



GFMJ-490 7 OPzV 490



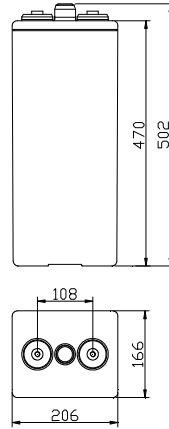
Application:

- Solar energy, wind energy
- Electric power, nuclear power
- Communication
- Ship, maritime affairs
- UPS, medical facilities and emergency lighting
- Situation with high environmental protection and energy-saving

Features of performance application

- ✚ Designed service life of 20 years
- ✚ High cycle service life
- ✚ Better temperature resistance performance
- ✚ Excellent deep cycle performance
- ✚ Superior low current discharge performance
- ✚ Stronger constant power discharge capability
- ✚ Better charge acceptability
- ✚ Better safety performance and reliability
- ✚ Modular and personified installation design
- ✚ High Performance/price ratio and low yearly operating cost
- ✚ Eco-friendly, cycle application

| | |
|---|--|
| Rated voltage | 2 V |
| Capacity@ 25°C (77°F) | 490Ah @ 10hr to 1.80V per cell |
| Weight | About 39.5kg (86.9 lb) |
| Reference internal resistance (charged) | About 0.34mΩ@ 25°C (77°F) |
| Short-circuit current | About 6029A (0.1S reference value) |
| Max discharge current | 1470A (5sec) |
| Self-discharge | < 20% 180 days @ 25°C (77°F) |
| Temperature range | Application: -20°C ~ 50°C (-4°F ~ 122°F) Storage: 0°C ~ 20°C (32°F ~ 68°F) Recommendation: 20°C ~ 25°C (68°F ~ 77°F) |
| Max charge current | 98A |
| Charge voltage @ 25°C (77°F) | Float charge: 2.23V, average charge: 2.35V Temperature compensation factor: -3 mV/°C |
| Terminal output | M10 copper terminal (HPb59-1) |
| Recharge time | See figure 2 |



Structure features of Shuangdeng GFMJ series VRLA gel battery:

- Electrolyte: primary material adopts Germany gas silicon dioxide, the material will be the thin collosol state when it's injected initially, and it can fill the whole plate space of battery, and each part of plate can react evenly. The flooded electrolyte design can avoid dry up of battery when it's in high temperature and over charged, the thermal capacity is big and heat-elimination is fine, accordingly, thermal runaway can be avoided. The electrolyte is in the gel state in finished battery without flowing, accordingly, leakage and lamination can be avoided.
- Plate: positive plate adopts tubular type plate which can effectively prevent active substance falling, the positive plate frame is molded with multi-component alloy, the crystal particle of alloy structure is tiny and dense, the corrosion-resisting performance is fine and service life is long. Negative plate adopts pasted plate, the grid adopts radiated structure which enhances utilization ratio of active substance and discharge capability of strong current, and the charge reception capability is strong.
- Battery case: it's made of ABS material, corrosion prevention is fine, strength is high, and appearance is beautiful, it can be sealed with lid reliably which can prevent potential leakage risk.
- Separator: adopt special micro-pore PVC-SiO₂ separator from Europe AMER-SIL Company, the porosity of separator is big and resistance is low. It has bigger electrolyte storage space.
- Terminal sealing: the built-in copper core lead-base terminal post has stronger current carrying capacity and corrosion resistance. The unique double sealing structure of terminal post can effectively avoid leakage, to guarantee reliability of terminal post sealing.
- Safety valve: adopt Germany technology, constant opening and closing valve, high reliability, the accumulator case expansion, damage and electrolyte dry up can be avoided.



Execution standard:

- IEC60896-21/22 DIN40742
- BS EN 61427-2002
- YD/T 1360-2005
- Q/321284KCC 03-2006

Authentication and certificate:

Certificate of Qualification on Perfecting Measurement & Measuring System

- GB/T19022-2003
- ISO10012:2003、IDT

Quality Management System

- Authentication
- GB/T19001-2000
- NO.03006Q10002R0M-2

Environmental Management System

- Authentication
- ISO 14001:2004
- NO.010607E2024R1M-2

Occupational Health Management System

- Authentication
- GB/T28001-2001
- NO.010607S10147R0M-2

Product authentication:

- YD/T1360-2005
- NO.030074640567R1M

CE authentication

- EN 61000-6-3:2001+A11:2004
- EN 61000-6-1:2001

National Industrial Product Production License

- XK06-044-00012

Product Quality Test Free Certificate

- (2006)GM(321630488)

Export product quality license

Discharge current at different final voltages and different discharge rates unit: A (25°C, 77°F)

| | 5min | 10min | 15min | 30min | 45min | 1hr | 1.5hr | 2hr | 3hr | 4hr | 5hr | 8 hr | 10 hr | 20hr | 100 hr | 120hr |
|-------|------|-------|-------|-------|-------|-----|-------|-----|-----|-----|-----|------|-------|-------|--------|-------|
| 1.90V | 466 | 397 | 292 | 273 | 245 | 203 | 152 | 137 | 106 | 88 | 75 | 55 | 46 | 23 | 5.92 | 5.08 |
| 1.85V | 480 | 409 | 350 | 303 | 260 | 237 | 167 | 159 | 121 | 99 | 85 | 61 | 44 | 25.30 | 6.24 | 5.35 |
| 1.80V | 504 | 481 | 448 | 371 | 286 | 259 | 211 | 164 | 123 | 101 | 87 | 61 | 51 | 26.56 | 6.45 | 5.53 |
| 1.75V | 525 | 519 | 515 | 406 | 301 | 275 | 232 | 171 | 127 | 104 | 88 | 62 | 52 | 27.62 | 6.61 | 5.61 |

Discharge power at different final voltages and different discharge rates unit: W (25°C, 77°F)

| | 5min | 10min | 15min | 30min | 45min | 1hr | 1.5hr | 2hr | 3hr | 4hr | 5hr | 8 hr | 10 hr | 20hr | 100 hr | 120hr |
|-------|------|-------|-------|-------|-------|-----|-------|-----|-----|-----|-----|------|-------|-------|--------|-------|
| 1.90V | 838 | 714 | 458 | 418 | 370 | 321 | 288 | 255 | 199 | 166 | 143 | 104 | 89 | 46.00 | 11.84 | 10.16 |
| 1.85V | 874 | 744 | 499 | 445 | 405 | 365 | 324 | 282 | 221 | 184 | 158 | 112 | 97 | 50.09 | 12.36 | 10.59 |
| 1.80V | 918 | 875 | 731 | 628 | 560 | 492 | 413 | 334 | 262 | 214 | 180 | 126 | 105 | 52.06 | 12.64 | 10.84 |
| 1.75V | 950 | 940 | 833 | 698 | 623 | 547 | 453 | 358 | 274 | 222 | 185 | 128 | 107 | 53.31 | 12.76 | 10.83 |



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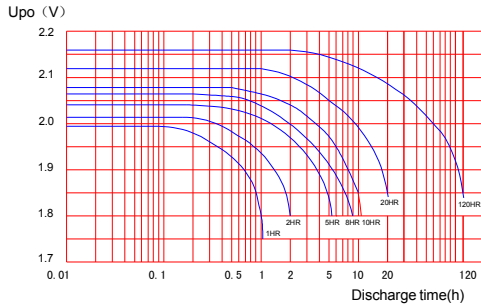


Figure 1 Discharge characteristic curve (20°C)

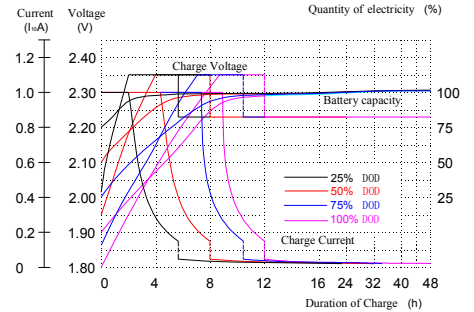


Figure 2 Constant voltage charge characteristic curve

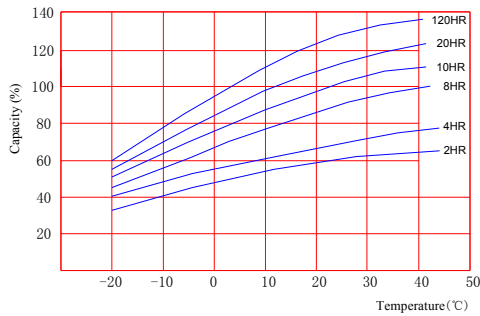


Figure 3 Relation curves between capacity and temperature

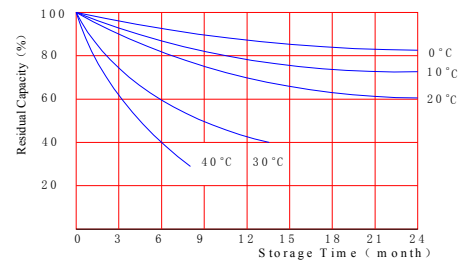


Figure 4 Self-discharge characteristic curve

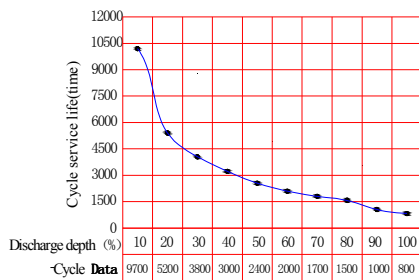


Figure 5 Relation curve between discharge depth and cycle service life

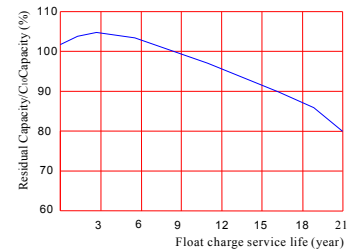


Figure 6 Relation curve between float charge service life and residual capacity

Remark: a) test circumstances: 20-30°C, relative humidity is 50~80percent;
b) charge mode: electricity of charge is equal to 105~115percent of discharge
c) residual capacity is 80 percent C₁₀

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Shuangdeng Group promises to provide excellent engineering service for customers, including product solution, installation design and on-site maintenance.

The above data are only taken as reference instead of inspection standard. Additional notification won't be available for parameter change due to improvement and regulation of product. Inspection shall be performed in accordance with standards.

We must make a statement, when the battery service life and safe operating performance is confirmed, the test condition will be stricter; accordingly, the battery shall not be used in these conditions, because it's difficult for battery to reach expected service life.