

6FM55-X 12V 55Ah(20hr)

The rechargeable batteries are lead-lead dioxide systems. The dilute sulfuric acid electrolyte is absorbed by separators and plates and thus immobilized. Should the battery be accidentally overcharged producing hydrogen and oxygen, special one-way valves allow the gases to escape thus avoiding excessive pressure build-up. Otherwise, the battery is completely sealed and is, therefore, maintenance-free, leak proof and usable in any position.



Battery Construction

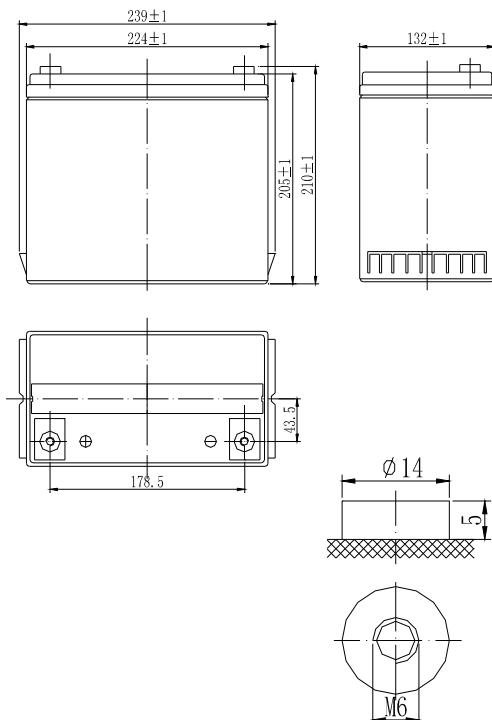
Component	Positive plate	Negative plate	Container	Cover	Safety valve	Terminal	Separator	Electrolyte
Raw material	Lead dioxide	Lead	ABS	ABS	Rubber	Copper	Fiberglass	Sulfuric acid

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.

Dimensions and Weight

Length(mm / inch)	239 / 9.41
Width(mm / inch)	132 / 5.20
Height(mm / inch)	205 / 8.07
Total Height(mm / inch)	210 / 8.27
Approx. Weight(Kg / lbs)	18 / 39.75



Performance Characteristics

Nominal Voltage	12V
Number of cell	6
Design Life	10 years
Nominal Capacity 77°F(25°C)	
20 hour rate (2.75A, 10.5V)	55Ah
10 hour rate (5.2A, 10.5V)	52Ah
5 hour rate (9.23A, 10.5V)	46.15Ah
1 hour rate (35.1A, 9.6V)	35.1Ah
Internal Resistance	
Fully Charged battery 77°F(25°C)	5.8mOhms
Self-Discharge	
3% of capacity declined per month at 20°C(average)	
Operating Temperature Range	
Discharge	-20~60°C
Charge	-10~60°C
Storage	-20~60°C
Max. Discharge Current 77°F(25°C)	550A(5s)
Short Circuit Current	1400A
Charge Methods: Constant Voltage Charge 77°F(25°C)	
Cycle use	14.4-14.7V
Maximum charging current	16.5A
Temperature compensation	-30mV/°C
Standby use	13.6-13.8V
Temperature compensation	-20mV/°C

Discharge Constant Current (Amperes at 77°F25°C)

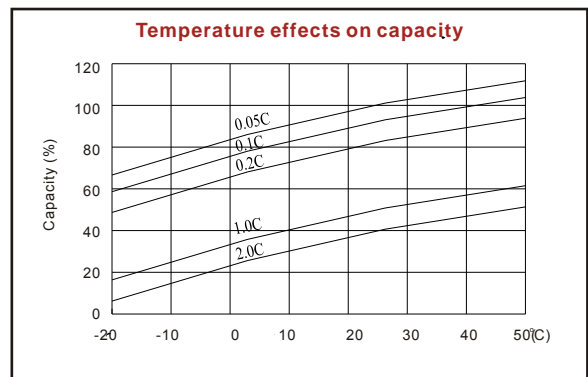
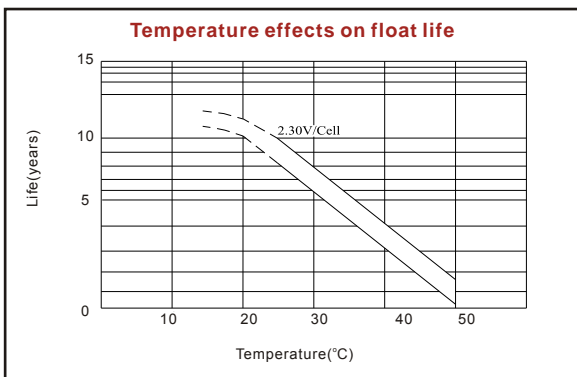
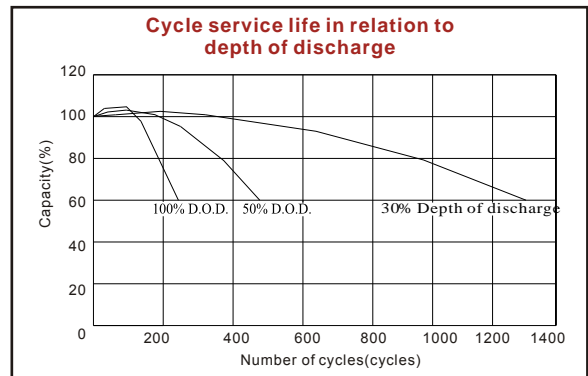
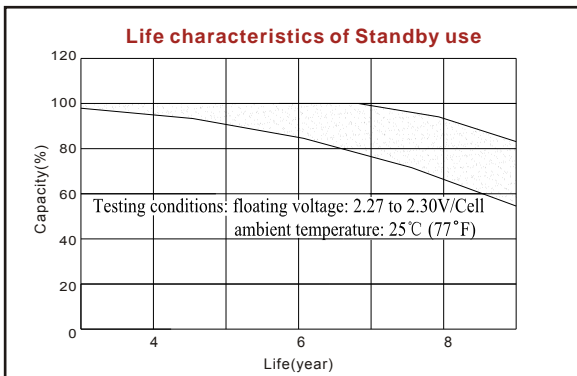
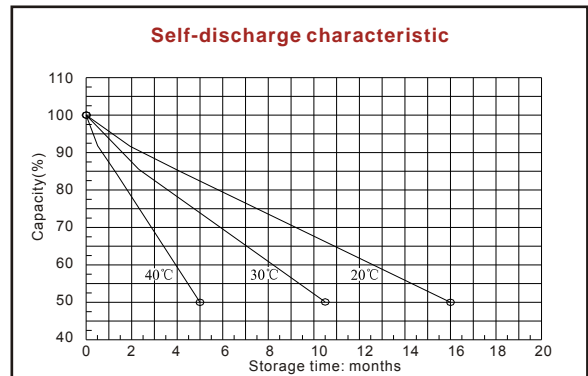
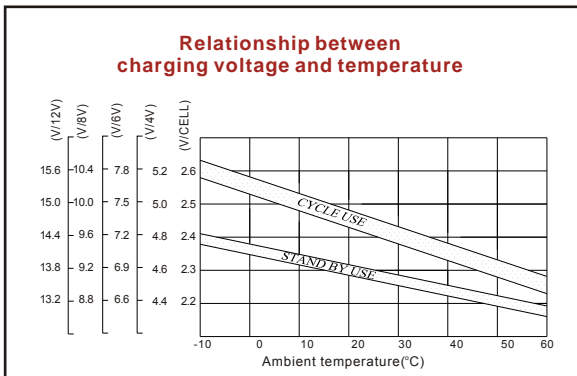
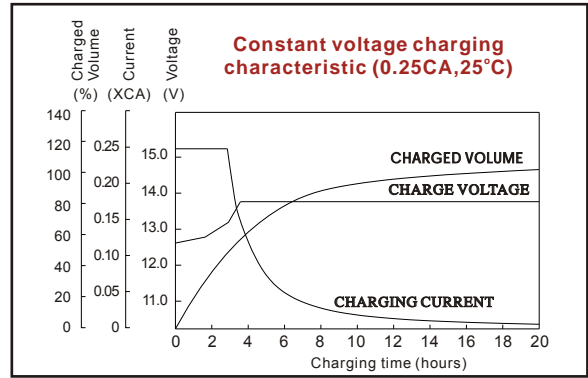
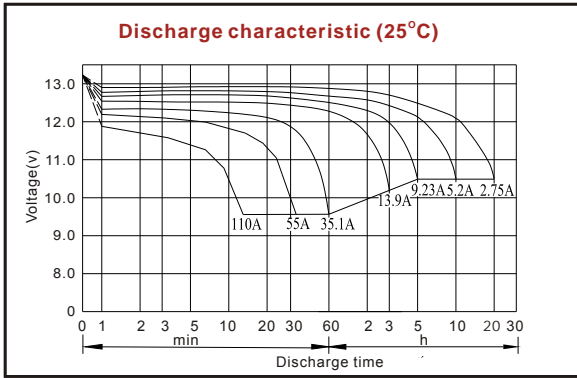
End Point Volts/Cell	10min	15min	30min	1h	3h	5h	10h	20h
1.60V	129	99.4	59.2	35.1	14.6	9.82	5.35	2.76
1.65V	124	95.4	57.4	34.2	14.2	9.57	5.30	2.76
1.70V	115	90.6	55.6	33.3	13.9	9.40	5.25	2.76
1.75V	106	85.8	53.8	32.5	13.6	9.23	5.20	2.75
1.80V	99.8	79.5	51.9	31.7	13.3	9.06	5.15	2.75

Discharge Constant Power (Watts at 77°F25°C)

End Point Volts/Cell	10min	15min	30min	45min	1h	2h	3h	5h
1.60V	238	185	111	85.3	68.9	41.1	29.1	18.8
1.65V	225	177	109	84.0	67.3	40.2	28.5	18.6
1.70V	213	169	107	82.3	65.8	39.4	27.9	18.2
1.75V	200	162	105	80.5	64.3	38.4	27.3	18.0
1.80V	186	154	104	78.4	62.6	37.4	26.7	17.9

(Note)The above characteristics data are average values obtained within three charge/discharge cycles not the minimum values.

6FM55X 12V55Ah



6FM100-X 12V 100Ah

The rechargeable batteries are lead-lead dioxide systems. The dilute sulfuric acid electrolyte is absorbed by separators and plates and thus immobilized. Should the battery be accidentally overcharged producing hydrogen and oxygen, special one-way valves allow the gases to escape thus avoiding excessive pressure build-up. Otherwise, the battery is completely sealed and is, therefore, maintenance-free, leak proof and usable in any position.

- Positive and negative plates in lead-calcium-tin alloy
- Stable Quality & High Reliability
- Sealed Construction
- Long Service Life
- Maintenance-Free Operation
- Low Pressure Venting System
- Low Self Discharge
- U. L. Component Recognition
- Six months shelf life at 20°C
- Design life 10 years



Dimensions and Weight

	SI Units	English Units
Length	330mm	13.0inch
Width	171mm	6.73inch
Height	215mm	8.46inch
Total Height	220mm	8.66inch
Approx. Weight	32.0Kg	70.6lbs

Performance Characteristics

- Nominal Voltage 12V
- Number of cell 6
- Nominal Capacity 77°F(25°C)
 - 10 hour rate (10.0A, 10.8V) 100Ah
 - 5 hour rate (17.5A, 10.5V) 87.5Ah
 - 1 hour rate (66.2A, 9.60V) 66.2Ah
- Internal Resistance
 - Fully Charged battery 77°F(25°C)5mOhms
- Self-Discharge
 - 3% of capacity declined per month at 20°C(average)
- Operating Temperature Range
 - Discharge -20~60°C
 - Charge -10~60°C
 - Storage -20~60°C
- Max. Discharge Current 77°F(25°C) 900A(5s)
- Short Circuit Current 2100A
- Charge Methods: Constant Voltage Charge 77°F(25°C)
 - Cycle use 14.4-14.7V
 - Maximum charging current 30A
 - Temperature compensation -30mV/°C
- Standby use 13.6-13.8V
 - Temperature compensation -20mV/°C

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

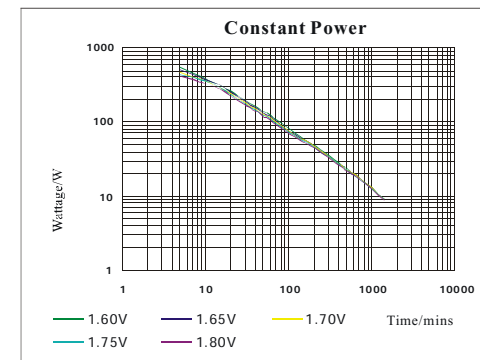
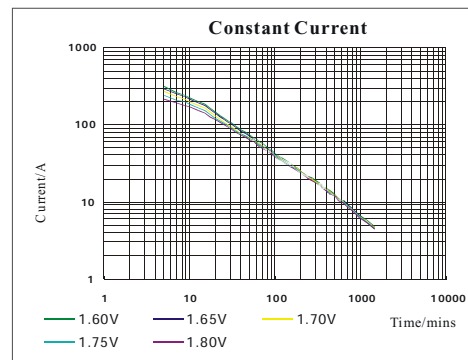
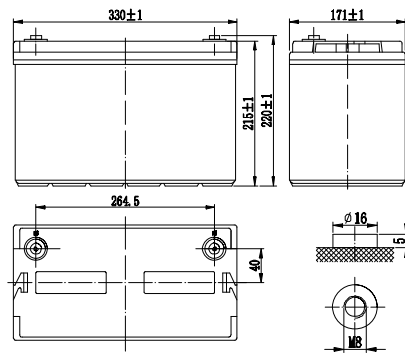
6FM100-X 12V 100Ah

Discharge Data

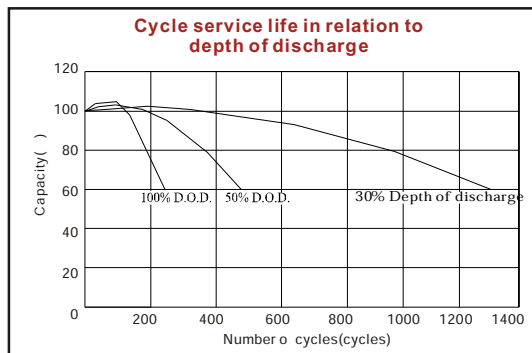
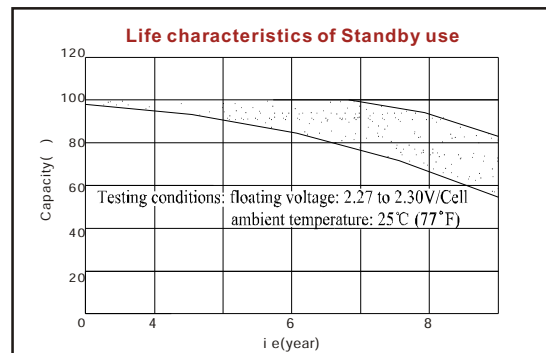
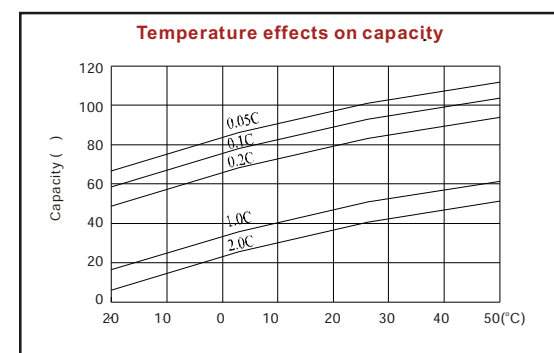
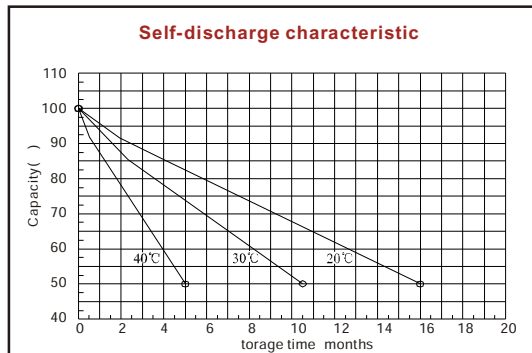
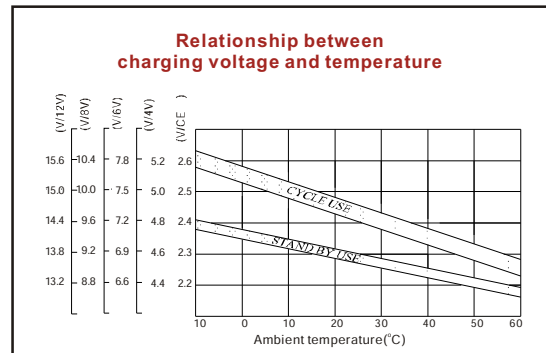
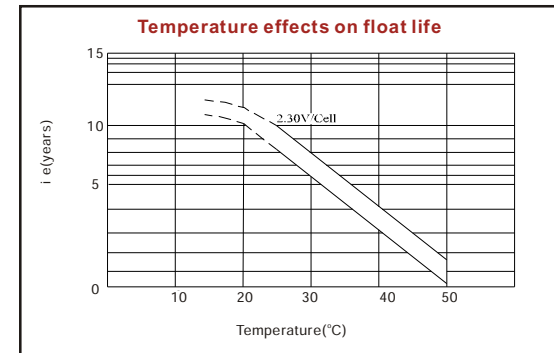
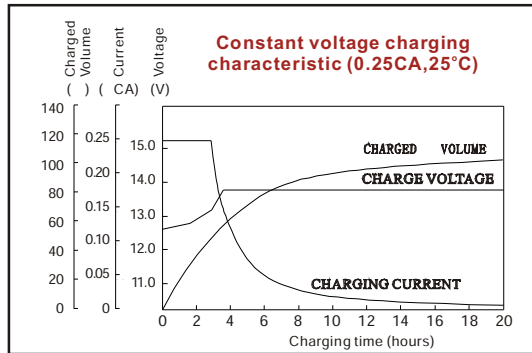
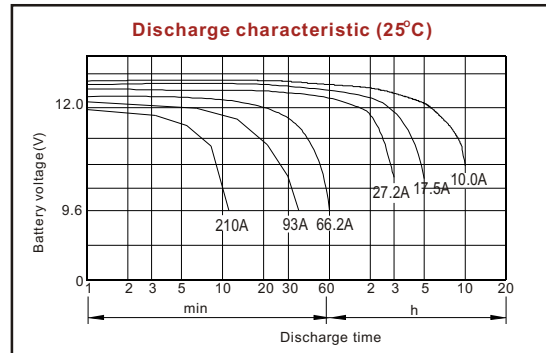
Constant Current Discharge Data (Amperes at 25°C)																									
End Voltage Per cell / V	5min	10min	15min	20min	25min	30min	35min	40min	45min	50min	55min	1h	1.5h	2h	2.5h	3h	4h	5h	6h	7h	8h	9h	10h	12h	24h
1.60	314	229	185	146	123	108	96.3	87.4	80.5	74.8	70.1	66.2	47.1	37.5	31.8	27.9	22.4	19.0	16.3	14.3	12.9	11.7	10.8	9.06	4.70
1.65	296	221	178	141	119	104	93.2	85.0	78.7	72.2	66.9	62.5	45.1	36.4	31.2	27.7	21.8	18.3	15.7	13.9	12.5	11.5	10.6	9.01	4.68
1.70	270	200	164	130	110	96.0	86.1	78.8	73.0	68.4	64.6	61.5	44.4	35.8	30.6	27.2	21.5	18.0	15.5	13.7	12.4	11.3	10.5	8.93	4.59
1.75	242	187	153	123	105	93.0	83.7	76.7	71.3	67.0	63.4	60.5	43.7	35.3	30.2	26.9	21.0	17.5	15.1	13.4	12.1	11.1	10.3	8.76	4.50
1.80	221	175	143	117	101	91.0	82.0	75.3	70.0	65.0	60.8	57.4	41.4	33.3	28.5	25.3	20.2	17.2	14.8	13.1	11.8	10.8	10.0	8.50	4.42

Constant Power Discharge Data (Watts per cell at 25°C)																									
End Voltage Per cell / V	5min	10min	15min	20min	25min	30min	35min	40min	45min	50min	55min	1h	1.5h	2h	2.5h	3h	4h	5h	6h	7h	8h	9h	10h	12h	24h
1.60	547	392	321	260	223	199	178	162	150	140	131	124	88.4	70.6	60.0	52.8	42.2	35.8	30.6	26.9	24.2	22.0	20.3	17.4	9.25
1.65	517	379	315	252	213	188	170	156	146	135	125	118	84.5	67.8	57.8	51.2	41.3	35.4	30.3	26.7	23.9	21.8	20.1	17.1	9.20
1.70	478	360	299	241	206	183	163	149	137	128	121	114	82.6	66.8	57.3	50.9	41.0	35.0	30.0	26.4	23.8	21.7	20.0	17.0	9.13
1.75	441	353	294	236	200	177	159	145	134	125	117	111	80.0	64.5	55.3	49.1	39.9	34.4	29.4	25.9	23.3	21.2	19.6	16.7	8.98
1.80	415	329	279	225	193	171	154	141	131	120	112	104	76.5	62.5	54.1	48.5	39.4	34.0	29.0	25.5	22.8	20.8	19.1	16.2	8.74

(Note) The above characteristics data are average values obtained within three charge/discharge cycles not the minimum values.



6FM100-X 12V 100Ah



6FM120D-X 12V 113Ah(10hr)

The rechargeable batteries are lead-lead dioxide systems. The dilute sulfuric acid electrolyte is absorbed by separators and plates and thus immobilized. Should the battery be accidentally overcharged producing hydrogen and oxygen, special one-way valves allow the gases to escape thus avoiding excessive pressure build-up. Otherwise, the battery is completely sealed and is, therefore, maintenance-free, leak proof and usable in any position.



Battery Construction

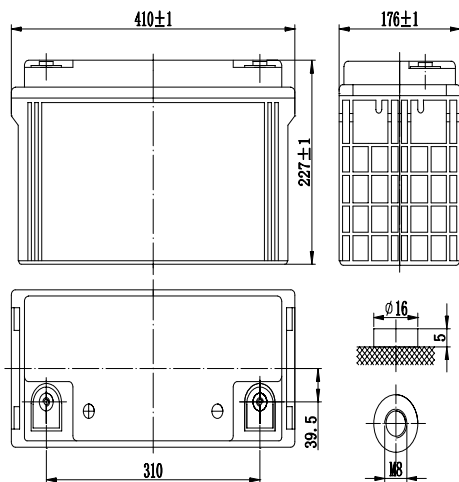
Component	Positive plate	Negative plate	Container	Cover	Safety valve	Terminal	Separator	Electrolyte
Raw material	Lead dioxide	Lead	ABS	ABS	Rubber	Copper	Fiberglass	Sulfuric acid

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.

Dimensions and Weight

Length(mm / inch)	410 / 16.14
Width(mm / inch)	176 / 6.93
Height(mm / inch)	227 / 8.94
Total Height(mm / inch)	227 / 8.94
Approx. Weight(Kg / lbs)	38 / 83.8



Performance Characteristics

Nominal Voltage	12V
Number of cell	6
Design Life	10 years
Nominal Capacity 77°F(25°C)	
10 hour rate (11.3A, 10.8V)	113Ah
5 hour rate (19.9A, 10.5V)	99.5Ah
1 hour rate (70.5A, 9.6V)	70.5Ah
Internal Resistance	
Fully Charged battery 77°F(25°C)	4.3mOhms
Self-Discharge	
3% of capacity declined per month at 20°C(average)	
Operating Temperature Range	
Discharge	-20~60°C
Charge	-10~60°C
Storage	-20~60°C
Max. Discharge Current 77°F(25°C)	950A(5s)
Short Circuit Current	2250A
Charge Methods: Constant Voltage Charge 77°F(25°C)	
Cycle use	14.4-14.7V
Maximum charging current	36A
Temperature compensation	-30mV/°C
Standby use	13.6-13.8V
Temperature compensation	-20mV/°C

Discharge Constant Current (Amperes at 77°F25°C)

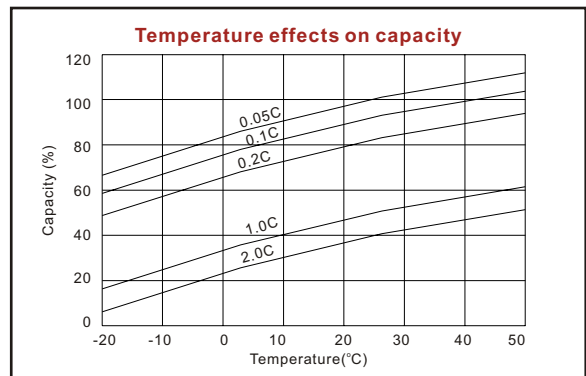
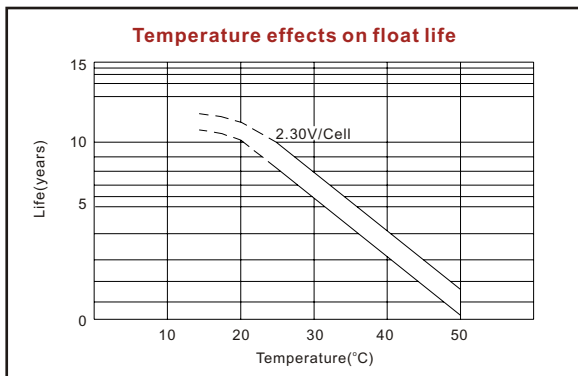
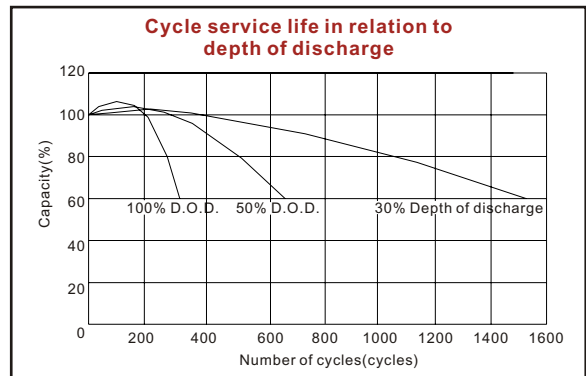
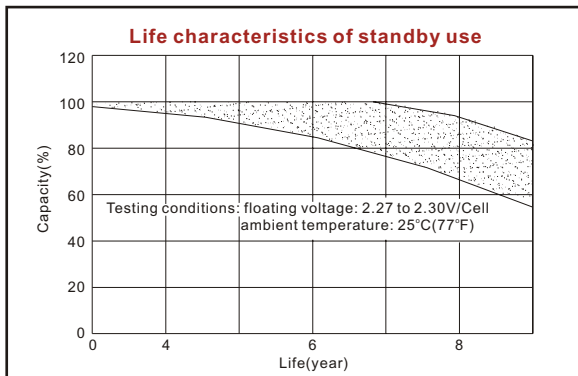
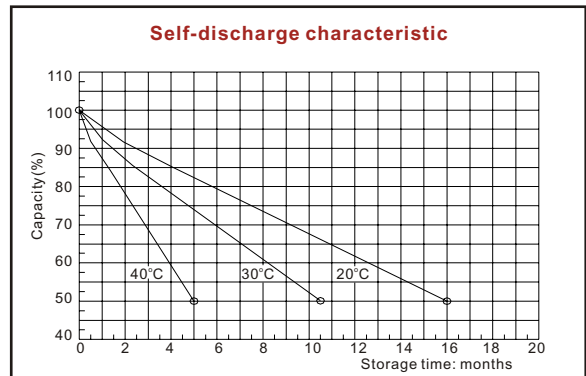
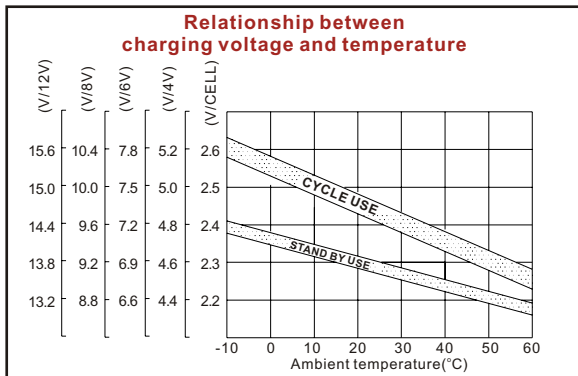
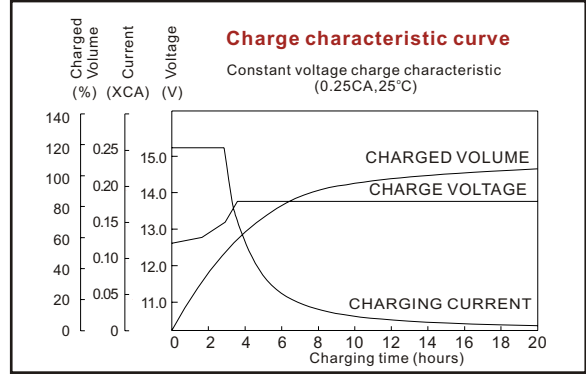
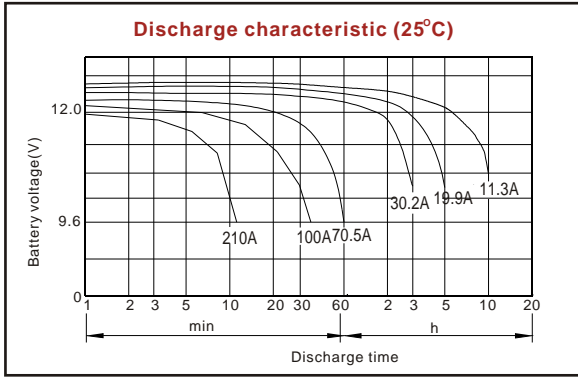
End Point Volts/Cell	5min	10min	15min	30min	45min	1h	3h	5h	10h
1.60V	327	240	190	117	86.0	70.5	31.7	20.9	11.7
1.65V	313	236	189	113	84.4	70.0	31.2	20.9	11.6
1.70V	289	214	182	109	82.2	68.7	30.7	20.6	11.5
1.75V	264	202	174	105	79.4	66.5	30.2	19.9	11.4
1.80V	241	189	162	103	77.4	64.4	27.8	19.2	11.3

Discharge Constant Power (Watts at 77°F25°C)

End Point Volts/Cell	5min	10min	15min	30min	45min	1h	2h	3h	5h
1.60V	574	432	359	221	169	139	78.6	58.6	39.3
1.65V	540	410	348	215	168	135	75.8	56.0	38.7
1.70V	505	388	336	208	154	129	73.1	54.5	38.1
1.75V	470	368	324	201	151	126	71.7	53.6	37.2
1.80V	444	344	301	194	147	122	69.9	52.5	36.8

(Note)The above characteristics data are average values obtained within three charge/discharge cycles not the minimum values.

6FM120D-X 12V113Ah



6FM230-X 12V 230Ah

- Positive and negative plates in lead-calcium-tin alloy
- Stable Quality & High Reliability
- Sealed Construction
- Long Service Life
- Maintenance-Free Operation
- Low Pressure Venting System
- Low Self Discharge
- U. L. Component Recognition
- Six months shelf life at 20°C
- Design life 10 years

FM Series



Dimensions and Weight

	<i>SI Units</i>	<i>English Units</i>
Length	520mm	20.5inch
Width	269mm	10.6inch
Height	203mm	8.0inch
Total Height	208mm	8.2inch
Approx. Weight	72.6Kg	160.1lbs

Performance Characteristics

- Nominal Voltage 12V
- Number of cell 6
- Nominal Capacity 77°F(25°C)
 - 10 hour rate (23.0A, 10.8V) 230Ah
 - 5 hour rate (44.6A, 10.5V) 223Ah
 - 1 hour rate (153A, 9.60V) 153Ah
- Internal Resistance
 - Fully Charged battery 77°F(25°C) 2.8mOhms
- Self-Discharge
 - 3% of capacity declined per month at 20°C(average)
- Operating Temperature Range
 - Discharge -20~60°C
 - Charge -10~60°C
 - Storage -20~60°C
- Max. Discharge Current 77°F(25°C) 1100A(5s)
- Short Circuit Current 4300A
- Charge Methods: Constant Voltage Charge 77°F(25°C)
 - Cycle use 14.4-14.7V
 - Maximum charging current 69A
 - Temperature compensation -30mV/°C
- Standby use 13.6-13.8V
 - Temperature compensation -20mV/°C

6FM230-X 12V 230Ah

Discharge Data

Constant Current Discharge Data (Amperes at 25°C)

End voltage volts/cell	5min	10min	15min	20min	25min	30min	35min	40min	45min	50min	55min	60min	1.5h	2h	2.5h	3h	4h	5h	6h	7h	8h	9h	10h	12h	24h
1.60V			371	307	268	242	216	197	182	170	161	153	111	89.6	76.9	68.5	54.0	45.4	38.0	32.8	28.9	25.8	23.4	20.3	10.4
1.65V			367	304	266	241	215	195	180	168	159	151	110	88.8	76.4	68.2	53.8	45.1	37.9	32.7	28.8	25.7	23.3	20.2	10.4
1.70V			365	302	265	240	214	194	179	167	158	150	109	88.3	76.0	67.8	53.5	44.9	37.7	32.5	28.6	25.6	23.2	20.1	10.3
1.75V			359	298	261	236	211	191	176	165	156	149	108	87.3	75.0	66.8	53.0	44.6	37.5	32.3	28.5	25.5	23.1	20.0	10.3
1.80V			348	290	256	233	208	189	174	164	155	148	107	87.0	74.7	66.5	52.6	44.3	37.2	32.1	28.3	25.4	23.0	19.9	10.2

Constant Power Discharge Data (Watts per cell at 25°C)

End voltage volts/cell	5min	10min	15min	20min	25min	30min	35min	40min	45min	50min	55min	60min	1.5h	2h	2.5h	3h	4h	5h	6h	7h	8h	9h	10h	12h	24h
1.60V			677	573	511	469	423	388	361	335	314	296	213	172	147	131	103	86.7	73.0	63.2	55.9	50.2	45.6	39.5	20.3
1.65V			673	570	507	466	420	386	359	333	312	294	212	171	146	130	103	86.4	72.8	63.0	55.7	50.0	45.4	39.4	20.3
1.70V			666	564	503	462	417	383	357	331	309	291	210	169	145	129	102	86.1	72.5	62.8	55.5	49.8	45.2	39.2	20.2
1.75V			658	558	499	459	415	381	355	328	306	288	208	168	144	128	101	85.8	72.2	62.5	55.2	49.6	45.0	39.0	20.1
1.80V			649	552	494	455	411	378	352	325	302	284	205	166	143	126	100	85.4	71.9	62.2	55.0	49.4	44.9	38.9	20.0

(Note)The above characteristics data are average values obtained within three charge/discharge cycles not the minimum values.

Performance drawings

