OSAKA
BATTERIES

GFM (2V)
VRLA Deep Cycle
AGM Batteries

The 2V VRLA Deep Cycle AGM Batteries are of the latest technology. These products can be widely used as backup power for telecommunication, UPS, Power plants, transmission substation, security system, microwave relay station, remote sensing device, emergency light system, mobile measuring equipment, power supply system, military facilities, railway signaling and auto control equipment.

Power Management Instruments

GFM (2V) VRLA Deep Cycle AGM Batteries

The GFM VRLA battery uses gas recombination technology and AGM technology. It was developed electrolyte absorption separator and valve regulated technology. GFM series is well suited for high rate, medium to long discharge.

Application

- Telecommunication & IT
- UPS/Solar
- Power Plants
- Transmission & Distribution Substations
- Industrial Control
- Security & Monitoring System (CCTV)
- Renewable & Alternate Energy Applications

Product Feature

- Product Technology: Gas Recombination , Valve Regulated Technology
- Maintenance Free: No topping up during whole service life)
- Very low gassing due to the internal gas recombination.
- Excellent recovery against the deep discharge
- One way safety valve
- Flame retardant ABS container & cover.

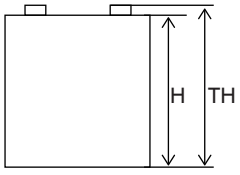
Electrical Charcteristics

Nominal voltage:	2V
Capacity range:	200AH ~ 3000AH / C10
Self discharge:	< 2~3%/month at 25°C
Operating temperature:	1) Discharge : - 40°C ~ 50°C
	2) Charge : - 20°C ~ 45°C
	3) Storage : - 20°C ~ 40°C
Recommended temperature:	20~ 25°C
Design life:	10 year (in float operation in temperature controlled environment)
Nos of cycle @ 25°C:	DOD 20% : 1600 cycle, DOD 50% : 900cycle,
	DOD 80% : 600cycle
Standby use float voltage:	2.23V @25°C
Cycle use voltage:	2.30V @25°C
Maximum charging current limit:	0.2x C10 (Temperature Coefficient '-3mV/°C)
Recommended charging current:	0.15x C10 (Temperature Coefficient '-3mV/°C)

Standard

- ISO9001
- ISO14001
- IEC 60896-21 & 22

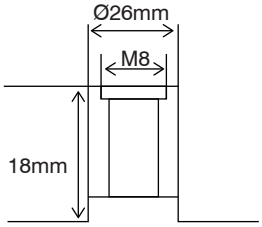
Battery Height



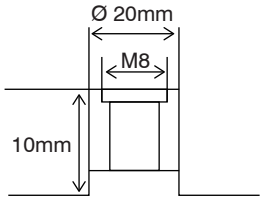
H : To Terminal
TH : To Top Cover

Terminal

GFM200~GFM1000, 2000

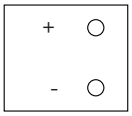


GFM1500~GFM3000

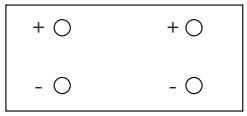


Cell Lay-Out (Terminal Position)

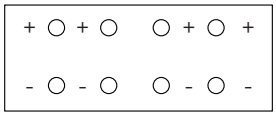
GFM200~GFM300



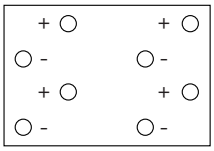
GFM400~GFM600



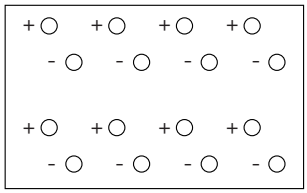
GFM800~GFM1000



GFM1500



GFM2000~GFM3000

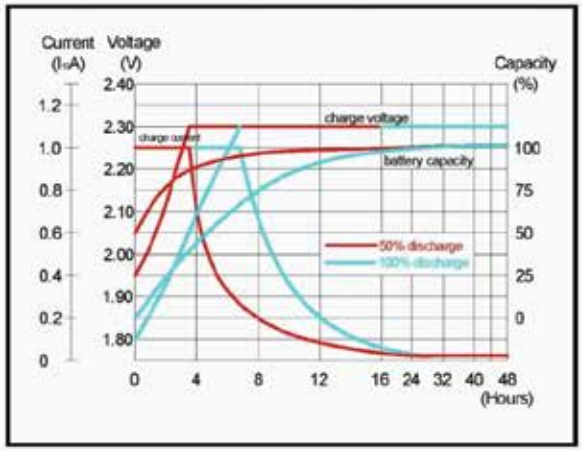


Main Specification & Type

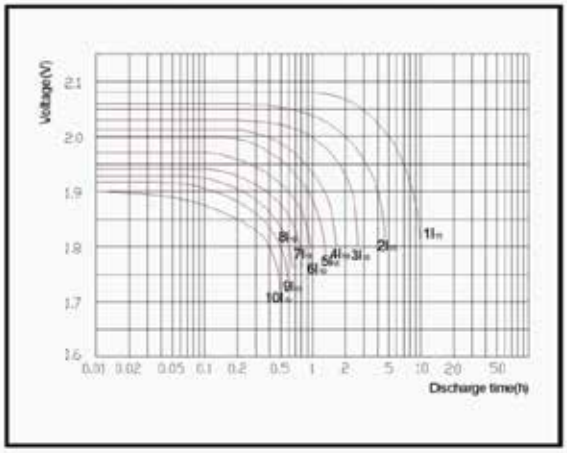
Type	Voltage (V)	Rated Capacity (AH)			Dimensions (mm)				Total Weight Appx(kg)	Internal Resistance (MΩ 25℃)	Short Circuit Current(A)
		C10 F.V=1.8	C5 F.V=1.75	C1 F.V=1.70V	L±2	W±2	H±3	TH±5			
GFM200	2	200	175	120	110	171	328	365	15	0.67	3000
GFM300	2	300	262	180	150	170	328	367	21	0.47	3700
GFM400	2	400	350	240	210	171	328	367	30	0.35	4600
GFM500	2	500	437	300	241	171	328	369	35	0.33	4900
GFM600	2	600	525	360	300	175	328	370	42	0.28	5200
GFM800	2	800	700	480	410	175	328	365	56	0.21	6800
GFM1000	2	1000	875	600	472	175	328	365	69	0.18	8100
GFM1500	2	1500	1313	900	399	350	343	382	102	0.14	10000
GFM2000	2	2000	1751	1200	489	349	343	383	135	0.11	11500
GFM3000	2	3000	2626	1800	709	352	343	382	199	0.10	17500

*All data and specifications are subject to change without any prior notice.

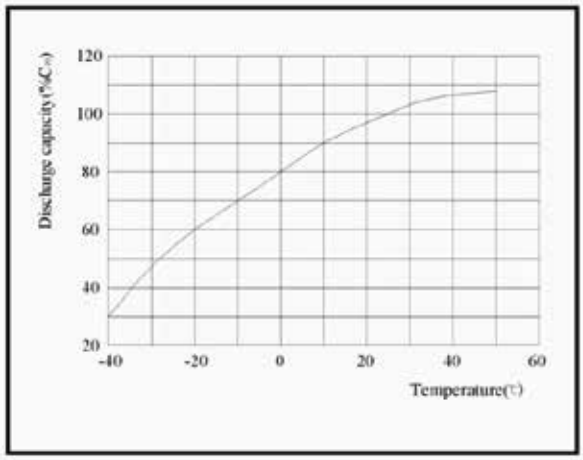
Constant Voltage Charge Characteristics



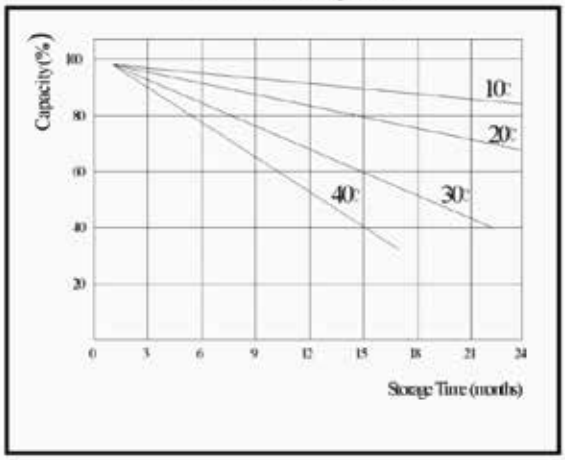
Discharge Performance at Different Discharge Rate



Capacity at Different Temperature



Curve of Storage Time and Self-discharge at Different Temperature



GFM200	Discharge Rates in Ampere to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	142	126	93	59	46	38	31	22	18
	1.85	176	140	111	64	50	40	34	23	20
	1.80	219	154	119	68	53	42	36	24	21
	1.75	243	179	126	70	55	43	36	25	21
	1.70	253	193	131	73	56	44	37	25	21
	1.65	261	203	135	74	56	44	37	25	21
	Discharge Rates in Watt to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	273	244	183	118	92	76	62	45	37
	1.85	332	266	215	124	100	80	67	47	40
	1.80	406	286	226	131	105	83	71	48	41
	1.75	442	328	238	136	107	84	72	49	42
	1.70	449	349	244	140	109	96	73	50	42
	1.65	450	364	247	142	109	86	73	50	42

GFM300	Discharge Rates in Ampere to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	213	190	140	89	68	56	46	33	28
	1.85	265	210	167	95	76	61	50	35	30
	1.80	329	231	178	101	80	63	53	36	31
	1.75	364	268	189	106	82	64	55	37	32
	1.70	379	289	197	109	84	65	55	37	32
	1.65	392	305	202	112	85	66	55	37	32
	Discharge Rates in Watt to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	410	367	275	176	137	114	94	67	56
	1.85	498	400	323	187	149	121	101	71	60
	1.80	609	430	339	196	157	125	106	73	62
	1.75	663	493	356	204	161	127	108	74	63
	1.70	673	524	366	209	163	145	109	74	64
	1.65	675	546	371	212	164	130	110	74	64

GFM400	Discharge Rates in Ampere to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	284	253	186	118	91	75	62	44	37
	1.85	353	280	222	127	101	81	67	47	40
	1.80	438	308	238	135	106	84	71	48	41
	1.75	486	358	252	141	110	86	73	49	42
	1.70	506	386	262	146	112	87	74	50	42
	1.65	522	406	270	149	113	88	74	50	43
	Discharge Rates in Watt to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	546	489	366	235	183	152	125	90	74
	1.85	664	533	430	249	199	161	134	94	80
	1.80	812	573	452	262	210	166	142	97	82
	1.75	884	657	475	272	214	169	144	98	84
	1.70	898	698	488	279	218	193	146	99	85
	1.65	900	728	494	283	218	173	146	99	85

GFM500	Discharge Rates in Ampere to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	355	316	233	148	114	94	77	55	46
	1.85	441	350	278	159	126	101	84	59	50
	1.80	548	385	297	169	133	105	89	60	52
	1.75	607	447	315	176	137	107	91	62	53
	1.70	632	482	328	182	140	109	92	62	53
	1.65	653	508	337	186	141	110	92	62	53
	Discharge Rates in Watt to Various End Voltage at 25℃									
	Final Voltage (V/Cell)			Hour						
		15	30	1	2	3	4	5	8	10
	1.85	683	611	458	294	229	190	156	112	93
	1.80	830	666	538	311	249	201	168	118	100
	1.75	1015	716	565	327	262	208	177	121	103
	1.70	1105	821	594	340	268	211	180	123	105
	1.65	1122	873	610	349	272	241	182	124	106
	1.60	1125	910	618	354	273	216	183	124	106

GFM600	Discharge Rates in Ampere to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	426	379	280	178	137	113	92	66	55
	1.85	529	420	334	191	151	121	101	70	60
	1.80	658	462	356	203	160	126	107	72	62
	1.75	728	536	378	211	164	128	109	74	63
	1.70	758	578	394	218	168	131	110	75	64
	1.65	784	610	404	223	169	132	110	75	64
	Discharge Rates in Watt to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	820	733	550	353	275	228	187	134	112
	1.85	996	799	646	373	299	241	202	142	120
	1.80	1218	859	678	392	314	250	212	145	124
	1.75	1326	985	713	408	322	253	216	148	126
	1.70	1346	1048	732	419	326	289	218	149	127
	1.65	1350	1092	742	425	328	259	220	149	127

GFM800	Discharge Rates in Ampere to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	568	506	373	237	182	150	123	89	74
	1.85	706	560	445	254	202	162	134	94	80
	1.80	877	616	475	270	213	168	142	97	83
	1.75	971	715	504	282	219	171	146	99	84
	1.70	1011	771	525	291	224	174	147	99	85
	1.65	1045	813	539	298	226	176	147	100	85
	Discharge Rates in Watt to Various End Voltage at 25℃									
	Final Voltage (V/Cell)	Minute		Hour						
		15	30	1	2	3	4	5	8	10
	1.90	1093	978	733	470	366	304	250	179	149
	1.85	1328	1066	861	498	398	322	269	189	160
	1.80	1624	1146	904	523	419	333	283	194	165
	1.75	1768	1314	950	544	429	338	288	197	168
	1.70	1795	1397	976	558	435	386	291	198	170
	1.65	1800	1456	989	566	437	346	293	198	170

GFM1000

Discharge Rates in Ampere to Various End Voltage at 25℃									
Final Voltage (V/Cell)	Minute		Hour						
	15	30	1	2	3	4	5	8	10
1.90	710	632	466	296	228	188	154	111	92
1.85	882	700	556	318	252	202	168	117	100
1.80	1096	770	594	338	266	210	178	121	104
1.75	1214	894	630	352	274	214	182	123	105
1.70	1264	964	656	364	280	218	184	124	106
1.65	1306	1016	674	372	282	220	184	125	106
Discharge Rates in Watt to Various End Voltage at 25℃									
Final Voltage (V/Cell)	Minute		Hour						
	15	30	1	2	3	4	5	8	10
1.90	1366	1222	916	588	458	380	312	224	186
1.85	1660	1332	1076	622	498	402	336	236	200
1.80	2030	1432	1130	654	524	416	354	242	206
1.75	2210	1642	1188	680	536	422	360	246	210
1.70	2244	1746	1220	698	544	482	364	248	212
1.65	2250	1820	1236	708	546	432	366	248	212

GFM1500

Discharge Rates in Ampere to Various End Voltage at 25℃									
Final Voltage (V/Cell)	Minute		Hour						
	15	30	1	2	3	4	5	8	10
1.90	1065	948	699	444	342	282	231	166	138
1.85	1323	1050	834	477	378	303	252	176	149
1.80	1644	1155	891	507	399	315	267	181	155
1.75	1821	1341	945	528	411	321	273	185	158
1.70	1896	1446	984	546	420	327	276	186	159
1.65	1959	1524	1011	558	423	330	276	187	160
Discharge Rates in Watt to Various End Voltage at 25℃									
Final Voltage (V/Cell)	Minute		Hour						
	15	30	1	2	3	4	5	8	10
1.90	2049	1833	1374	882	687	570	468	336	279
1.85	2490	1998	1614	933	747	603	504	354	300
1.80	3045	2148	1695	981	786	624	531	363	309
1.75	3315	2463	1782	1020	804	633	540	369	315
1.70	3366	2619	1830	1047	816	723	546	372	318
1.65	3375	2730	1854	1062	819	648	549	372	318

GFM2000

Discharge Rates in Ampere to Various End Voltage at 25℃									
Final Voltage (V/Cell)	Minute		Hour						
	15	30	1	2	3	4	5	8	10
1.90	1420	1264	932	592	456	376	308	222	184
1.85	1764	1400	1112	636	504	404	336	235	199
1.80	2192	1540	1188	676	532	420	356	242	207
1.75	2428	1788	1260	704	548	428	364	246	210
1.70	2528	1928	1312	728	560	436	368	248	212
1.65	2612	2032	1348	744	564	440	368	250	213
Discharge Rates in Watt to Various End Voltage at 25℃									
Final Voltage (V/Cell)	Minute		Hour						
	15	30	1	2	3	4	5	8	10
1.90	2732	2444	1832	1176	916	760	624	448	372
1.85	3320	2664	2152	1244	996	804	672	472	400
1.80	4060	2864	2260	1308	1048	832	708	484	412
1.75	4420	3284	2376	1360	1072	844	720	492	420
1.70	4488	3492	2440	1396	1088	964	728	496	424
1.65	4500	3640	2472	1416	1092	864	732	496	424

GFM3000	Discharge Rates in Ampere to Various End Voltage at 25℃								
	Final Voltage (V/Cell)	Minute		Hour					
		15	30	1	2	3	4	5	8	10
	1.90	2130	1896	1398	888	684	564	462	332	276
	1.85	2646	2100	1668	954	756	606	504	352	299
	1.80	3288	2310	1782	1014	798	630	534	362	311
	1.75	3642	2682	1890	1056	822	642	546	370	315
	1.70	3792	2892	1968	1092	840	654	552	373	318
	1.65	3918	3048	2022	1116	846	660	552	374	319
	Discharge Rates in Watt to Various End Voltage at 25℃								
	Final Voltage (V/Cell)	Minute		Hour					
		15	30	1	2	3	4	5	8	10
	1.90	4098	3666	2748	1764	1374	1140	936	672	558
	1.85	4980	3996	3228	1866	1494	1206	1008	708	600
	1.80	6090	4296	3390	1962	1572	1248	1062	726	618
	1.75	6630	4926	3564	2040	1608	1266	1080	738	630
	1.70	6732	5238	3660	2094	1632	1446	1092	744	636
	1.65	6750	5460	3708	2124	1638	1296	1098	744	636

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