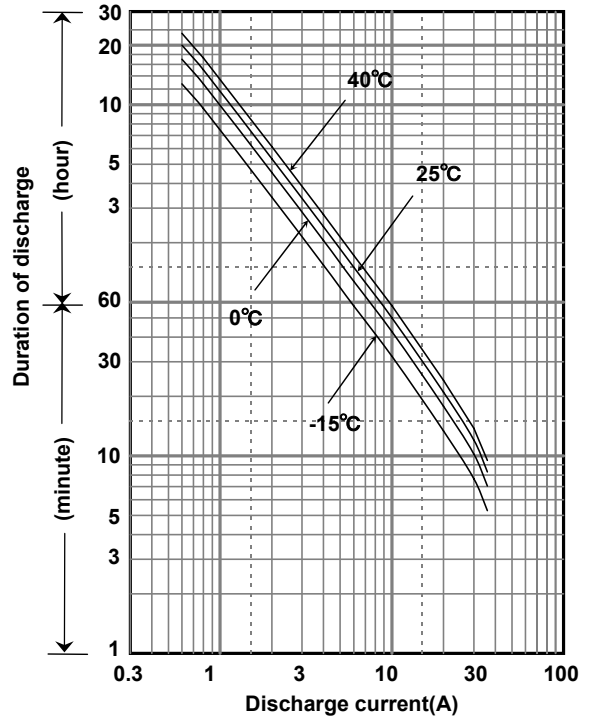
### Specification

Nominal Voltage	12V	
Rated Capacity(20HR)	12Ah	
Dimensions	Length	151 mm
	Width	98 mm
	Height	94 mm
	Total height	100 mm
Approx. Mass	3.85 kg	
Terminal	Faston 187 & 250M	

### Characteristics

Capacity (25 °C)	20 hour rate	12Ah
	10 hour rate	11.3Ah
	5 hour rate	10.4Ah
	1 hour rate	8.1Ah
Internal Resistance	Fully charged battery (25 °C)	15 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

### Duration of discharge vs. discharge current



### Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	679	559	384	298	247	183	137	105	70.3	54.5	38.1	28.8	24.1	21.7	13.3	7.22	6.02
9.9V	649	537	373	288	241	177	135	104	69.9	54.2	37.8	28.8	24.1	21.7	13.3	7.22	6.02
10.2V	607	506	363	282	235	177	134	102	69.1	53.9	37.5	28.8	24.0	21.6	13.2	7.21	6.01
10.5V	556	475	343	271	231	172	133	100	68.5	53.3	36.9	28.7	24.0	21.6	13.2	7.20	6.00
10.8V	495	434	321	261	225	166	123	98	66.1	52.1	36.3	28.4	23.8	21.5	13.1	7.18	5.98

### Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	61.1	50.1	34.3	25.9	21.3	15.6	11.7	8.90	5.95	4.60	3.20	2.41	2.01	1.81	1.11	0.602	0.502
9.9V	58.4	48.2	33.3	25.0	20.8	15.1	11.5	8.80	5.92	4.58	3.18	2.41	2.01	1.81	1.11	0.602	0.502
10.2V	54.6	45.4	32.4	24.5	20.3	15.1	11.4	8.70	5.85	4.55	3.15	2.41	2.00	1.80	1.10	0.601	0.501
10.5V	50.0	42.6	30.6	23.6	19.9	14.7	11.3	8.50	5.80	4.50	3.10	2.40	2.00	1.80	1.10	0.600	0.500
10.8V	44.5	38.9	28.7	22.7	19.4	14.2	10.5	8.30	5.60	4.40	3.05	2.38	1.99	1.79	1.09	0.598	0.498

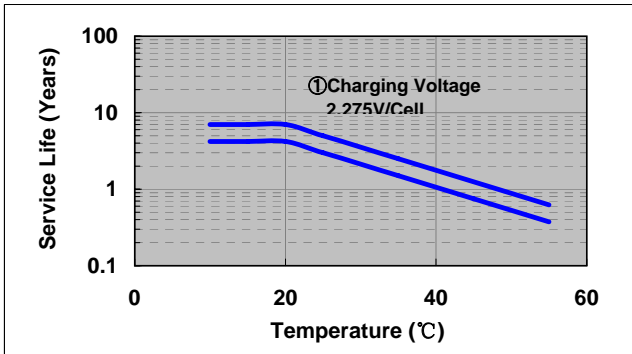
### ■ Charging Method (25°C)

Cycle use	Control voltage:14.5-14.9V;Initial current4.8A or smaller
Trickle use	Control voltage:13.6-13.8V;Initial current:1.8A or smaller

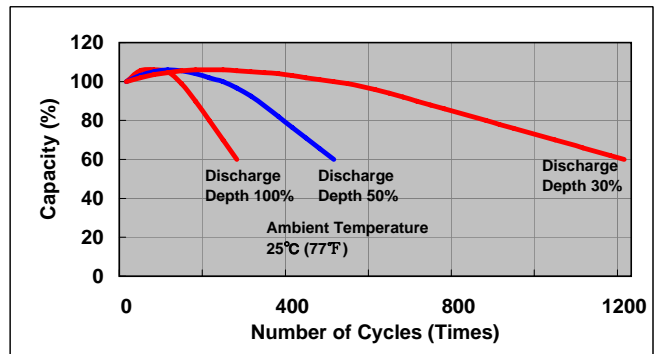
### ■ Cut off voltage

Discharge current	0.6A-2.4A	2.4A-6A	6A-12A	12A-24A	24A-36A
Cut off voltage(V)	10.5	10.2	9.9	9.3	8.7

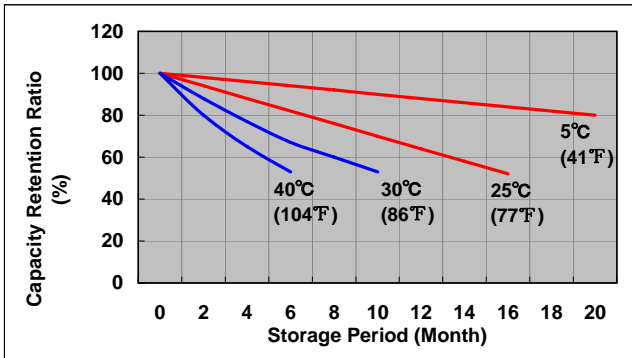
### ■ Influence of Temperature on Trickle life



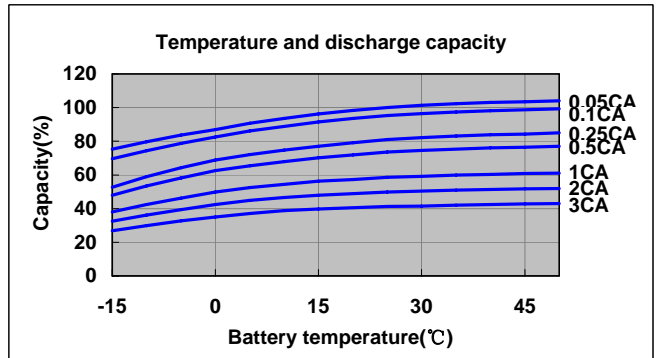
### ■ Cycle life vs. Depth of discharge



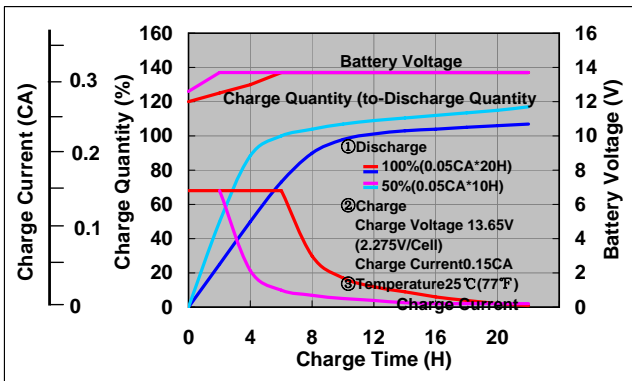
### ■ Residual capacity test result



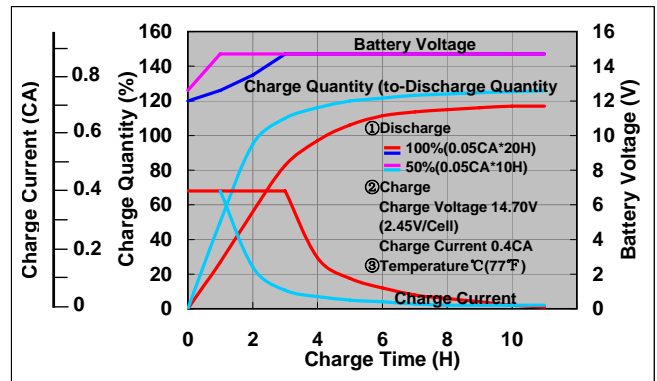
### ■ Discharge capacity by temperature and by discharge current



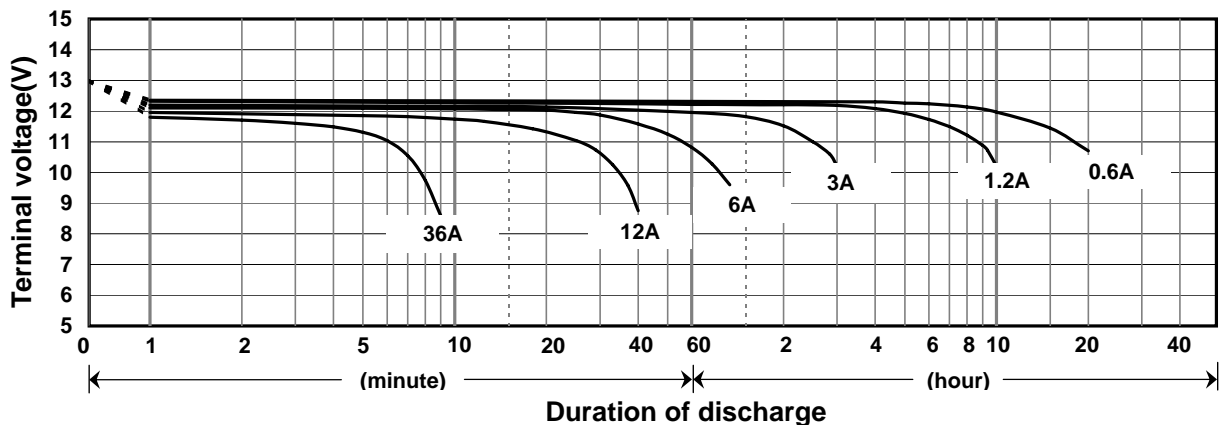
### ■ Constant-voltage constant-current charge characteristics for Trickle use



### ■ Constant-voltage constant-current charge characteristics for Cycle use

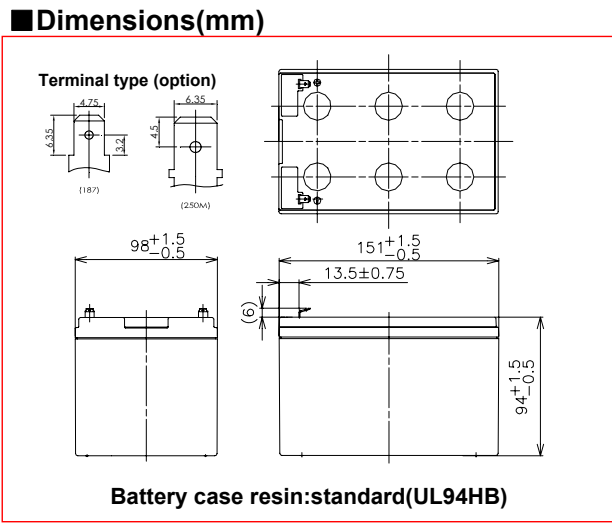


### ■ Discharge characteristics(25°C)



# LC-RA1215

For main and standby power supplies  
 Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



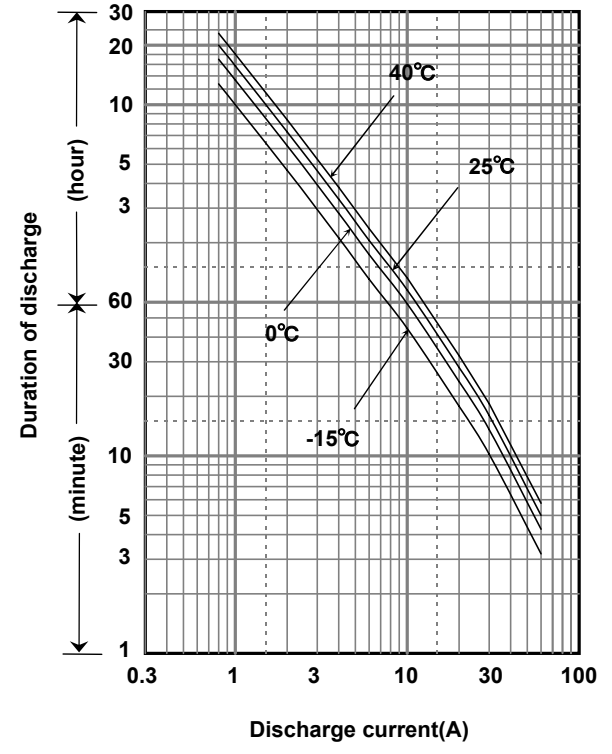
### Specification

Nominal Voltage		12V
Rated Capacity(20HR)		15Ah
Dimensions	Length	151 mm
	Width	98 mm
	Height	94 mm
	Total height	100 mm
Approx. Mass		4.15 kg
Terminal		Faston 187 & 250M

### Characteristics

Capacity (25 °C)	20 hour rate	15Ah
	10 hour rate	14Ah
	5 hour rate	12.9Ah
	1 hour rate	10Ah
Internal Resistance	Fully charged battery (25 °C)	15 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

### Duration of discharge vs. discharge current



### Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	850	682	455	350	292	217	157	123	83.9	65.0	47.1	36.0	29.9	25.2	16.2	8.75	7.30
9.9V	799	646	444	343	286	213	156	123	82.8	64.6	46.9	35.8	29.7	25.1	16.1	8.74	7.29
10.2V	741	607	433	336	281	211	154	121	81.4	63.4	46.4	35.7	29.5	24.9	15.9	8.72	7.27
10.5V	667	555	404	318	270	206	152	118	80.1	61.9	45.7	35.5	29.4	24.8	15.9	8.70	7.25
10.8V	576	497	368	300	263	199	146	116	77.7	59.6	44.8	35.1	28.9	24.5	15.7	8.66	7.21

### Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	76.5	61.2	40.6	30.4	25.2	18.5	13.4	10.5	7.11	5.49	3.96	3.01	2.49	2.10	1.35	0.730	0.609
9.9V	71.8	58.0	39.7	29.9	24.7	18.2	13.3	10.4	7.01	5.45	3.94	3.00	2.48	2.09	1.34	0.728	0.608
10.2V	66.6	54.5	38.6	29.2	24.2	18.1	13.1	10.3	6.89	5.36	3.90	2.99	2.46	2.08	1.33	0.727	0.606
10.5V	59.9	49.8	36.1	27.6	23.3	17.6	13.0	10.0	6.78	5.22	3.84	2.97	2.45	2.07	1.33	0.725	0.604
10.8V	51.8	44.6	32.9	26.1	22.7	17.0	12.5	9.82	6.58	5.03	3.77	2.94	2.41	2.04	1.31	0.722	0.601

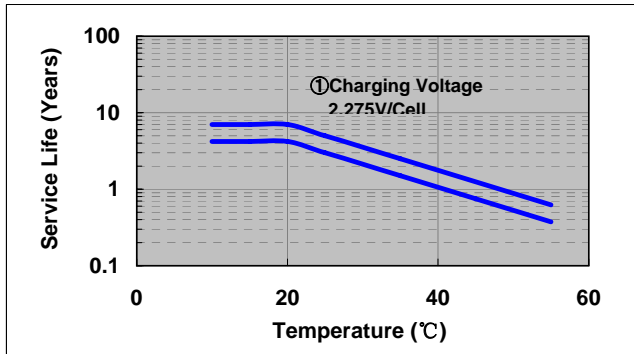
### Charging Method (25°C)

Cycle use	Control voltage 14.5-14.9V; Initial current 6A or smaller
Trickle use	Control voltage: 13.6-13.8V; Initial current: 2.25A or smaller

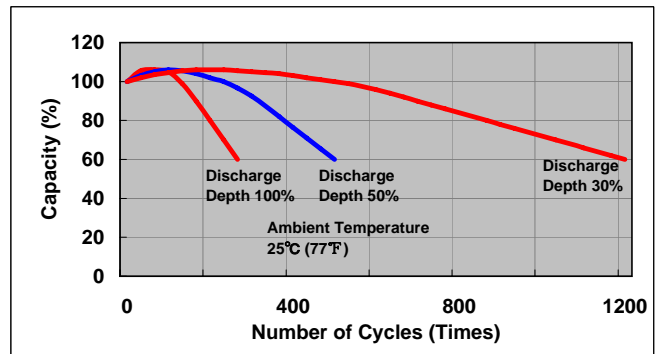
### Cut off voltage

Discharge current	0.75A-3A	3A-7.5A	7.5A-15A	15A-30A	30A-45A
Cut off voltage(V)	10.5	10.2	9.9	9.3	8.7

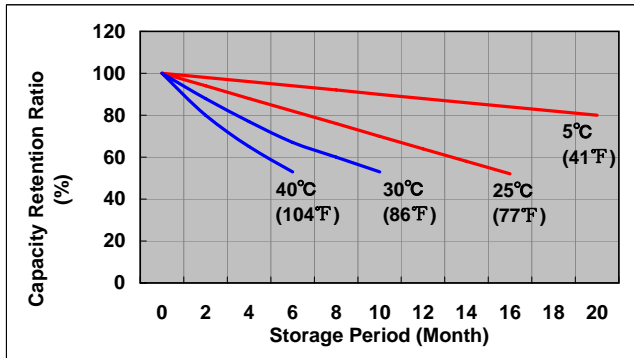
### Influence of Temperature on Trickle life



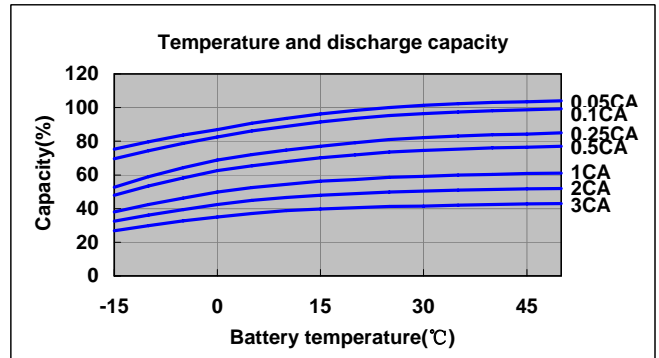
### Cycle life vs. Depth of discharge



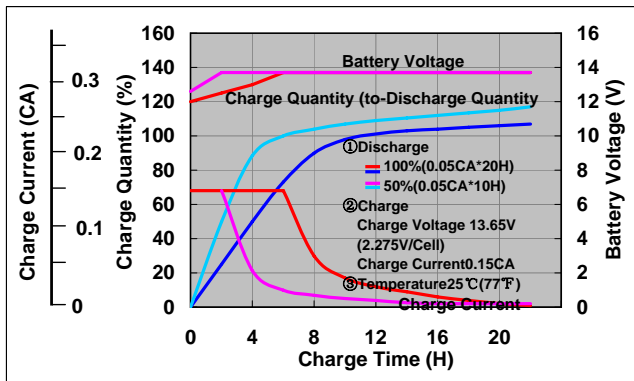
### Residual capacity test result



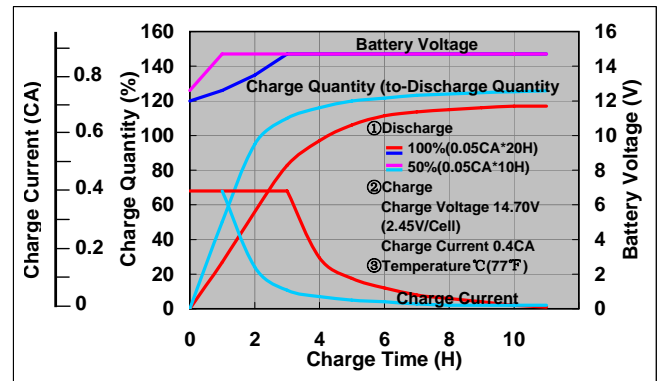
### Discharge capacity by temperature and by discharge current



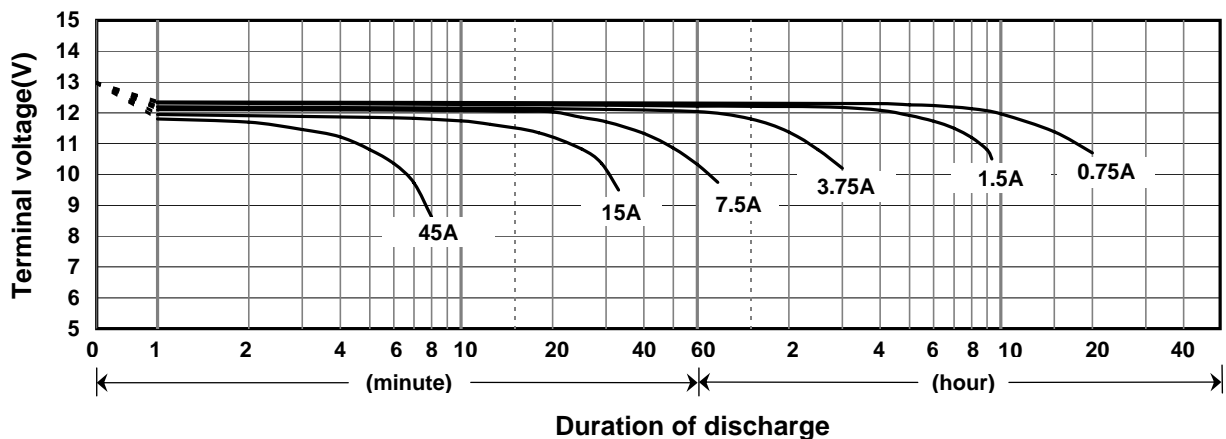
### Constant-voltage constant-current charge characteristics for Trickle use



### Constant-voltage constant-current charge characteristics for Cycle use



### Discharge characteristics(25°C)



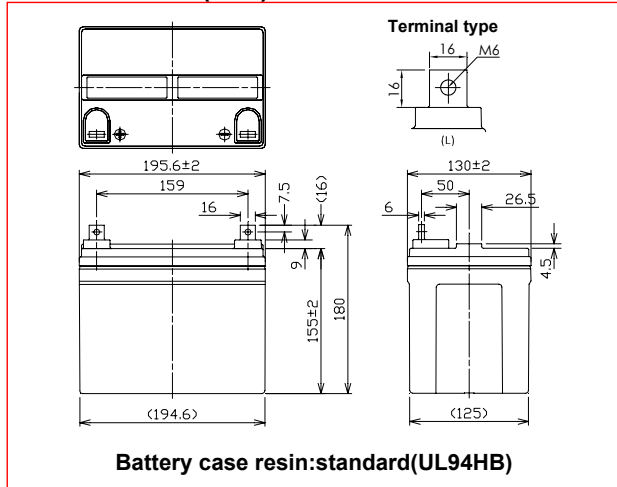


**LC-R1233**

For standby power supplies  
Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



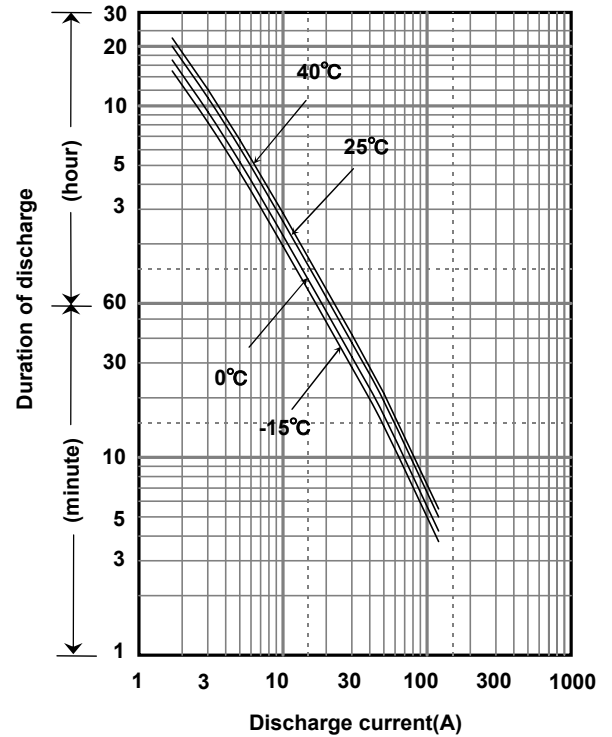
■ Dimensions(mm)



■ Specification

Nominal Voltage	12V	
Rated Capacity(20HR)	33Ah	
Dimensions	Length	195.6 mm
	Width	130 mm
	Height	155 mm
	Total height	180 mm
Approx. Mass	11.5 kg	
Terminal	M6 Bolt and Nut type	

■ Duration of discharge vs. discharge current



■ Characteristics

Capacity (25 °C)	20 hour rate	33Ah
	10 hour rate	30Ah
	5 hour rate	27Ah
	1 hour rate	20Ah
Internal Resistance	Fully charged battery (25 °C)	7 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

■ Watt Table(25°C)

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	1546	1254	948	732	635	457	328	268	187	149	107	86.6	69.5	60.5	36.9	19.8	16.5
9.9V	1446	1182	928	721	630	452	322	262	182	148	105	85.4	68.3	60.0	36.9	19.8	16.5
10.2V	1379	1115	899	706	619	443	321	259	170	147	104	84.2	67.7	60.0	36.9	19.8	16.5
10.5V	1323	1051	868	684	603	433	314	256	168	146	104	84.2	67.7	60.0	36.9	19.8	16.5
10.8V	1182	1001	823	663	590	421	281	233	162	137	99.4	82.5	67.1	58.8	36.9	19.8	16.3

■ Ampere Table(25°C)

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	139	113	84.6	63.7	54.8	39.1	27.9	22.8	15.8	12.6	9.00	7.25	5.80	5.10	3.08	1.65	1.38
9.9V	130	106	82.9	62.7	54.4	38.6	27.4	22.2	15.5	12.5	8.85	7.15	5.70	5.00	3.08	1.65	1.38
10.2V	124	100	80.3	61.4	53.4	37.9	27.4	22.0	14.4	12.4	8.75	7.05	5.65	5.00	3.08	1.65	1.38
10.5V	119	94.3	77.5	59.5	52.0	37.0	26.8	21.8	14.3	12.3	8.70	7.05	5.65	5.00	3.08	1.65	1.38
10.8V	106	89.8	73.5	57.7	50.9	36.0	24.0	19.8	13.7	11.6	8.35	6.90	5.60	4.90	3.08	1.65	1.36

### Charging Method

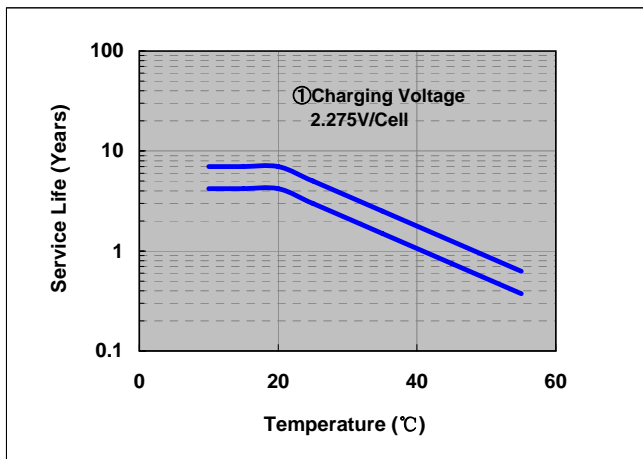
(25°C)

Trickle use	Control voltage 13.6-13.8V; Initial current 4.95A or smaller
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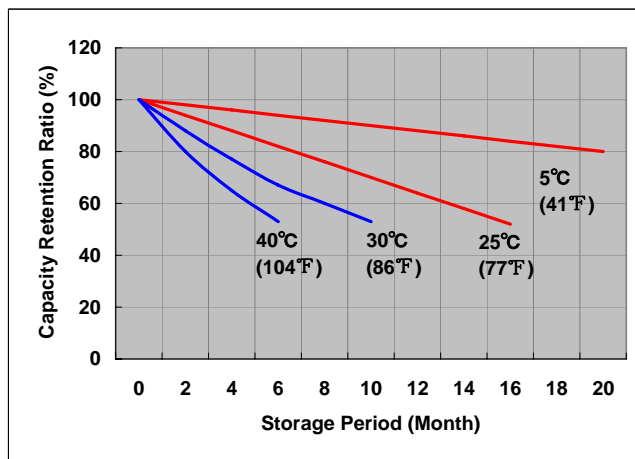
### Cut off voltage

Discharge current	1.65A-6.6A	6.6A-16.5A	16.5A-33A	33A-66A	66A-99A
Cut off voltage (V)	10.5	10.2	9.9	9.3	8.7

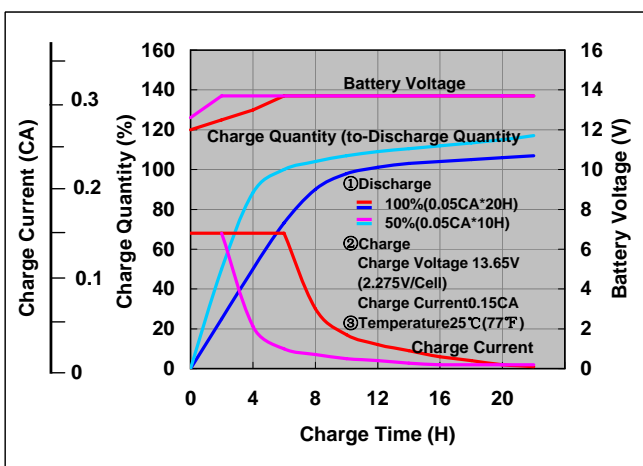
### Influence of Temperature on Trickle life



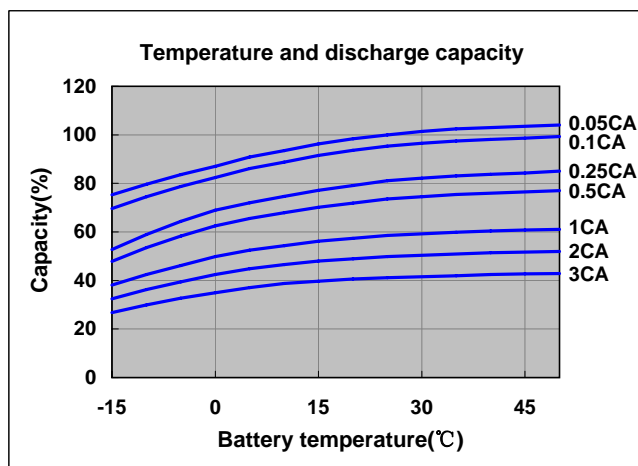
### Residual capacity test result



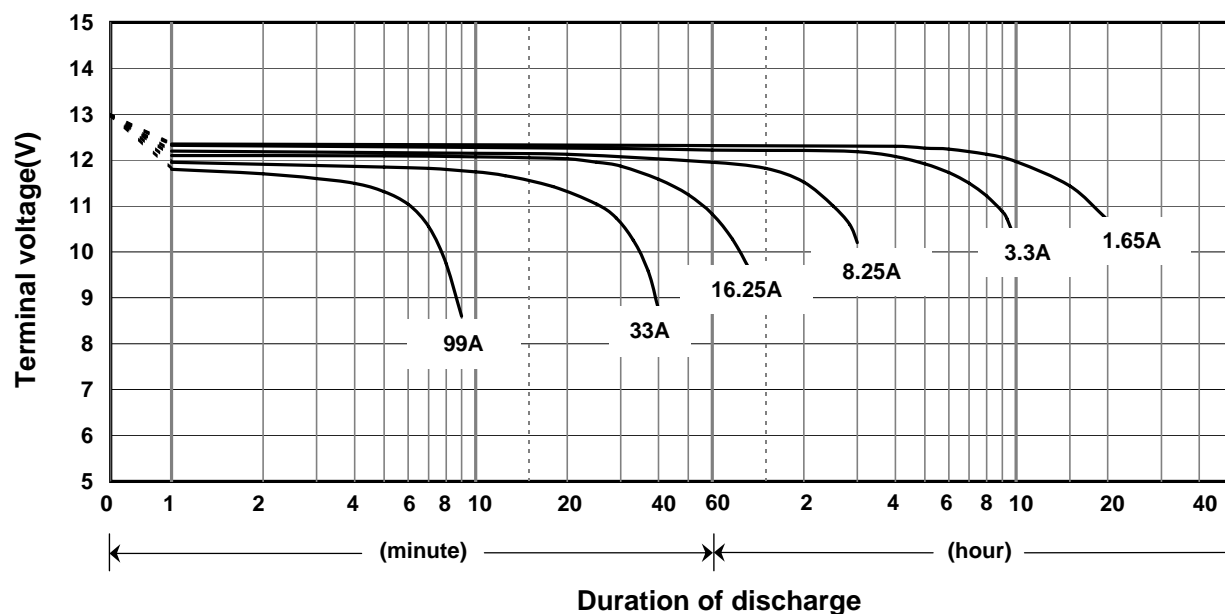
### Constant-voltage and constant-current charge characteristics



### Discharge capacity by temperature and by discharge current



### Discharge characteristics (25°C)

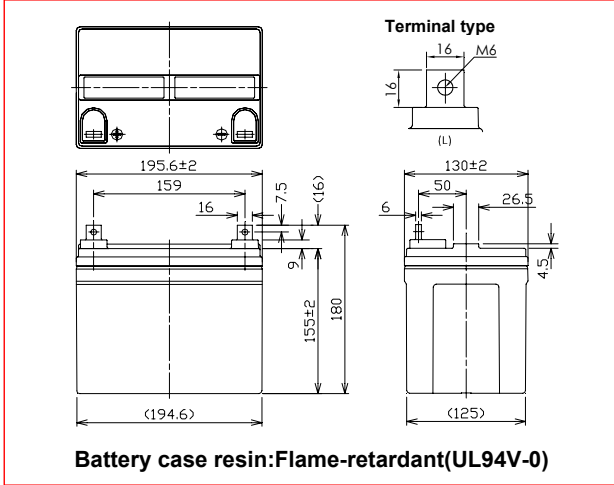


**LC-V1233**

For standby power supplies  
Expected trickle life:3-5years at 25°C, approx.5 years at 20°C



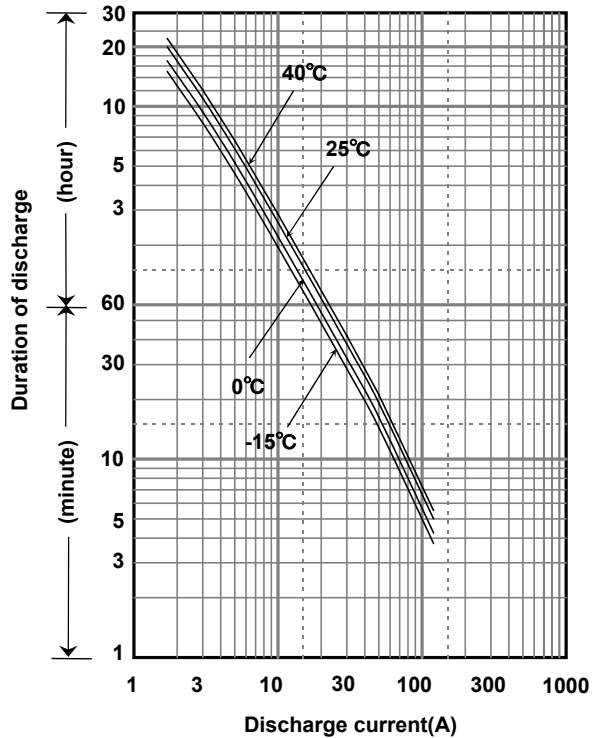
**■Dimensions(mm)**



**■Specification**

Nominal Voltage		12V
Rated Capacity(20HR)		33Ah
Dimensions	Length	195.6 mm
	Width	130 mm
	Height	155 mm
	Total height	180 mm
Approx. Mass		11.5 kg
Terminal		M6 Bolt and Nut type

**■Duration of discharge vs. discharge current**



**■Characteristics**

Capacity (25 °C)	20 hour rate	33Ah
	10 hour rate	30Ah
	5 hour rate	27Ah
	1 hour rate	20Ah
Internal Resistance	Fully charged battery (25 °C)	7 mΩ
Temperature Dependency of Capacity (20 hour rate)	40 °C	102%
	25 °C	100%
	0 °C	85%
	-15 °C	65%
Self Discharge (25 °C)	After 3 months	91%
	After 6 months	82%
	After 12 months	64%

**■Watt Table(25°C)**

Cut-off V	(Wattage/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	1546	1254	948	732	635	457	328	268	187	149	107	86.6	69.5	60.5	36.9	19.8	16.5
9.9V	1446	1182	928	721	630	452	322	262	182	148	105	85.4	68.3	60.0	36.9	19.8	16.5
10.2V	1379	1115	899	706	619	443	321	259	170	147	104	84.2	67.7	60.0	36.9	19.8	16.5
10.5V	1323	1051	868	684	603	433	314	256	168	146	104	84.2	67.7	60.0	36.9	19.8	16.5
10.8V	1182	1001	823	663	590	421	281	233	162	137	99.4	82.5	67.1	58.8	36.9	19.8	16.3

**■Ampere Table(25°C)**

Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	139	113	84.6	63.7	54.8	39.1	27.9	22.8	15.8	12.6	9.00	7.25	5.80	5.10	3.08	1.65	1.38
9.9V	130	106	82.9	62.7	54.4	38.6	27.4	22.2	15.5	12.5	8.85	7.15	5.70	5.00	3.08	1.65	1.38
10.2V	124	100	80.3	61.4	53.4	37.9	27.4	22.0	14.4	12.4	8.75	7.05	5.65	5.00	3.08	1.65	1.38
10.5V	119	94.3	77.5	59.5	52.0	37.0	26.8	21.8	14.3	12.3	8.70	7.05	5.65	5.00	3.08	1.65	1.38
10.8V	106	89.8	73.5	57.7	50.9	36.0	24.0	19.8	13.7	11.6	8.35	6.90	5.60	4.90	3.08	1.65	1.36

### ■ Charging Method

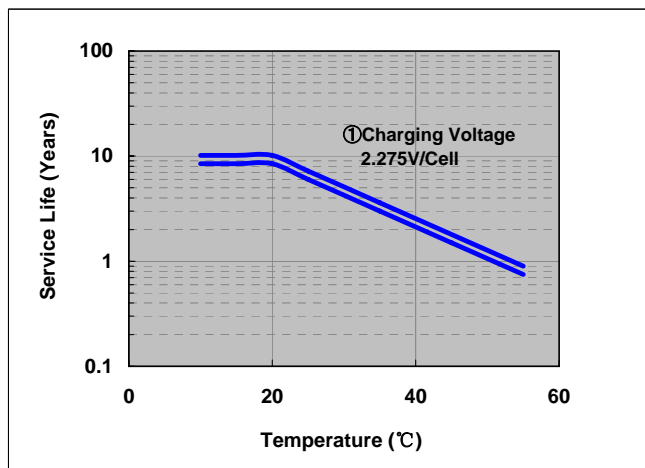
(25°C)

Trickle use	Control voltage 13.6-13.8V; Initial current 4.95A or smaller
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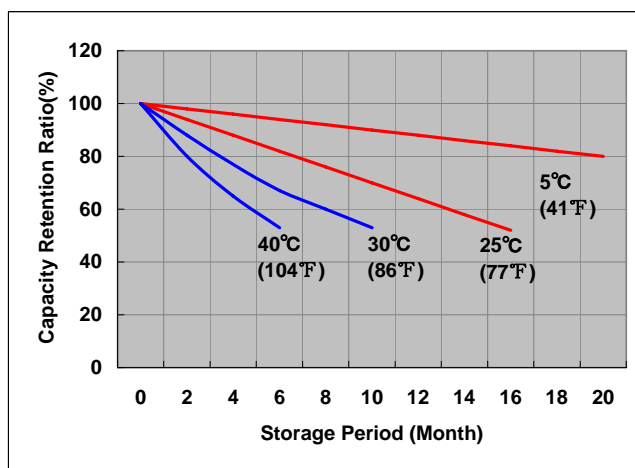
### ■ Cut off voltage

Discharge current	1.65A-6.6A	6.6A-16.5A	16.5A-33A	33A-66A	66A-99A
Cut off voltage(V)	10.5	10.2	9.9	9.3	8.7

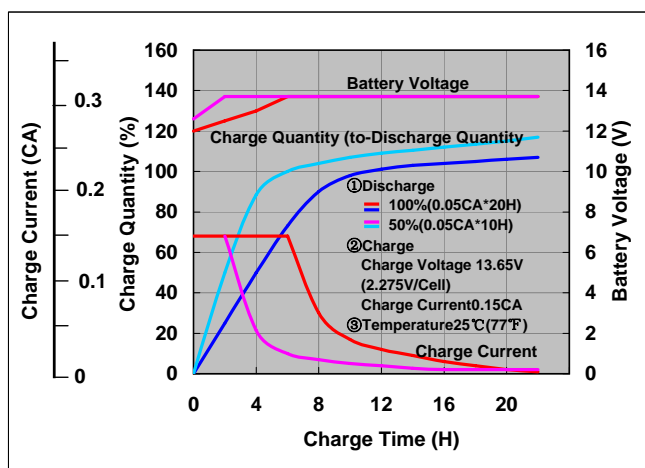
### ■ Influence of Temperature on Trickle life



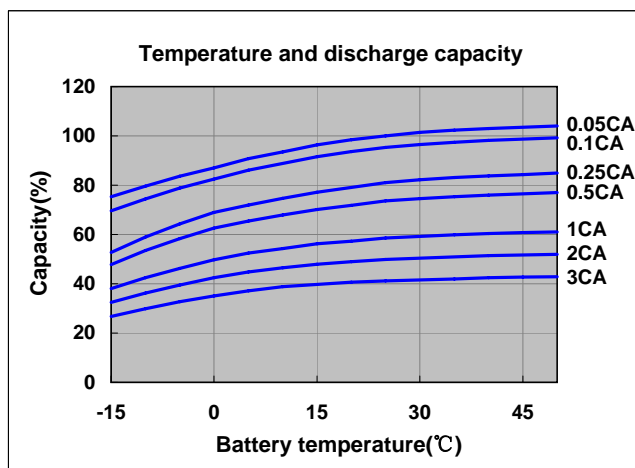
### ■ Residual capacity test result



### ■ Constant-voltage and constant-current charge characteristics



### ■ Discharge capacity by temperature and by discharge current



### ■ Discharge characteristics(25°C)

