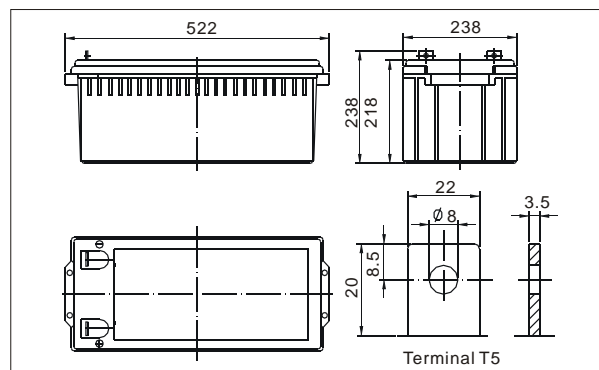


● Outer dimensions (mm)



TianChang sealed lead-acid rechargeable battery (VRLA battery) is leak-proof and maintenance free. The Superiority of VRLA battery is derived from its uniquely efficient oxygen recombination technology. The oxygen evolved from the positive plates diffuses through the micro porous glass fiber mat to the negative plates where it is changed back to water by recombination reaction, eliminating the need for water addition. The result is a maintenance free battery.

● Battery Construction

Component	Positive plate	Negative plate	Container	Cover	Safety valve	Terminal	Separator	Electrolyte
Raw material	Lead dioxide	Lead	ABS	ABS	Rubber	Copper	Fiberglass	Sulfuric acid

● General Features

- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance or water adding.
- Not restricted for air transport-complies with IATA/ICAO Special Provision A67.
- UL-recognized component.
- Can be mounted in any orientation.
- Computer designed lead, calcium tin alloy grid for high power density.
- Long service life, float or cyclic applications.
- Maintenance-free operation.
- Low self discharge.

● Application

- Electric powered vehicles
- Golf cars and buggies
- PDA equipment as laptop computer,
- Camera, phone sets, medical sets
- Power tools, Lawn mowers, vacuum cleaners
- Electric Powered Toys
- Wheel Chairs

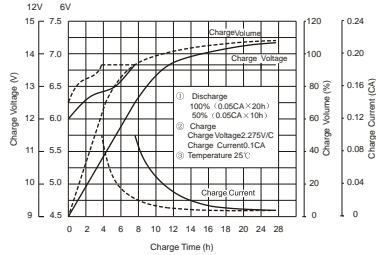
● Specifications

Nominal Voltage		12V
Capacity (10 hr 25°C)		180 Ah
Design Life		10 Years
Dimensions	Length	522 mm (20.55 inch)
	Width	238 mm (9.37 inch)
	Height	218 mm (8.58 inch)
	Total Height	238 mm (9.37 inch)
Approx. Weight		57 Kg
Capacity 25°C (77°F)	10 hr rate	180 Ah
	3 hr rate	150 Ah
	1 hr rate	125 Ah
Internal Resistance (Full charged Battery at 25°C (77°F))		3 mΩ

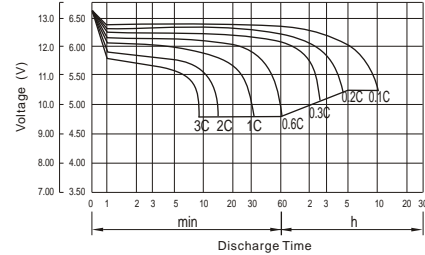
Capacity affected by Temperature (20hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Self-Discharge at 25°C	3 month	Remaining capacity: 91%
	6 month	Remaining capacity: 82%
	12 month	Remaining capacity: 65%
Normal operating temperature		25°C ± 3°C (77°F ± 5°F)
Operating temperature range		-15°C ~ 50°C (5 ~ 122°F)
Float charging voltage (25°C)		13.6 to 13.8V
Cyclic charging voltage (25°C)		14.5 to 14.9V
Maximum charging current		60A
Terminal material		Copper
Maximum Discharge current		1600A (5sec)

TC12-180-D

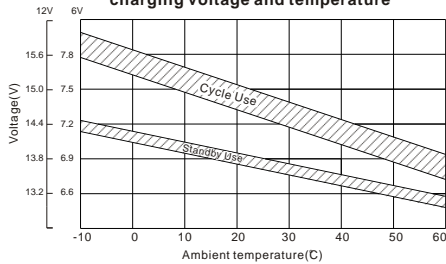
Charge characteristic Curve for standby use



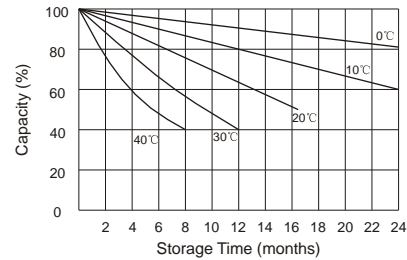
Discharge characteristic (25°C/77°F)



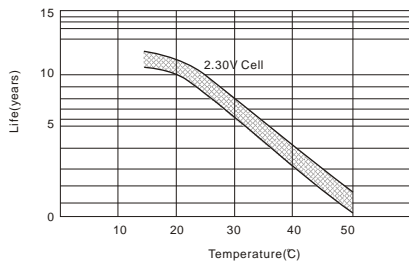
Relationship between charging voltage and temperature



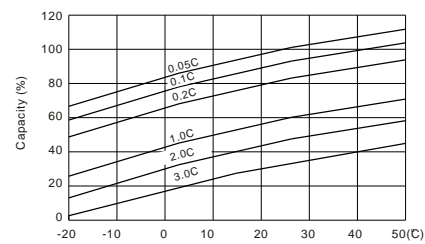
Self-discharge characteristic



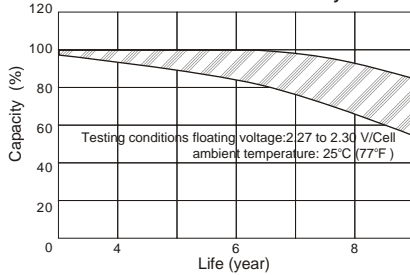
Temperature effects on float life



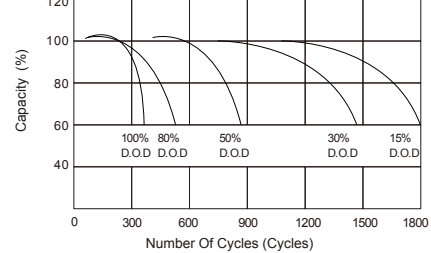
Temperature effects on capacity



Life characteristics of Standby use



Cycle service life in relation to depth of discharge



Discharge Constant Current (Amperes at 77°F/25°C)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	519.5	387.9	320.0	202.8	117.0	70.01	48.39	39.66	32.46	22.36	18.91	10.40
10.0V	504.5	369.1	313.5	199.4	116.5	69.48	48.20	39.47	32.27	22.18	18.72	10.21
10.2V	494.9	356.1	308.5	197.7	115.4	68.96	47.83	39.29	32.08	22.00	18.54	10.02
10.5V	454.2	328.6	293.8	192.7	114.3	68.43	47.65	38.92	31.70	21.81	18.36	9.83
10.8V	418.8	299.6	276.3	184.3	111.6	67.20	46.35	38.01	31.12	21.45	18.18	9.64
11.1V	376.4	267.8	247.8	172.6	106.0	64.22	44.31	36.17	29.79	20.54	17.63	9.07

Discharge Constant Power (Watts at 77°F/25°C)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.6V	5373	4131	3520	2312	1352	825.2	575.8	472.7	387.3	267.0	225.9	124.7
10.0V	5267	4005	3464	2284	1349	820.8	576.0	472.1	386.3	265.7	224.5	122.5
10.2V	5265	3899	3425	2267	1338	815.9	573.5	471.1	384.9	263.9	222.5	120.2
10.5V	4898	3631	3267	2215	1326	809.9	571.3	466.7	380.4	261.8	220.3	118.0
10.8V	4557	3347	3081	2123	1302	799.6	555.7	456.1	373.5	257.4	218.1	115.7
11.1V	4214	3026	2773	1994	1246	769.9	531.7	434.0	357.4	246.5	211.6	108.9

(Note)The above characteristics data are average values.