

BATTERY CSB



HR series
High Rate

ENERGY OF INFINITY ▼

- Confidence & Creativity
- Service & Sincerity
- Belief & Bravery

HR

HR series

HR-series batteries are specially designed for high rate discharge applications. With new VRLA technology, they are small, lightweight and offer a service life of up to 5 years in standby use, or more than 260 cycles at 100% discharge. Because of the innovative design, HR-series output energy is 20% higher than comparable products. As with all CSB batteries, they are rechargeable, highly efficient, maintenance free, leak proof, viable in any orientation and ISO/UL certified.



Performance

- Innovative plate structure greatly increases energy/density ratios.
- Increased current delivery for high-rate discharge.
- Up to 50% greater resistance to grid growth under optimal temperature.
- Reduced internal resistance for superior performance.
- Uniform plate formation for consistent capacity.
- No-spill design
- Viable in any orientation.
- Maintenance free.

Long service life

- Up to 5 years expected life under normal float charge conditions at 25 °C (77 °F)
- Extended shelf life (up to 14 months at 20 °C)

Reliability

- CSB manufactured batteries are 100% 2-cycle tested by CCDS.
- CSB-manufactured batteries are UL-recognized components under UL 924 and UL 1989. CSB file number MH 14533.
- ISO 9001/14001 certified.

Applications

Standby use

- UPS.
- Workstation UPS.
- Emergency lighting equipment.
- Precision instrument backup power.
- Fire alarm and security systems.
- Communications and electrical equipment.
- Office computers, microcomputers and OA equipment.
- Robots, control equipment and other FA equipment.
- Emergency power supply in power plants and substations.

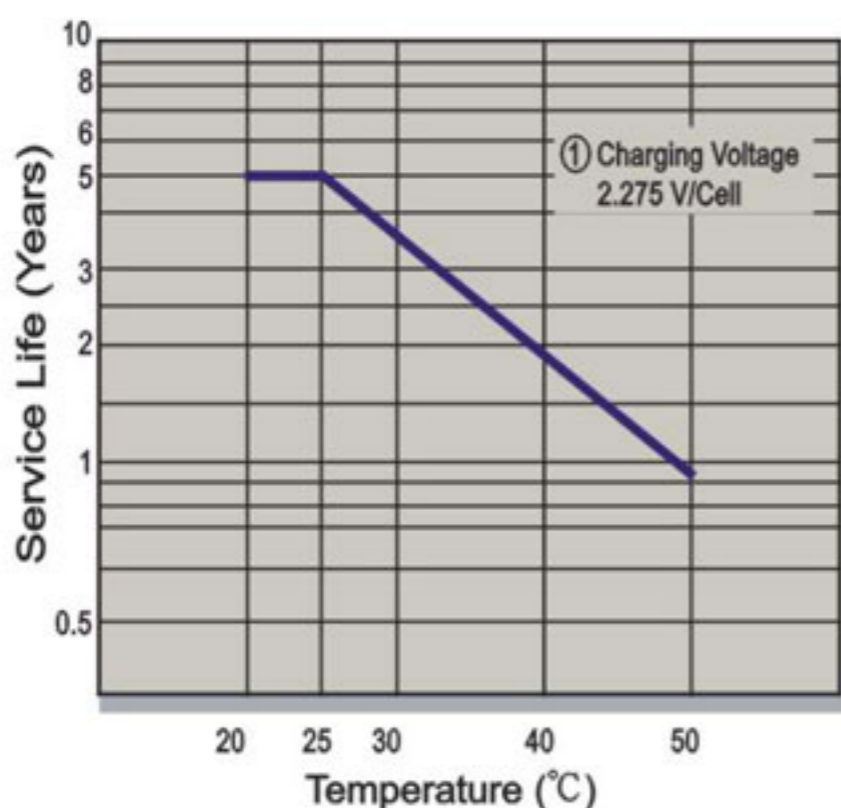
Cycle use

- Portable measuring equipment.
- Cameras and photographic equipment.
- Various toys and hobby equipment.

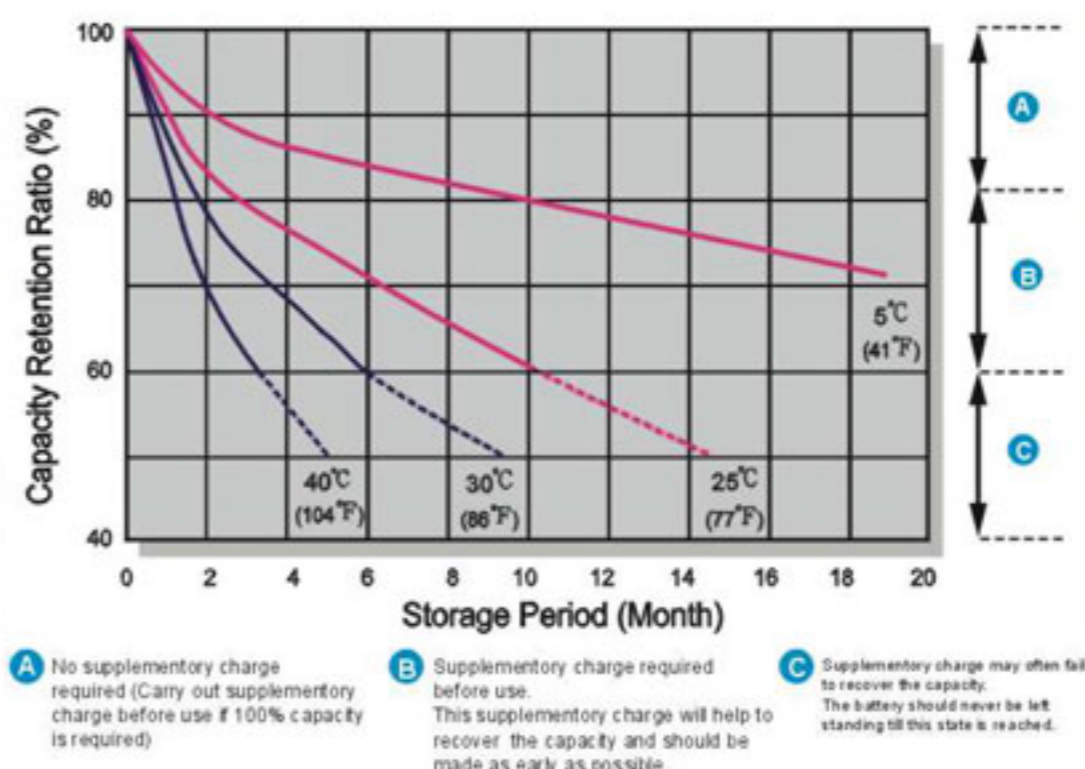
Solar Cell Power Generation

- Street lighting.
- Portable power supply.
- Water pumping.
- Rural power systems.

Trickle (or Float) Service Life



Capacity Retention Characteristic

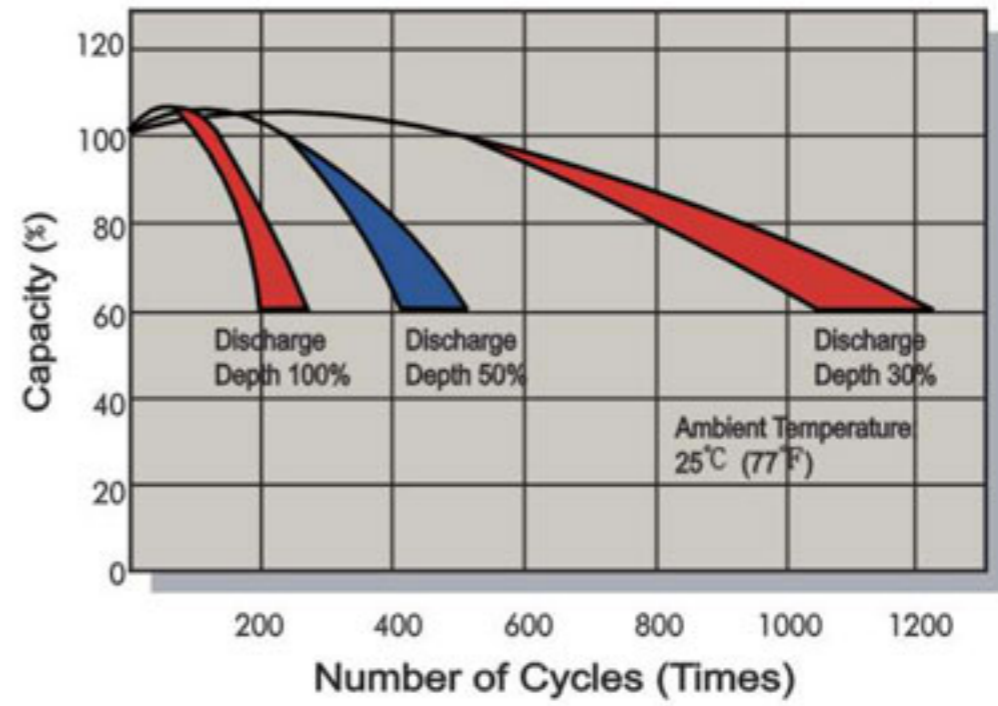
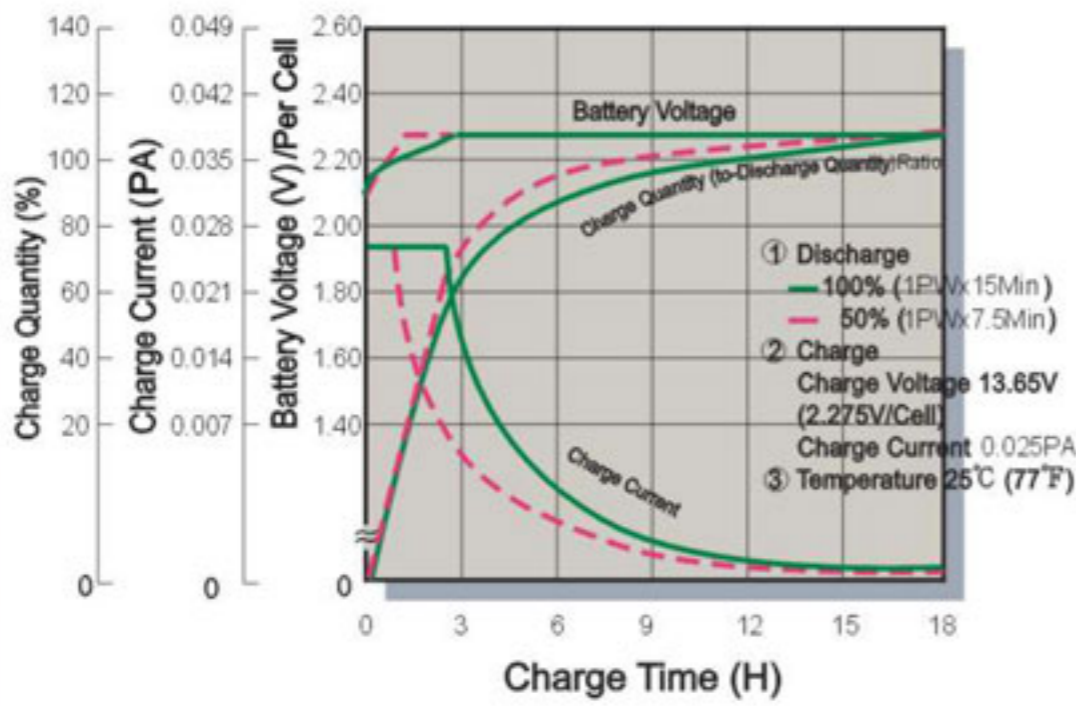


- A** No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required)
- B** Supplementary charge required before use. This supplementary charge will help to recover the capacity and should be made as early as possible.
- C** Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this state is reached.

Supplementary charge and storage guidelines

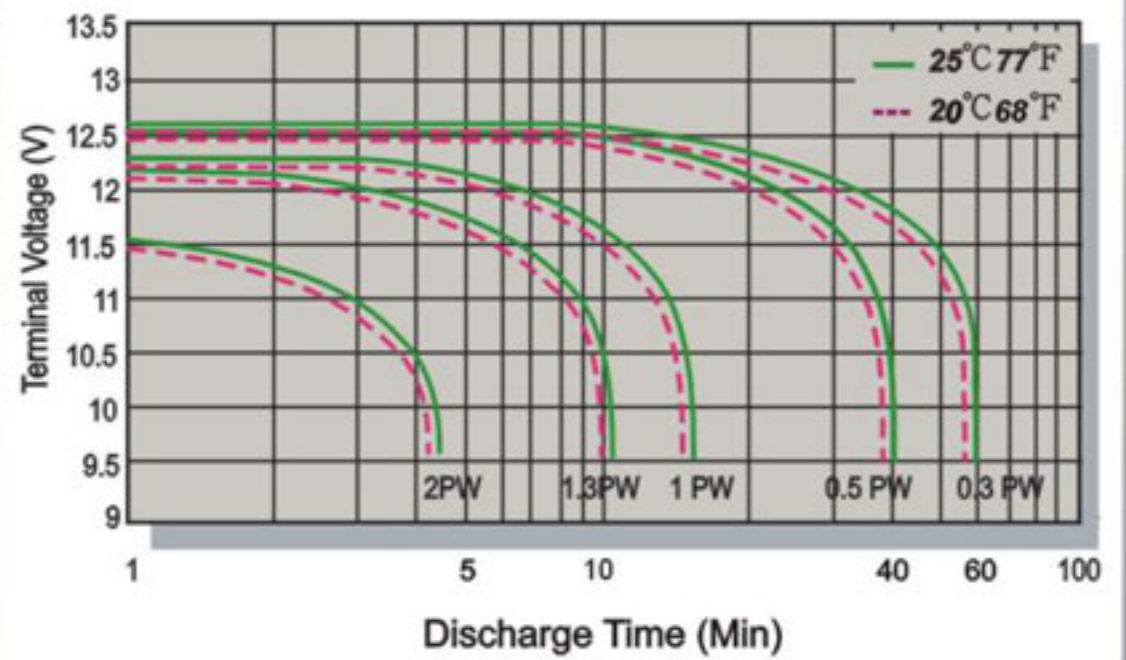
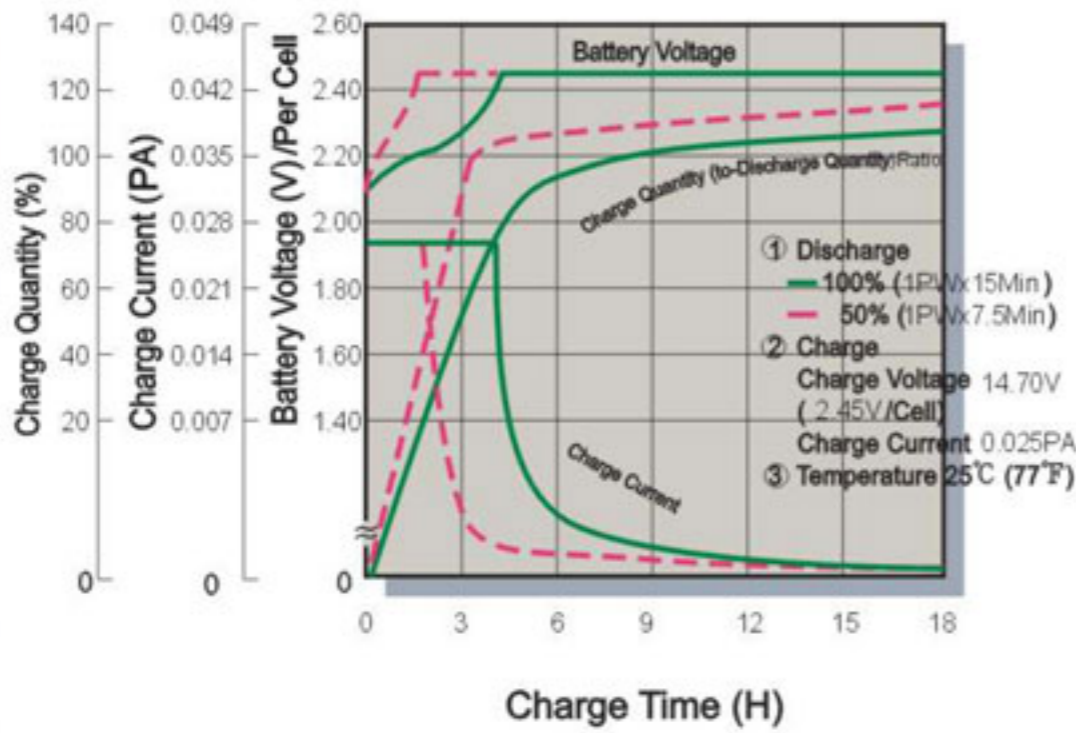
Battery Voltage and Charge Time for Standby Use

Cycle Service Life



Battery Voltage and Charge Time for Cycle Use

Terminal Voltage (V) and Discharge Time

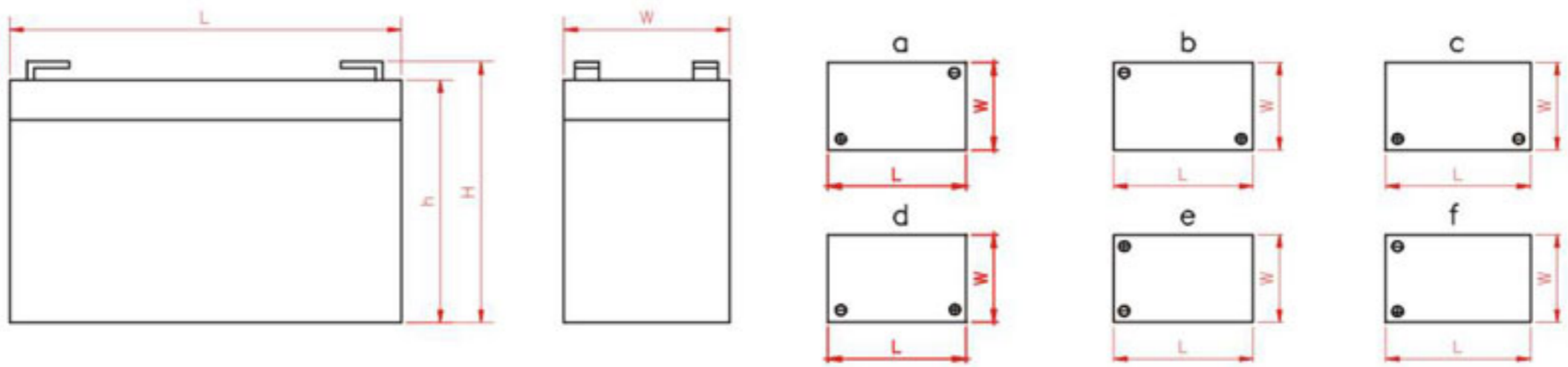


Specifications

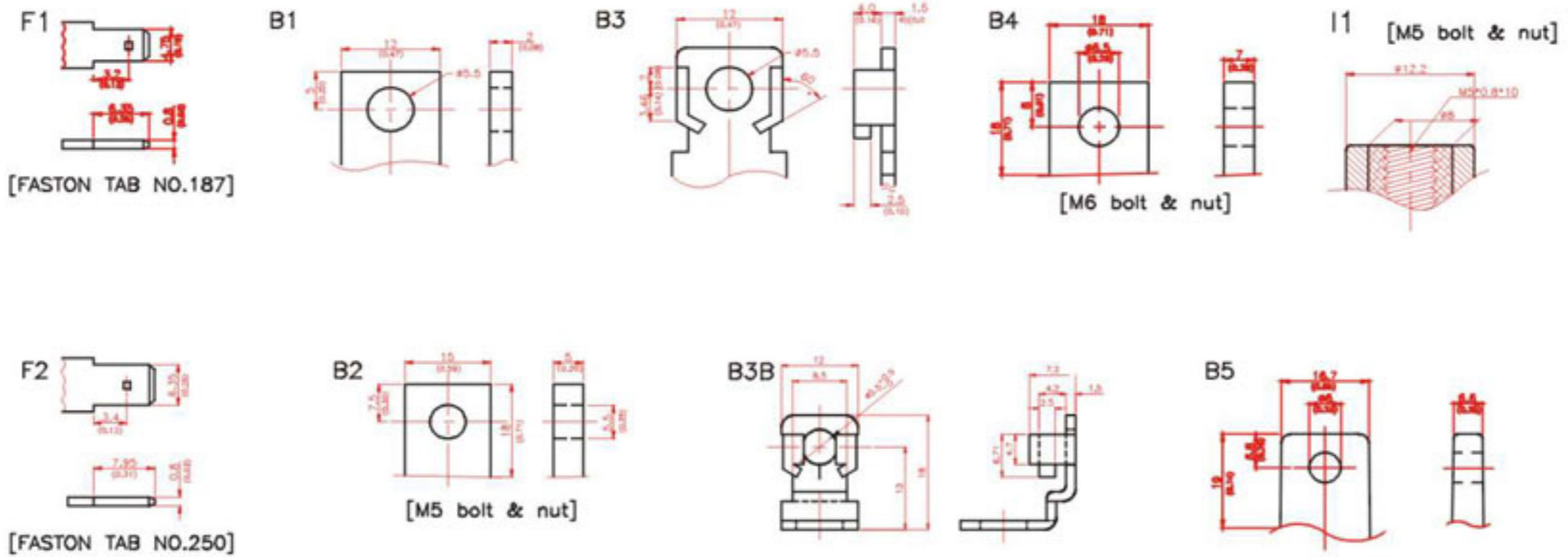
Battery Type	Nominal Voltage(V)	Nominal Capacity (15min) (Wh/cell)	Weight (Approx. Kg)	Energy Density (Wh/l)	Specific Energy (Wh/kg)	Internal Resistance Approx. (mΩ)	Max. Discharge Current 5 sec (A)	Dimensions (mm)				Terminal Position	Terminal Type	Max. Charging Current (A)	Max. Screw Torque value	
								Overall Height(H)	Container Height (h)	Length (L)	Width (W)				kgf-cm/lbf-in	N-m
HR1221W	12	21	1.80	49.1	17.50	25.00	60/90	106±0.5	101.8±0.5	90±0.5	70±0.5	c	F1/F2	2.10	—	—
HR1224W	12	24	1.95	49.7	18.46	21.00	100/130	98.3±1.0	94±1.0	151±2.0	51±1.0	e	F1/F2	2.40	—	—
HR1227W	12	27	1.97	63.1	20.56	19.00	100/130	106±1.5	101.8±1.5	90±1.0	70±1.0	c	F1/F2	2.70	—	—
HR1234W	12	34	2.50	55.3	20.40	19.00	100/130	100±1.0	94±1.0	151±2.0	65±1.0	e	F1/F2	3.40	—	—
HR1251W	12	51	3.72	55.0	20.56	13.00	150/180	100±1.0	94±1.0	151±2.0	98±1.0	e	F1/F2	5.10	—	—
HR1290W	12	90	6.75	61.2	20.00	9.00	300	167±2.0	160±2.0	181±2.0	76.2±1.0	D	I1	9.00	65/56	6.37
HR12120W	12	120	10.20	52.1	17.65	9.00	400	175±2.0	166.5±2.0	166±2.0	125±1.5	c	I1	12.00	65/56	6.37

Charging(V) : • Standby Use : 2.275V±0.025V/CELL AT 25°C (77°F) Temp Coefficient -3.3mV/CELL°C
 • Cycle Use : 2.45V±0.05V/CELL AT 25°C (77°F) Temp Coefficient -5mV/CELL°C

Terminal Position



Terminal Type



HR1221W

Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	46.4	31.2	24.4	20.3	17.4	12.9	10.4	7.29	4.02	2.83
1.67V	43.1	29.7	23.6	19.9	17.1	12.5	10.1	7.18	4.00	2.71
1.70V	41.3	28.9	23.2	19.7	16.8	12.3	9.93	7.14	3.99	2.65
1.75V	37.4	27.4	22.2	19.0	16.3	12.1	9.70	7.07	3.98	2.56
1.80V	33.1	25.2	21.0	18.2	15.7	11.8	9.51	7.00	3.96	2.46
1.85V	28.6	22.8	19.2	16.9	14.8	11.5	9.29	6.92	3.95	2.36

Constant Power Discharge Characteristics Unit:Watts(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	557	374	293	244	209	154	123	87.5	48.2	33.9
1.67V	515	357	284	238	203	150	120	86.6	48.1	32.5
1.70V	495	348	279	234	200	149	119	86.2	48.0	31.9
1.75V	451	329	266	226	194	145	116	85.8	47.9	30.7
1.80V	397	302	250	216	188	141	113	85.4	47.8	29.5
1.85V	343	275	237	208	181	138	111	85.3	47.7	28.3

HR1224W

Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	47.5	33.0	26.1	22.0	18.9	14.0	11.0	7.95	4.29	3.43
1.67V	44.1	31.1	24.7	21.0	18.0	13.5	10.6	7.76	4.20	3.34
1.70V	42.7	30.3	24.0	20.5	17.6	13.2	10.5	7.67	4.15	3.30
1.75V	40.5	28.8	23.0	19.8	17.0	12.8	10.2	7.56	4.10	3.26
1.80V	38.4	27.4	22.2	19.1	16.4	12.5	10.0	7.49	4.06	3.22
1.85V	36.4	26.0	21.3	18.5	16.0	12.1	9.84	7.44	4.04	3.19

Constant Power Discharge Characteristics Unit:Watts(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	570	396	313	264	228	168	132	95.4	51.5	41.2
1.67V	529	373	297	251	217	162	128	92.9	50.3	40.2
1.70V	512	363	289	246	212	159	126	92.1	49.9	39.7
1.75V	486	346	277	238	204	154	123	90.8	49.3	39.2
1.80V	461	329	266	229	197	149	121	89.9	48.8	38.8
1.85V	437	314	256	219	187	144	119	89.2	48.5	38.6

HR1227W**Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)**

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	55.4	36.5	27.5	22.1	18.7	13.6	10.9	7.88	4.55	3.23
1.67V	50.4	34.3	26.5	21.4	18.3	13.5	10.8	7.83	4.49	3.18
1.70V	45.6	32.2	25.3	20.8	17.8	13.1	10.7	7.77	4.47	3.16
1.75V	41.0	29.9	24.2	20.0	17.2	12.8	10.6	7.68	4.43	3.13
1.80V	36.4	27.5	22.7	18.9	16.3	12.4	10.3	7.49	4.35	3.08
1.85V	31.7	24.8	20.7	17.4	15.2	11.7	9.59	7.11	4.16	2.96

Constant Power Discharge Characteristics Unit:Watts(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	503	383	305	254	219	163	127	92.4	52.4	37.4
1.67V	469	358	288	242	211	162	126	91.6	52.3	37.3
1.70V	455	347	280	236	206	161	125	91.3	52.2	37.1
1.75V	428	327	268	229	200	158	124	90.3	51.8	36.8
1.80V	403	309	255	218	192	153	120	88.2	51.3	36.7
1.85V	377	290	240	208	184	144	114	84.4	49.2	35.1

HR1234W**Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)**

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	73.8	49.2	36.8	29.7	25.4	18.5	14.6	10.5	5.99	4.25
1.67V	65.8	44.8	34.4	28.2	24.2	17.8	14.1	10.3	5.86	4.15
1.70V	62.2	42.9	33.3	27.5	23.6	17.4	13.8	10.1	5.80	4.11
1.75V	56.3	39.8	31.6	26.2	22.7	16.8	13.5	9.90	5.69	4.05
1.80V	50.3	36.4	29.7	24.9	21.7	16.2	13.1	9.66	5.60	3.99
1.85V	43.3	32.9	27.6	23.5	20.7	15.6	12.7	9.39	5.50	3.92

Constant Power Discharge Characteristics Unit:Watts(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	706	506	395	328	286	211	169	124	71.7	50.8
1.67V	645	470	376	315	276	205	165	121	70.5	50.1
1.70V	618	454	366	308	270	202	163	120	70.0	49.6
1.75V	571	426	350	296	260	196	160	118	69.0	49.0
1.80V	524	400	333	285	250	191	156	116	68.1	48.3
1.85V	478	376	316	273	241	186	152	114	67.0	47.7

HR1251W**Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)**

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	85.8	64.0	50.8	43.0	36.8	27.1	21.4	15.4	8.33	6.65
1.67V	82.4	61.6	49.2	41.8	35.8	26.7	20.9	15.3	8.29	6.61
1.70V	80.5	60.5	48.0	41.2	35.2	26.4	20.7	15.2	8.28	6.58
1.75V	77.2	57.9	46.4	39.9	34.3	25.7	20.3	15.1	8.24	6.52
1.80V	72.9	54.8	44.6	38.3	32.9	24.8	19.9	14.9	8.20	6.44
1.85V	68.6	51.6	42.7	36.5	31.6	23.9	19.6	14.7	8.16	6.36

Constant Power Discharge Characteristics Unit:Watts(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	1,030	768	607	511	441	325	257	185	100	79.8
1.67V	990	742	585	500	430	320	251	184	99.6	79.4
1.70V	969	726	573	494	422	317	249	183	99.3	79.0
1.75V	927	695	552	479	408	310	244	181	98.9	78.3
1.80V	875	657	532	460	393	300	239	179	98.4	77.3
1.85V	824	619	513	441	379	290	235	177	97.9	76.4

HR1290W**Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)**

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	177	124	95.8	79.4	68	48.7	38.4	27.3	15.8	11.5
1.67V	156	114	90.2	77.6	65.2	48.4	38.1	27	15.7	11.4
1.70V	147	109	87.8	76.4	63.9	47.6	37.7	26.9	15.6	11.3
1.75V	131	102	82.9	72.8	61.1	46.2	37	26.3	15.5	11.2
1.80V	115	92.5	77.2	67.7	58	44	35.5	25.5	15.2	11.1
1.85V	98.6	82.9	70.8	60.8	53.3	40.7	32.6	23.8	14.5	10.6

Constant Power Discharge Characteristics Unit:Watts(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	1701	1282	1041	868	753	544	429	309	183	133
1.67V	1570	1193	989	850	734	540	428	307	182	132
1.70V	1509	1155	962	838	726	534	426	305	181	131
1.75V	1398	1087	913	802	704	520	416	300	179	130
1.80V	1282	1011	862	756	665	501	402	295	177	129
1.85V	1166	926	797	687	608	461	375	277	168	124

HR12120W**Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)**

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	169	148	125	107	94.2	70.5	56.1	41.2	24.5	16.8
1.67V	153	135	115	100	88.9	67.0	53.6	39.7	24.0	16.6
1.70V	146	128	109	95.5	85.6	65.3	52.5	39.2	23.7	16.4
1.75V	132	117	101	88.9	80.2	62.0	50.4	37.8	23.1	16.2
1.80V	117	105	91.2	81.3	73.3	58.3	48.0	36.0	22.2	15.8
1.85V	100	92.5	82.4	74.3	67.3	54.3	45.7	34.6	21.2	15.2

Constant Power Discharge Characteristics Unit:Watts(25°C, 77°F)

F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	1,745	1,622	1,419	1,199	1,030	771	621	462	284	197
1.67V	1,608	1,495	1,315	1,119	975	738	600	453	279	194
1.70V	1,539	1,427	1,260	1,084	947	724	590	447	276	193
1.75V	1,412	1,306	1,161	1,012	895	701	578	435	270	190
1.80V	1,273	1,181	1,060	944	853	676	561	418	263	186
1.85V	1,100	1,045	966	877	805	648	536	402	253	181

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