

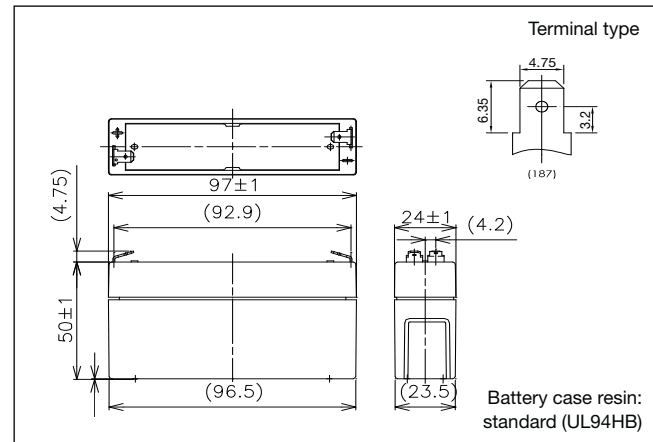
LC-R061R3P*1



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

For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

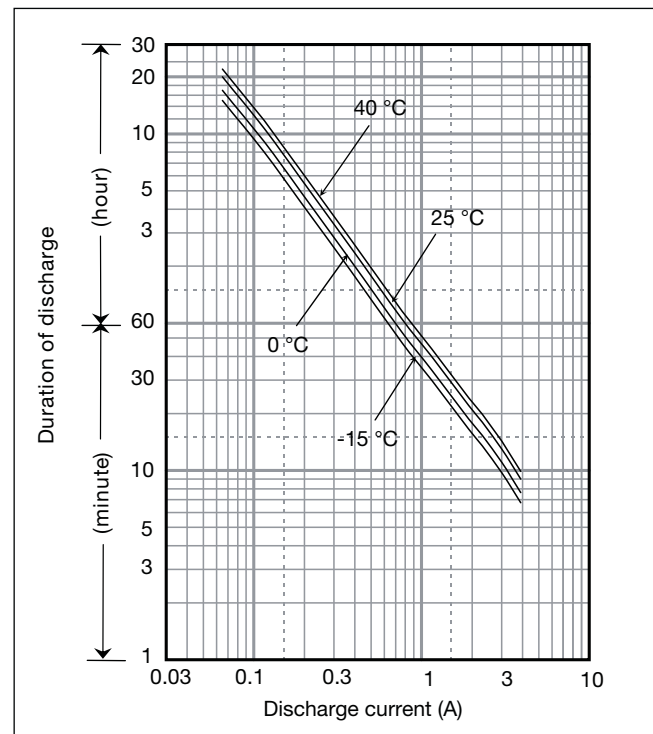
Dimensions (mm)



Specifications

Nominal voltage	6V	
Nominal capacity (20 hour rate)	1.3Ah	
Dimensions	Length	97mm
	Width	24mm
	Height	50mm
	Total Height	55mm
Approx. mass	0.3kg	
Terminal	Faston 187	

Duration of discharge vs Discharge current



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)	50mΩ
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

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

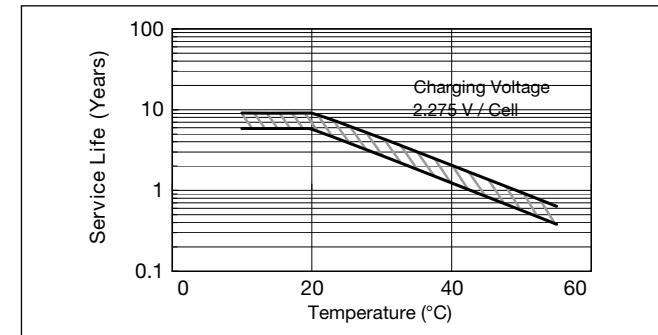
Cut-off V	(Ampere/Battery)																							
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h							
4.8V	7.02	5.53	3.59	2.67	2.22	1.64	1.16	0.921	0.632	0.488	0.361	0.276	0.228	0.183	0.121	0.0655	0.0547							
4.95V	6.52	5.18	3.52	2.65	2.18	1.63	1.15	0.921	0.619	0.484	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							

*1 This battery is also available with a flame retardant battery case resin (UL94 V-0).

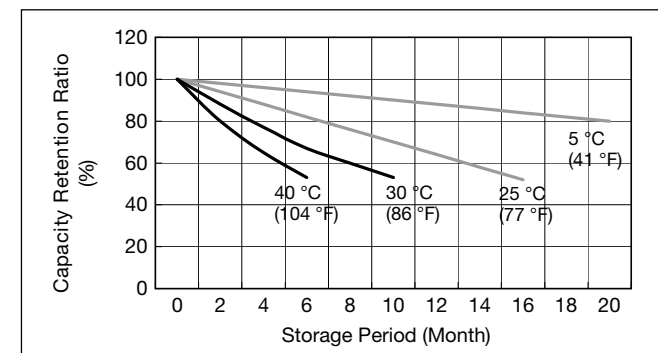
Charging Method

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

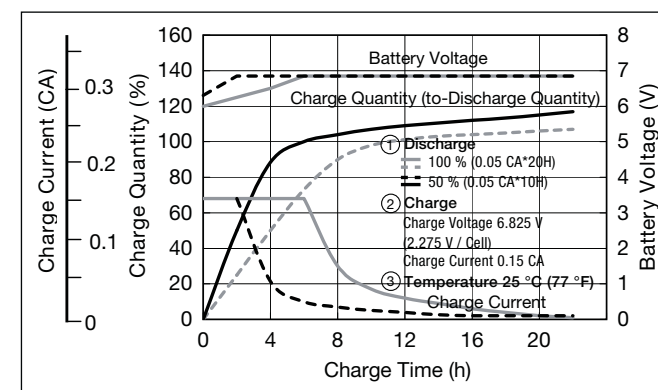
Influence of Temperature on Trickle life



Residual capacity vs storage period



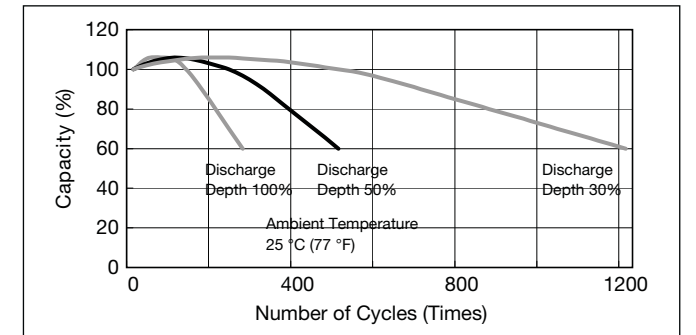
Constant-voltage and constant-current charge characteristics for Trickle use



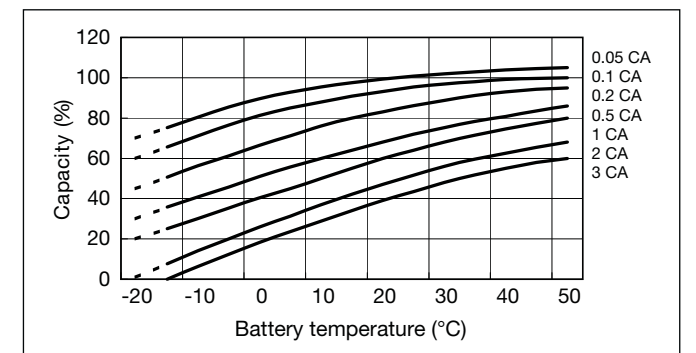
Cut off voltage

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

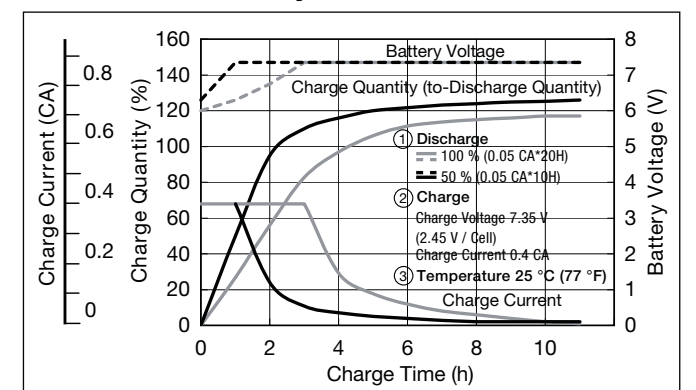
Cycle life vs Depth of discharge



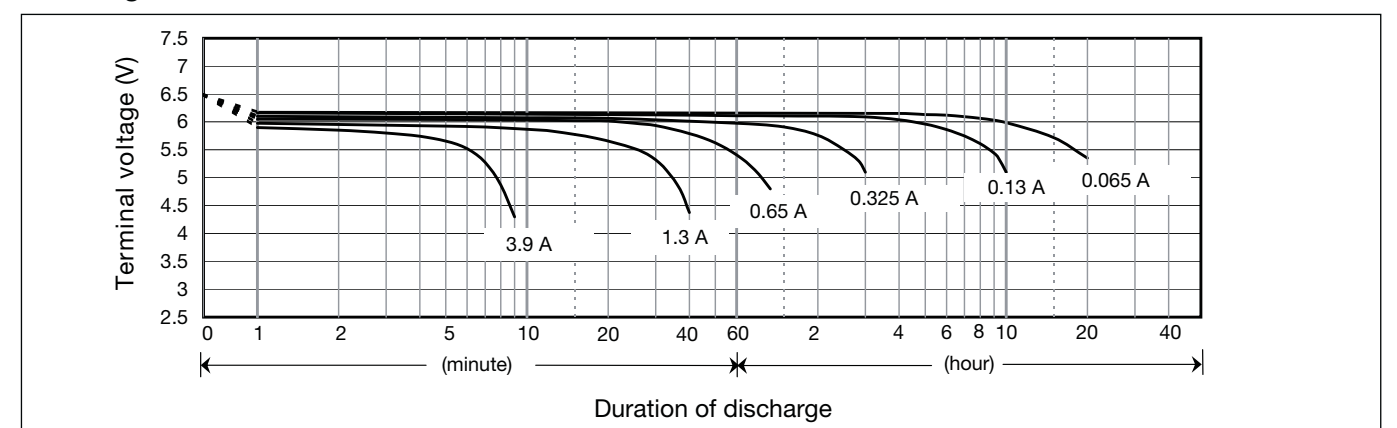
Discharge capacity by temperature and by discharge current



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



Discharge characteristics

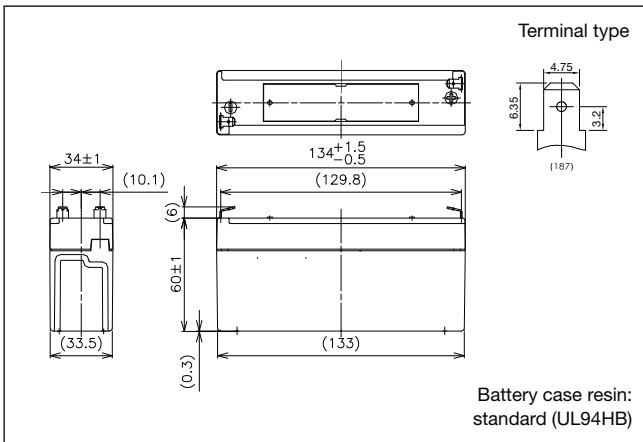


LC-R063R4P*1



For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

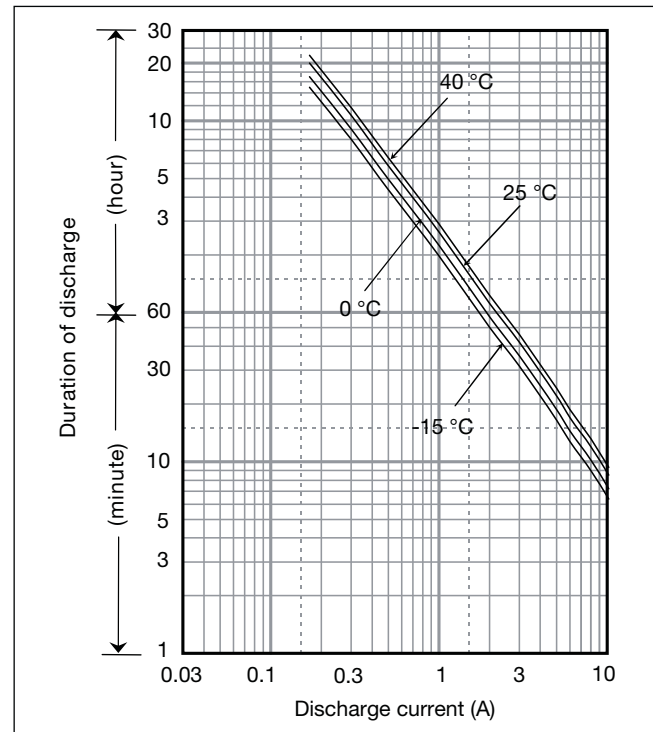
Dimensions (mm)



Specifications

Nominal voltage	6V	
Nominal capacity (20 hour rate)	3.4Ah	
Dimensions	Length	134mm
	Width	34mm
	Height	60mm
	Total Height	66mm
Approx. mass	0.62kg	
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)	30mΩ
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

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

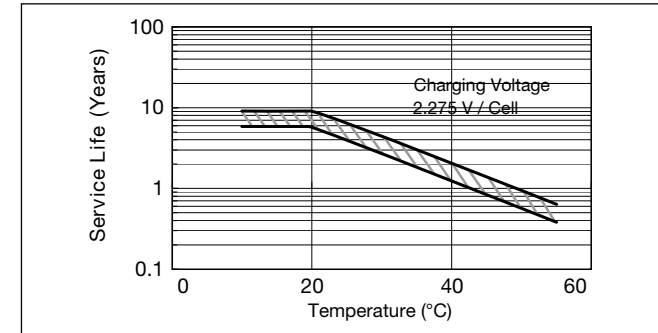
Cut-off V	(Ampere/Battery)																							
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h							
4.8V	18.4	14.4	9.40	6.99	5.81	4.30	3.02	2.41	1.65	1.27	0.944	0.722	0.595	0.478	0.316	0.171	0.143							
4.95V	17.0	13.6	9.21	6.94	5.71	4.25	3.00	2.41	1.62	1.27	0.940	0.718	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							

*1 This battery is also available with a flame retardant battery case resin (UL94 V-0).

Charging Method

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

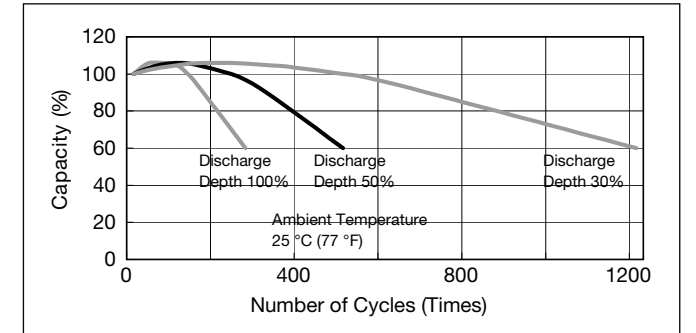
Influence of Temperature on Trickle life



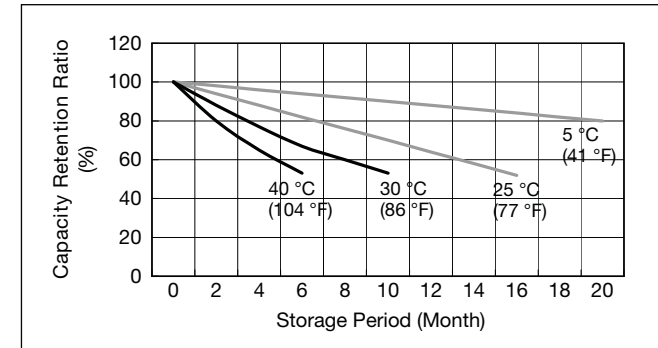
Cut off voltage

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

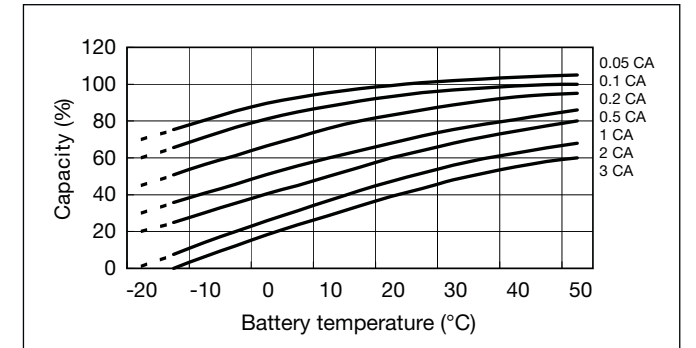
Cycle life vs Depth of discharge



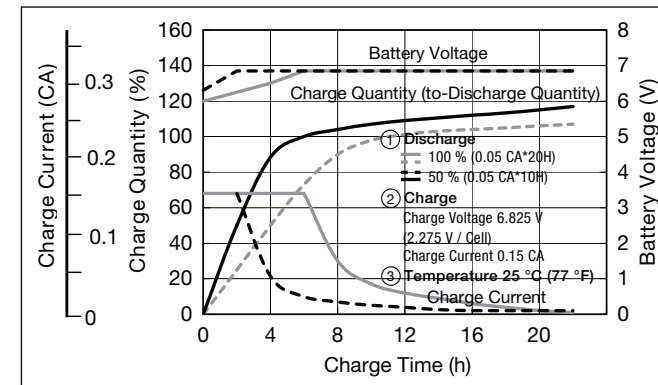
Residual capacity vs storage period



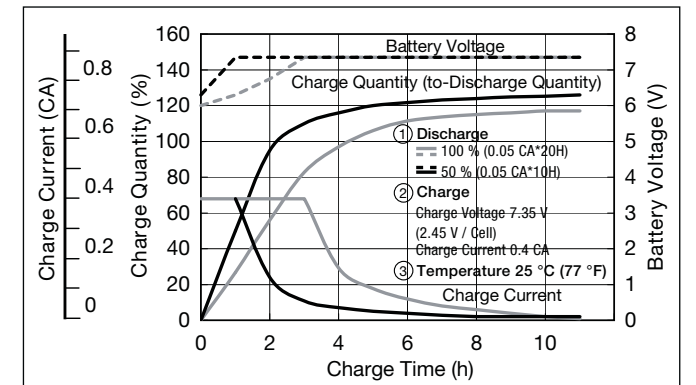
Discharge capacity by temperature and by discharge current



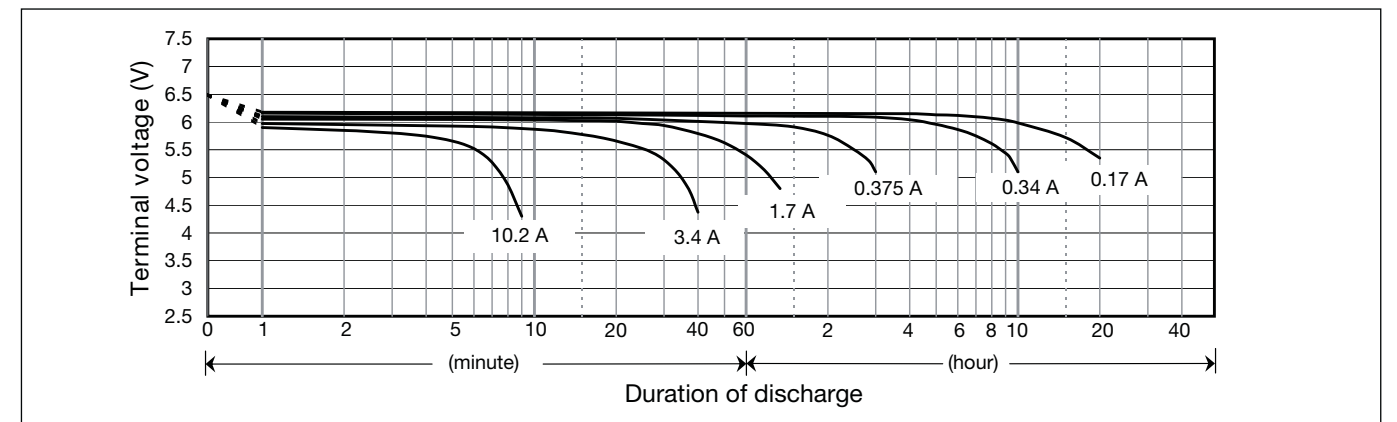
Constant-voltage and constant-current charge characteristics for Trickle use



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



Discharge characteristics



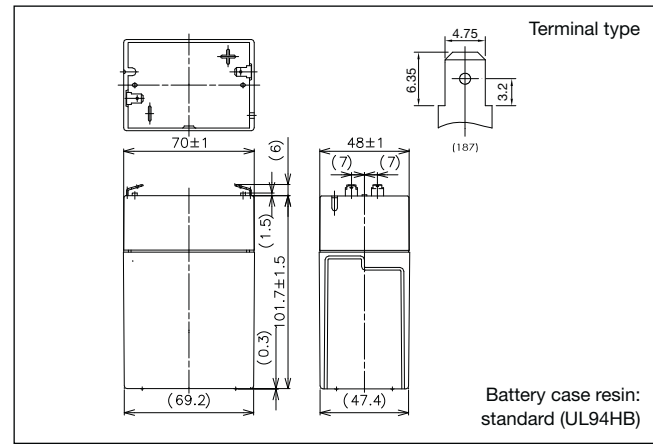
LC-R064R5P*1



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

For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

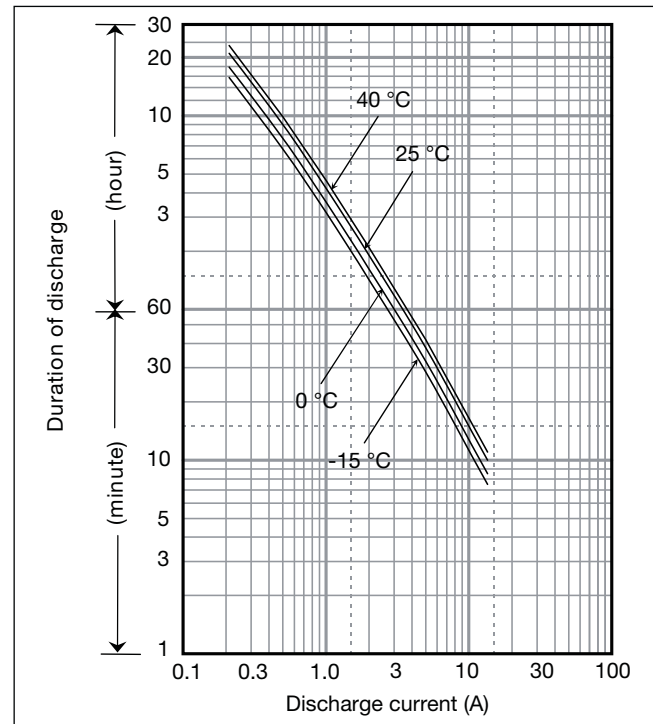
Dimensions (mm)



Specifications

Nominal voltage	6V	
Nominal capacity (20 hour rate)	4.5Ah	
Dimensions	Length	70mm
	Width	48mm
	Height	102mm
	Total Height	108mm
Approx. mass	0.72kg	
Terminal	Faston 187	

Duration of discharge vs Discharge current



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)	20mΩ
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

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	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	94	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	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	87	74	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

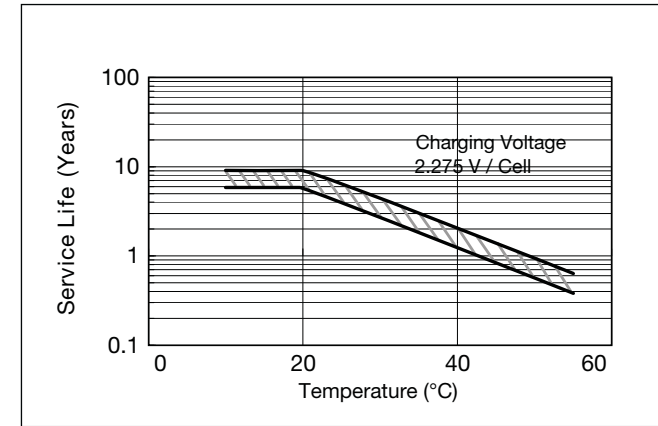
Cut-off V	(Ampere/Battery)																	
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h	
4.8V	24.3	19.13	12.44	9.25	7.69	5.69	4.00	3.19	2.19	1.69	1.25	0.956	0.788	0.633	0.419	0.227	0.189	
4.95V	22.6	17.94	12.19	9.19	7.56	5.63	3.98	3.19	2.14	1.68	1.24	0.950	0.781	0.630	0.417	0.226	0.189	
5.1V	20.8	16.81	11.88	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	15.06	11.00	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	13.31	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	

*1 This battery is also available with a flame retardant battery case resin (UL94 V-0).

Charging Method

Trickle use	Control voltage: 6.8 - 6.9V; Initial current: 0.675A or smaller
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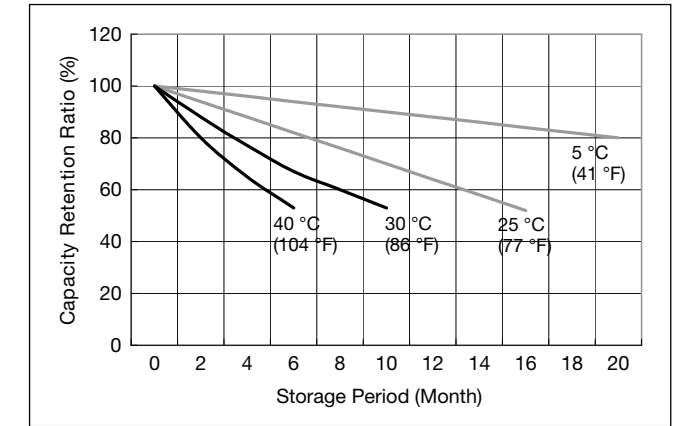
Influence of Temperature on Trickle life



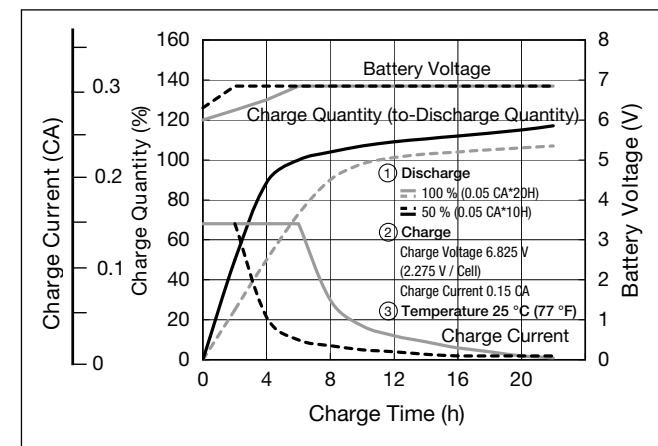
Cut off voltage

Discharge current	0.225 A - 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

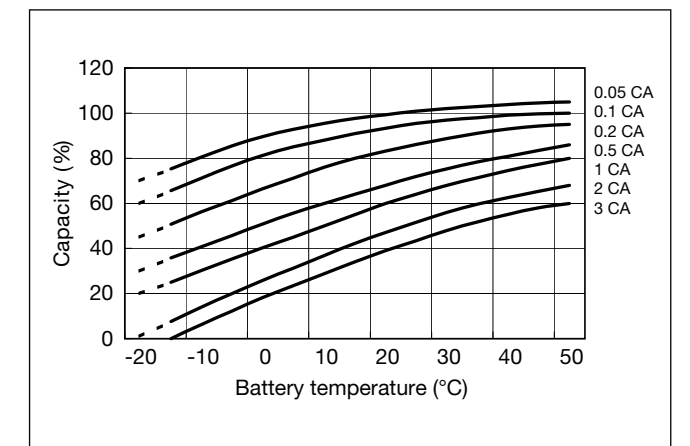
Residual capacity vs storage period



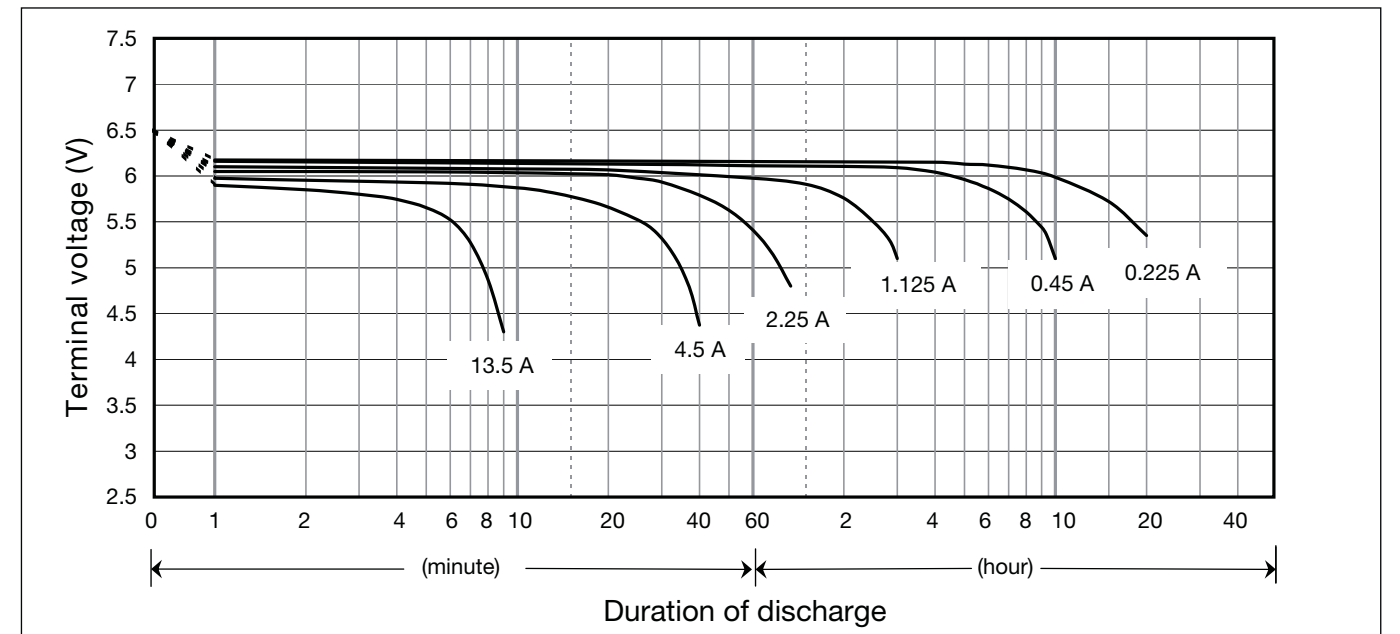
Constant-voltage and constant-current charge characteristics for Trickle use



Discharge capacity by temperature and by discharge current



Discharge characteristics



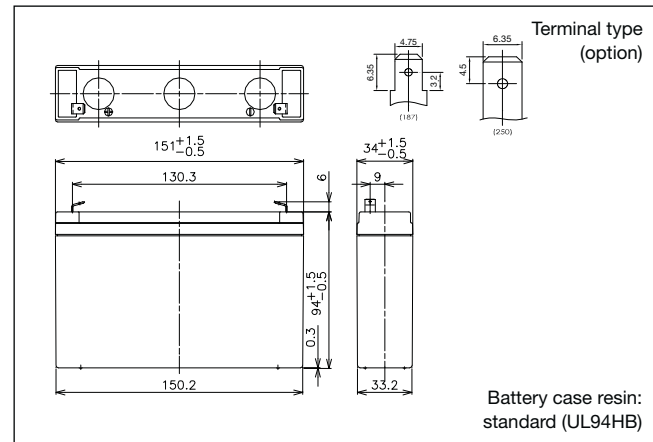
LC-R067R2P*1



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

For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

Dimensions (mm)

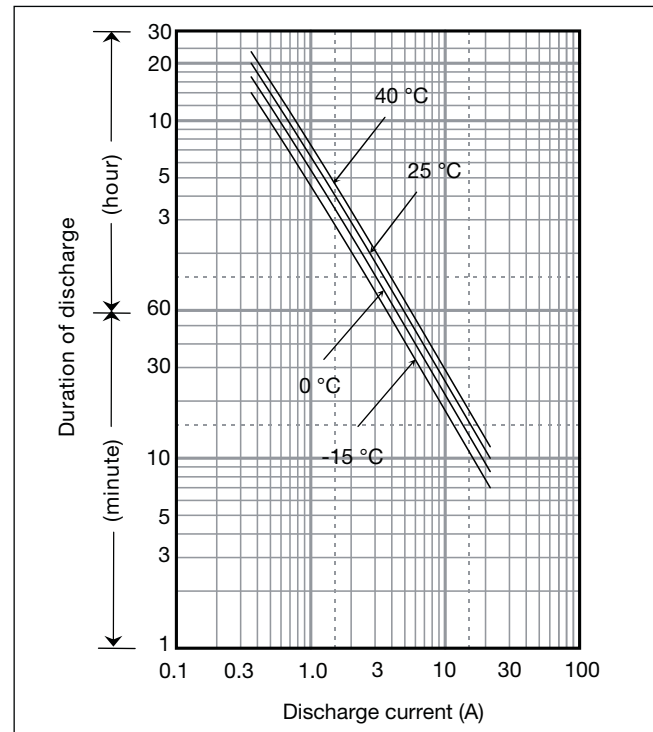


Battery case resin: standard (UL94HB)

Specifications

Nominal voltage	6V	
Nominal capacity (20 hour rate)	7.2Ah	
Dimensions	Length	151mm
	Width	34mm
	Height	94mm
	Total Height	100mm
Approx. mass	1.26kg	
Terminal	Faston 187 or Faston 250 with hole	

Duration of discharge vs Discharge current



Characteristics

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

Watt Table

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	99	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	88	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

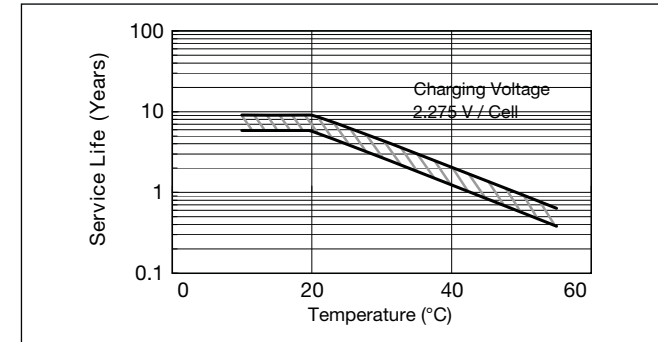
Cut-off V	(Ampere/Battery)																
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
4.8V	38.9	30.6	19.9	14.8	12.3	9.1	6.4	5.1	3.5	2.7	2.00	1.50	1.26	1.00	0.67	0.36	0.30
4.95V	36.1	28.7	18.5	14.8	12.1	9.0	6.4	5.1	3.4	2.6	2.00	1.50	1.25	1.00	0.67	0.36	0.30
5.1V	33.3	26.9	19.0	14.4	11.9	8.9	6.3	5.0	3.3	2.5	1.95	1.50	1.24	1.00	0.66	0.36	0.30
5.25V	29.6	24.1	17.6	13.4	11.3	8.7	6.2	4.9	3.3	2.5	1.95	1.50	1.23	1.00	0.66	0.36	0.30
5.4V	25.0	21.3	15.7	12.5	11.0	8.4	6.1	4.8	3.2	2.4	1.90	1.50	1.20	1.00	0.65	0.35	0.30

*1 This battery is also available with a flame retardant battery case resin (UL94 V-0).

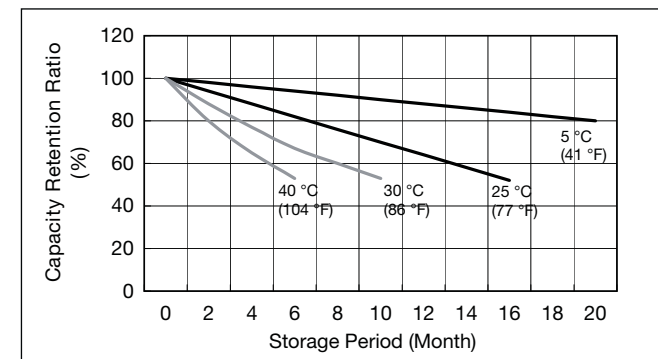
Charging Method

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

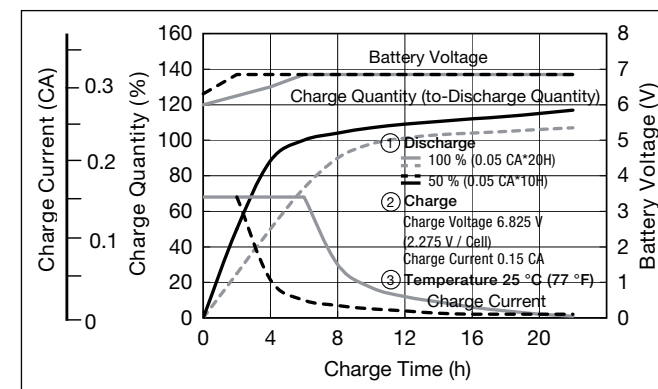
Influence of Temperature on Trickle life



Residual capacity vs storage period



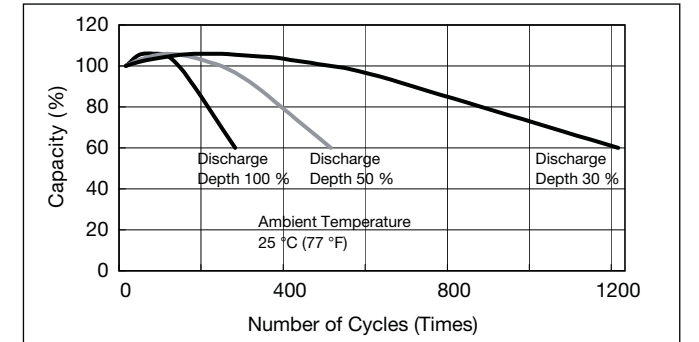
Constant-voltage and constant-current charge characteristics for Trickle use



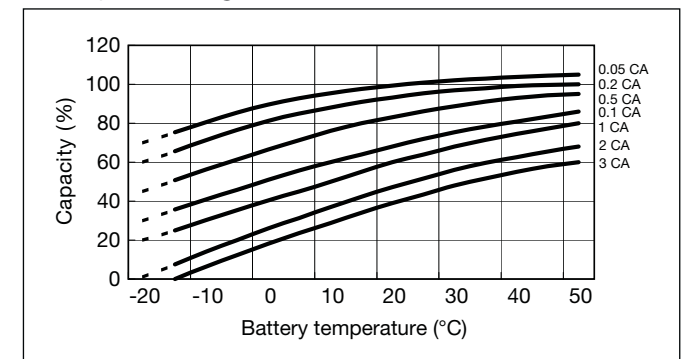
Cut off voltage

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

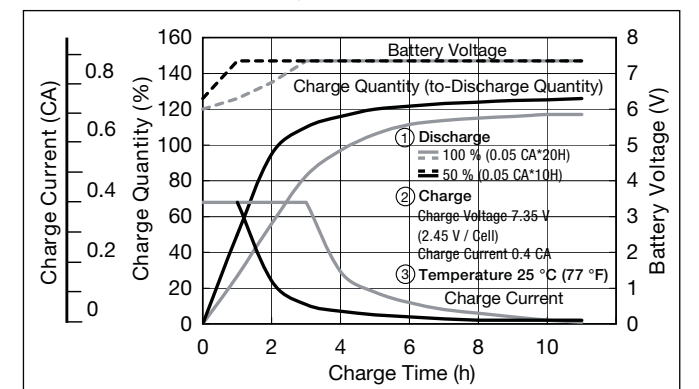
Cycle life vs Depth of discharge



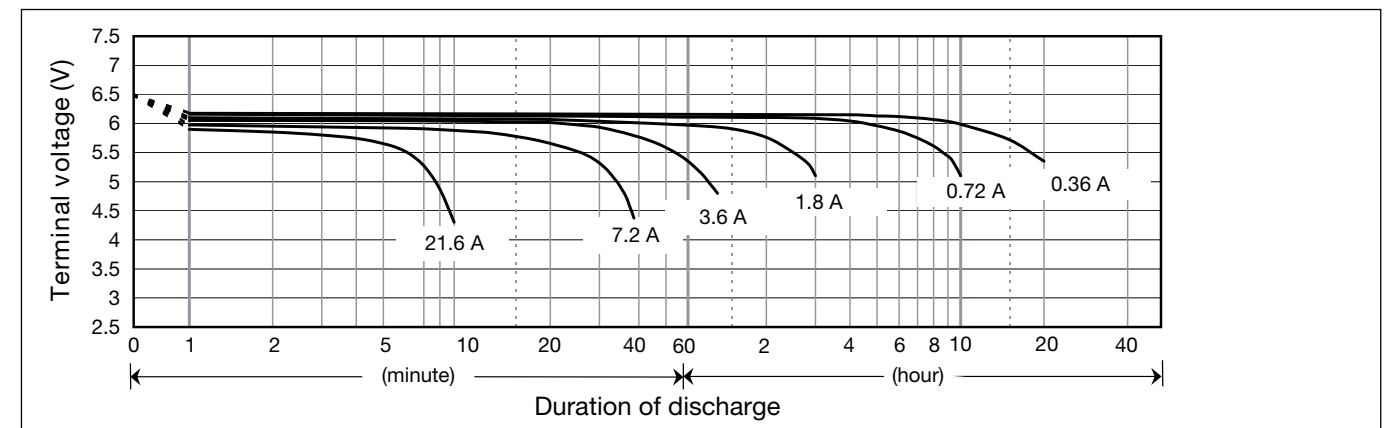
Discharge capacity by temperature and by discharge current



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



Discharge characteristics

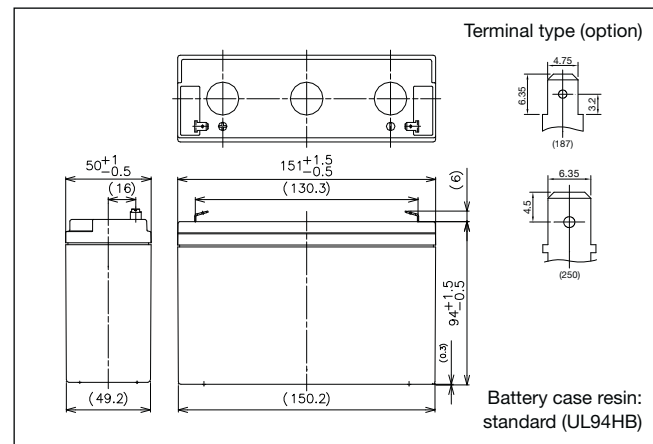


LC-R0612P*1

For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.



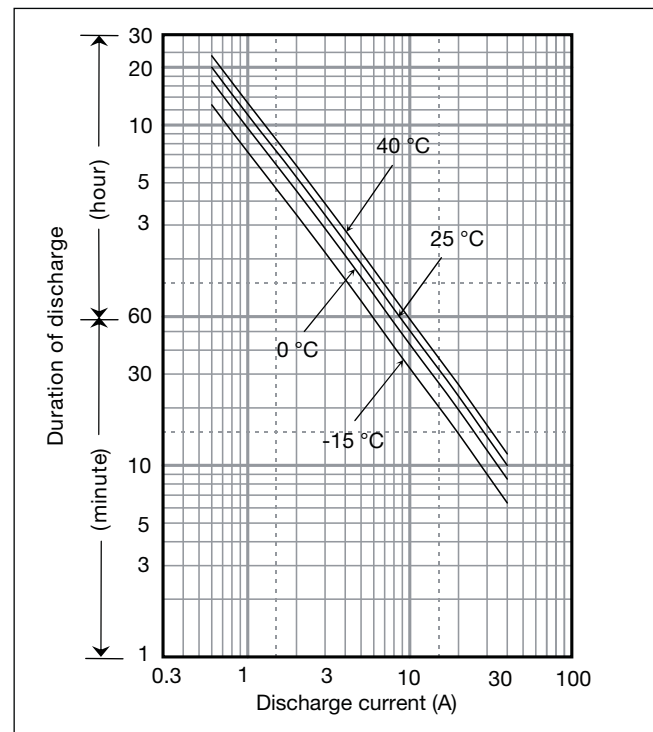
Dimensions (mm)



Specifications

Nominal voltage	6V	
Nominal capacity (20 hour rate)	12Ah	
Dimensions	Length	151mm
	Width	50mm
	Height	94mm
	Total Height	100mm
Approx. mass	2.00kg	
Terminal	Faston 187 or Faston 250 with hole	

Duration of discharge vs Discharge current



Characteristics

Capacity (25°C)	20 hour rate	12.0Ah
	10 hour rate	11.3Ah
	5 hour rate	10.4Ah
	1 hour rate	8.1Ah
Internal resistance	Fully charged battery (25°C)	15mΩ
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

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	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

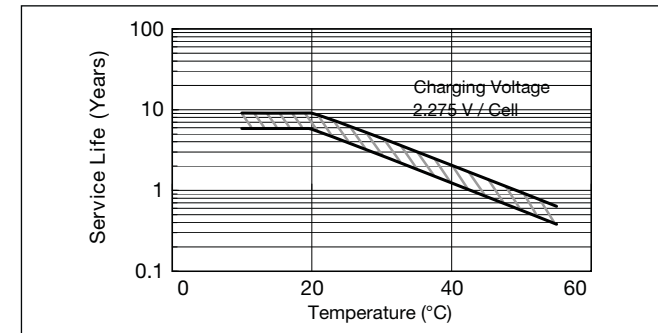
Cut-off V	(Ampere/Battery)																							
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h							
4.8V	61.1	50.1	34.3	25.9	21.3	15.6	11.7	8.90	5.95	4.60	3.20	2.41	2.01	1.81	1.11	0.602	0.502							
4.95V	58.4	48.2	33.3	25.0	20.8	15.1	11.5	8.80	5.92	4.58	3.18	2.41	2.01	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							

*1 This battery is also available with a flame retardant battery case resin (UL94 V-0).

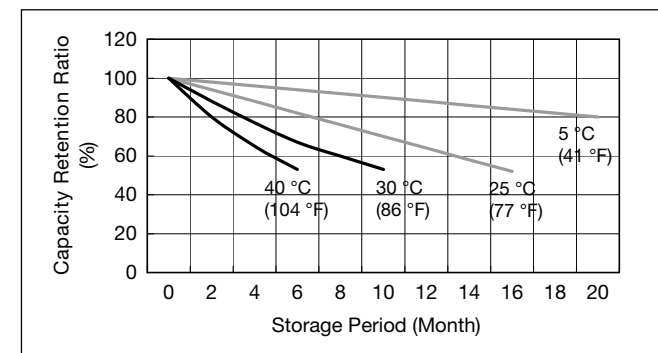
Charging Method

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

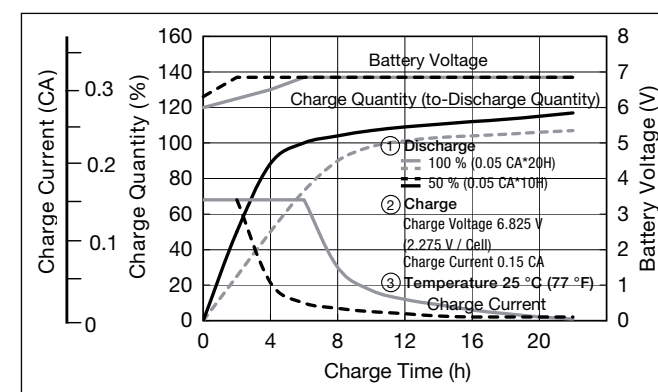
Influence of Temperature on Trickle life



Residual capacity vs storage period



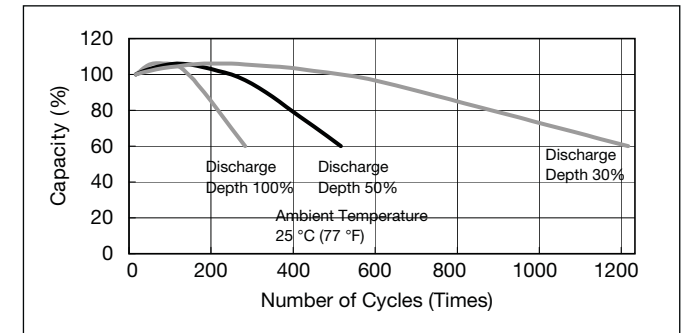
Constant-voltage and constant-current charge characteristics for Trickle use



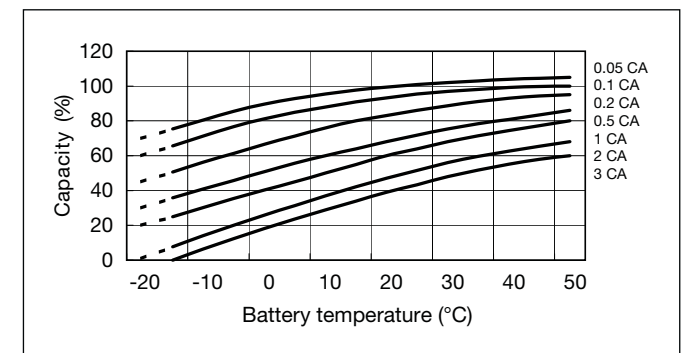
Cut off voltage

Discharge current	0.6A - 2.4A	2.4A - 6A	6A - 12A	12A - 24A	24A - 36A
Cut off voltage (V)	5.25	5.1	4.95	5.65	4.35

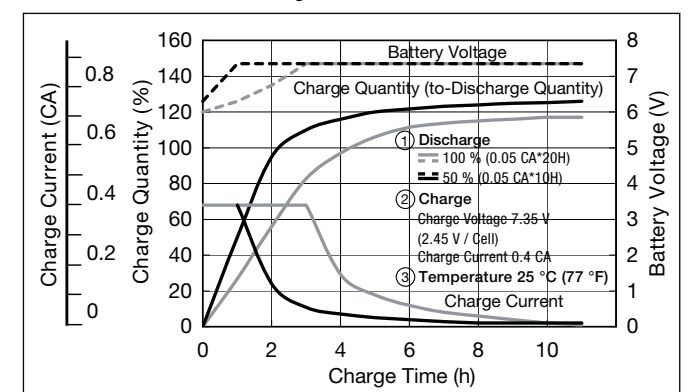
Cycle life vs Depth of discharge



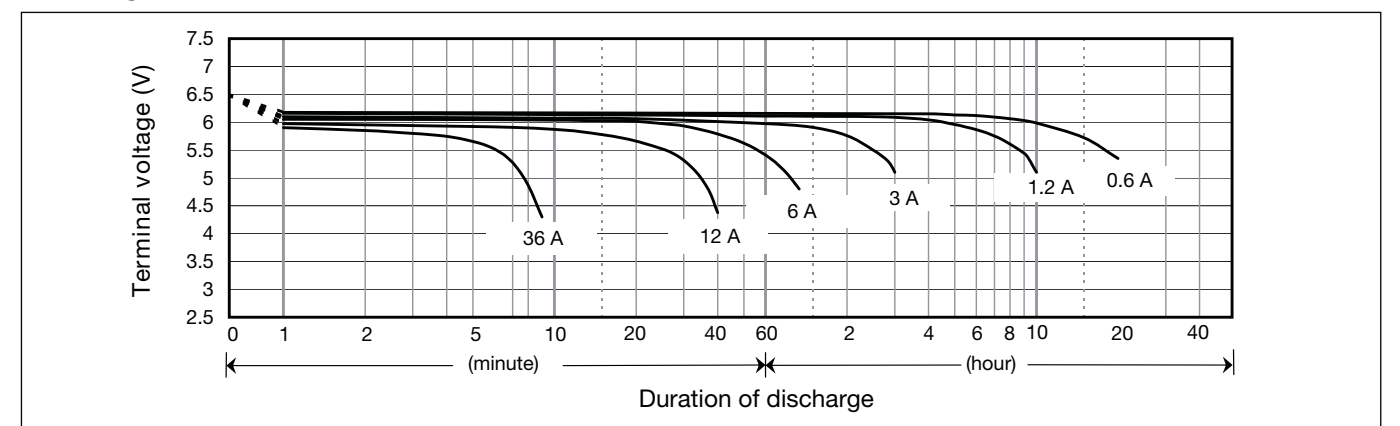
Discharge capacity by temperature and by discharge current



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



Discharge characteristics

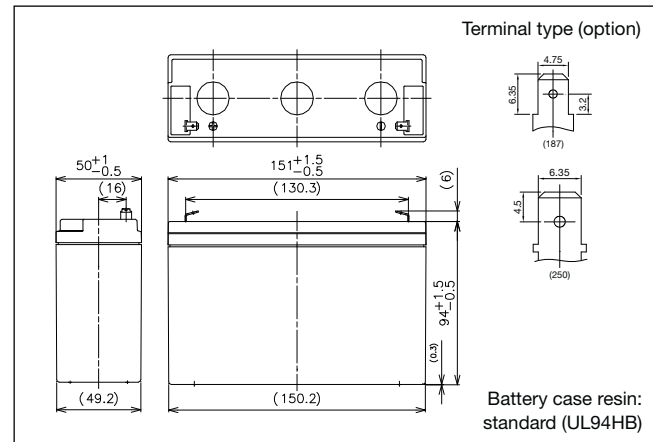


LC-R0615P



For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

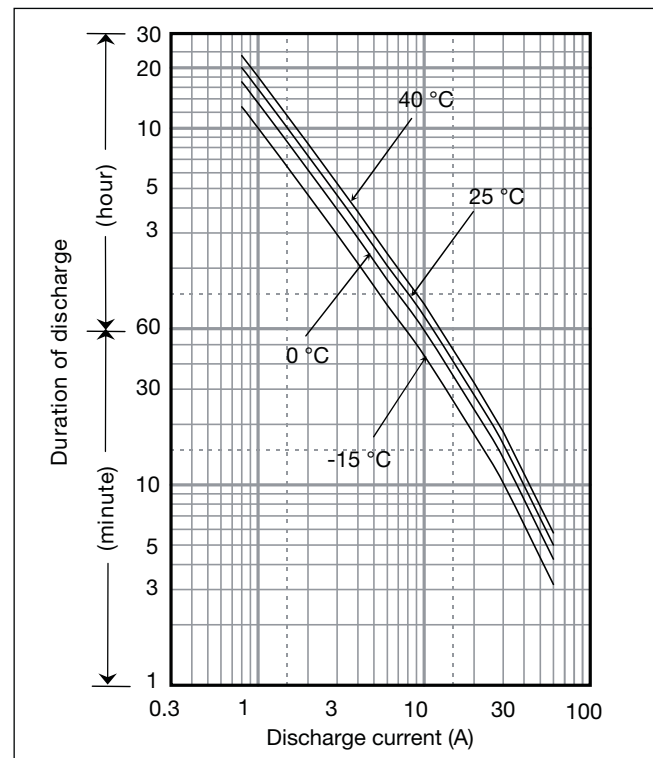
Dimensions (mm)



Specifications

Nominal voltage	6V	
Nominal capacity (20 hour rate)	15Ah	
Dimensions	Length	151mm
	Width	50mm
	Height	94mm
	Total Height	100mm
Approx. mass	2.10kg	
Terminal	Faston 187 or Faston 250 with hole	

Duration of discharge vs Discharge current



Characteristics

Capacity (25°C)	20 hour rate	12.0Ah
	10 hour rate	11.3Ah
	5 hour rate	10.4Ah
Internal resistance	Fully charged battery (25°C)	15mΩ
	1 hour rate	8.1Ah
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

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	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

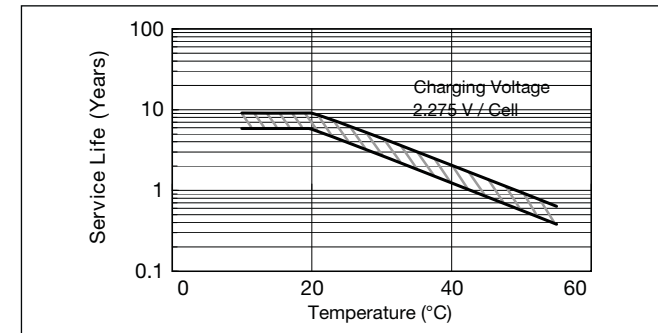
Ampere Table

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	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

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

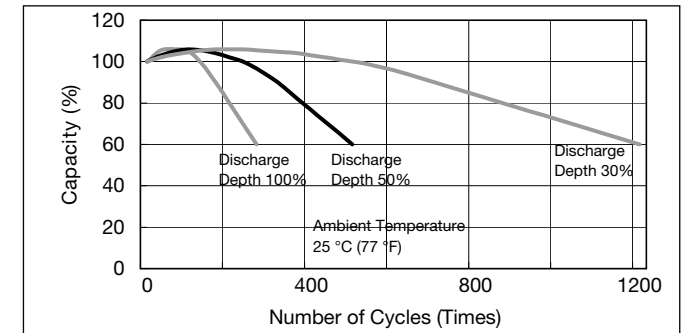
Influence of Temperature on Trickle life



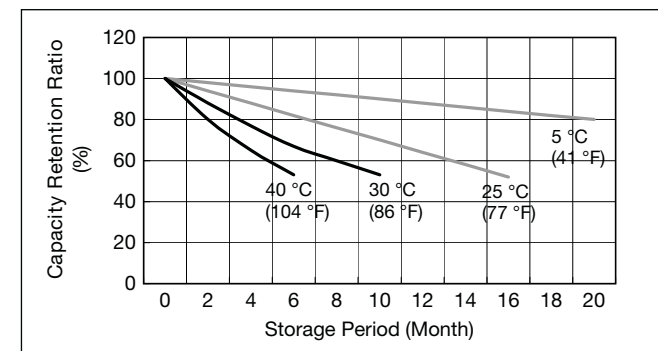
Cut off voltage

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

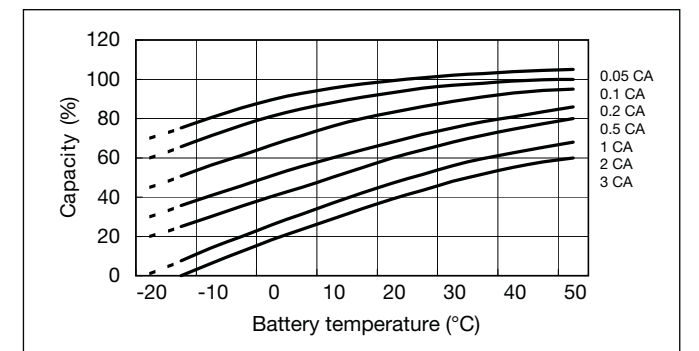
Cycle life vs Depth of discharge



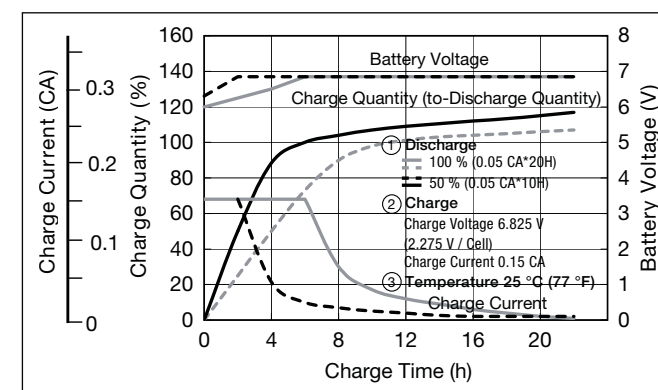
Residual capacity vs storage period



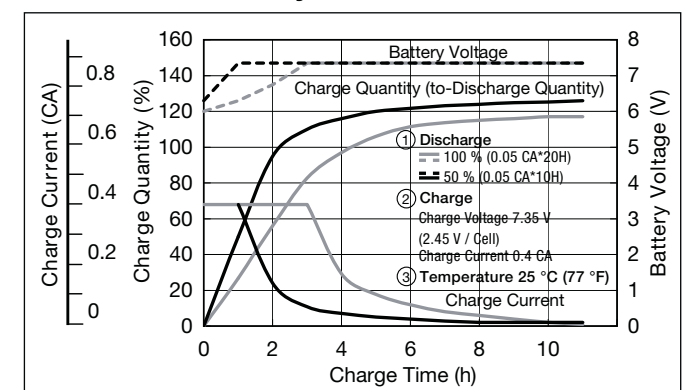
Discharge capacity by temperature and by discharge current



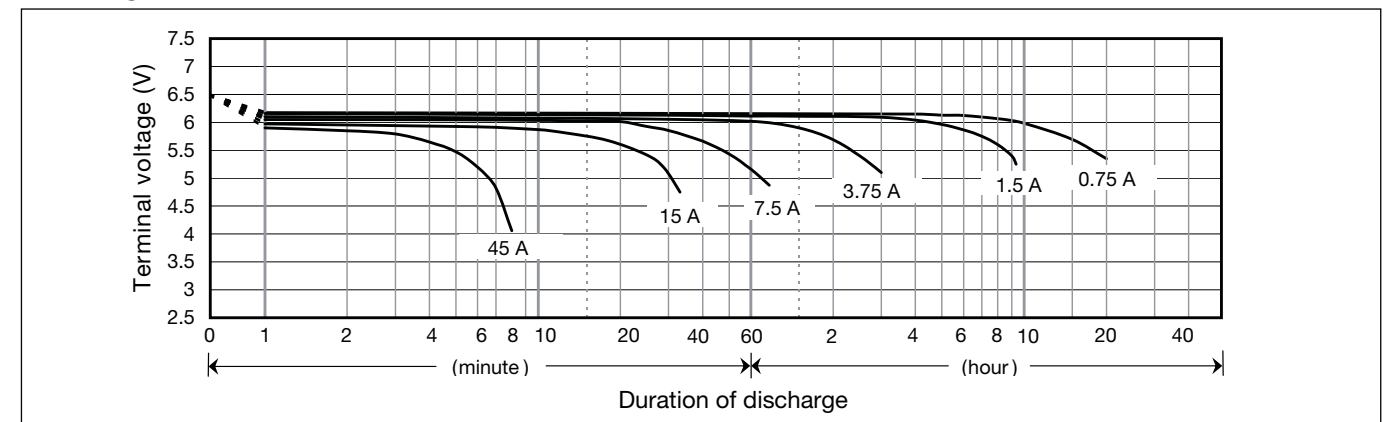
Constant-voltage and constant-current charge characteristics for Trickle use



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



Discharge characteristics



LC-R121R3PG

For main and standby power supplies. Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

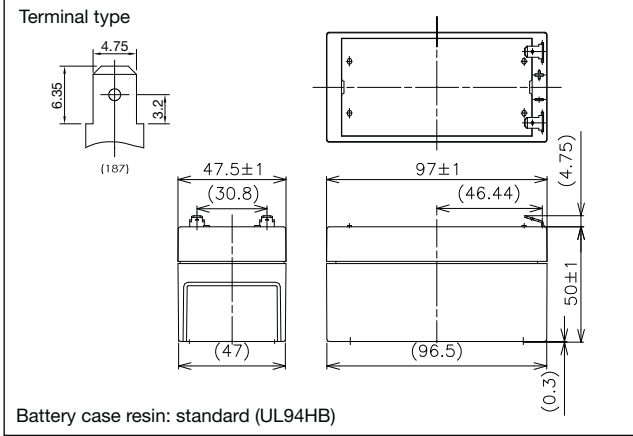
VdS

G196049



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

Dimensions (mm)

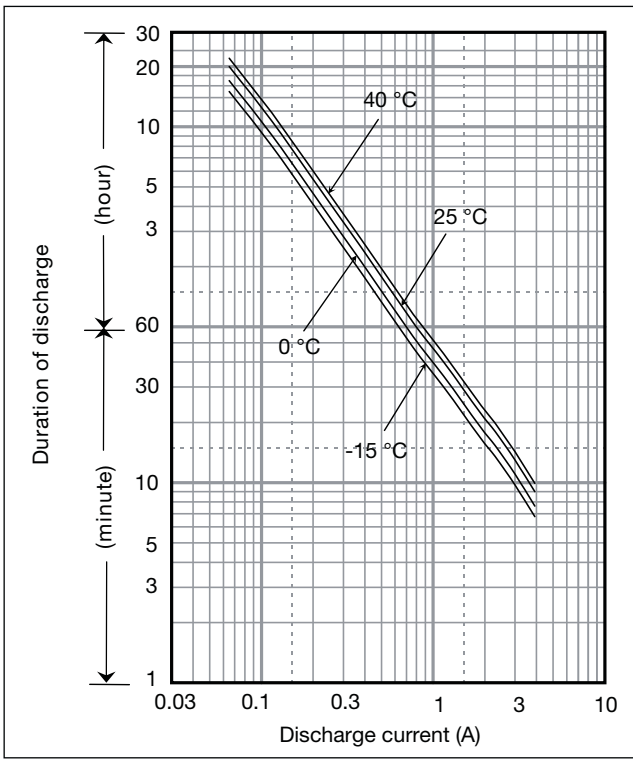


Battery case resin: standard (UL94HB)

Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	1.3Ah	
Dimensions	Length	97mm
	Width	47.5mm
	Height	50mm
	Total Height	55mm
Approx. mass	0.59kg	
Terminal	Faston 187	

Duration of discharge vs Discharge current



Characteristics

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

Watt Table

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

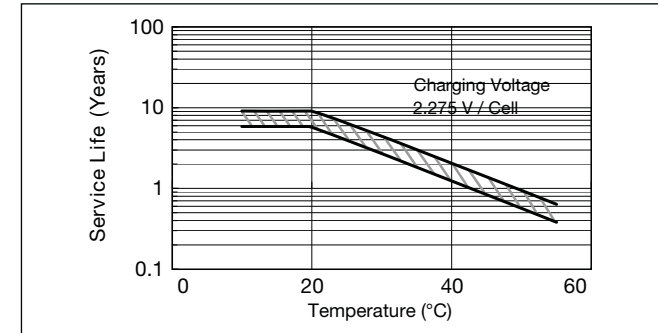
Ampere Table

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

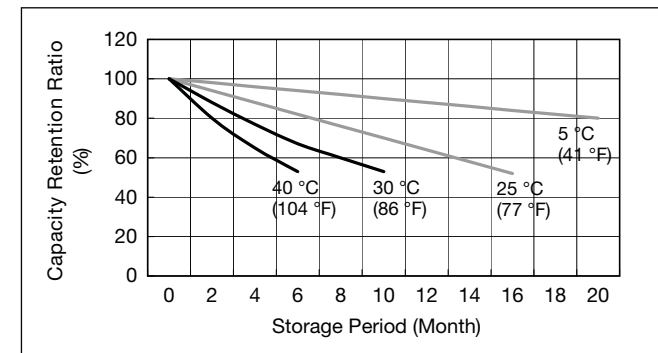
Charging Method

Cycle use	Control voltage: 14.5 - 14.9V; Initial current 0.52A or smaller
Trickle use	Control voltage: 13.6 - 13.8V; Initial current: 1.08A or smaller

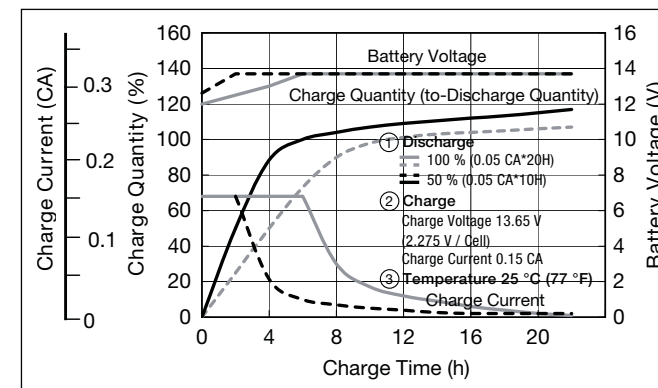
Influence of Temperature on Trickle life



Residual capacity vs storage period



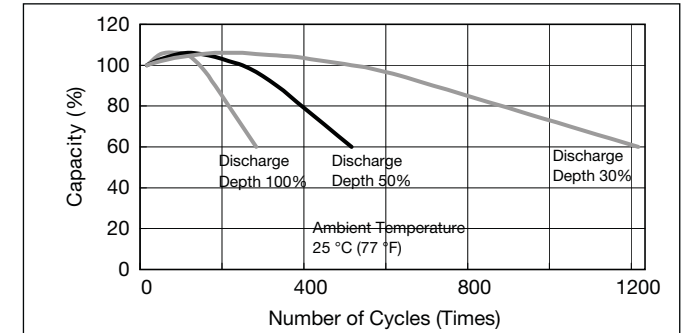
Constant-voltage and constant-current charge characteristics for Trickle use



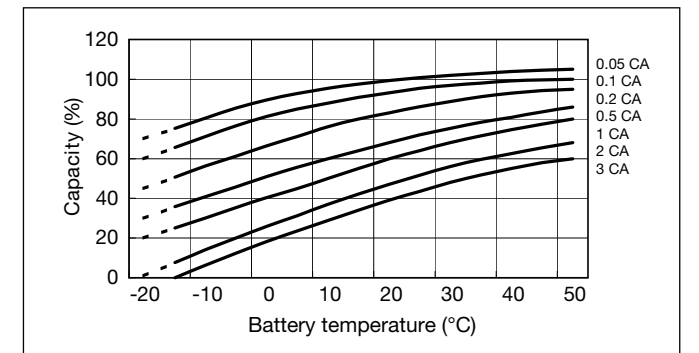
Cut off voltage

Discharge current	0.065 A - 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

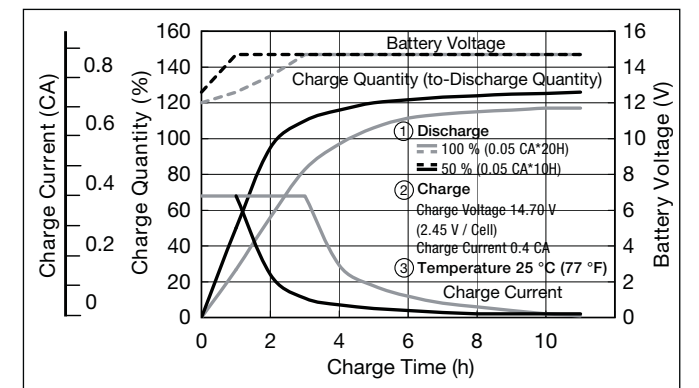
Cycle life vs Depth of discharge



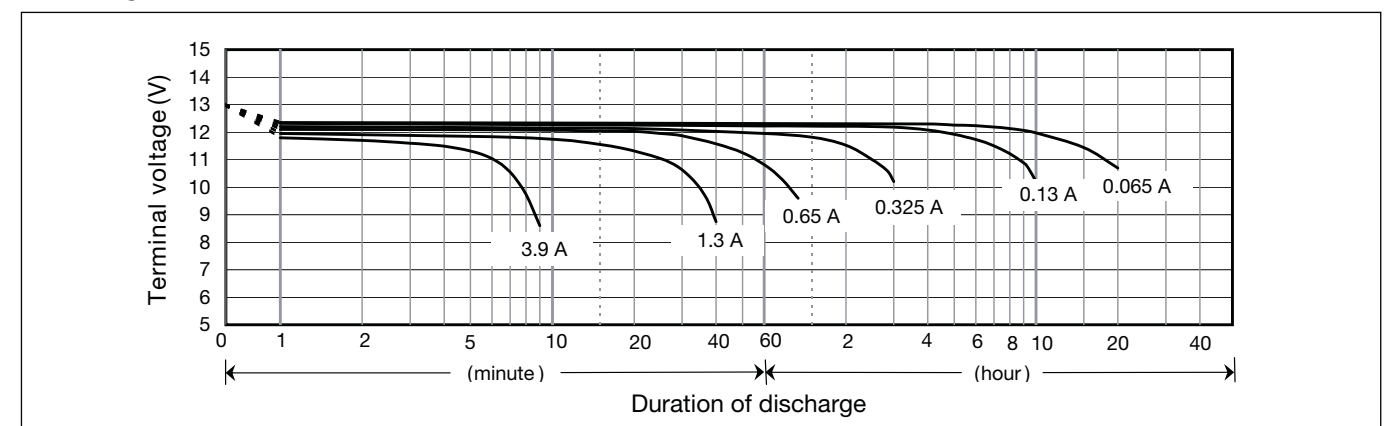
Discharge capacity by temperature and by discharge current



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



Discharge characteristics



LC-R122R2PG

For main and standby power supplies. Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

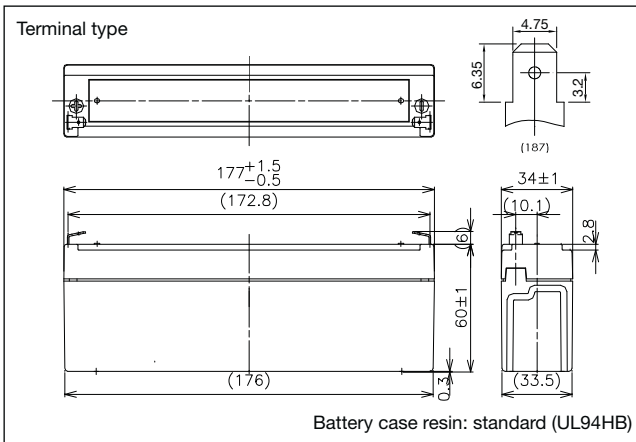
VdS

G188151



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

Dimensions (mm)

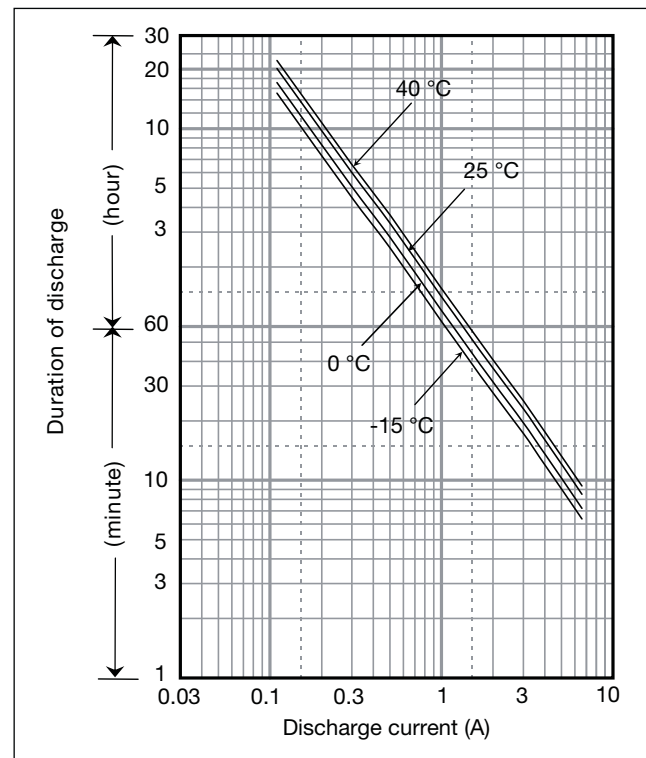


Battery case resin: standard (UL94HB)

Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	2.2Ah	
Dimensions	Length	177mm
	Width	34mm
	Height	60mm
	Total Height	66mm
Approx. mass	0.8kg	
Terminal	Faston 187	

Duration of discharge vs Discharge current



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)	70mΩ
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

(Wattage/Battery)

Cut-off V	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

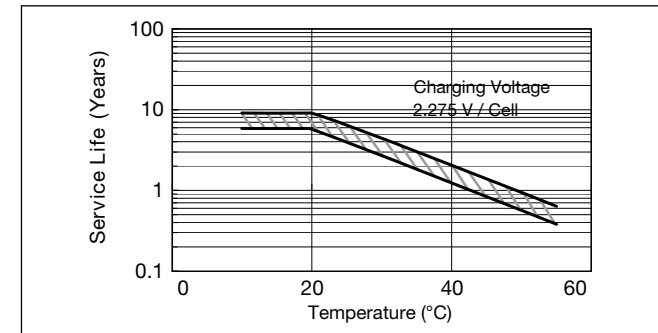
(Ampere/Battery)

Cut-off V	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

Cycle use	Control voltage: 14.5 - 14.9V; Initial current: 0.88A or smaller
Trickle use	Control voltage: 13.6 - 13.8V; Initial current: 0.33A or smaller

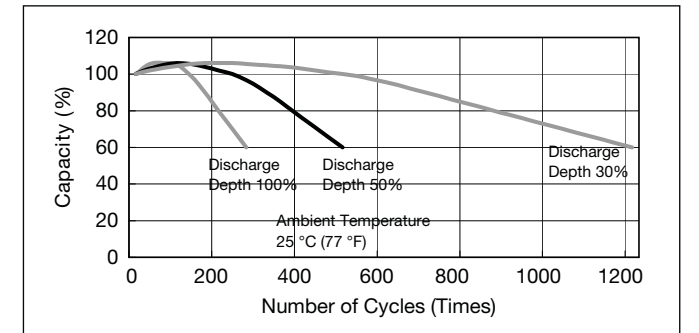
Influence of Temperature on Trickle life



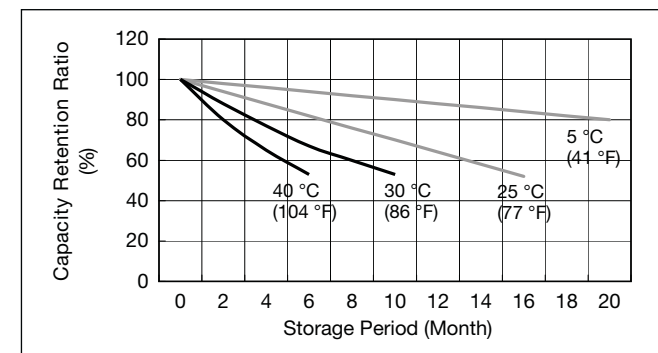
Cut off voltage

Discharge current	0.011 A - 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

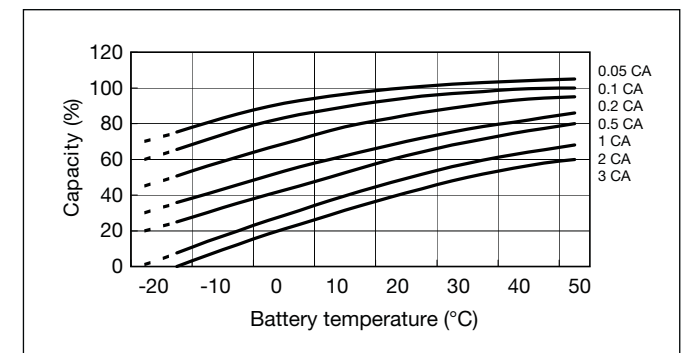
Cycle life vs Depth of discharge



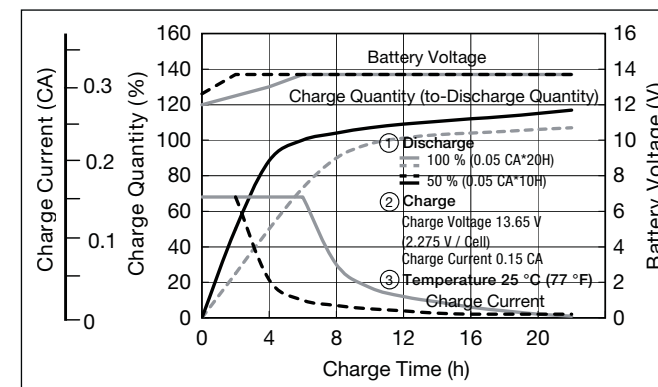
Residual capacity vs storage period



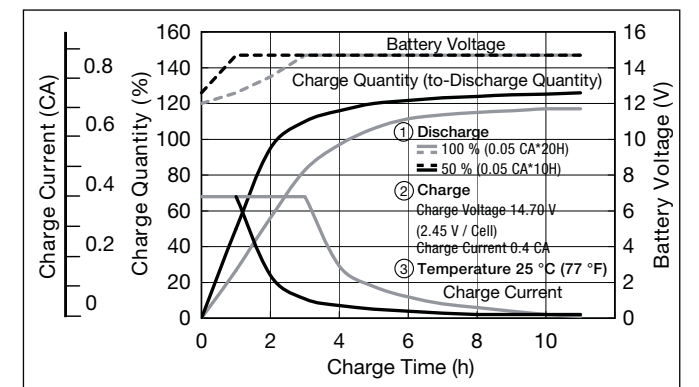
Discharge capacity by temperature and by discharge current



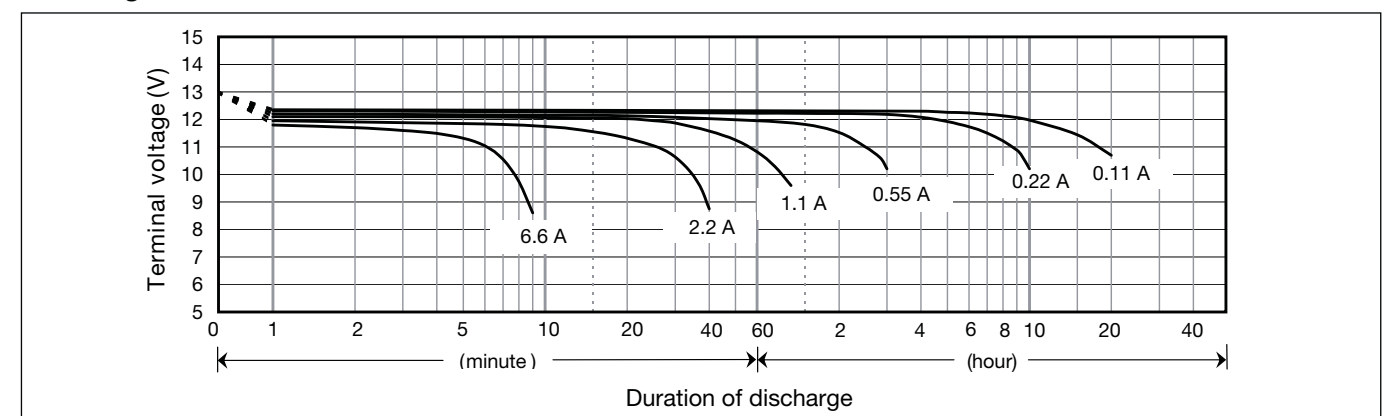
Constant-voltage and constant-current charge characteristics for Trickle use



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



Discharge characteristics



LC-R123R4PG

For main and standby power supplies. Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

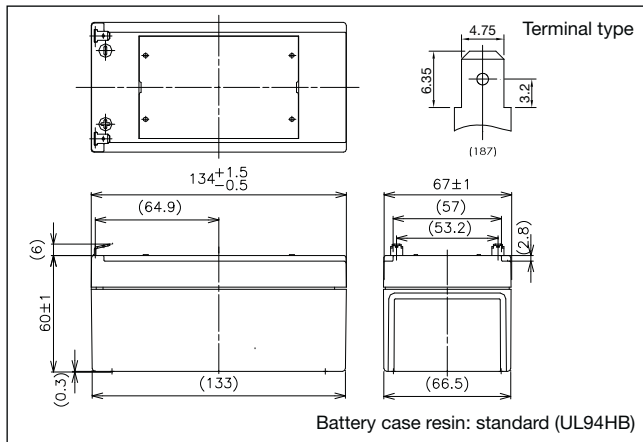
VdS

G191053



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

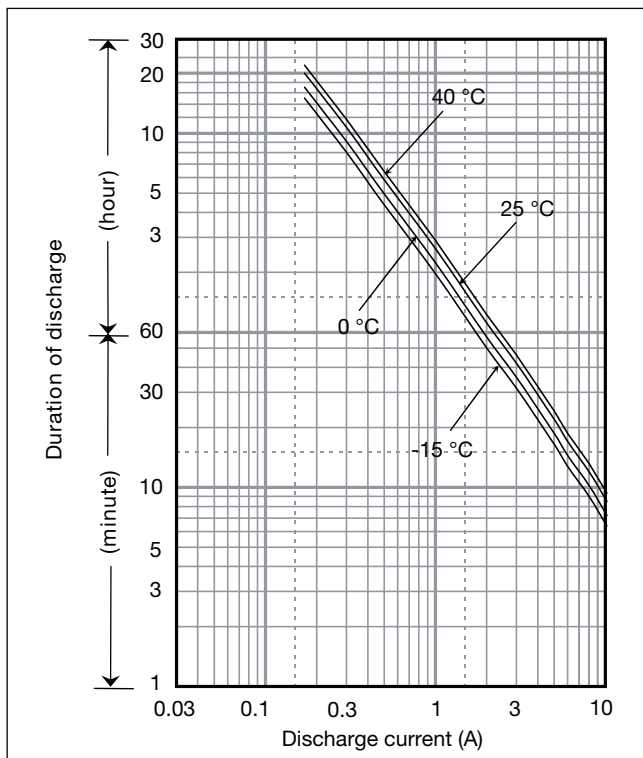
Dimensions (mm)



Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	3.4Ah	
Dimensions	Length	134mm
	Width	67mm
	Height	60mm
	Total Height	66mm
Approx. mass	1.2kg	
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
Internal resistance	Fully charged battery (25°C)	60mΩ
	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

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

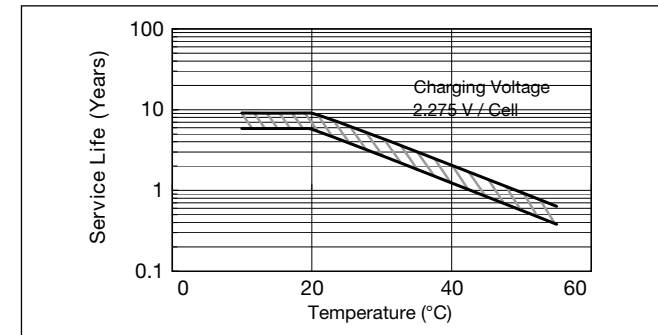
Ampere Table

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

Cycle use	Control voltage: 14.5 - 14.9V; Initial current: 1.36A or smaller
Trickle use	Control voltage: 13.6 - 13.8V; Initial current: 0.51A or smaller

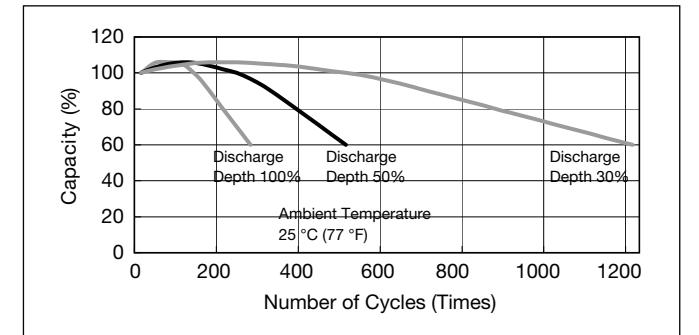
Influence of Temperature on Trickle life



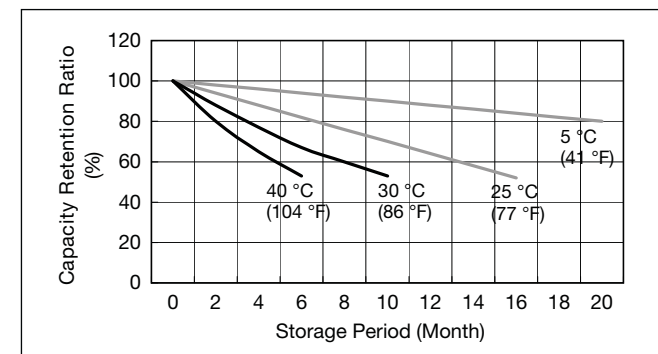
Cut off voltage

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

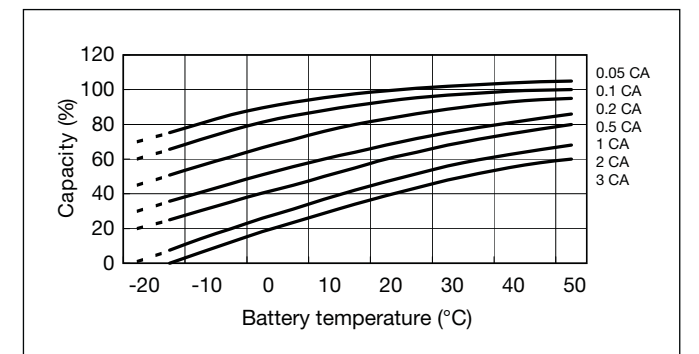
Cycle life vs Depth of discharge



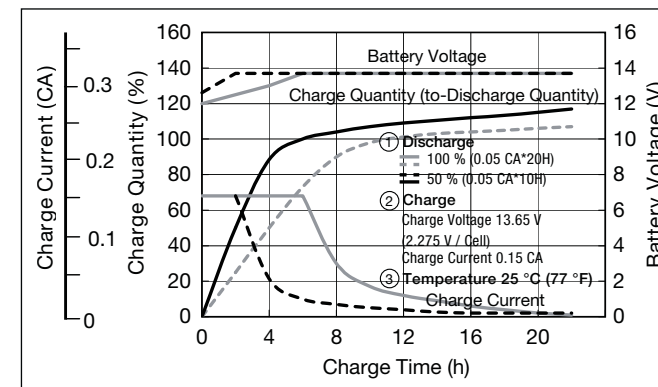
Residual capacity vs storage period



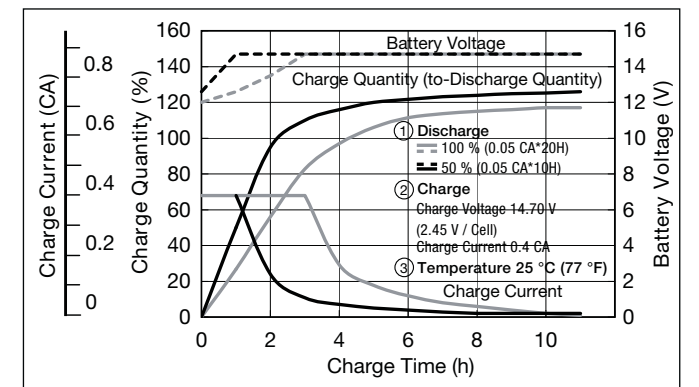
Discharge capacity by temperature and by discharge current



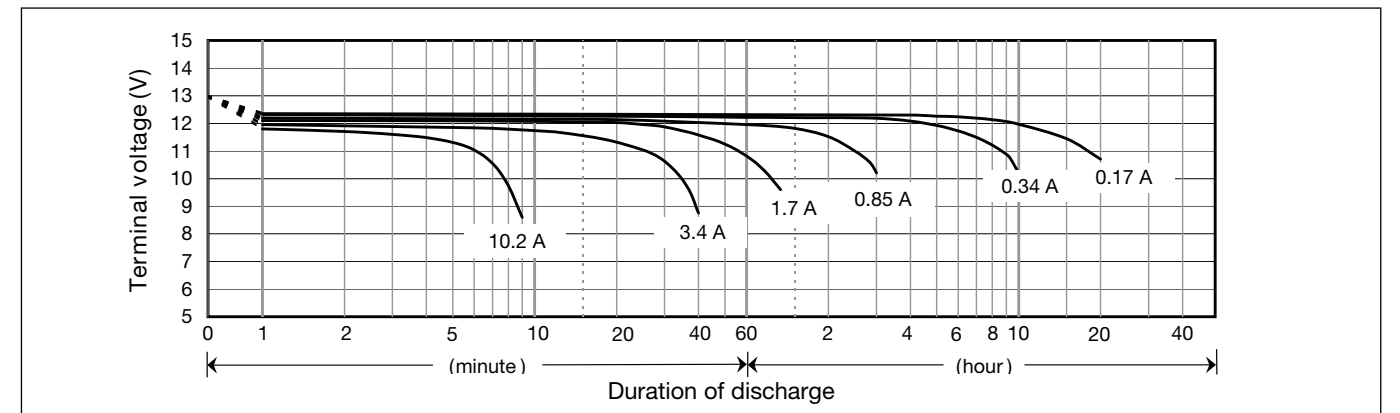
Constant-voltage and constant-current charge characteristics for Trickle use



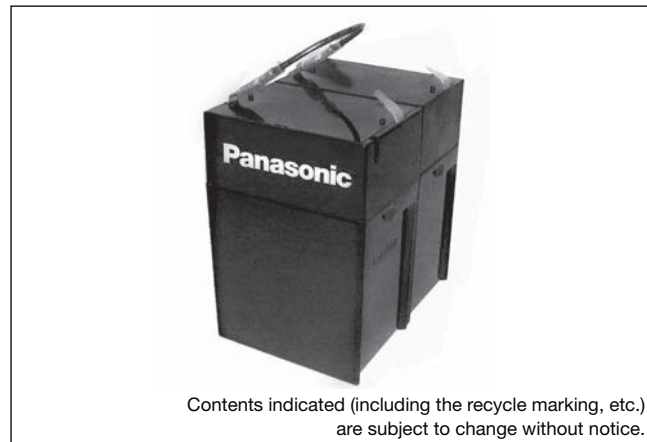
Constant-voltage and constant-current charge characteristics for Cycle use



Discharge characteristics



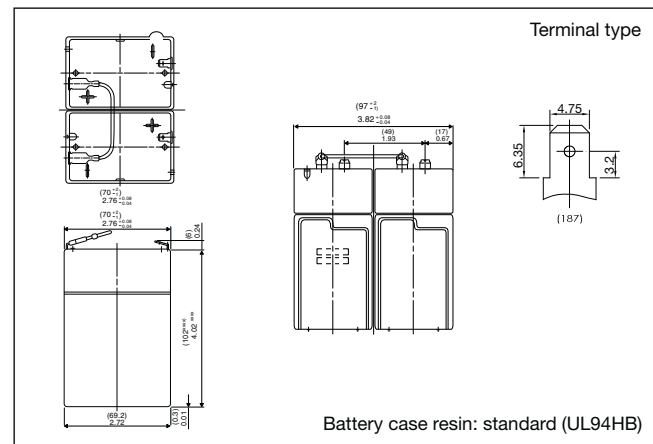
LC-R124R5P



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

For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

Dimensions (mm)



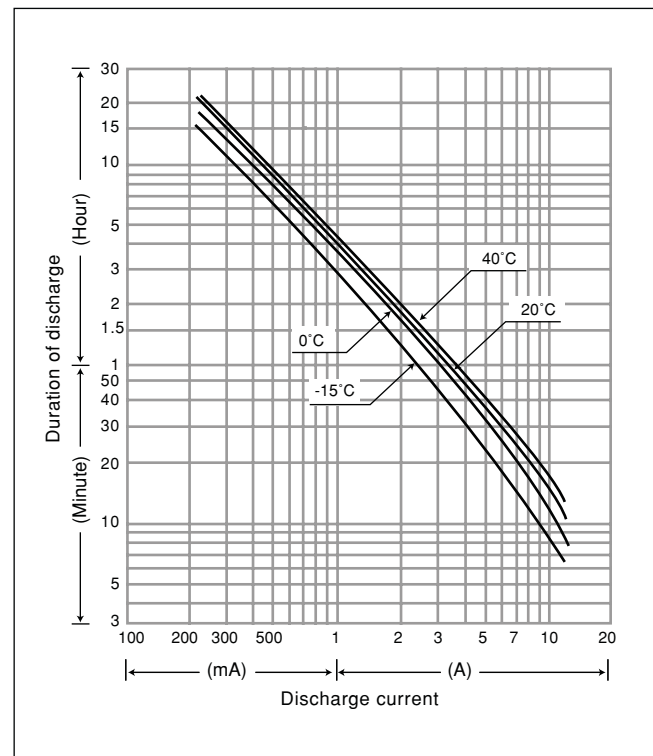
Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	4.5Ah	
Dimensions	Length	70mm
	Width	97mm
	Height	102mm
	Total Height	108mm
Approx. mass	1.45kg	
Terminal	Faston 187	

Characteristics

Capacity (25°C)	20 hour rate	4.5Ah
	10 hour rate	3.9Ah
	5 hour rate	3.5Ah
	1 hour rate	2.8Ah
Internal resistance	Fully charged battery (25°C)	40mΩ
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	83%
	After 12 months	66%

Duration of discharge vs Discharge current



Watt Table

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	270	214	139.4	106.4	89.2	66.6	47	37.6	25.8	19.98	14.88	11.42	9.44	7.58	5.02	2.72	2.272
9.9V	250	200	136.6	105.6	87.8	65.8	46.6	37.6	25.4	19.84	14.8	11.36	9.36	7.56	5	2.72	2.266
10.2V	232	188	133	103.6	86.2	65	46.2	36.8	24.8	19.32	14.66	11.28	9.28	7.5	4.96	2.7	2.258
10.5V	206	168	123.2	96.4	82	63.6	45.4	36	24.2	18.64	14.42	11.2	9.2	7.4	4.92	2.7	2.25
10.8V	174	148	110	89.8	79.8	61.4	44.8	35.4	23.6	17.76	14.14	11.06	8.98	7.28	4.88	2.68	2.236

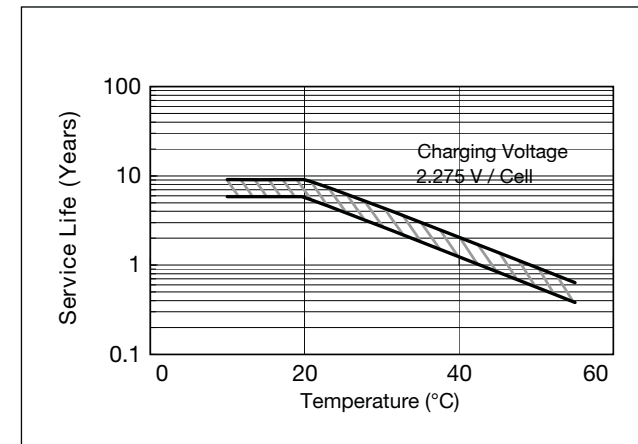
Ampere Table

Cut-off V	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h
9.6V	24.3	19.13	12.44	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
9.9V	22.6	17.94	12.19	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
10.2V	20.8	16.81	11.88	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
10.5V	18.5	15.06	11.00	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
10.8V	15.6	13.31	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

Trickle use	Control voltage: 13.6 - 13.8V; Initial current: 0,675A or smaller
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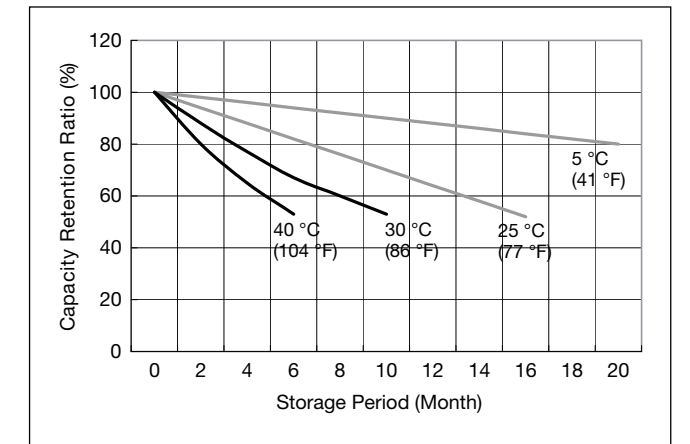
Influence of Temperature on Trickle life



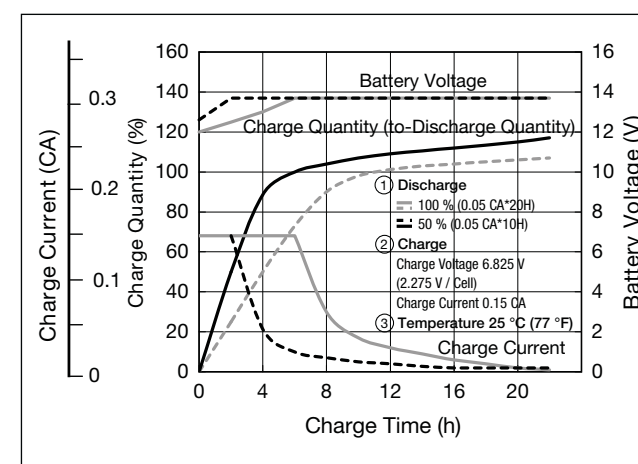
Cut off voltage

Discharge current	0.225 A - 0.9A	0.9A - 2.25A	2.25A - 4.5A	4.5A - 9A	9A - 13.5A
Cut off voltage (V)	10.5	10.2	9.9	9.3	8.7

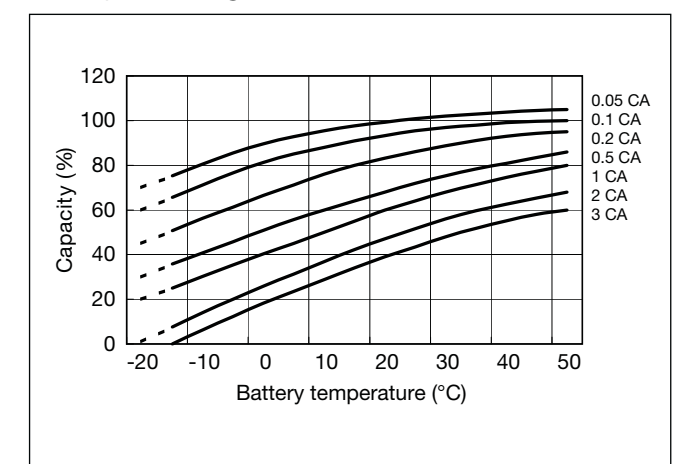
Residual capacity vs storage period



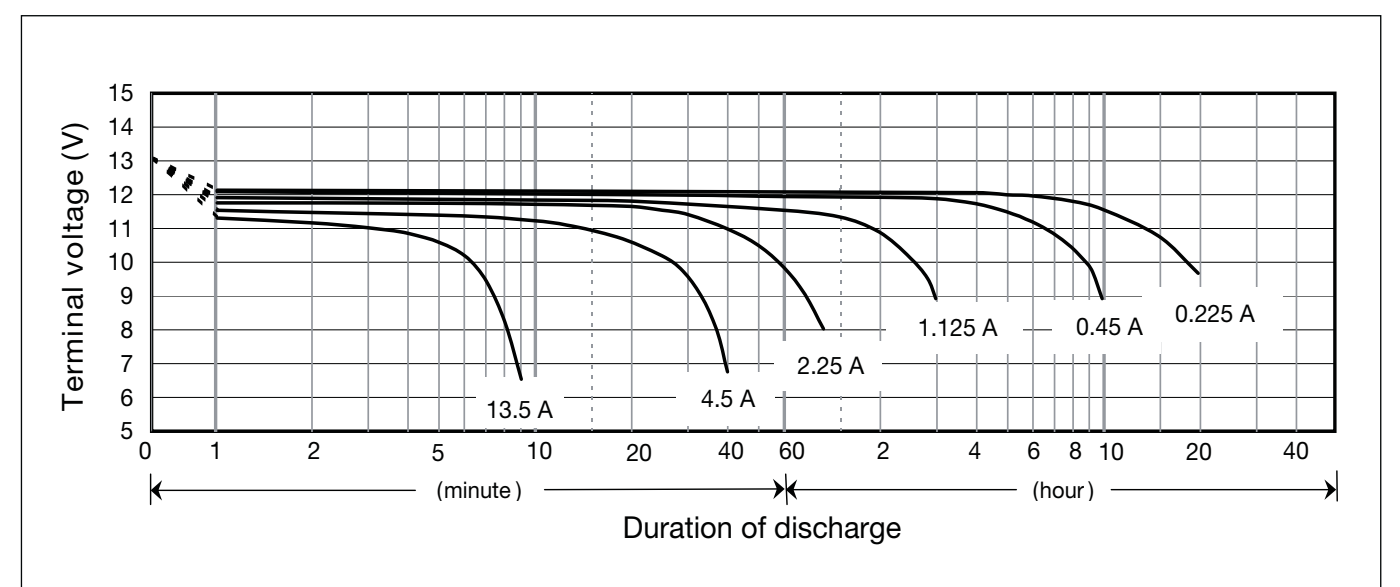
Constant-voltage and constant-current charge characteristics for Trickle use



Discharge capacity by temperature and by discharge current



Discharge characteristics

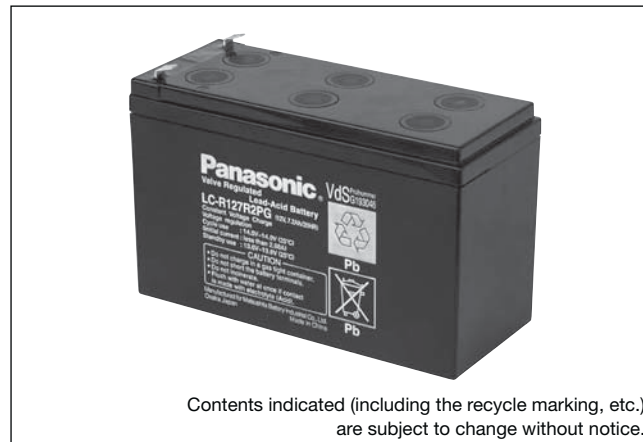


LC-R127R2PG*1

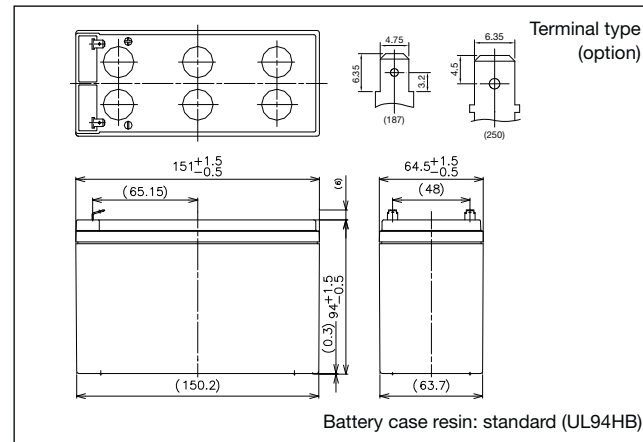
For main and standby power supplies. Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

VdS

G193046



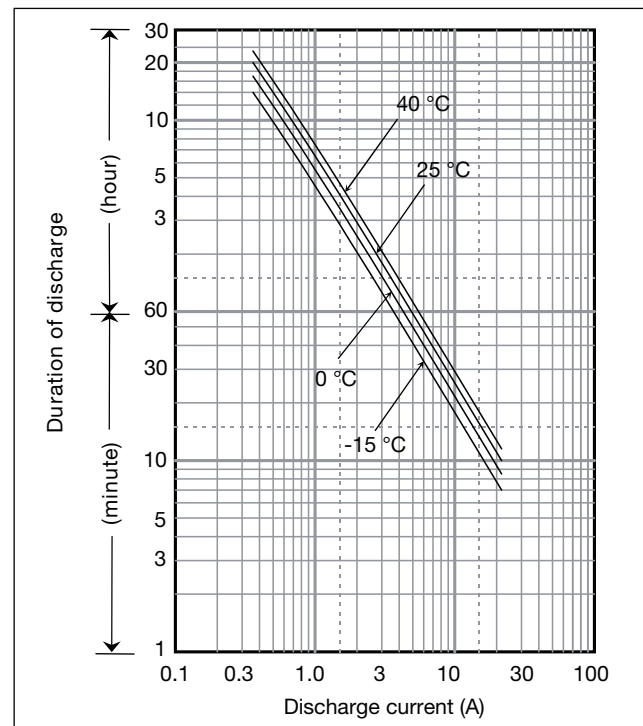
Dimensions (mm)



Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	7.2Ah	
Dimensions	Length	151mm
	Width	64.5mm
	Height	94mm
	Total Height	100mm
Approx. mass	2.47kg	
Terminal	Faston 187 or Faston 250 with hole	

Duration of discharge vs Discharge current



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)	21mΩ
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

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	71.6	56.5	37.8	28.4	22.6	17.7	14.4	11.7	7.80	4.30	3.58							

Ampere Table

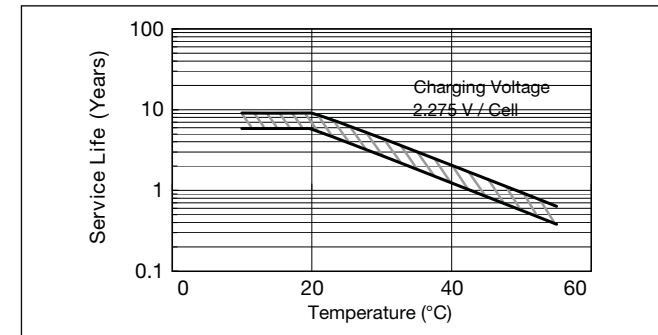
Cut-off V	(Ampere/Battery)																							
	3min	5min	10min	15min	20min	30min	45min	1h	1.5h	2h	3h	4h	5h	6h	10h	20h	24h							
9.6V	38.9	30.6	19.9	14.8	12.3	9.1	6.4	5.1	3.50	2.70	2.00	1.53	1.26	1.012	0.670	0.363	0.303							
9.9V	36.1	28.7	19.5	14.7	12.1	9.0	6.4	5.1	3.43	2.68	1.99	1.52	1.25	1.008	0.667	0.362	0.302							
10.2V	33.3	26.9	19.0	14.4	11.9	8.9	6.3	5.0	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	8.7	6.2	4.9	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	8.4	6.1	4.8	3.20	2.40	1.90	1.48	1.20	0.972	0.650	0.358	0.298							

*1 This battery is also available with a flame retardant battery case resin (UL94 V-0) but with no VdS certification.

Charging Method

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

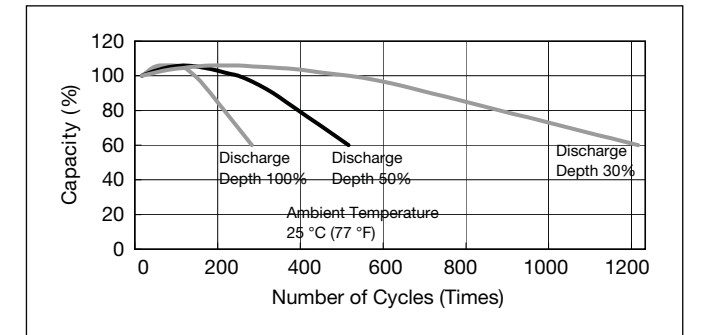
Influence of Temperature on Trickle life



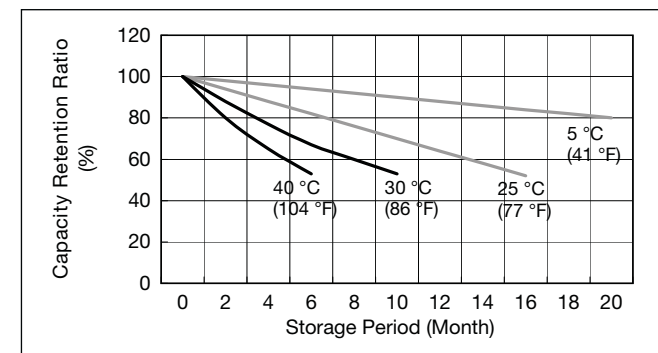
Cut off voltage

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

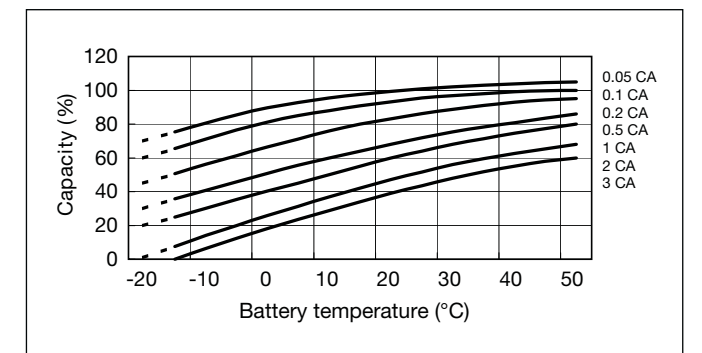
Cycle life vs Depth of discharge



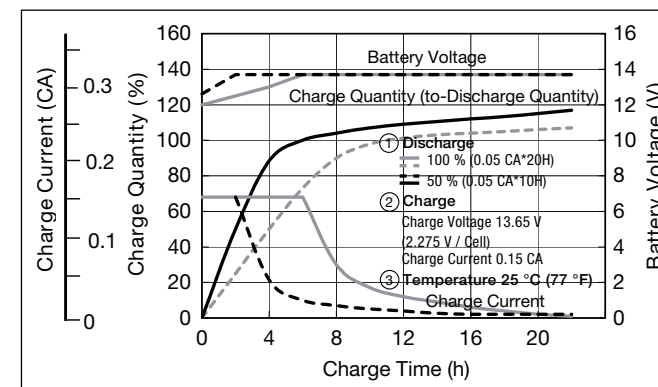
Residual capacity vs storage period



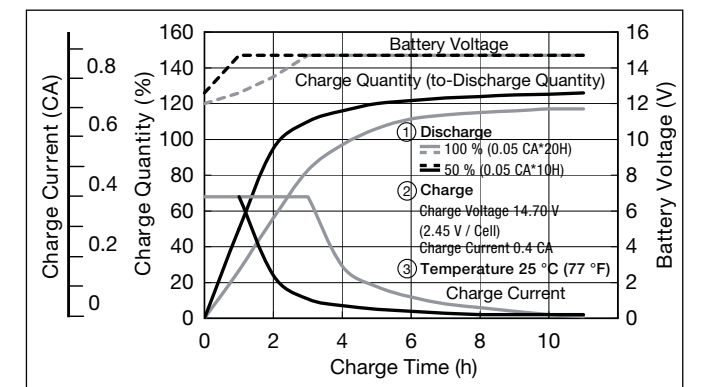
Discharge capacity by temperature and by discharge current



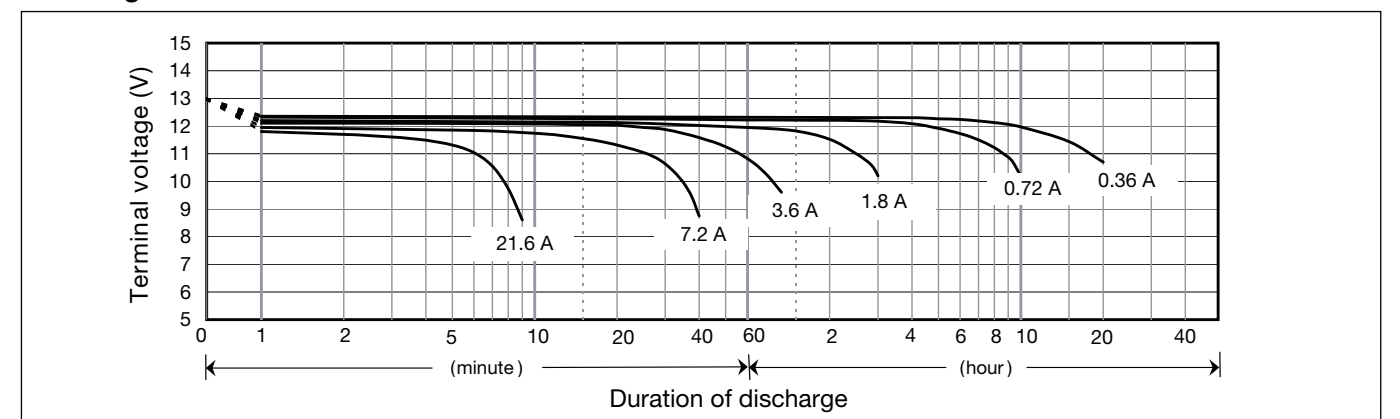
Constant-voltage and constant-current charge characteristics for Trickle use



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



Discharge characteristics



LC-RA1212PG

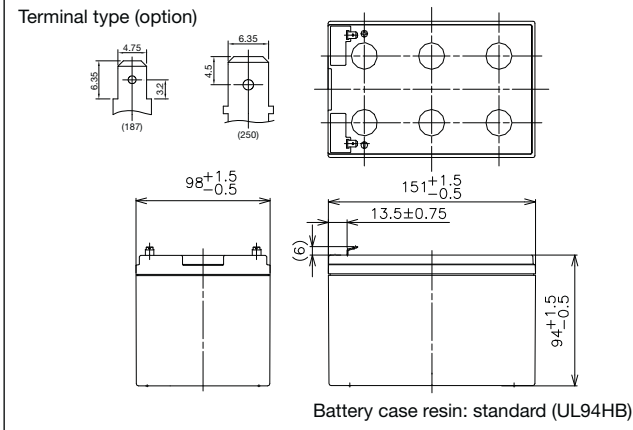
For main and standby power supplies. Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

VdS

G100001



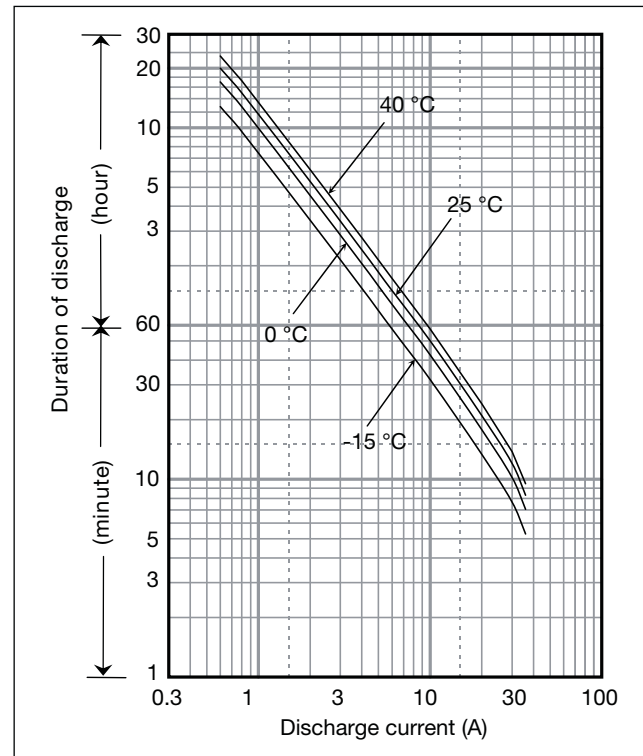
Dimensions (mm)



Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	12Ah	
Dimensions	Length	151mm
	Width	98mm
	Height	94mm
	Total Height	100mm
Approx. mass	3.8kg	
Terminal	Faston 187 or Faston 250 with hole	

Duration of discharge vs Discharge current



Characteristics

Capacity (25°C)	20 hour rate	12.0Ah
	10 hour rate	11.3Ah
	5 hour rate	10.4Ah
Internal resistance	Fully charged battery (25°C)	30mΩ
	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

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	

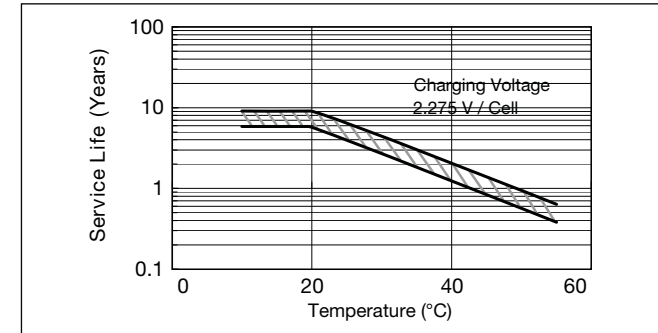
Ampere Table

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

Cycle use	Control voltage: 14.5 - 14.9V; Initial current: 4.8A or smaller
Trickle use	Control voltage: 13.6 - 13.8V; Initial current: 1.8A or smaller

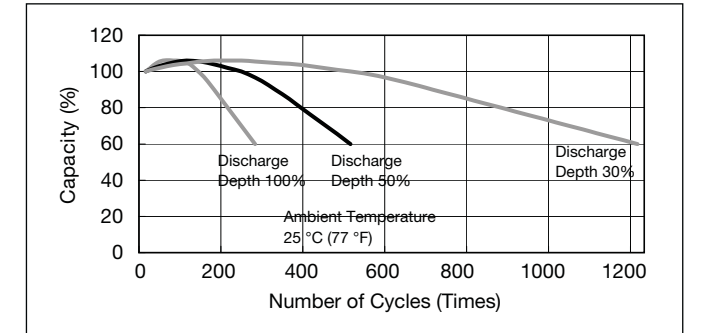
Influence of Temperature on Trickle life



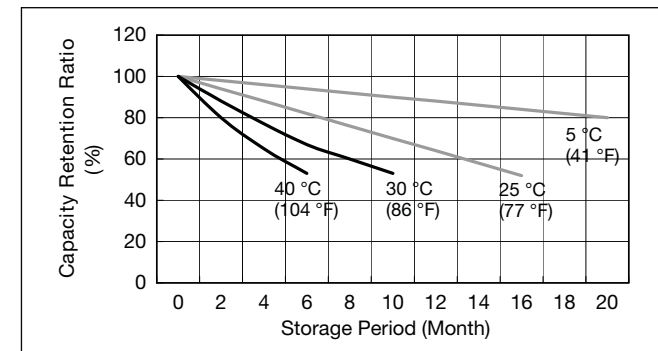
Cut off voltage

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

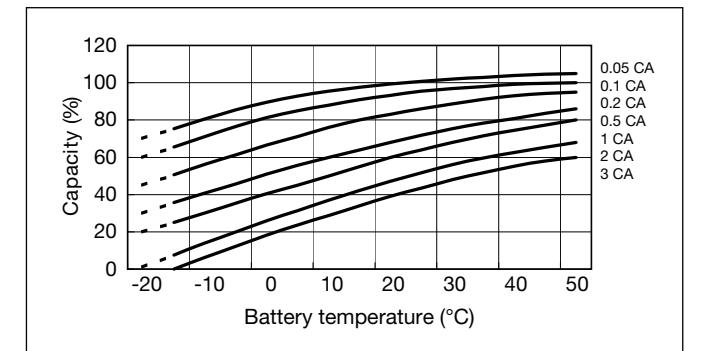
Cycle life vs Depth of discharge



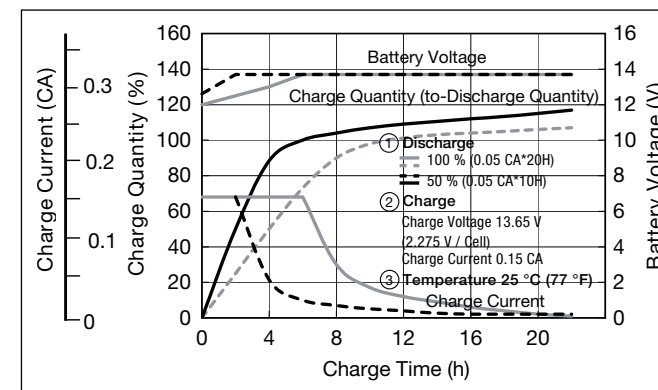
Residual capacity vs storage period



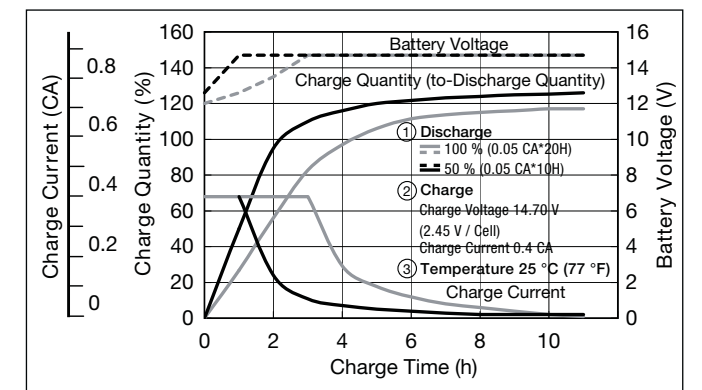
Discharge capacity by temperature and by discharge current



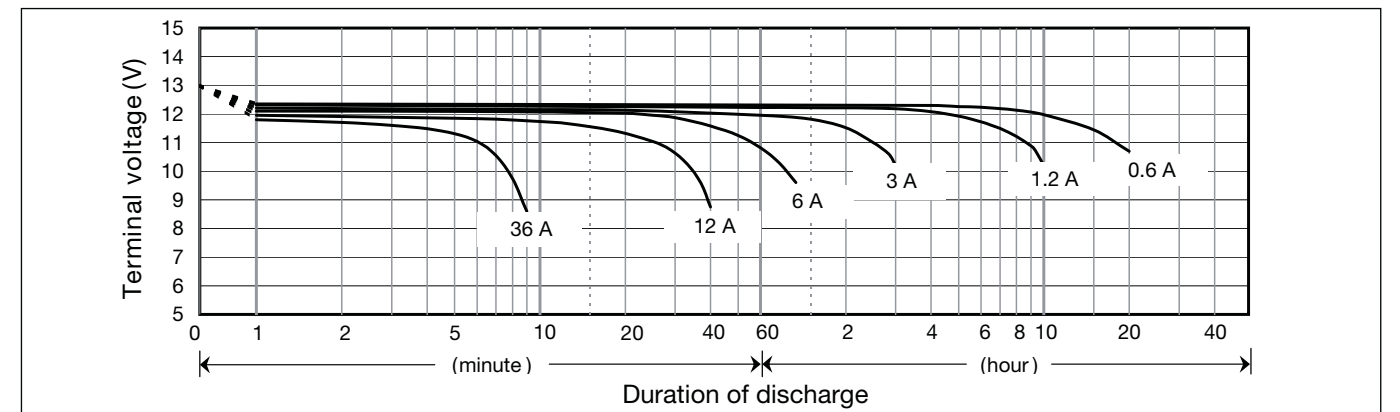
Constant-voltage and constant-current charge characteristics for Trickle use



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



Discharge characteristics

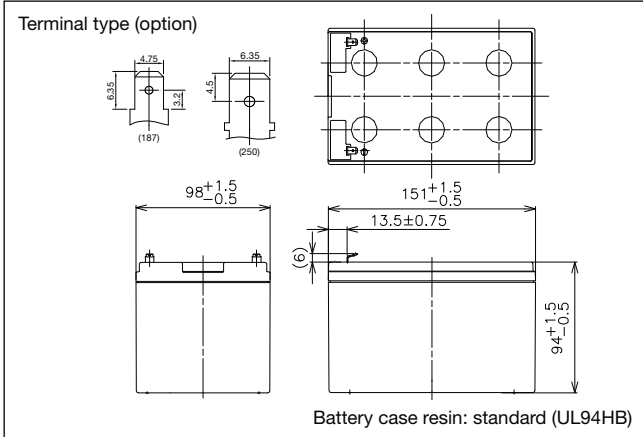


LC-RA1215P



For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

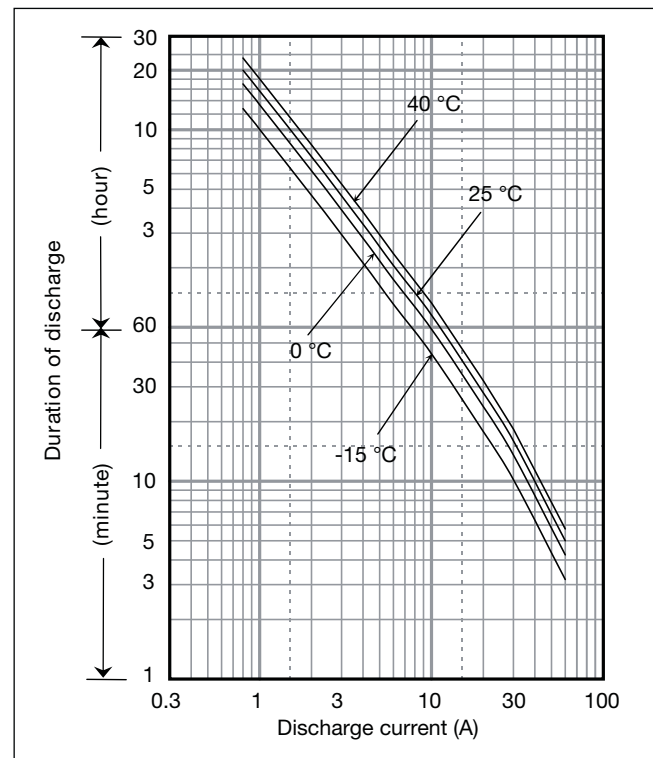
Dimensions (mm)



Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	15Ah	
Dimensions	Length	151mm
	Width	98mm
	Height	94mm
	Total Height	100mm
Approx. mass	4.2kg	
Terminal	Faston 187 or Faston 250 with hole	

Duration of discharge vs Discharge current



Characteristics

Capacity (25°C)	20 hour rate	15.0Ah
	10 hour rate	14.0Ah
	5 hour rate	12.9Ah
	1 hour rate	10.0Ah
Internal resistance	Fully charged battery (25°C)	30mΩ
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

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

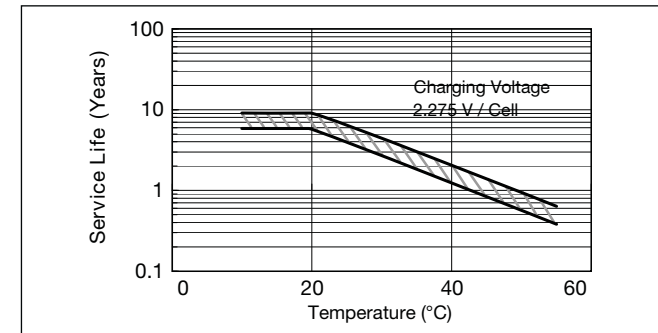
Ampere Table

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

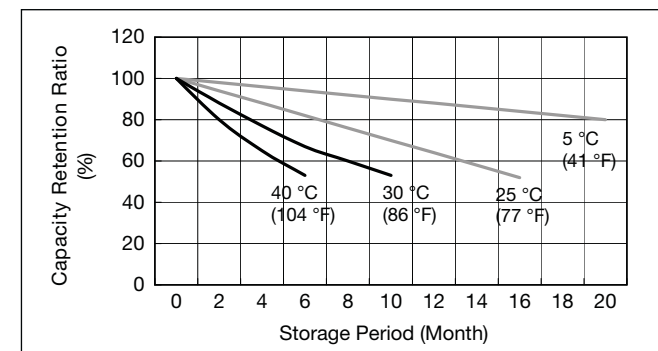
Charging Method

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

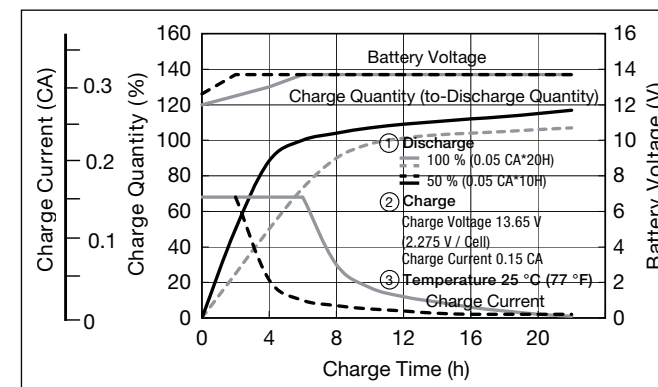
Influence of Temperature on Trickle life



Residual capacity vs storage period



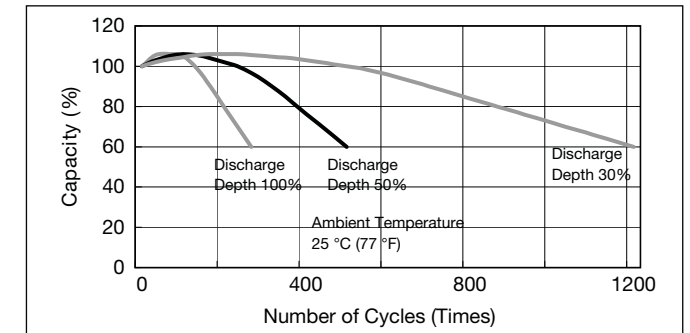
Constant-voltage and constant-current charge characteristics for Trickle use



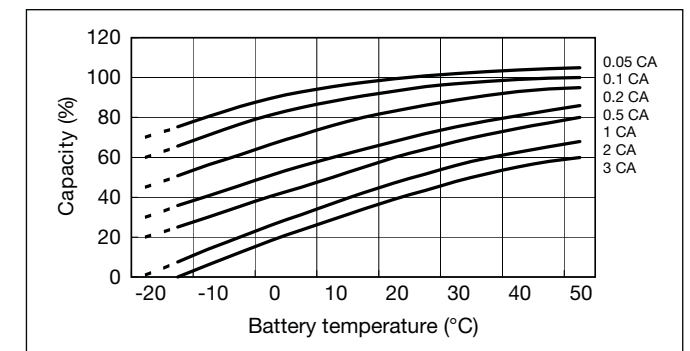
Cut off voltage

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

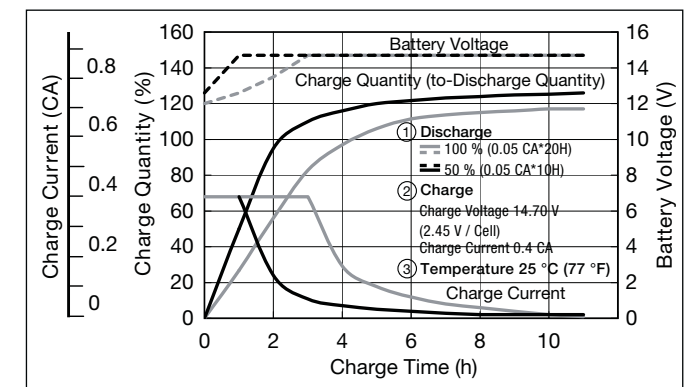
Cycle life vs Depth of discharge



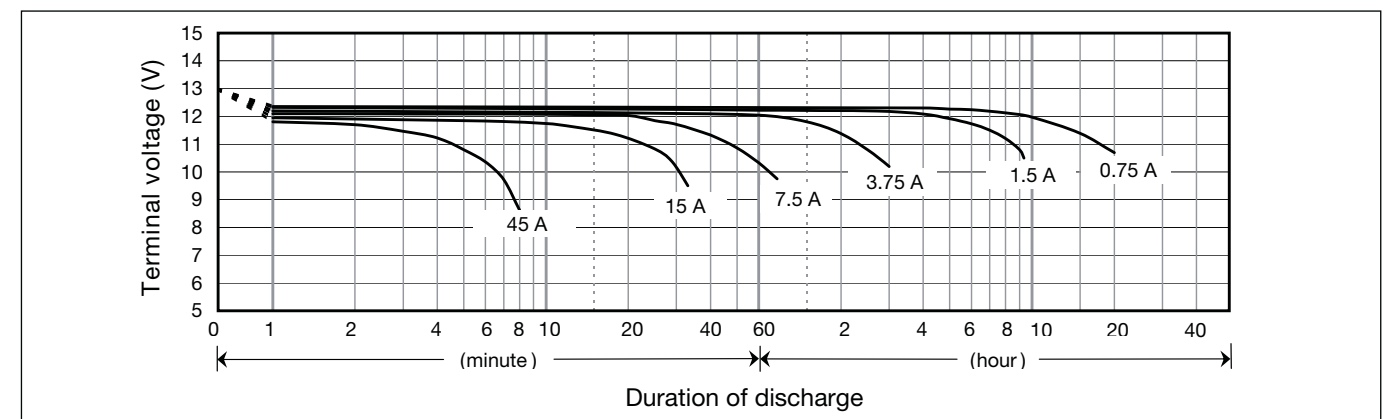
Discharge capacity by temperature and by discharge current



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



Discharge characteristics

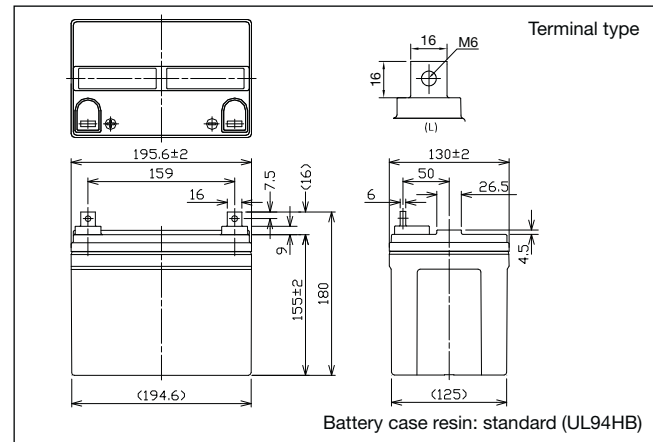


LC-R1233P



For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

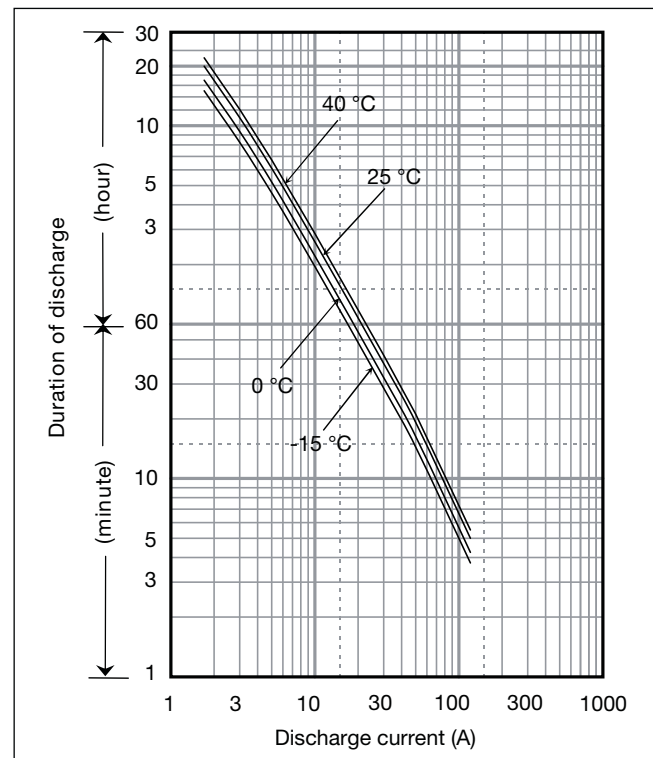
Dimensions (mm)



Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	33Ah	
Dimensions	Length	195.6mm
	Width	130mm
	Height	155mm
	Total Height	180mm
Approx. mass	12kg	
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)	7mΩ
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

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	82.5	67.1	58.8	36.9	19.8	16.3	

Ampere Table

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	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	90	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	

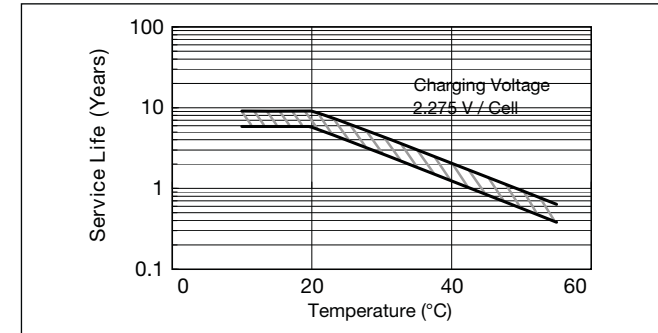
Charging Method

Cycle use	Control voltage: 14.5 - 14.9V; Initial current: 13.2A or smaller
Trickle use	Control voltage: 13.6 - 13.8V; Initial current: 4.95A or smaller

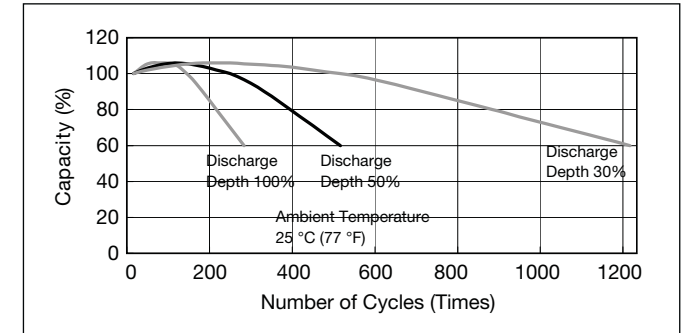
Cut off voltage

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

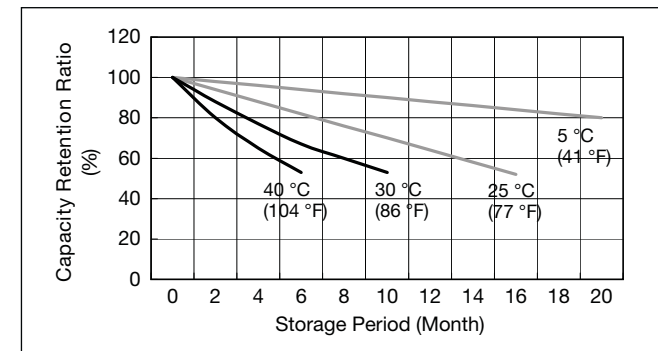
Influence of Temperature on Trickle life



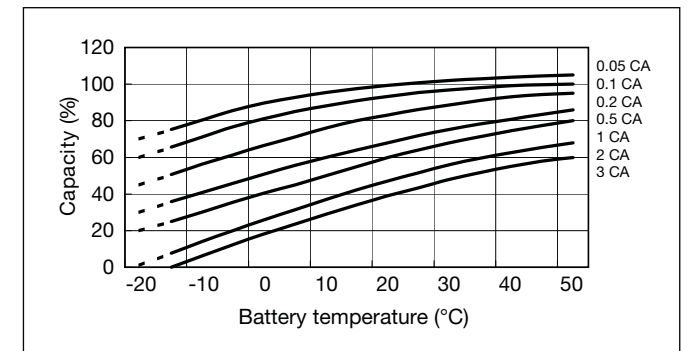
Cycle life vs Depth of discharge



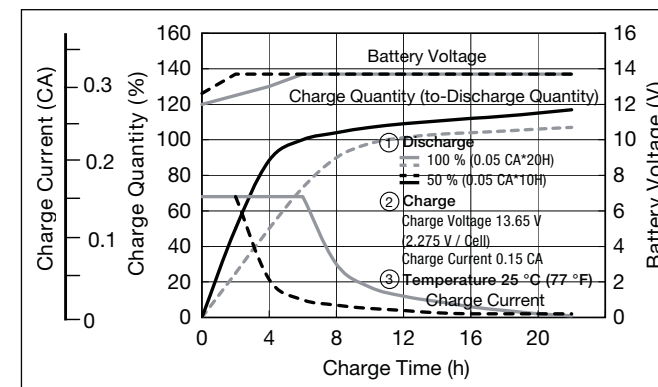
Residual capacity vs storage period



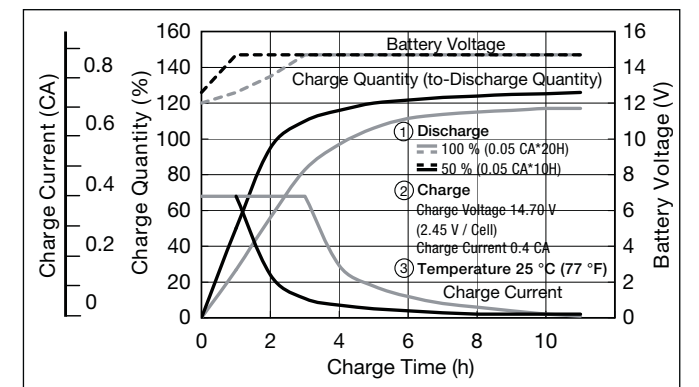
Discharge capacity by temperature and by discharge current



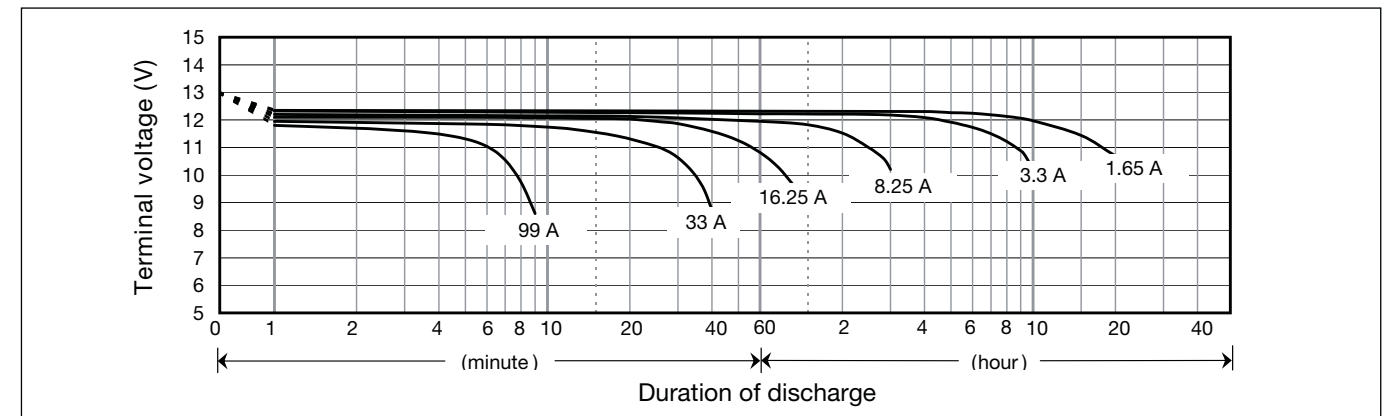
Constant-voltage and constant-current charge characteristics for Trickle use



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



Discharge characteristics



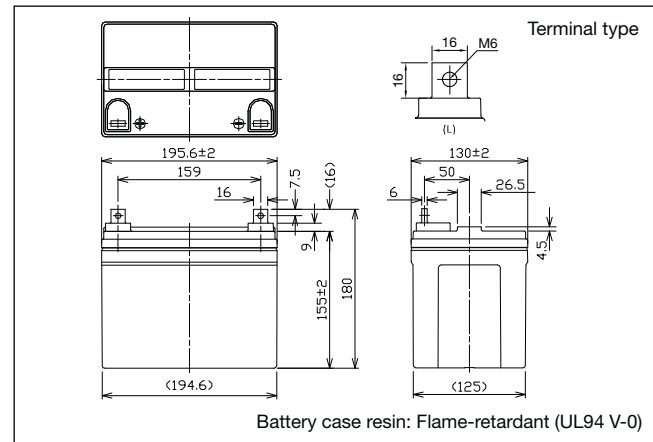
LC-V1233P



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

For main and standby power supplies.
Expected trickle design life: 6 – 9 years at 20°C according to Eurobat.

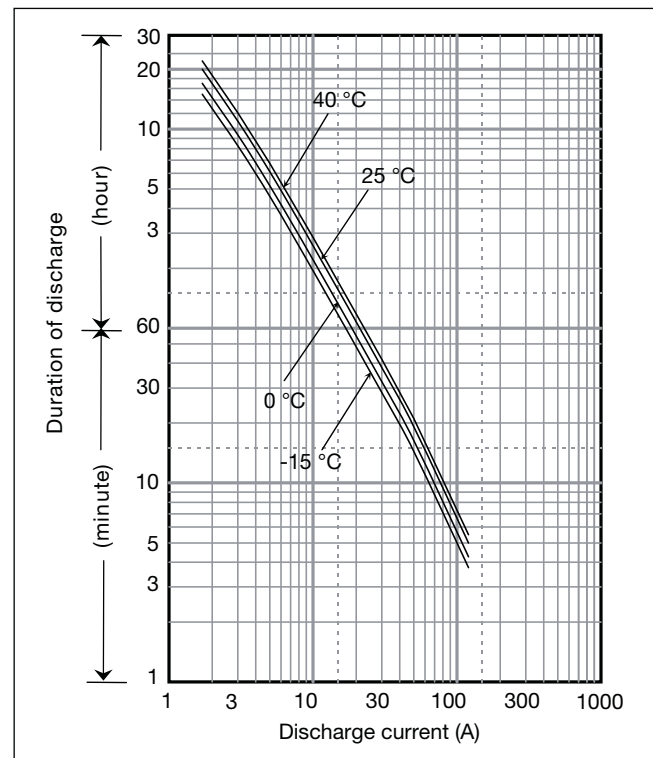
Dimensions (mm)



Specifications

Nominal voltage	12V	
Nominal capacity (20 hour rate)	33Ah	
Dimensions	Length	195.6mm
	Width	130mm
	Height	155mm
	Total Height	180mm
Approx. mass	11.1kg	
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
Internal resistance	Fully charged battery (25°C)	7mΩ
	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

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	82.5	67.1	58.8	36.9	19.8	16.3		

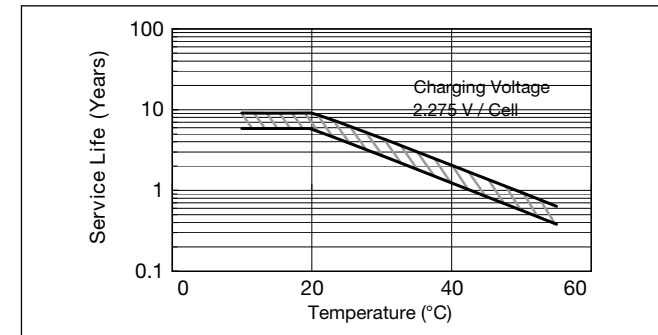
Ampere Table

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	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	90	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

Cycle use	Control voltage: 14.5 - 14.9V; Initial current: 13.2A or smaller
Trickle use	Control voltage: 13.6 - 13.8V; Initial current: 4.95A or smaller

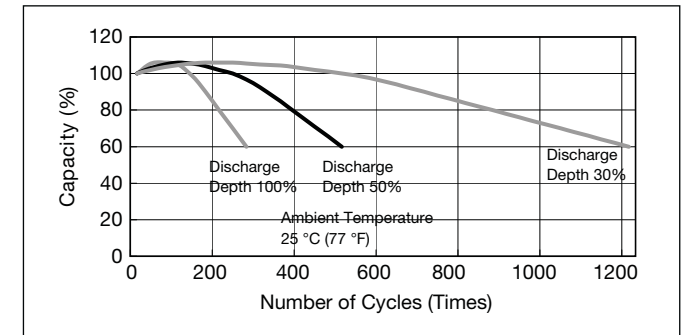
Influence of Temperature on Trickle life



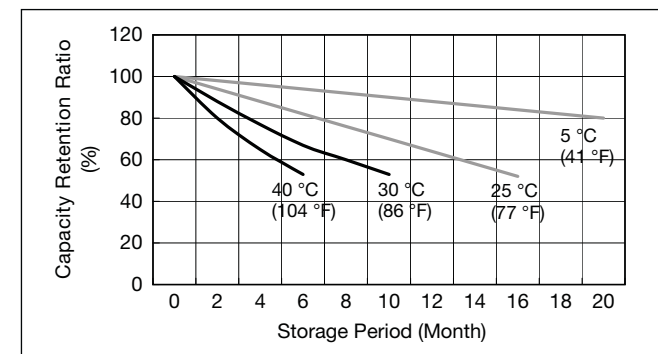
Cut off voltage

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

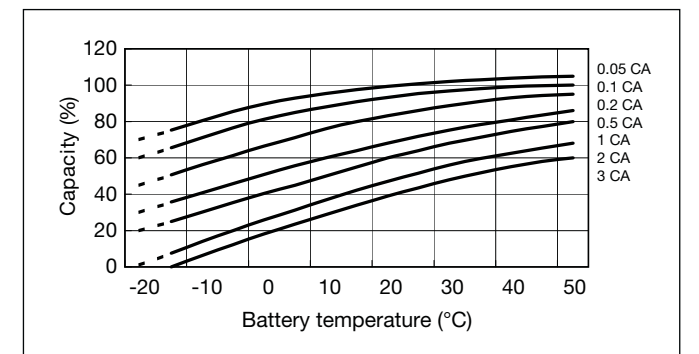
Cycle life vs Depth of discharge



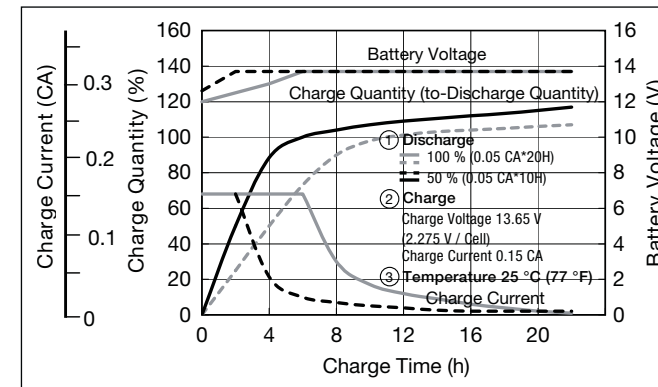
Residual capacity vs storage period



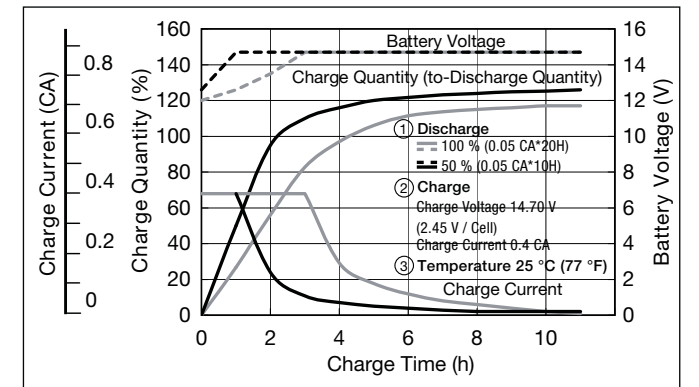
Discharge capacity by temperature and by discharge current



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



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



Discharge characteristics

