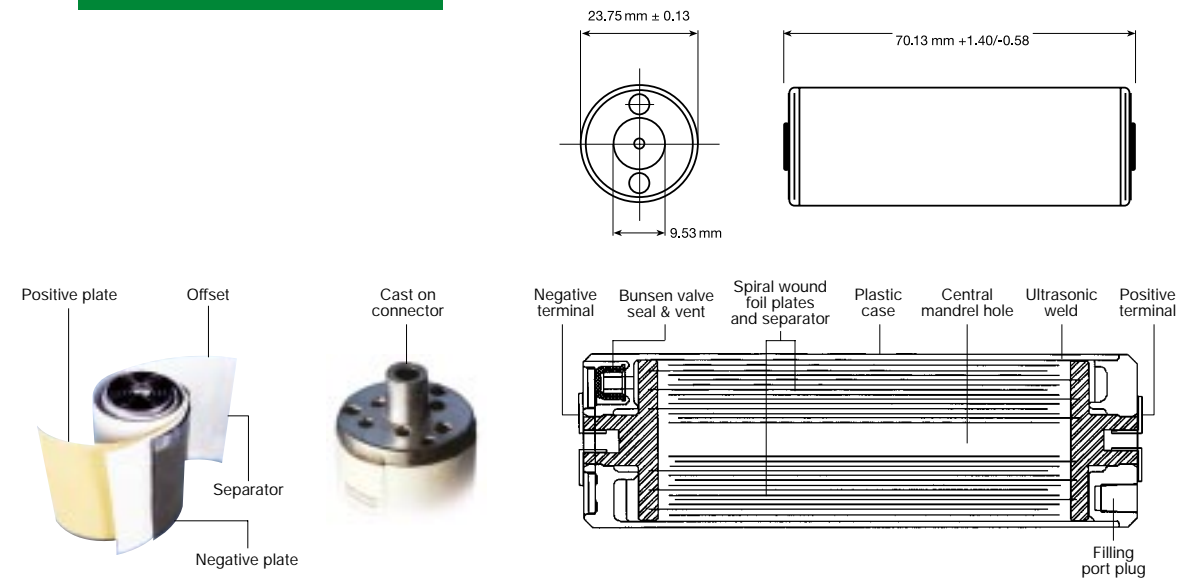


## Cell Construction



## Specifications

Model : GP100TMFSC

Description	Ratings	Conditions
Nominal voltage	2V	
Minimum capacity	1.0 Ah / 1 hour 0.6 Ah / 43 seconds	1 Amp Rate (1.5V cutoff) 50 Amp Rate (1.3V cutoff)
Nominal internal resistance	≤ 2.0 mΩ	Fully charged @25°C
Nominal cycle life	500	100% DOD 10C (10 Amps) Discharge, to 80% of initial capacity (continuous)
Estimated float life with intermittent charging	3-5 years	@ 20°C
Recommended maximum storage time between recharges (-50% SOC)	2 months (or to 2.0V / cell) 6 months (or to 2.0V / cell)	@ 20°C @ 0°C
Terminal type	Tin Plated Brass	
Recommended operating temperature	-40°C to +50°C	
Peak short circuit current	> 1000 Amps	
Nominal dimension	Diameter : 23.75 mm Height : 70.13 mm	
Weight per cell	88.5 g	
Volume per cell	31.3 ml	

## TMF® Lead Acid



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# GP Batteries

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# GP Batteries

## TMF® Lead Acid Rechargeable Batteries





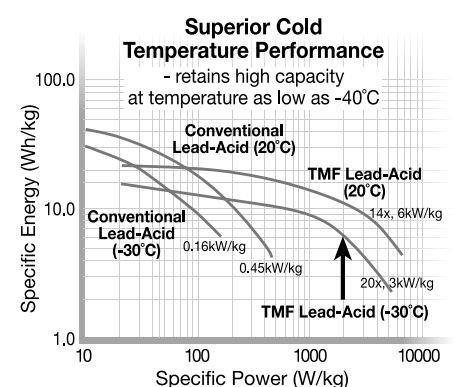
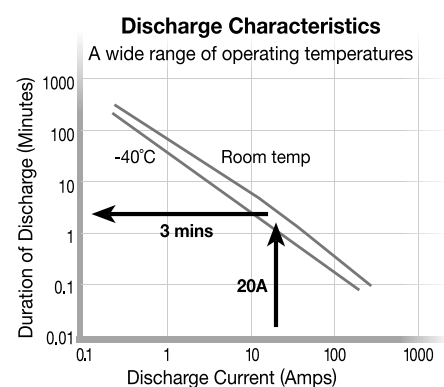
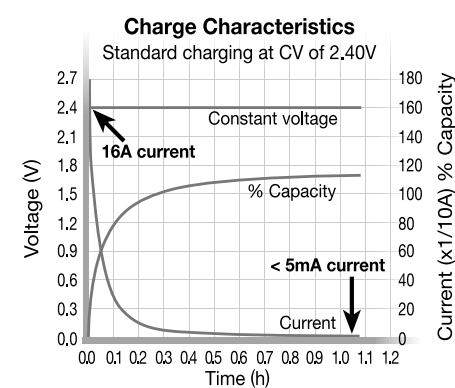
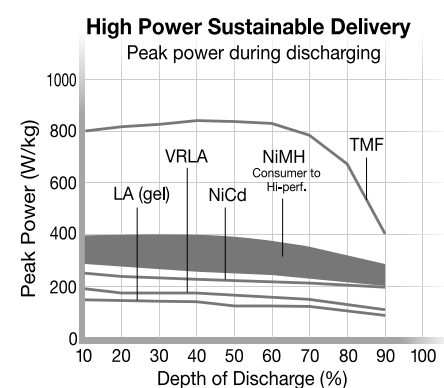
# TMF<sup>®</sup> Thin Metal Film Advanced Battery Technology

The patented Thin Metal Film technology combines the best features of traditional sealed-lead battery chemistry with an advanced mechanical construction. The result of this revolutionary development makes it possible to pack an incredible amount of power into a very small cell with extremely efficient energy transfer both in discharging and recharging. Impressive demonstrations of the technology's benefits can be found in numerous high-powered applications and applications that simply did not exist before.

## Major Features

- Ultra high power density**  
 Advanced technology provides ultra-high power performance for TMF cells at 6.5kW/kg.
- Fast charge capability**  
 With high power fast charger, TMF cells can be full charged within 20 minutes.
- Superior low temperature performance**  
 TMF cells can retain high power at temperature as low as -40°C.
- High rate of discharge**  
 TMF cells has a wide range of discharging capabilities with outstanding performance in high discharge rates.
- Small sizes and light weight**  
 TMF cells provide the same cranking power of conventional lead acid batteries with 5 times lighter weight.
- Low internal resistance**  
 Internal resistance is less than 2.0mOhm at room temperature. It results in high current delivery with minimal heat generation.
- Long cycle life**  
 TMF cells can deliver nominal cycle life of 500 cycles.
- Long float life**  
 TMF cells can deliver 3 to 5 years of estimated float life with constant voltage charging.
- No memory effect**  
 Common like all lead acid batteries, TMF cells do not show any memory effect.

## Performance Characteristics



## Major Applications

Automotive engine starting,  
Marine engine starting,  
Engine power generator system starting,  
Standby power applications, UPS,  
Military standby power applications,  
Hybrid electric vehicle and all standby instantaneous high power applications.



## Battery Handling and Precautions

### Charge

Charge Voltage	Charge to 2.40V per cell at constant voltage mode, each being supervised.
Charge Current	No control limit, best below 10A.
Charge Temperature	Charge in the range of 0°C to 45°C.

### Discharge

Discharge Current	Size the discharge over-current protection elements to be able to take the maximum current.
Discharge Temperature	Discharge in the range of -40°C to 50°C.
Over-discharge	Do not discharge below 1.70V/cell under significant loads.

### Storage

Storage Temperature	Store at -20°C to 20°C.
Long Term Storage	Store at 50% state of charge at 0°C for extended storage periods over one year, recharge the battery to 2.40V to prevent over-self-discharge of the battery.

### Equipment Design

Reverse Polarity Prevention	Terminal signs "+" and "-" must be clearly indicated on the equipment.
Battery Location	Battery must be well protected and mounted so that they are not subjected to damage due to poor handling.
Damage Prevention Due to Drop	The PCBA, wiring and cells should be protected inside the battery pack by pack design so that they are difficult to short due to drop.

### Safety

Don't Dismantle	Do not disassemble or modify the battery pack. Should the pack is opened, the battery pack may leak, emitting corrosive liquid that may cause burns, burst, overheating or ignite.
Don't Short Circuit	Do not connect the positive (+) and negative (-) terminals. Both terminals must be kept in place to prevent short-circuiting during storage and transportation. Otherwise, short-circuiting will occur, causing the battery pack to leak, overheat, emit smoke, burst and/or ignite.
Don't Put Into Fire	Do not discard the battery pack into fire or heat it. Otherwise, inner-insulation, gas release vent or safety features would be damaged, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.
Don't Put Into Water	Do not immerse the battery pack in water or seawater, and do not allow it to get wet. Otherwise, the protective features may be damaged, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.
Don't Pierce	Do not pierce the battery pack with nail or other sharp objects, or strike it with hammer, or step on it. Otherwise, the battery pack may be damaged and deformed, possibly leading to internal short-circuiting, acid leakage, overheating, smoke emission, bursting and/or ignition.
Don't Strike or Throw	Do not strike or throw the battery pack. Otherwise, the protective features may be damaged, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.
Don't Direct Soldering	Do not directly solder onto battery. Always solder onto solder tags for connection. Otherwise, soldering heat would melt down its insulation, damage its gas release vent or safety features, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.



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