

*Herkese yetecek kadar
enerjimiz var!*



KURUMSAL

1977 yılında Akümülatör plakaları ve malzemesi üretmek üzere, Kayseri'de küçük bir atölyede kurulan Aküsan A.Ş. bugün 9.000 m² si kapalı 12.000 m² lik alanda hizmet veren uluslararası bir markaya dönüşmüştür.

1981 yılında ebonit kutulu ziftli akümülatör üretimi ile Ford Traktör Fabrikasının en önemli tedarikçilerinden biri olma başarısını göstermiştir. 1983 yılında Doğu Sanayi Bölgesine taşıdığı fabrikasıyla sektörde ilerleme yolunda önemli adım atmıştır. 1986 yılında az bakımlı plastik kutulu akü üretimiyle sektöre yeni bir ivme kazandırmıştır.

Kuruluşumuz bugüne kadar müşteri memnuniyeti ve üstün kaliteyi kendisine prensip edinip hiçbir zaman kaliteden ödün vermemiştir. Bu çerçevede 1988 yılında aldığı "TSE 1353 Kalite Sertifikası" ve 2004 yılında aldığı "ISO 9001:2000 Kalite Sistem Sertifikası" ile kalitesini tescillemiş ve ülkemizin önemli akümülatör üreticilerinden biri olduğunu ispatlamıştır. 2006 yılında aldığı "TS EN ISO 14001 Çevre Yönetim Sistem Sertifikası" ile de çevreye ve doğaya karşı olan duyarlılığını ispatlamıştır.

Yenilikçi yapısıyla sektörde ilerleyen firmamız 2008 yılından itibaren de Türkiye'nin ilk ve tek VRLA Jel Akü üreticisi olarak yoluna devam etmektedir. Asya ve Feza Starter tip akümülatörler ve FZA JEL AKÜ ticari markalarımızla TSE ve Alman Menşeli Unicert – ISO 9001:2008 kalite belgelerimiz çerçevesinde imalat yapmaktayız. Yurtiçi 350'yi aşkın bayimiz ile hizmete devam ediyoruz. Yurtdışında ise 15'in üzerinde ülkeye ihracat gerçekleştirmekteyiz, "Yunanistan, Mısır, Lübnan, Nijerya, Türkmenistan, Polonya" bunlardan birkaçıdır. Bu çerçevede yaptığı ihracatla ülke ekonomisine katkıda bulunan Aküsan A.Ş. teknolojik gelişmeleri yakından izleyerek gücüne güç katmak için çalışmalarını titizlikle sürdürmektedir.

Toplam kalite yönetimi ve sürekli gelişim anlayışına verdiği önemden dolayı yatırımlarına aralıksız devam eden Aküsan A.Ş. yıllık 500.000 akümülatör üretim kapasitesi ile sektörde adından söz edilen bir firma olma başarısını göstermiştir.

Çevre Politikamız

Çevreye karşı daha duyarlı olmak için sürekli gelişimi sağlamak; şirketimiz yönetimi ve personeli için bir önceliktir.

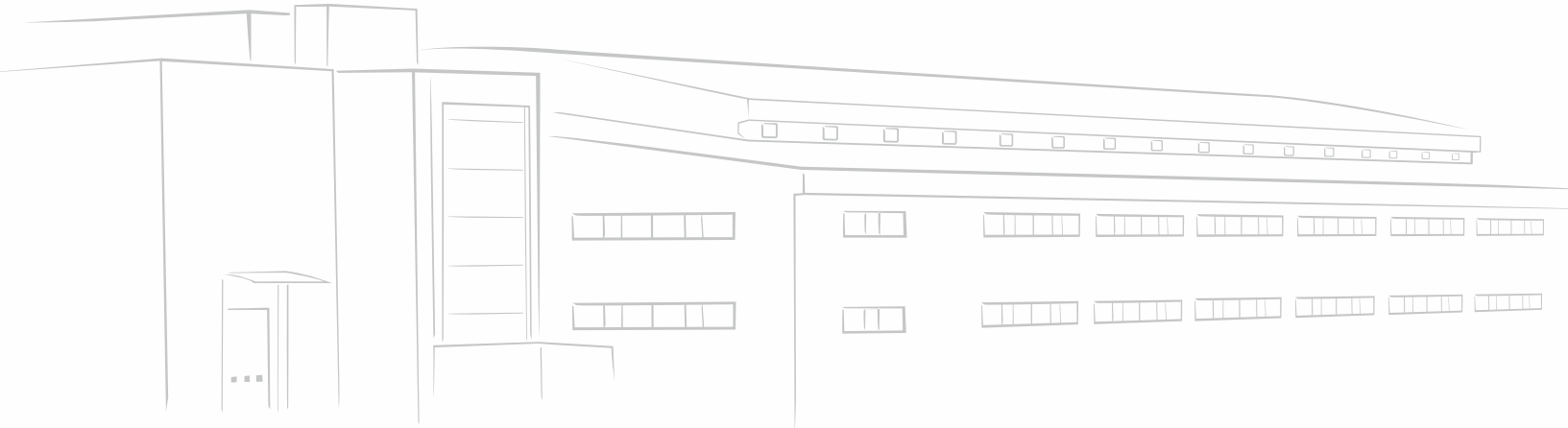
Şirketimiz ; ISO 14001 standardına uygun olarak ,çevresel hedeflere ulaşmak için tüm mali, idari ,teknik donanım kaynaklarının tedarik edilerek Çevre Yönetim Sisteminin sürekli gelişimini sağlamayı taahhüt eder.

Kalite Politikamız

Ana politikamız müşterilerimizin beklentilerini en üst seviyede karşılamaktır.

Bunu gerçekleştirmek için;

- Ürün ve çevre ile ilgili olarak ulusal/uluslararası yasal yükümlülükleri ve kalite standartlarının gereklerini yerine getirmek,
- Tedarikçilerimizden müşterilerimize kadar olan süreçte; kalite, maliyetler ve teknolojiye iyileşmeyi sürekli hale getirmek,
- Süreçleri yalınlaştırmak ve iyileştirmek,
- Müşterilerimizi doğru anlamak ve beklentilerini fazlasıyla karşılamak,
- Ürün ve hizmette tam güvenilirliği sağlamak ve sürekli kılmak,
- Enformasyon ve üretim teknolojilerini izleyerek kendi teknolojimizi oluşturmak,
- Tedarikçi kalitemizi yükseltmek için çalışmalar yapmak,
- Çalışanların motivasyonlarını artırarak şirket hedefleri ile bütünleşmelerini sağlamak,
- Müşterilerimizi, çalışanlarımızı ve çevreyi olası risklerden korumaktır.



CORPORATE

Akusan Inc. was established in 1976 in Kayseri / TURKEY. Akusan Inc. was founded in a small workshop to produce starter battery plates, and today has become an international brand, occupying a total area of 12.000 m².

In 1981, Akusan started to produce ebonite type starter battery and its first batteries are used as OEM battery of Turkish Ford Factory. Since 1983, Akusan Inc. is using its modern plant to produce battery components, in "East Industrial Zone" of Kayseri, has accelerated its growth in certain steps to be an international firm and a demanded brand.

Trained personnel structure, high-standard technology and modern manufacturing understanding lie beneath the high-quality of Akusan Inc. Our company has always given great importance to the quality of product. Most important principle of our company is the customer satisfaction with high-quality product. Based on this principle; it got the "TSE 1353 Quality Certificate" in 1988 and also in 2004 our company earned another quality certificate, which is "ISO 9001:2000 Quality Management System". Our company proved its quality in battery sector with these certificates. And also, it has showed its sensitivity to nature and environment by getting the certificate; "TS EN ISO 14000 Environmental Management Certificate".

Akusan INC., which endeavors to develop itself constantly and with environmental and technological improvement to compete with the world's technology, has continued to its technological investments with Gel Battery manufacturing since 2008 as the first and only in TURKEY. AKUSAN has achieved to produce GEL Batteries within the brand name FZA GEL BATTERY.

Till now we have more than 350 retail-sales point in domestic market, also we are exporting gel battery more than 15 countries in all over the world. (Poland, Jordan, Greece, Iraq, Cameroon, Afghanistan etc.)

Environmental Policy

Being more sensitive about environment is precedence for our company's management and employee.

The management of our company undertake that all financial, administrative and technical resources will be supplied in order to provide ongoing improvement in Environment Management System as appropriate ISO 14001 Standards.

Quality Policy

Our main policy is to respond to our customers needs at top level.

To realize this;

- To use every opportunity for improvement
- To constitute a participation and positive company culture; with high motivated employee.
- To provide better working conditions to protect environment and to respect all livings.
- To respect and obey the quality standards delivery times of our customers in the way of our company goods.
- To form our own technology by following up- to- date informations and technologies.
- To see all our suppliers as a part of our quality system and to make them improve as the same way we do.

The logo for FZA BATTERY features the letters 'FZA' in a large, bold, red font with a stylized lightning bolt effect. Below 'FZA', the word 'BATTERY' is written in a smaller, red, sans-serif font.

FZA 14-12 (E-BIKE)

12V 14AH



FZA 14-12 / VRLA GEL



Physical Specification

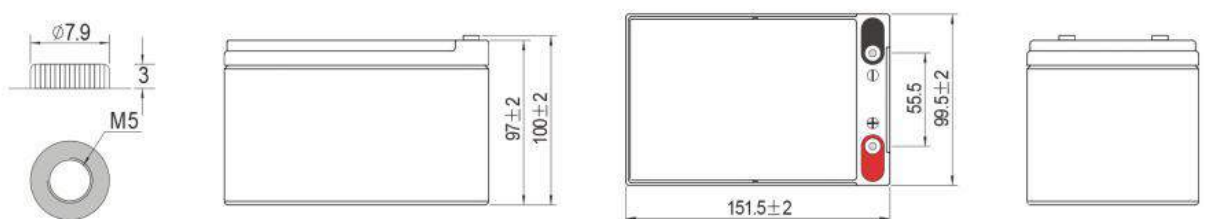
Part Number	FZA 14-12
Length	151.5 ± 2 mm
Width	99.5 ± 2 mm
Container Height	97 ± 2 mm
Total Height (with terminal)	100 ± 2 mm

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	14AH
Terminal Type	Standard Terminal	F1 (Optional Terminal F2)
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	UL94-V0
Rated Capacity	20hr, 1.80V/cell, 25°C	13.9 AH/0.70A
	10hr, 1.80V/cell, 25°C	13.0 AH/1.30A
	5hr, 1.75V/cell, 25°C	11.4 AH/2.28A
	3hr, 1.75V/cell, 25°C	10.3 AH/3.45A
	1hr, 1.60V/cell, 25°C	8.40 AH/8.40A
Max Discharge Current	195A (5s)	
Internal Resistance	Approx 14m Ω	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C
		Charge: 0 ~ 40°C
		Storage: -15 ~ 40°C
	Nominal Operating Temp. Range	25 ± 3°C
	Cycle Use	Initial Charging Current less than 3.9A Voltage 14.4V ~ 15.0V Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V Temp. Coefficient -20mV/°C
Capacity affect by Temperature	40°C	103%
	25°C	100%
	0°C	86%
Design Floating Life at 20°C	12 Years	

Dimensions

F1 Terminal



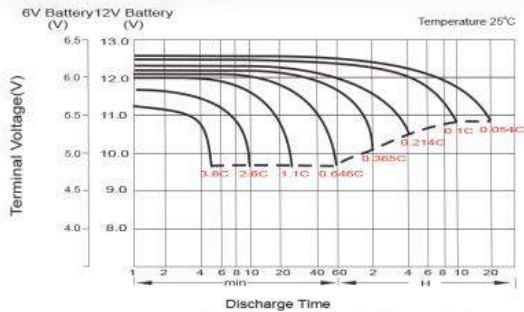
Constant Current Discharge (Amperes) at 25°C (77°F)

F.V/Time	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	19.0	16.0	14.0	10.1	8.00	6.49	4.03	3.14	2.55	2.07	1.81	1.47	1.23	0.690
1.80V/cell	24.3	19.4	16.5	11.9	9.30	7.27	4.40	3.38	2.72	2.22	1.94	1.56	1.30	0.697
1.75V/cell	26.7	21.1	17.8	12.3	9.65	7.61	4.56	3.45	2.78	2.28	1.99	1.59	1.31	0.703
1.70V/cell	29.1	22.6	18.7	12.8	10.0	7.85	4.75	3.54	2.85	2.34	2.03	1.61	1.33	0.716
1.65V/cell	31.4	24.0	19.9	13.5	10.3	8.11	4.88	3.69	2.95	2.40	2.07	1.64	1.35	0.725
1.60V/cell	34.1	25.7	21.2	14.3	10.7	8.40	5.04	3.81	3.04	2.48	2.12	1.65	1.37	0.729

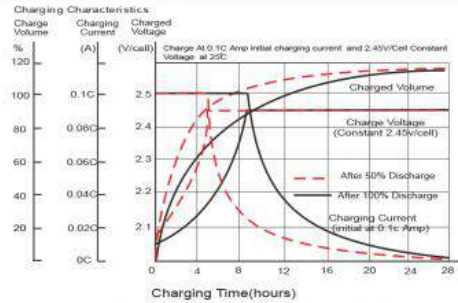
Constant Power Discharge (Watts) at 25°C (77°F)

F.V/Time	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	35.5	30.2	26.7	19.4	15.5	12.6	7.86	6.14	4.99	4.06	3.57	2.91	2.43	1.381
1.80V/cell	44.8	35.9	31.0	22.6	17.8	14.0	8.52	6.58	5.30	4.35	3.81	3.09	2.57	1.391
1.75V/cell	48.6	38.9	33.1	23.3	18.4	14.6	8.81	6.68	5.41	4.46	3.91	3.14	2.60	1.404
1.70V/cell	52.2	41.2	34.6	24.2	19.1	15.0	9.14	6.85	5.54	4.56	3.98	3.18	2.62	1.429
1.65V/cell	56.0	43.5	36.6	25.4	19.5	15.5	9.37	7.12	5.72	4.68	4.07	3.23	2.67	1.445
1.60V/cell	59.7	46.0	38.6	26.5	20.2	15.9	9.63	7.30	5.87	4.81	4.15	3.25	2.70	1.451

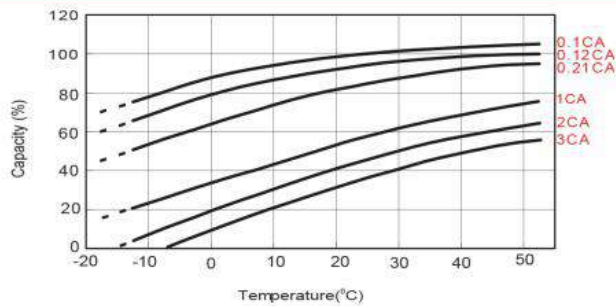
Discharge Characteristics



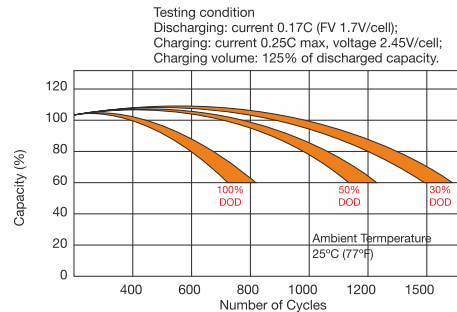
Float Charging Characteristics



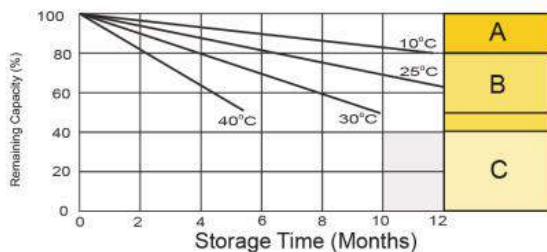
Temperature Effects in Relation to Battery Capacity



Effect of Temperature on Long Term Float Life



Self Discharge Characteristics



- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
1.Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
2.Charged for above 20hours at limited current 0.25CA and constant voltage 2.45V/cell.
3.Charged for 8~10hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

FZA 22-12

12V 22AH



FZA 22-12 / VRLA GEL



Physical Specification

Part Number:	FZA 22-12
Length:	181.5 ± 2 mm (5.95 inches)
Width:	77 ± 2 mm (3.85 inches)
Container Height:	167.5 ± 2 mm (3.74 inches)
Total Height (with terminal):	167.5 ± 2 mm (3.98 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (20HR)	22 AH
Terminal Type	Standard Terminal	F3
	Optional Terminal	F12
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	20.0 AH/1.00A	(20hr, 1.80V/cell, 25°C / 77°F)
	18.6 AH/1.86A	(10hr, 1.80V/cell, 25°C / 77°F)
	17.0 AH/3.40A	(5hr, 1.75V/cell, 25°C / 77°F)
	15.3 AH/5.10A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	300A (5s)	
Internal Resistance	Approx 15mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 6.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	5 Years	

Dimensions

F3 Terminal



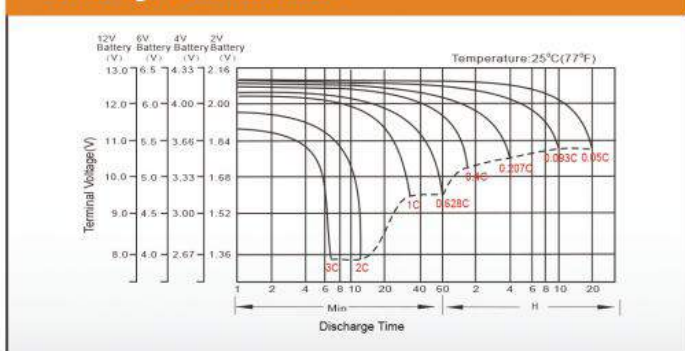
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	38.1	29.2	24.2	20.9	16.2	11.9	10.1	5.95	4.65	3.78	3.09	2.68	2.16	1.80	0.99
1.80V/cell	51.1	37.4	29.3	24.8	19.1	13.9	11.3	6.49	5.01	4.04	3.31	2.87	2.29	1.86	1.00
1.75V/cell	57.6	41.1	32.0	26.6	19.8	14.4	11.8	6.73	5.10	4.13	3.40	2.95	2.33	1.91	1.01
1.70V/cell	63.5	44.8	34.1	28.0	20.7	15.0	12.2	6.90	5.24	4.24	3.49	3.01	2.36	1.95	1.03
1.65V/cell	70.0	48.3	36.3	29.7	21.8	15.4	12.4	7.00	5.47	4.39	3.58	3.08	2.40	1.99	1.04
1.60V/cell	77.2	52.4	38.8	31.7	23.0	16.0	12.6	7.30	5.63	4.52	3.70	3.14	2.42	2.01	1.05

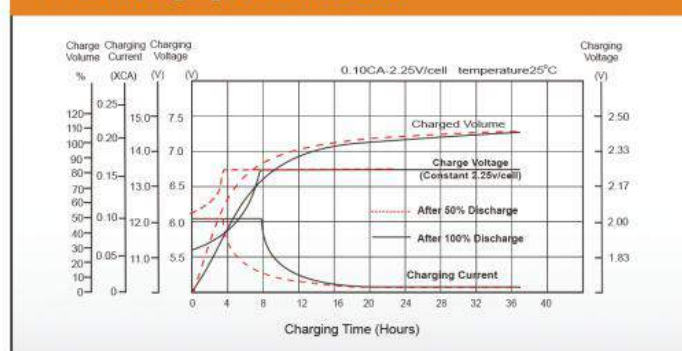
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	69.6	54.0	45.2	39.5	30.9	22.9	19.4	11.6	9.07	7.40	6.05	5.26	4.26	3.57	1.96
1.80V/cell	92.5	68.2	53.9	46.0	35.9	26.5	21.6	12.5	9.71	7.86	6.46	5.62	4.51	3.68	1.98
1.75V/cell	102.0	73.8	58.1	49.0	36.9	27.2	22.5	12.9	9.85	8.00	6.61	5.76	4.58	3.77	2.00
1.70V/cell	109.3	78.6	61.2	51.1	38.2	28.2	23.1	13.2	10.1	8.20	6.77	5.87	4.64	3.84	2.03
1.65V/cell	118.8	84.0	64.6	53.9	40.0	28.6	23.5	13.3	10.5	8.45	6.93	5.98	4.70	3.91	2.05
1.60V/cell	128.0	89.1	67.9	56.8	41.9	29.7	23.6	13.9	10.8	8.69	7.13	6.09	4.73	3.95	2.06

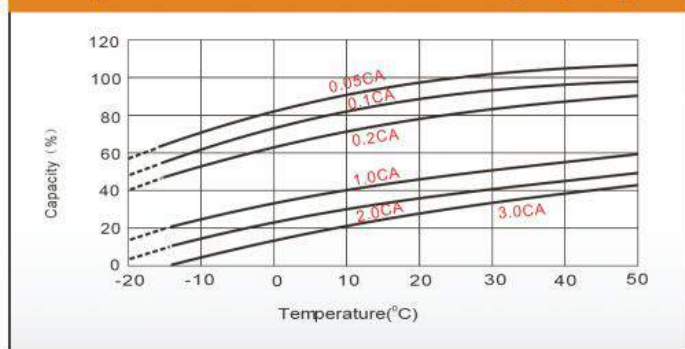
Discharge Characteristics



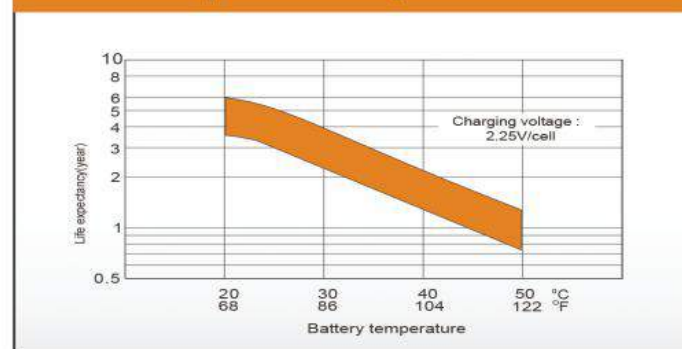
Float Charging Characteristics



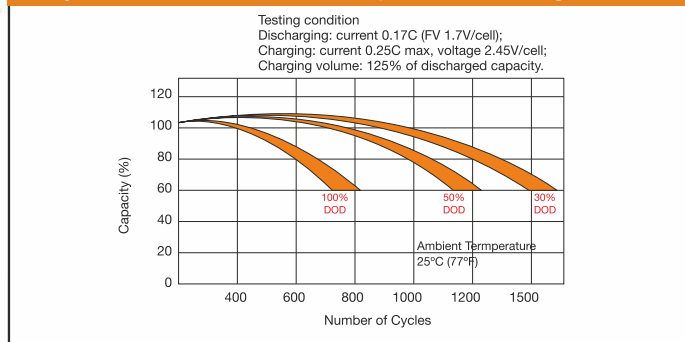
Temperature Effects in Relation to Battery Capacity



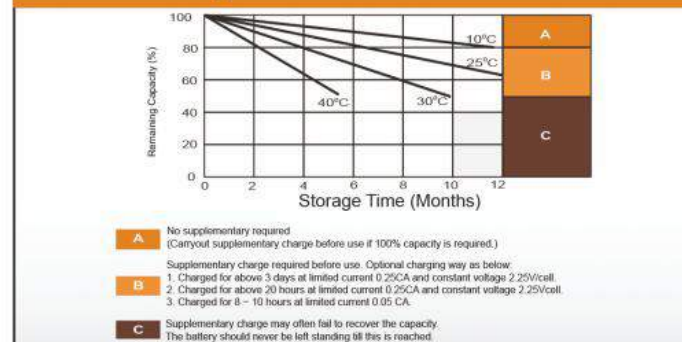
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 24-12 (E-BIKE)

12V 24AH



FZA 24-12 / VRLA GEL



Physical Specification

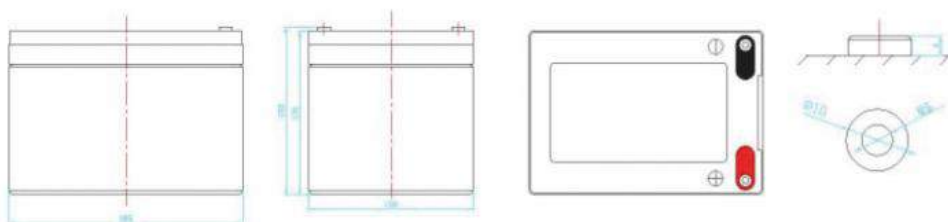
Part Number:	FZA 24-12
Length:	185 ± 2 mm (7.28 inches)
Width:	105 ± 2 mm (4.13 inches)
Container Height:	130 ± 2 mm (5.12 inches)
Total Height (with terminal):	130 ± 2 mm (5.12 inches)

Specifications

	Normal Voltage	12V
	Normal Capacity (20HR)	24.0AH
Terminal Type	Standard Terminal	F3
	Optional Terminal	
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS(UL94:VO)
Rated Capacity	25.7 AH/1.29A	(20hr, 1.80V/cell, 25°C / 77°F)
	24.0 AH/2.40A	(10hr, 1.80V/cell, 25°C / 77°F)
	21.0 AH/4.21A	(5hr, 1.75V/cell, 25°C / 77°F)
	19.1 AH/6.36A	(3hr, 1.75V/cell, 25°C / 77°F)
	15.5 AH/15.5A	(1hr, 1.60V/cell, 25°C / 77°F)
Max Discharge Current	360A (5s)	
Internal Resistance	Approx 13.0mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 7.2A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
	Capacity affected by Temperature	40°C (104°F) 103%
25°C (77°F) 100%		
0°C (32°F) 86%		
Design Floating Life at 20°C	12 Years	

Dimensions

F3 Terminal



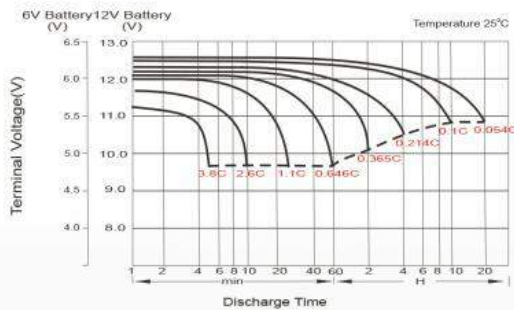
Constant Current Discharge (Amperes) at 25°C (77°F)

F.V/Time	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	35.1	29.6	25.8	18.6	14.8	12.0	7.44	5.80	4.70	3.82	3.33	2.72	2.27	1.27
1.80V/cell	44.9	35.7	30.5	21.9	17.2	13.4	8.12	6.24	5.02	4.10	3.57	2.88	2.40	1.29
1.75V/cell	49.3	39.0	32.9	22.8	17.8	14.0	8.43	6.36	5.13	4.21	3.67	2.93	2.42	1.30
1.70V/cell	53.8	41.7	34.5	23.7	18.5	14.5	8.76	6.54	5.27	4.32	3.75	2.98	2.45	1.32
1.65V/cell	58.0	44.3	36.7	25.0	19.0	15.0	9.00	6.82	5.45	4.44	3.83	3.02	2.50	1.34
1.60V/cell	63.0	47.4	39.1	26.4	19.8	15.5	9.31	7.02	5.62	4.58	3.91	3.05	2.52	1.35

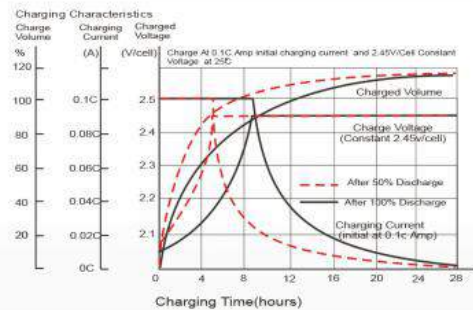
Constant Power Discharge (Watts) at 25°C (77°F)

F.V/Time	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	65.6	55.7	49.2	35.7	28.6	23.3	14.5	11.3	9.21	7.50	6.58	5.38	4.49	2.55
1.80V/cell	82.7	66.3	57.3	41.6	33.0	25.9	15.7	12.1	9.78	8.03	7.03	5.70	4.75	2.57
1.75V/cell	89.7	71.8	61.1	43.0	34.0	27.0	16.3	12.3	10.0	8.23	7.22	5.79	4.79	2.59
1.70V/cell	96.4	78.1	63.9	44.6	35.3	27.8	18.9	12.6	10.2	8.41	7.36	5.87	4.84	2.64
1.65V/cell	103.3	80.4	67.6	46.8	36.0	28.6	17.3	13.2	10.6	8.64	7.51	5.96	4.93	2.67
1.60V/cell	110.2	84.9	71.2	49.0	37.2	29.4	17.8	13.5	10.8	8.88	7.65	6.01	4.98	2.68

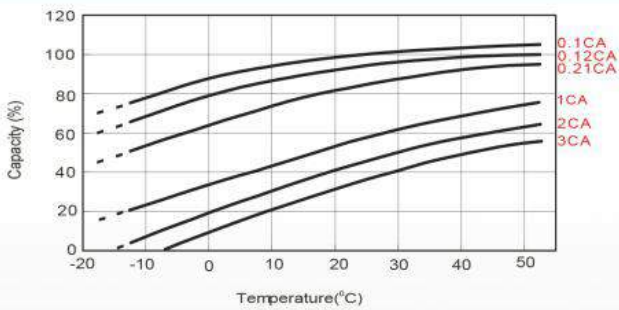
Discharge Characteristics



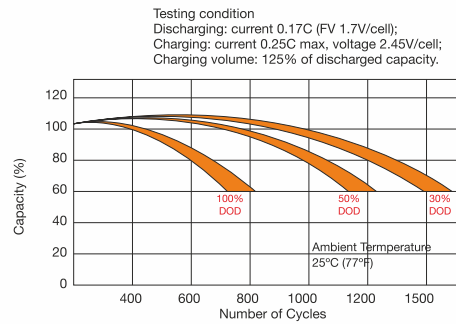
Float Charging Characteristics



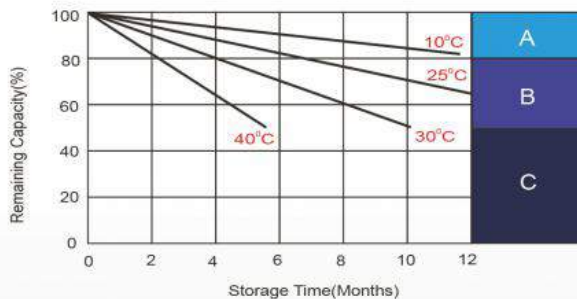
Temperature Effects in Relation to Battery Capacity



Effect of Temperature on Long Term Float Life



Self Discharge Characteristics



- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
 1. Charged for above 3 days at limited current 0.25CA and constant volatge 2.25V/cell.
 2. Charged for above 20hours at limited current 0.25CA and constant volatge 2.45V/cell.
 3. Charged for 8~10hours at limited current 0.05CA .
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

FZA 26-12 / JEL

12V 26AH

General



FZA 26-12 / VRLA GEL



Physical Specification

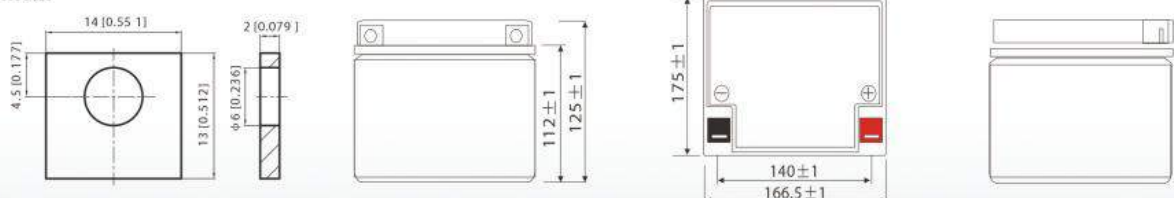
Part Number:	FZA 26-12
Length:	265 ± 2 mm (6.52 inches)
Width:	75 ± 2 mm (6.89 inches)
Container Height:	170 ± 2 mm (4.92 inches)
Total Height (with terminal):	170 ± 2 mm (4.92 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (20HR)	26AH
Terminal Type	Standard Terminal	F3
	Optional Terminal	F12
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	26.0 AH/1.30A	(20hr,1.80V/cell, 25°C / 77°F)
	24.3 AH/2.43A	(10hr,1.80V/cell, 25°C / 77°F)
	22.2 AH/4.44A	(5hr,1.75V/cell, 25°C / 77°F)
	19.9 AH/6.65A	(3hr,1.75V/cell, 25°C / 77°F)
Max Discharge Current	390A (5s)	
Internal Resistance	Approx 14mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 7.8A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	7 Years	

Dimensions

F3 Terminal



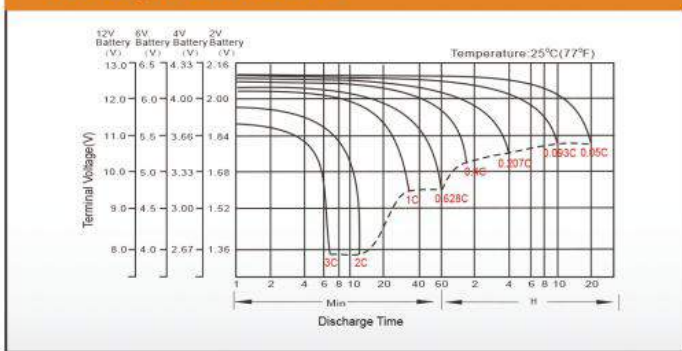
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	59.3	44.8	37.0	31.3	23.5	17.3	13.9	8.41	6.27	5.04	4.24	3.66	2.87	2.38	1.28
1.80V/cell	70.3	50.1	40.3	33.7	25.0	18.2	14.5	8.74	6.48	5.19	4.35	3.75	2.94	2.43	1.30
1.75V/cell	79.5	54.5	43.1	35.6	26.3	19.0	15.1	9.00	6.65	5.31	4.44	3.82	2.99	2.46	1.33
1.70V/cell	87.6	58.4	45.5	37.4	27.4	19.7	15.6	9.23	6.79	5.41	4.52	3.88	3.03	2.50	1.34
1.65V/cell	94.5	61.9	47.7	38.9	28.3	20.3	16.1	9.43	6.92	5.50	4.58	3.93	3.07	2.52	1.35
1.60V/cell	100.6	64.9	49.6	40.2	29.1	20.8	16.4	9.60	7.02	5.57	4.64	3.97	3.10	2.55	1.36

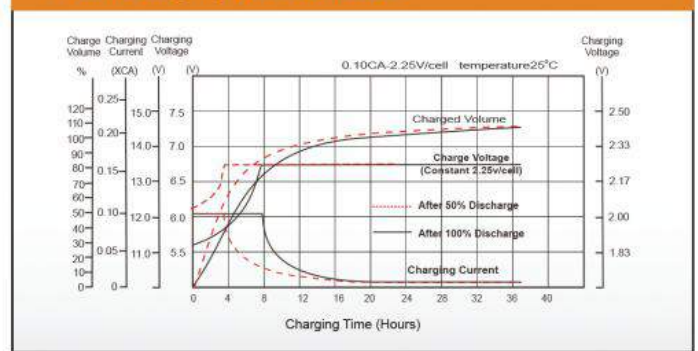
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	112.3	85.7	71.4	61.0	46.1	34.0	27.5	16.7	12.5	10.1	8.52	7.38	5.81	4.81	2.61
1.80V/cell	132.1	95.2	77.3	65.2	48.8	35.7	28.7	17.3	12.9	10.4	8.71	7.53	5.92	4.89	2.63
1.75V/cell	148.1	102.9	82.2	68.7	51.0	37.1	29.6	17.8	13.2	10.6	8.87	7.65	6.00	4.96	2.67
1.70V/cell	161.6	109.4	86.3	71.7	53.0	38.4	30.5	18.2	13.4	10.7	8.99	7.75	6.07	5.00	2.69
1.65V/cell	172.9	115.1	89.9	74.3	54.6	39.4	31.4	18.5	13.7	10.9	9.10	7.83	6.13	5.05	2.71
1.60V/cell	182.3	119.8	92.9	76.5	56.0	40.2	32.0	18.8	13.8	11.0	9.18	7.89	6.17	5.08	2.73

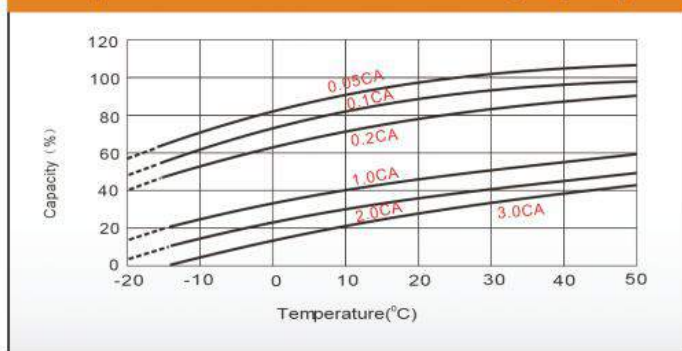
Discharge Characteristics



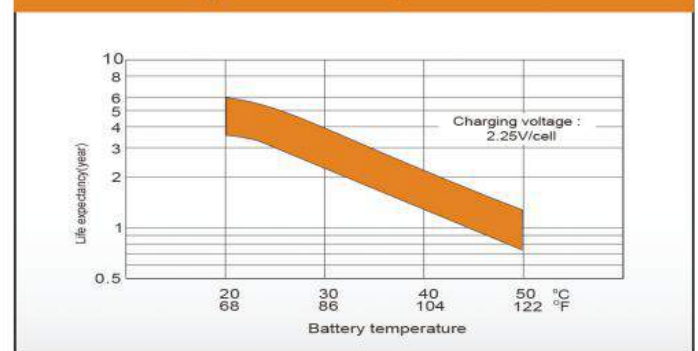
Float Charging Characteristics



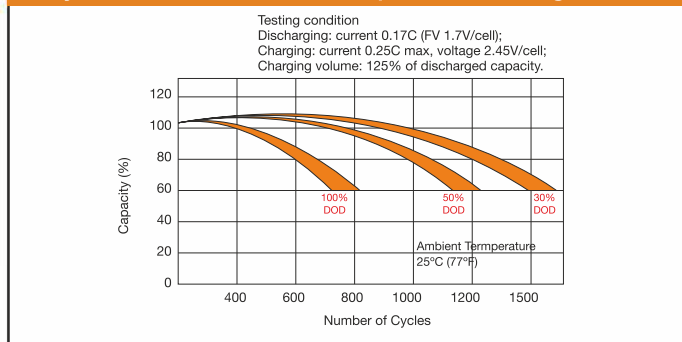
Temperature Effects in Relation to Battery Capacity



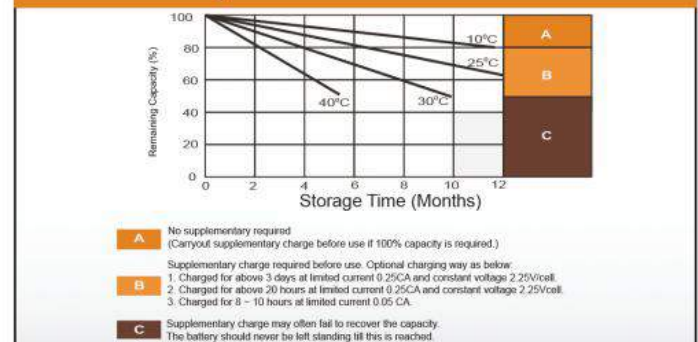
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 35-12

12V 35AH



FZA 35-12 / VRLA GEL



Physical Specification

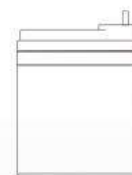
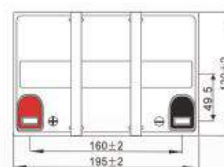
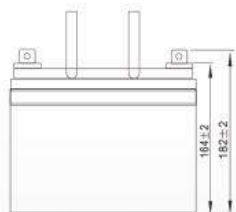
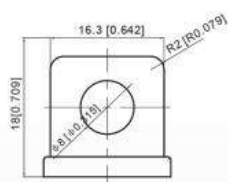
Part Number:	FZA 35-12
Length:	195 ± 2 mm (7.68 inches)
Width:	130 ± 2 mm (5.12 inches)
Container Height:	164 ± 2 mm (6.46 inches)
Total Height (with terminal):	182 ± 2 mm (7.17 inches)

Specifications

	Normal Voltage	12V
	Normal Capacity (20HR)	35 AH
Terminal Type	Standard Terminal	F5
	Optional Terminal	
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS(UL94:VO)
Rated Capacity	35.4 AH/1.77A	(20hr, 1.80V/cell, 25°C / 77°F)
	33.0 AH/3.30A	(10hr, 1.80V/cell, 25°C / 77°F)
	28.9 AH/5.79A	(5hr, 1.75V/cell, 25°C / 77°F)
	26.2 AH/8.75A	(3hr, 1.75V/cell, 25°C / 77°F)
	21.3 AH/21.3A	(1hr, 1.60V/cell, 25°C / 77°F)
Max Discharge Current	495A (5s)	
Internal Resistance	Approx 11.0mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (32 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 9.9A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F) 103%	
	25°C (77°F) 100%	
	0°C (32°F) 86%	
Design Floating Life at 20°C	12 Years	

Dimensions

F5 Terminal



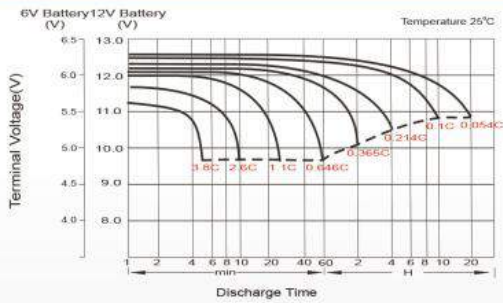
Constant Current Discharge (Amperes) at 25°C (77°F)

F.V/Time	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	48.3	40.7	35.5	25.6	20.3	16.5	10.2	7.98	6.46	5.25	4.58	3.74	3.12	1.75
1.80V/cell	61.7	49.1	42.0	30.2	23.6	18.5	11.2	8.59	6.90	5.64	4.91	3.97	3.30	1.77
1.75V/cell	67.8	53.7	45.2	31.3	24.5	19.3	11.6	8.75	7.06	5.79	5.05	4.04	3.33	1.79
1.70V/cell	73.9	57.3	47.5	32.6	25.5	19.9	12.0	8.99	7.24	5.93	5.15	4.09	3.37	1.82
1.65V/cell	79.8	60.9	50.4	34.4	26.1	20.6	12.4	9.37	7.49	6.10	5.27	4.16	3.44	1.84
1.60V/cell	86.6	65.1	53.7	36.3	27.2	21.3	12.8	9.66	7.73	6.30	5.38	4.20	3.47	1.85

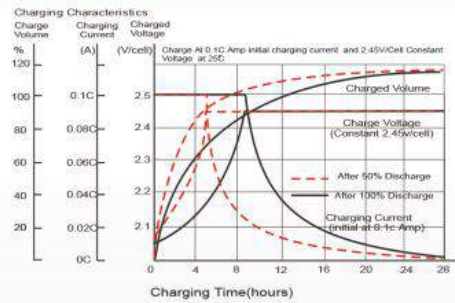
Constant Power Discharge (Watts) at 25°C (77°F)

F.V/Time	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	90.1	76.6	67.7	49.1	39.3	32.0	19.9	15.6	12.7	10.3	9.05	7.40	6.17	3.51
1.80V/cell	113.6	91.2	78.8	57.3	45.3	35.6	21.6	16.7	13.4	11.0	9.67	7.84	6.53	3.53
1.75V/cell	123.3	98.7	84.1	59.2	46.8	37.1	22.4	17.0	13.7	11.3	9.92	7.96	6.59	3.56
1.70V/cell	132.6	104.6	87.9	61.3	48.5	38.2	23.2	17.4	14.1	11.6	10.1	8.07	6.65	3.63
1.65V/cell	142.0	110.5	92.9	64.4	49.6	39.3	23.8	18.1	14.5	11.9	10.3	8.19	6.78	3.67
1.60V/cell	151.6	116.8	97.9	67.3	51.2	40.4	24.4	18.5	14.9	12.2	10.5	8.26	6.85	3.68

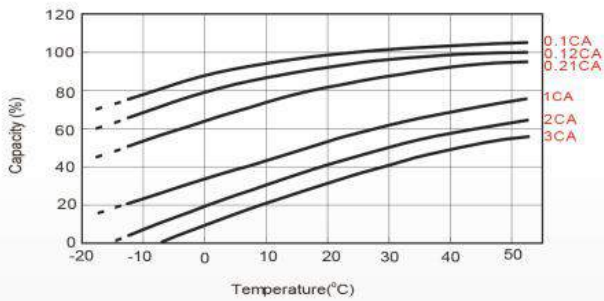
Discharge Characteristics



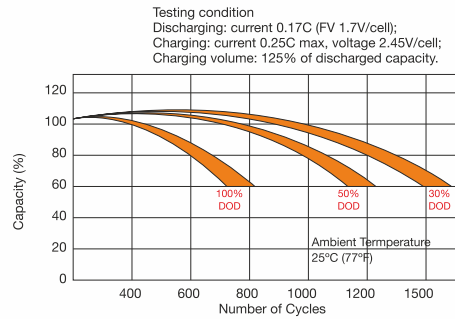
Charging Characteristics (cycle use)



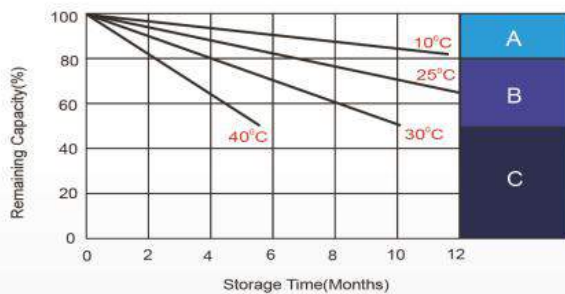
Temperature Effects in Relation to Battery Capacity



Effect of Temperature on Long Term Float Life



Self Discharge Characteristics



- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
 1. Charged for above 3 days at limited current 0.25CA and constant volatge 2.25V/cell.
 2. Charged for above 20hours at limited current 0.25CA and constant volatge 2.45V/cell.
 3. Charged for 8~10hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

FZA 40-12

12V 40AH

General



FZA 40-12 / VRLA GEL



Physical Specification

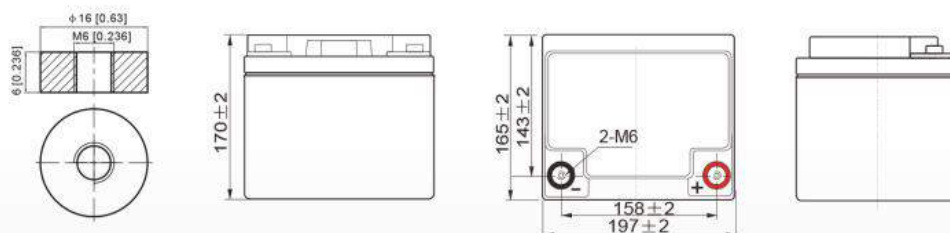
Part Number:	FZA 40-12
Length:	197 ± 2 mm (7.76 inches)
Width:	165 ± 2 mm (6.49 inches)
Container Height:	170 ± 2 mm (6.69 inches)
Total Height (with terminal):	170 ± 2 mm (6.69 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (20HR)	40AH
Terminal Type	Standard Terminal	F7
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	40.0AH/4.08A	(20hr, 1.80V/cell, 25°C / 77°F)
	37.2 AH/4.00A	(10hr, 1.80V/cell, 25°C / 77°F)
	31.5 AH/6.89A	(5hr, 1.75V/cell, 25°C / 77°F)
	31.2 AH/10.4A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	480A (5s)	
Internal Resistance	Approx 9mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 12.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F6 Terminal



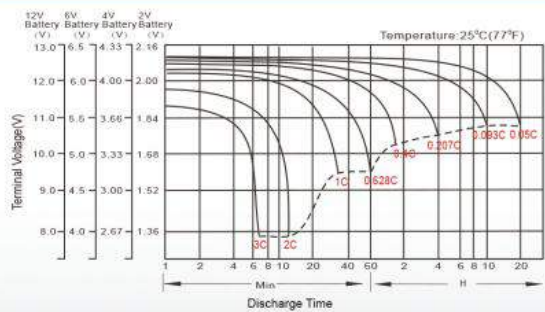
Constant Current Discharge (Amperes) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	68.5	53.8	45.8	38.3	30.4	23.0	18.9	12.0	9.50	7.76	6.25	5.44	4.42	3.78	2.06
1.80V/cell	91.9	68.8	55.3	45.3	35.9	26.8	21.1	13.1	10.2	8.28	6.72	5.84	4.69	4.00	2.08
1.75V/cell	103.6	75.6	60.4	48.7	37.3	27.8	22.1	13.6	10.4	8.47	6.88	6.00	4.77	4.04	2.10
1.70V/cell	114.1	82.4	64.5	51.2	38.8	28.9	22.8	14.1	10.7	8.69	7.06	6.12	4.84	4.08	2.14
1.65V/cell	125.8	88.9	68.6	54.4	40.9	29.6	23.6	14.5	11.2	8.99	7.26	6.26	4.91	4.16	2.17
1.60V/cell	138.8	96.5	73.3	57.9	43.2	30.9	24.4	15.0	11.5	9.27	7.50	6.40	4.96	4.21	2.18

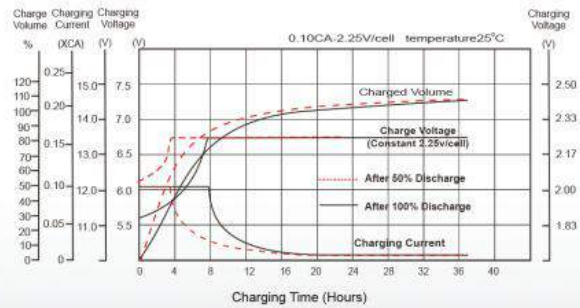
Constant Power Discharge (Watts) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	125.2	99.4	85.4	72.2	58.0	44.3	36.4	23.3	18.5	15.2	12.3	10.7	8.73	7.47	4.08
1.80V/cell	166.2	125.5	101.8	84.1	67.4	51.1	40.5	25.3	19.8	16.1	13.1	11.4	9.23	7.90	4.11
1.75V/cell	183.4	135.7	109.8	89.6	69.4	52.5	42.2	26.1	20.1	16.4	13.4	11.7	9.36	7.97	4.15
1.70V/cell	196.4	144.6	115.6	93.4	71.8	54.4	43.4	27.1	20.6	16.8	13.7	11.9	9.49	8.05	4.23
1.65V/cell	213.5	154.6	122.0	98.5	75.1	55.3	44.5	27.7	21.4	17.3	14.0	12.2	9.61	8.20	4.28
1.60V/cell	230.0	164.0	128.3	103.8	78.8	57.3	45.9	28.5	22.0	17.8	14.5	12.4	9.69	8.27	4.29

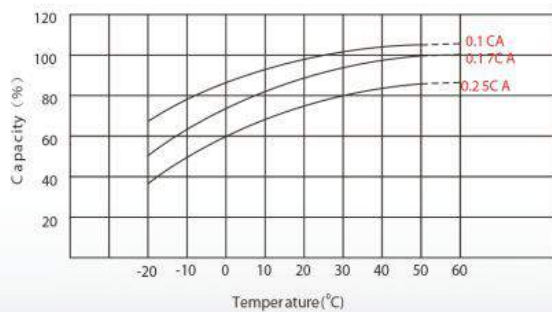
Discharge Characteristics



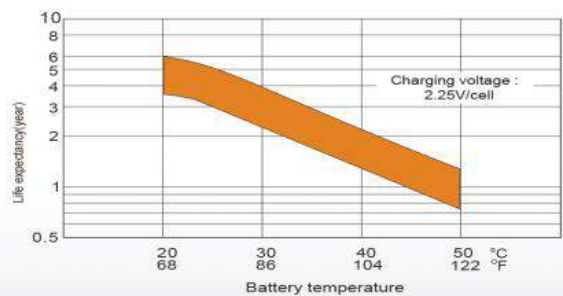
Float Charging Characteristics



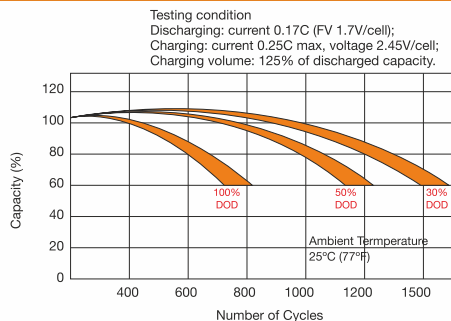
Temperature Effects in Relation to Battery Capacity



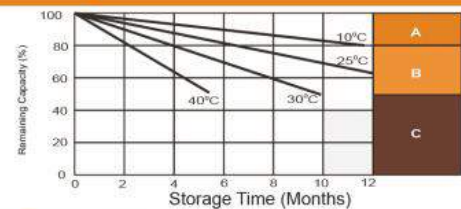
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



- A** No supplementary required
(Carryout supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell
2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.25V/cell
3. Charged for 8-10 hours at limited current 0.05 CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

FZA 44-12 / VRLA GEL



Physical Specification

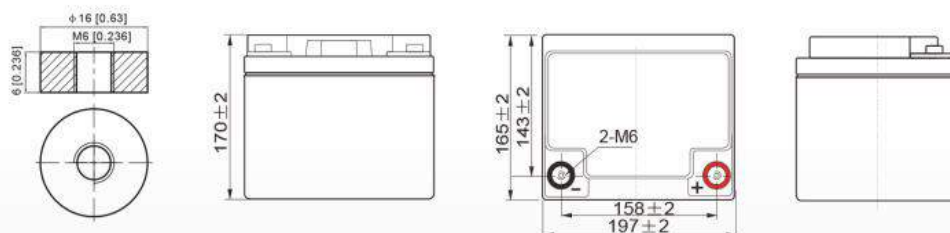
Part Number:	FZA 44-12
Length:	197 ± 2 mm (7.76 inches)
Width:	165 ± 2 mm (6.49 inches)
Container Height:	170 ± 2 mm (6.69 inches)
Total Height (with terminal):	170 ± 2 mm (6.69 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (20HR)	44 AH
Terminal Type	Standard Terminal	F7
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	40.0AH/4.08A	(20hr, 1.80V/cell, 25°C / 77°F)
	37.2 AH/4.00A	(10hr, 1.80V/cell, 25°C / 77°F)
	31.5 AH/6.89A	(5hr, 1.75V/cell, 25°C / 77°F)
	31.2 AH/10.4A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	480A (5s)	
Internal Resistance	Approx 9mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 12.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F6 Terminal



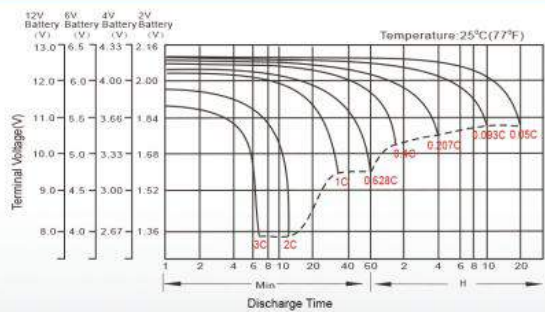
Constant Current Discharge (Amperes) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	68.5	53.8	45.8	38.3	30.4	23.0	18.9	12.0	9.50	7.76	6.25	5.44	4.42	3.78	2.06
1.80V/cell	91.9	68.8	55.3	45.3	35.9	26.8	21.1	13.1	10.2	8.28	6.72	5.84	4.69	4.00	2.08
1.75V/cell	103.6	75.6	60.4	48.7	37.3	27.8	22.1	13.6	10.4	8.47	6.88	6.00	4.77	4.04	2.10
1.70V/cell	114.1	82.4	64.5	51.2	38.8	28.9	22.8	14.1	10.7	8.69	7.06	6.12	4.84	4.08	2.14
1.65V/cell	125.8	88.9	68.6	54.4	40.9	29.6	23.6	14.5	11.2	8.99	7.26	6.26	4.91	4.16	2.17
1.60V/cell	138.8	96.5	73.3	57.9	43.2	30.9	24.4	15.0	11.5	9.27	7.50	6.40	4.96	4.21	2.18

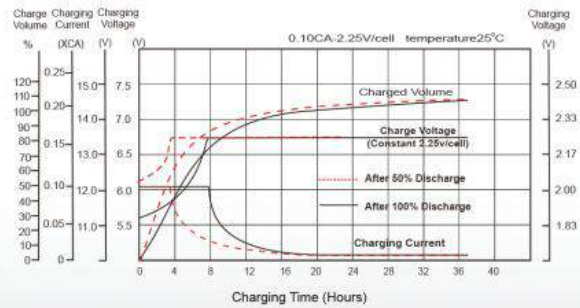
Constant Power Discharge (Watts) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	125.2	99.4	85.4	72.2	58.0	44.3	36.4	23.3	18.5	15.2	12.3	10.7	8.73	7.47	4.08
1.80V/cell	166.2	125.5	101.8	84.1	67.4	51.1	40.5	25.3	19.8	16.1	13.1	11.4	9.23	7.90	4.11
1.75V/cell	183.4	135.7	109.8	89.6	69.4	52.5	42.2	26.1	20.1	16.4	13.4	11.7	9.36	7.97	4.15
1.70V/cell	196.4	144.6	115.6	93.4	71.8	54.4	43.4	27.1	20.6	16.8	13.7	11.9	9.49	8.05	4.23
1.65V/cell	213.5	154.6	122.0	98.5	75.1	55.3	44.5	27.7	21.4	17.3	14.0	12.2	9.61	8.20	4.28
1.60V/cell	230.0	164.0	128.3	103.8	78.8	57.3	45.9	28.5	22.0	17.8	14.5	12.4	9.69	8.27	4.29

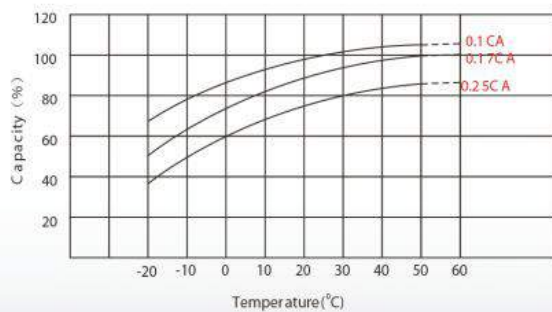
Discharge Characteristics



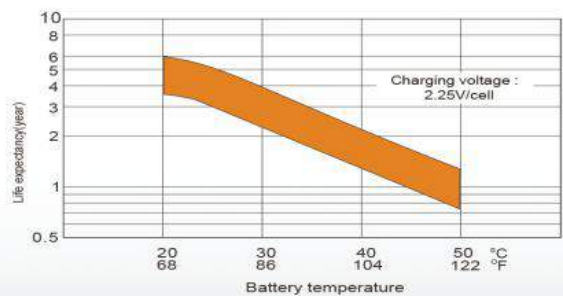
Float Charging Characteristics



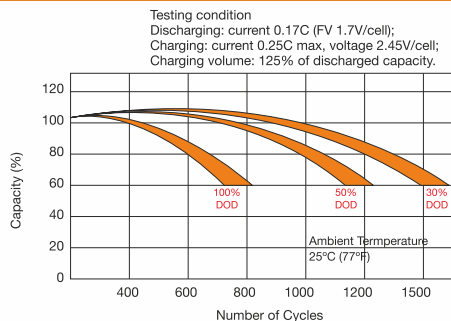
Temperature Effects in Relation to Battery Capacity



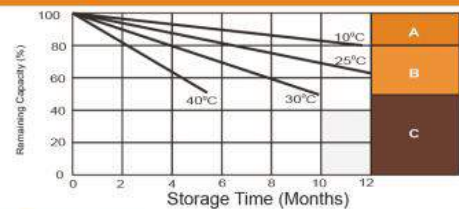
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



- A** No supplementary required
(Carryout supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell
2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.25V/cell
3. Charged for 8 - 10 hours at limited current 0.05 CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

FZA 55-12

12V 55AH

General



FZA 55-12 / VRLA GEL



Physical Specification

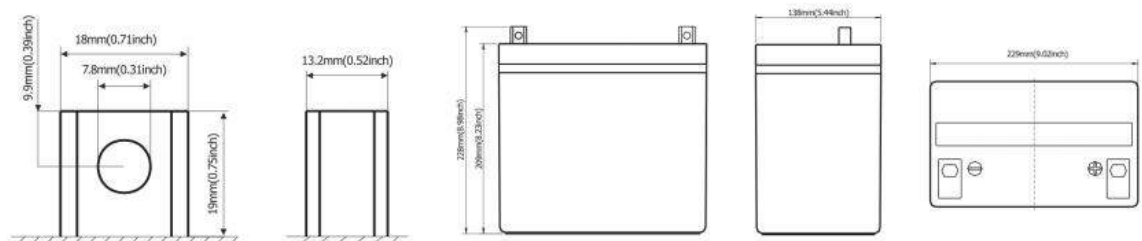
Part Number	FZA 55-12
Length	229 ± 2 mm
Width	138 ± 2 mm
Container Height	209 ± 2 mm
Total Height (with terminal)	228 ± 2 mm

Specifications

	Nominal Voltage	12V
	Nominal Capacity 20HR)	55 AH
Terminal Type	Standard Terminal	F9
	Optional Terminal	F6
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS(UL94:VO)
Rated Capacity	20hr, 1.80V/cell, 25°C	61.0 AH/2.8A
	10hr, 1.80V/cell, 25°C	52.25 AH/5.225A
	5hr, 1.75V/cell, 25°C	46.75 AH/9.35A
	1hr, 1.60V/cell, 25°C	33.0 AH/33.0A
Max Discharge Current	16.5A	
Internal Resistance	0.006mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C
		Charge: 0 ~ 40°C
		Storage: -15 ~ 40°C
	Nominal Operating Temp. Range	25 ± 3°C
	Cycle Use	14.4V ~ 15.0V Temp. Coefficient -24mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.6V ~ 13.8V Temp. Coefficient -18mV/°C
	Capacity affect by Temperature	40°C
25°C		100%
0°C		86%
Design Floating Life at 20°C	15 Years	

Dimensions

F9 Terminal



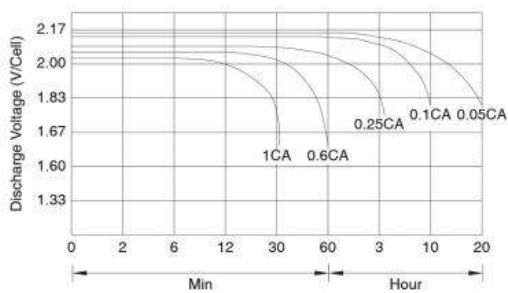
Constant Current Discharge (Amperes) at 20°C

F.V/Time	5 min	10 min	15 min	30 min	1h	3h	5h	10h	20h
1.60V/cell	193	132	96.3	57.8	36.3	15.0	10.5	5.83	2.90
1.67V/cell	173	120	93.5	56.1	36.2	15.0	10.4	5.74	2.89
1.70V/cell	164	116	90.2	55.0	36.1	15.0	10.4	5.70	2.89
1.75V/cell	146	107	85.3	53.9	35.8	14.9	10.3	5.60	2.88
1.80V/cell	132	100	81.4	52.3	35.3	14.8	10.2	5.50	2.77
1.85V/cell	100	82	70.4	48.1	34.9	14.7	10.2	5.41	2.73

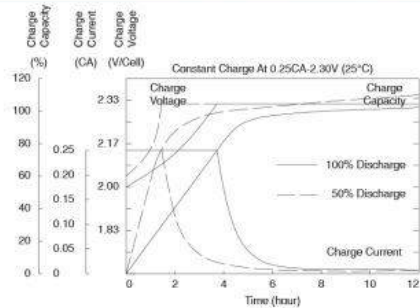
Constant Power Discharge (Watts) at 20°C

F.V/Time	5 min	10 min	15 min	30 min	1h	3h	5h	10h	20h
1.60V/cell	317	219	171	109	71.5	28.8	20.1	11.7	5.80
1.67V/cell	301	216	169	107	69.1	28.8	20.1	11.5	5.78
1.70V/cell	281	211	166	104	67.3	28.8	20.1	11.4	5.78
1.75V/cell	262	197	156	101	66.7	28.4	19.9	11.2	5.75
1.80V/cell	235	183	147	98.5	65.6	28.0	19.5	11.0	5.55
1.85V/cell	188	152	128	90.2	65.0	27.9	19.3	10.8	5.45

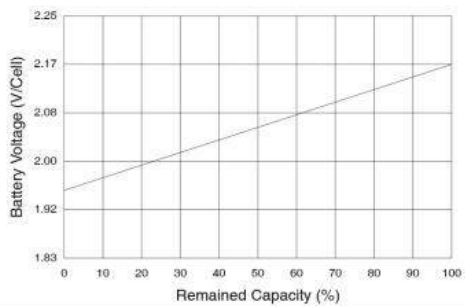
Discharge Characteristics



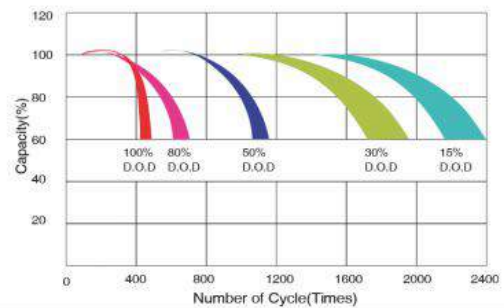
Float Charging Characteristics



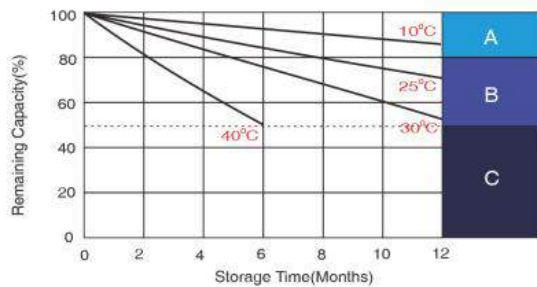
Temperature Effects in Relation to Battery Capacity



Life Characteristics of Cycle Use



Self Discharge Characteristics



- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
1.Charged for above 3 days at limited current 0.25CA and constant volatge 2.25V/cell.
2.Charged for above 20hours at limited current 0.25CA and constant volatge 2.45V/cell.
3.Charged for 8~10hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

FZA 60-12

12V 60AH

General



FZA 60-12 / VRLA GEL



Physical Specification

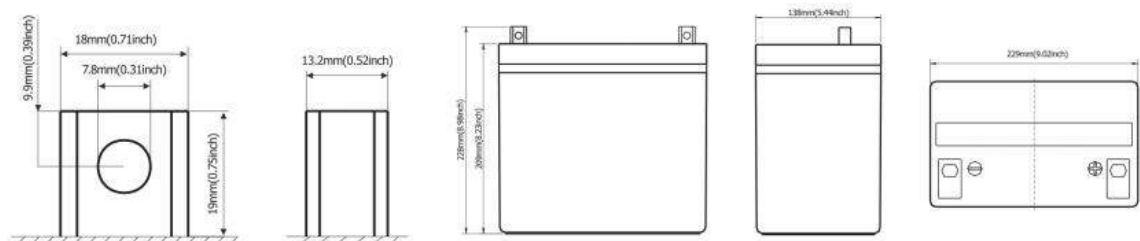
Part Number	FZA 60-12
Length	229 ± 2 mm
Width	138 ± 2 mm
Container Height	209 ± 2 mm
Total Height (with terminal)	228 ± 2 mm

Specifications

	Nominal Voltage	12V
	Nominal Capacity 20HR)	60 AH
Terminal Type	Standard Terminal	F9
	Optional Terminal	F6
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS(UL94:VO)
Rated Capacity	20hr, 1.80V/cell, 25°C	61.0 AH/2.8A
	10hr, 1.80V/cell, 25°C	52.25 AH/5.225A
	5hr, 1.75V/cell, 25°C	46.75 AH/9.35A
	1hr, 1.60V/cell, 25°C	33.0 AH/33.0A
Max Discharge Current	16.5A	
Internal Resistance	0.006mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C
		Charge: 0 ~ 40°C
		Storage: -15 ~ 40°C
	Nominal Operating Temp. Range	25 ± 3°C
	Cycle Use	14.4V ~ 15.0V Temp. Coefficient -24mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.6V ~ 13.8V Temp. Coefficient -18mV/°C
Capacity affect by Temperature	40°C	103%
	25°C	100%
	0°C	86%
Design Floating Life at 20°C	15 Years	

Dimensions

F9 Terminal



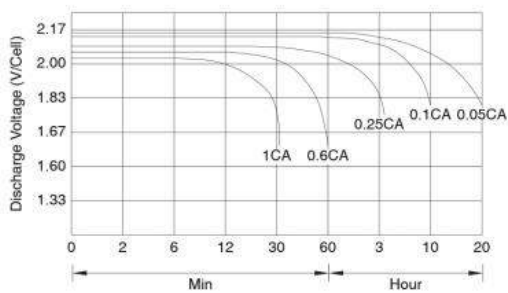
Constant Current Discharge (Amperes) at 20°C

F.V/Time	5 min	10 min	15 min	30 min	1h	3h	5h	10h	20h
1.60V/cell	193	132	96.3	57.8	36.3	15.0	10.5	5.83	2.90
1.67V/cell	173	120	93.5	56.1	36.2	15.0	10.4	5.74	2.89
1.70V/cell	164	116	90.2	55.0	36.1	15.0	10.4	5.70	2.89
1.75V/cell	146	107	85.3	53.9	35.8	14.9	10.3	5.60	2.88
1.80V/cell	132	100	81.4	52.3	35.3	14.8	10.2	5.50	2.77
1.85V/cell	100	82	70.4	48.1	34.9	14.7	10.2	5.41	2.73

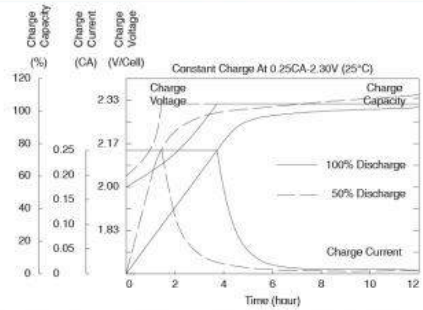
Constant Power Discharge (Watts) at 20°C

F.V/Time	5 min	10 min	15 min	30 min	1h	3h	5h	10h	20h
1.60V/cell	317	219	171	109	71.5	28.8	20.1	11.7	5.80
1.67V/cell	301	216	169	107	69.1	28.8	20.1	11.5	5.78
1.70V/cell	281	211	166	104	67.3	28.8	20.1	11.4	5.78
1.75V/cell	262	197	156	101	66.7	28.4	19.9	11.2	5.75
1.80V/cell	235	183	147	98.5	65.6	28.0	19.5	11.0	5.55
1.85V/cell	188	152	128	90.2	65.0	27.9	19.3	10.8	5.45

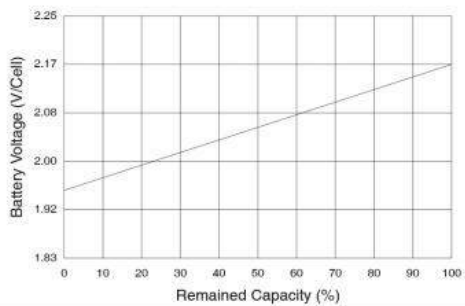
Discharge Characteristics



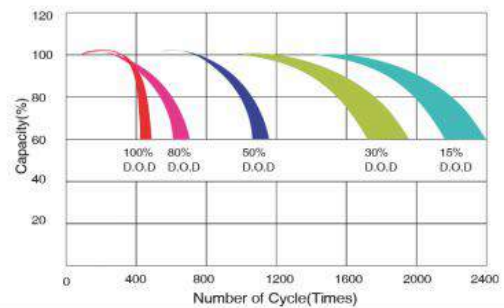
Float Charging Characteristics



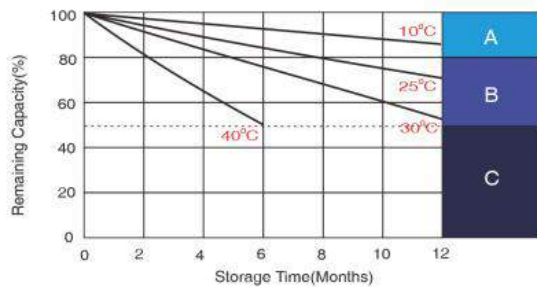
Temperature Effects in Relation to Battery Capacity



Life Characteristics of Cycle Use



Self Discharge Characteristics



- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
1.Charged for above 3 days at limited current 0.25CA and constant volatge 2.25V/cell.
2.Charged for above 20hours at limited current 0.25CA and constant volatge 2.45V/cell.
3.Charged for 8~10hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

FZA 65-12

12V 65AH

General



FZA 65-12 / VRLA GEL



Physical Specification

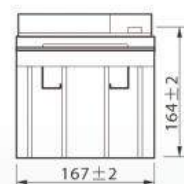
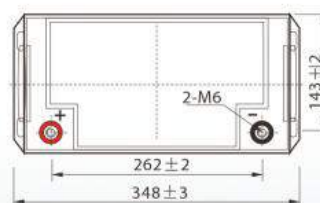
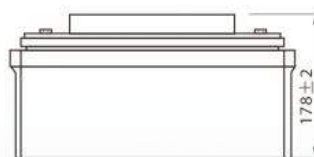
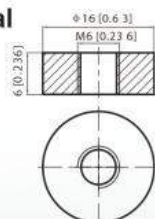
Part Number:	FZA 65-12
Length:	348 ± 2 mm (13.70 inches)
Width:	167 ± 2 mm (6.57 inches)
Container Height:	178 ± 2 mm (7.01 inches)
Total Height (with terminal):	178 ± 2 mm (7.01 inches)

Specifications

Terminal Type	Nominal Voltage	12V
	Nominal Capacity (20HR)	65AH
Container Material	Standard Terminal	F6
	Optional Terminal	F10
Rated Capacity	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Max Discharge Current	65.0 AH/3.40A	(20hr, 1.80V/cell, 25°C / 77°F)
	62.5.0 AH/6.50A	(10hr, 1.80V/cell, 25°C / 77°F)
	56.0 AH/11.2A	(5hr, 1.75V/cell, 25°C / 77°F)
	48.9 AH/16.3A	(3hr, 1.75V/cell, 25°C / 77°F)
Internal Resistance	780A (5s)	Approx 7.3mΩ
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 19.5A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C		10 Years

Dimensions

F6 Terminal



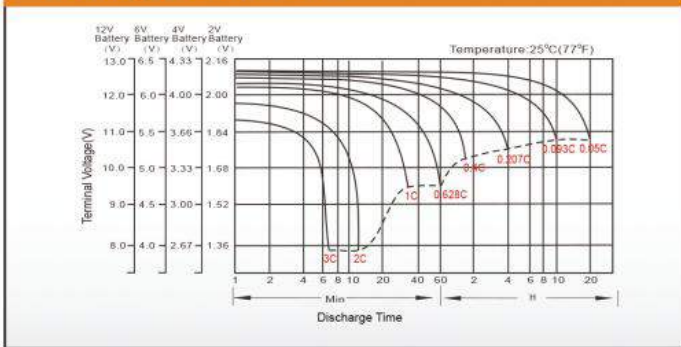
Constant Current Discharge (Amperes) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	119.3	91.7	79.0	68.6	53.2	40.2	32.6	19.7	15.0	12.3	10.5	9.20	7.44	6.26	3.35
1.80V/cell	149.3	107.3	89.9	77.2	58.3	43.5	34.9	21.0	15.8	12.9	11.0	9.59	7.74	6.50	3.40
1.75V/cell	168.4	117.0	98.2	82.7	62.5	46.2	36.9	21.9	16.3	13.2	11.2	9.78	7.86	6.57	3.44
1.70V/cell	185.4	126.4	104.8	87.8	65.3	48.1	38.5	22.6	16.8	13.6	11.5	9.98	7.97	6.63	3.48
1.65V/cell	202.8	136.1	111.4	92.8	68.5	50.3	40.0	23.2	17.2	13.8	11.7	10.2	8.09	6.70	3.52
1.60V/cell	220.0	146.6	119.2	97.7	71.9	52.3	41.6	23.9	17.6	14.1	11.9	10.3	8.20	6.79	3.54

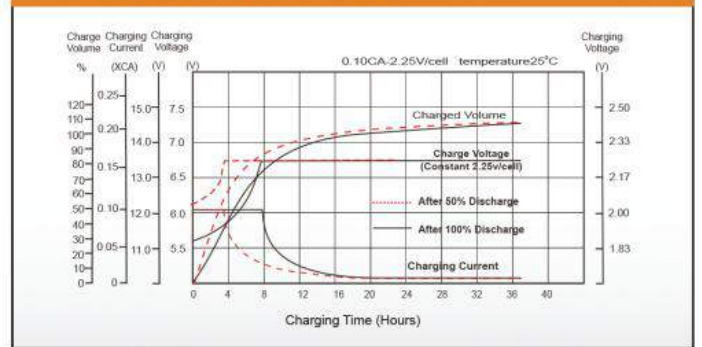
Constant Power Discharge (Watts) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	226.3	175.5	152.8	133.7	104.3	79.3	64.6	39.1	30.0	24.7	21.1	18.5	15.0	12.7	6.80
1.80V/cell	280.5	203.9	172.6	149.6	113.8	85.4	68.9	41.6	31.5	25.8	22.0	19.3	15.6	13.1	6.88
1.75V/cell	313.5	220.8	187.4	159.4	121.5	90.4	72.7	43.3	32.4	26.4	22.4	19.6	15.8	13.2	6.93
1.70V/cell	342.1	236.6	198.8	168.3	126.3	93.8	75.7	44.6	33.2	26.9	22.8	19.9	15.9	13.3	6.98
1.65V/cell	370.9	253.0	210.1	177.2	132.1	97.8	78.3	45.6	34.0	27.4	23.2	20.2	16.2	13.4	7.06
1.60V/cell	398.3	270.5	223.3	185.6	138.1	101.3	81.2	46.9	34.7	27.9	23.6	20.5	16.3	13.5	7.07

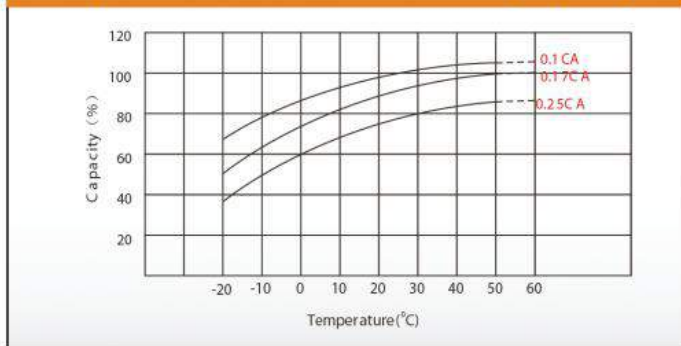
Discharge Characteristics



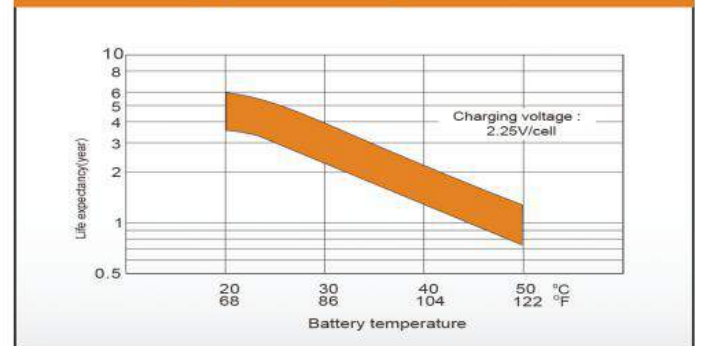
Float Charging Characteristics



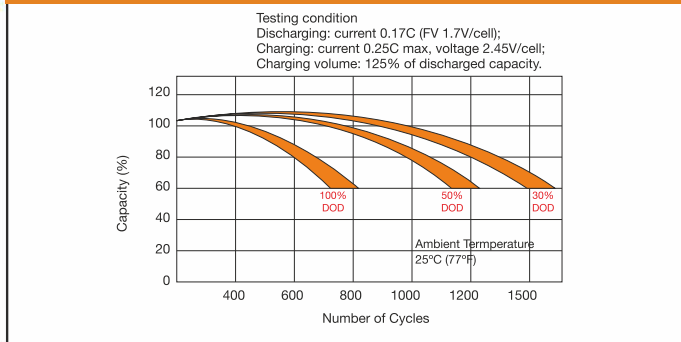
Temperature Effects in Relation to Battery Capacity



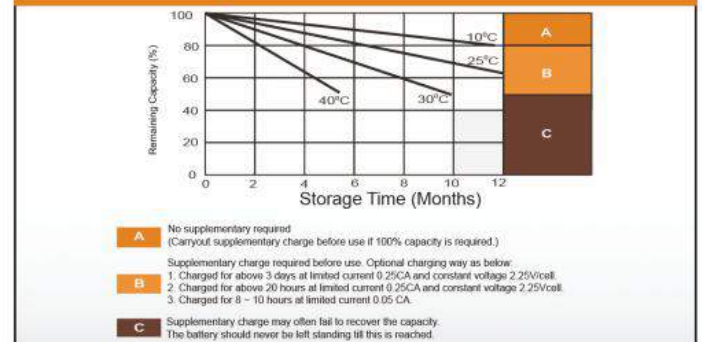
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 80-12

12V 80AH

General



FZA 80-12 / VRLA GEL



Physical Specification

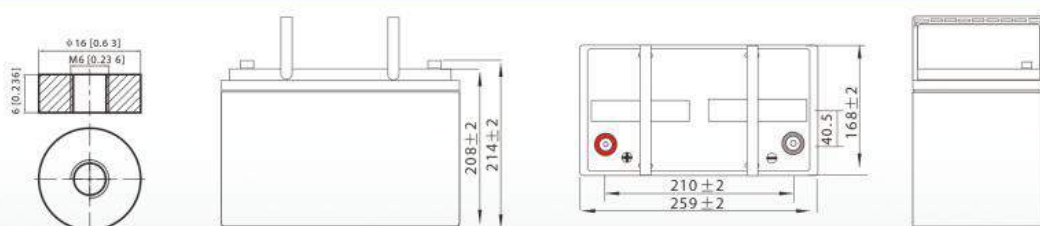
Part Number:	FZA 80-12
Length:	259 ± 2 mm (10.20 inches)
Width:	168 ± 2 mm (6.61 inches)
Container Height:	208 ± 2 mm (8.19 inches)
Total Height (with terminal):	214 ± 2 mm (8.43 inches)

Specifications

Terminal Type	Nominal Voltage	12V
	Nominal Capacity (10HR)	80AH
	Standard Terminal	F6
Container Material	Optional Terminal	-
	Standard Option	ABS
Rated Capacity	Flame Retardant Option (FR)	ABS (UL94:VO)
	83.2 AH/4.16A	(20hr, 1.80V/cell, 25°C / 77°F)
	80.0 AH/8.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	69.0 AH/13.8A	(5hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	62.4 AH/20.8A	(3hr, 1.75V/cell, 25°C / 77°F)
	960A (5s)	
Internal Resistance	Approx 6mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 24.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F6 Terminal



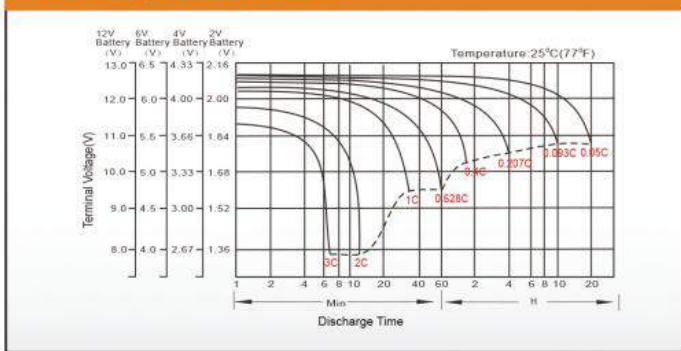
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	136.9	107.6	91.5	76.6	60.9	46.1	37.7	24.0	19.0	15.5	12.5	10.9	8.84	7.55	4.12
1.80V/cell	183.8	137.5	110.6	90.5	71.8	53.6	42.2	26.2	20.4	16.6	13.4	11.7	9.38	8.00	4.16
1.75V/cell	207.2	151.1	120.8	97.4	74.6	55.6	44.2	27.2	20.8	16.9	13.8	12.0	9.54	8.08	4.20
1.70V/cell	228.2	164.7	129.0	102.3	77.6	57.8	45.6	28.3	21.4	17.4	14.1	12.2	9.67	8.16	4.28
1.65V/cell	251.6	177.8	137.2	108.7	81.9	59.3	47.1	29.1	22.3	18.0	14.5	12.5	9.82	8.33	4.34
1.60V/cell	277.5	193.0	146.7	115.8	86.4	61.8	48.8	30.0	23.0	18.5	15.0	12.8	9.92	8.42	4.36

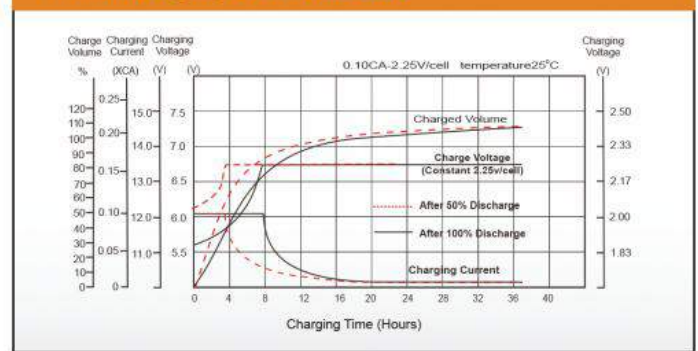
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	250.3	198.8	170.8	144.3	116.0	88.5	72.7	46.7	37.0	30.3	24.5	21.4	17.4	14.9	8.16
1.80V/cell	332.5	251.1	203.6	168.1	134.8	102.2	81.1	50.6	39.6	32.2	26.2	22.9	18.5	15.8	8.23
1.75V/cell	366.9	271.5	219.7	179.1	138.8	105.0	84.4	52.3	40.2	32.8	26.8	23.4	18.7	15.9	8.30
1.70V/cell	392.8	289.2	231.3	186.8	143.6	108.8	86.8	54.2	41.2	33.6	27.4	23.9	19.0	16.1	8.45
1.65V/cell	427.0	309.2	244.0	197.0	150.3	110.5	89.1	55.4	42.8	34.7	28.1	24.3	19.2	16.4	8.55
1.60V/cell	460.1	328.1	256.7	207.5	157.5	114.6	91.7	57.0	43.9	35.6	28.9	24.8	19.4	16.5	8.58

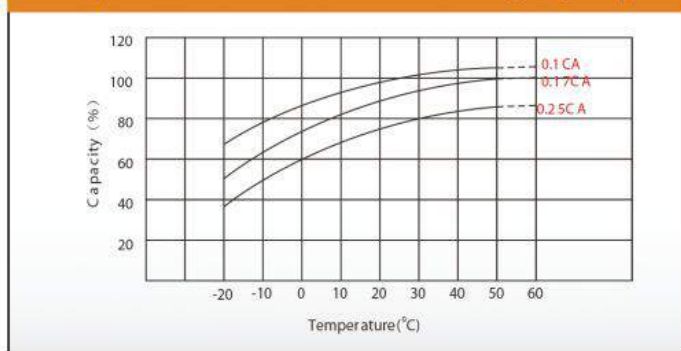
Discharge Characteristics



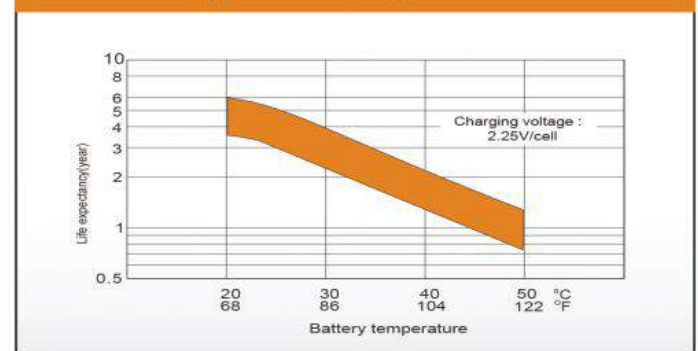
Float Charging Characteristics



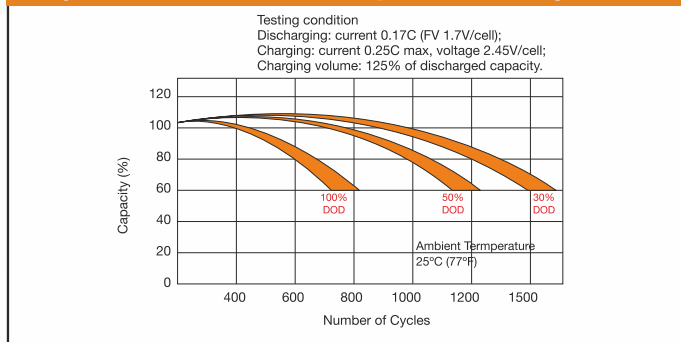
Temperature Effects in Relation to Battery Capacity



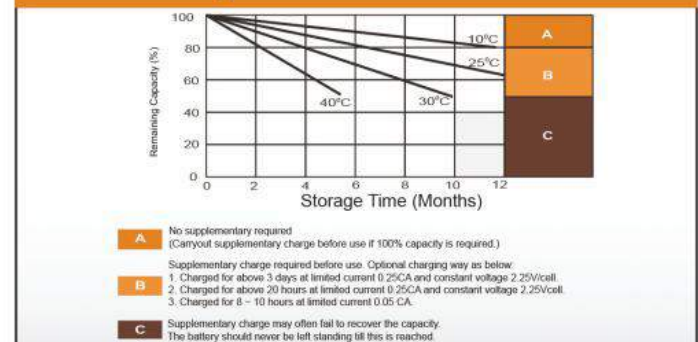
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 100-12

12V 100AH

General



FZA 100-12 / VRLA GEL



Physical Specification

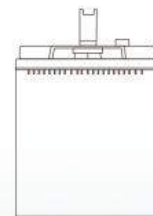
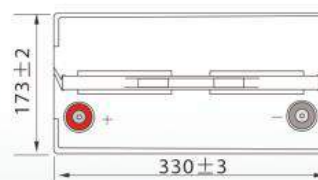
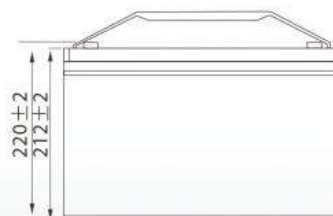
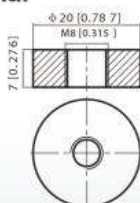
Part Number:	FZA 100-12
Length:	330 ± 2 mm (12.99 inches)
Width:	173 ± 2 mm (6.81 inches)
Container Height:	212 ± 2 mm (8.35 inches)
Total Height (with terminal):	220 ± 2 mm (8.66 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	100AH
Terminal Type	Standard Terminal	F11
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	104.0 AH/5.20A	(20hr, 1.80V/cell, 25°C / 77°F)
	100.0 AH/10.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	88.0 AH/17.6A	(5hr, 1.75V/cell, 25°C / 77°F)
	76.2 AH/25.4A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	1200A (5s)	
Internal Resistance	Approx 4.9mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 30.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



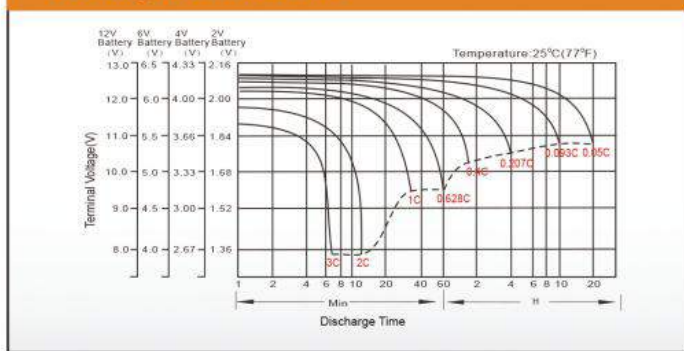
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	208.8	161.4	136.4	117.0	88.4	65.7	53.0	31.3	23.5	19.2	16.4	14.4	11.6	9.65	5.13
1.80V/cell	246.0	180.0	150.8	126.6	94.2	69.6	55.9	33.1	24.6	20.2	17.2	15.0	12.0	10.0	5.20
1.75V/cell	278.4	197.4	162.0	134.7	99.0	72.7	58.0	34.4	25.4	20.7	17.6	15.3	12.2	10.1	5.29
1.70V/cell	318.0	214.8	174.4	143.4	104.6	76.0	60.4	35.3	26.0	21.2	17.9	15.6	12.4	10.2	5.34
1.65V/cell	356.4	232.2	185.6	151.5	110.0	79.2	63.0	36.3	26.7	21.7	18.3	15.9	12.6	10.3	5.40
1.60V/cell	405.6	254.4	197.2	159.9	115.8	82.4	65.1	37.5	27.6	22.2	18.6	16.2	12.7	10.5	5.45

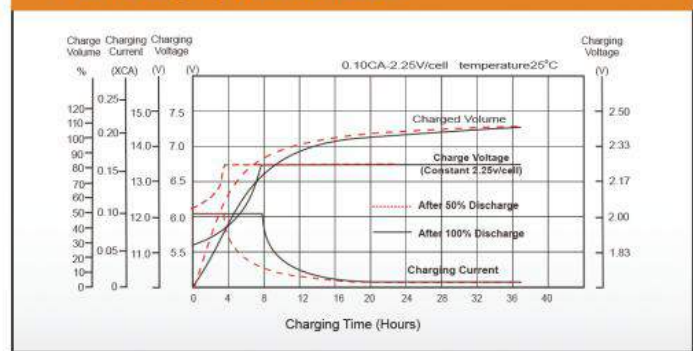
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	381.8	298.1	254.5	220.5	168.5	126.4	102.2	60.8	45.7	37.5	32.2	28.2	22.9	19.1	10.15
1.80V/cell	445.0	328.6	277.6	235.1	176.8	132.7	107.2	63.8	47.7	39.2	33.6	29.4	23.7	19.8	10.29
1.75V/cell	492.9	354.6	294.6	247.8	184.3	137.3	110.8	66.0	49.1	40.1	34.3	29.9	24.0	19.9	10.45
1.70V/cell	547.4	377.1	312.7	261.8	193.6	143.0	115.0	67.6	50.1	41.0	34.8	30.4	24.3	20.1	10.54
1.65V/cell	604.8	403.9	330.2	274.5	201.9	147.7	119.1	69.2	51.3	41.8	35.3	30.8	24.6	20.3	10.64
1.60V/cell	672.4	432.4	345.1	286.6	211.1	152.9	122.4	71.1	52.7	42.6	35.9	31.3	24.8	20.5	10.73

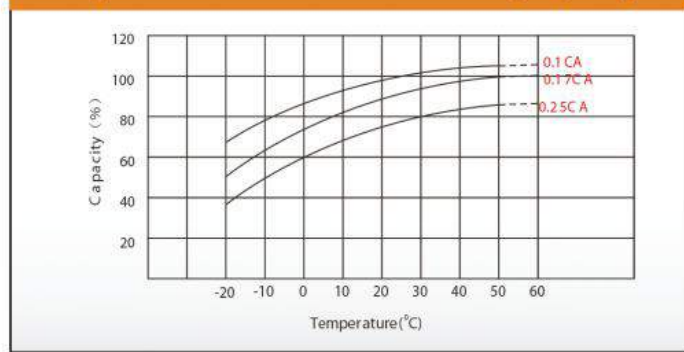
Discharge Characteristics



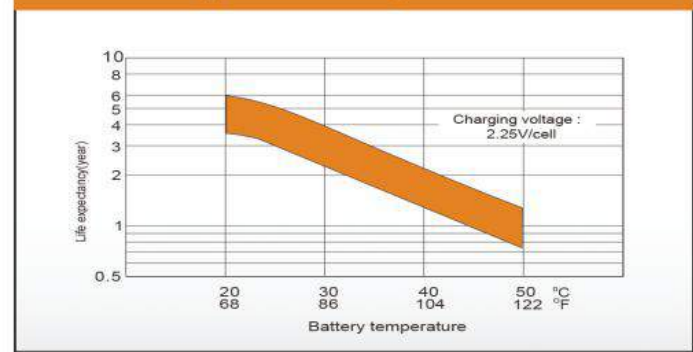
Float Charging Characteristics



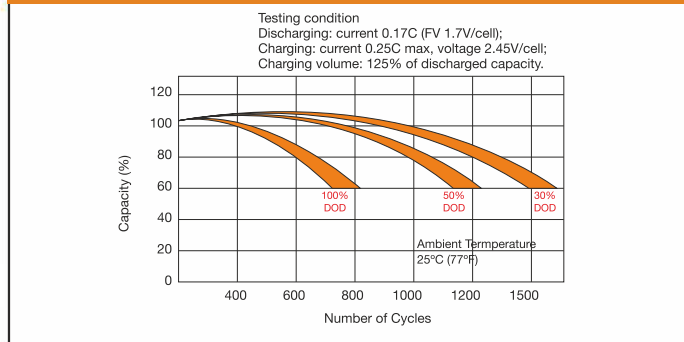
Temperature Effects in Relation to Battery Capacity



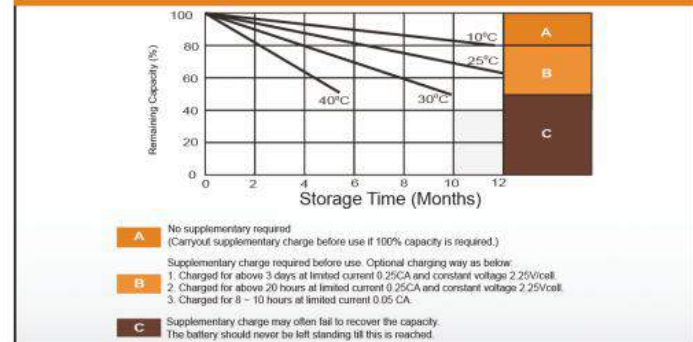
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 110-12

12V 110AH

General



FZA 110-12 / VRLA GEL



Physical Specification

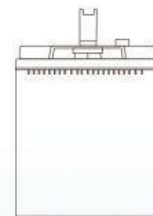
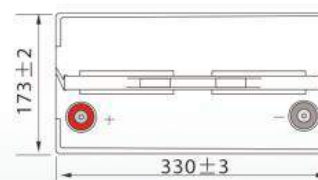
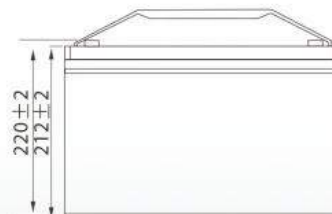
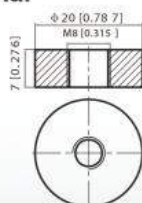
Part Number:	FZA 110-12
Length:	330 ± 2 mm (12.99 inches)
Width:	173 ± 2 mm (6.81 inches)
Container Height:	212 ± 2 mm (8.35 inches)
Total Height (with terminal):	220 ± 2 mm (8.66 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	110 AH
Terminal Type	Standard Terminal	F11
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	104.0 AH/5.20A	(20hr, 1.80V/cell, 25°C / 77°F)
	100.0 AH/10.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	88.0 AH/17.6A	(5hr, 1.75V/cell, 25°C / 77°F)
	76.2 AH/25.4A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	1200A (5s)	
Internal Resistance	Approx 4.9mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 30.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



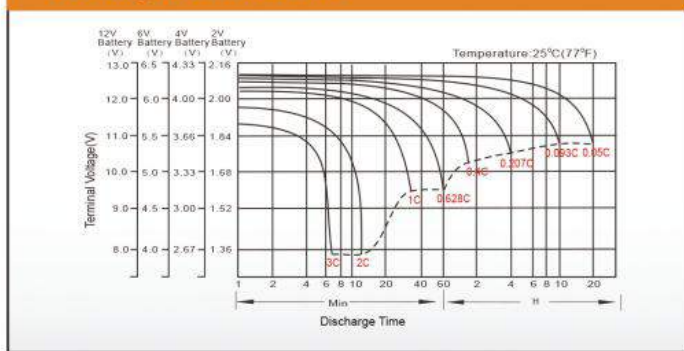
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	208.8	161.4	136.4	117.0	88.4	65.7	53.0	31.3	23.5	19.2	16.4	14.4	11.6	9.65	5.13
1.80V/cell	246.0	180.0	150.8	126.6	94.2	69.6	55.9	33.1	24.6	20.2	17.2	15.0	12.0	10.0	5.20
1.75V/cell	278.4	197.4	162.0	134.7	99.0	72.7	58.0	34.4	25.4	20.7	17.6	15.3	12.2	10.1	5.29
1.70V/cell	318.0	214.8	174.4	143.4	104.6	76.0	60.4	35.3	26.0	21.2	17.9	15.6	12.4	10.2	5.34
1.65V/cell	356.4	232.2	185.6	151.5	110.0	79.2	63.0	36.3	26.7	21.7	18.3	15.9	12.6	10.3	5.40
1.60V/cell	405.6	254.4	197.2	159.9	115.8	82.4	65.1	37.5	27.6	22.2	18.6	16.2	12.7	10.5	5.45

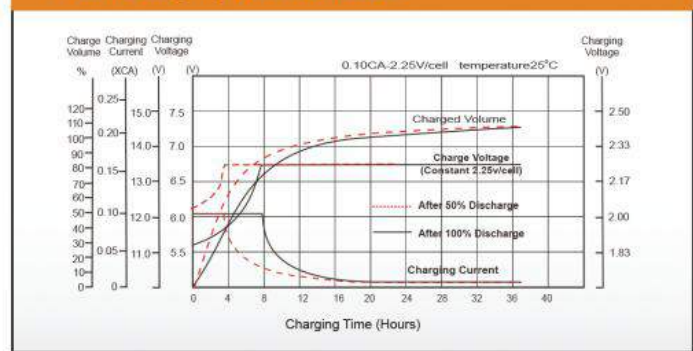
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	381.8	298.1	254.5	220.5	168.5	126.4	102.2	60.8	45.7	37.5	32.2	28.2	22.9	19.1	10.15
1.80V/cell	445.0	328.6	277.6	235.1	176.8	132.7	107.2	63.8	47.7	39.2	33.6	29.4	23.7	19.8	10.29
1.75V/cell	492.9	354.6	294.6	247.8	184.3	137.3	110.8	66.0	49.1	40.1	34.3	29.9	24.0	19.9	10.45
1.70V/cell	547.4	377.1	312.7	261.8	193.6	143.0	115.0	67.6	50.1	41.0	34.8	30.4	24.3	20.1	10.54
1.65V/cell	604.8	403.9	330.2	274.5	201.9	147.7	119.1	69.2	51.3	41.8	35.3	30.8	24.6	20.3	10.64
1.60V/cell	672.4	432.4	345.1	286.6	211.1	152.9	122.4	71.1	52.7	42.6	35.9	31.3	24.8	20.5	10.73

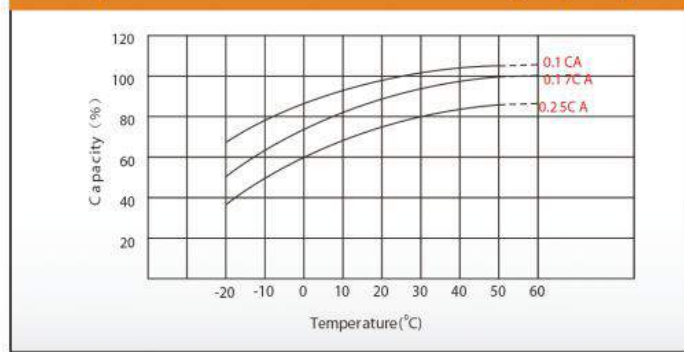
Discharge Characteristics



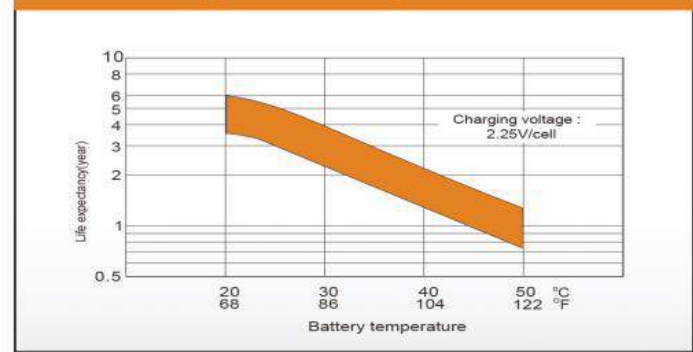
Float Charging Characteristics



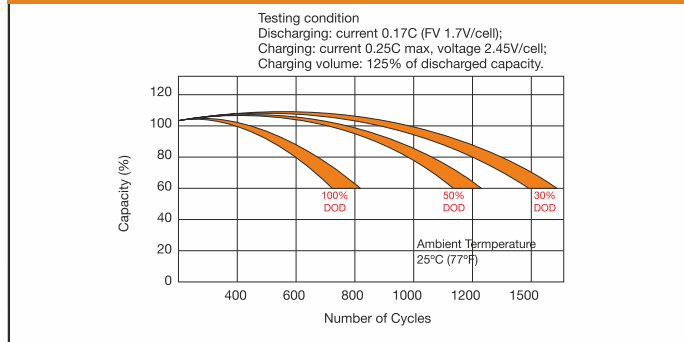
Temperature Effects in Relation to Battery Capacity



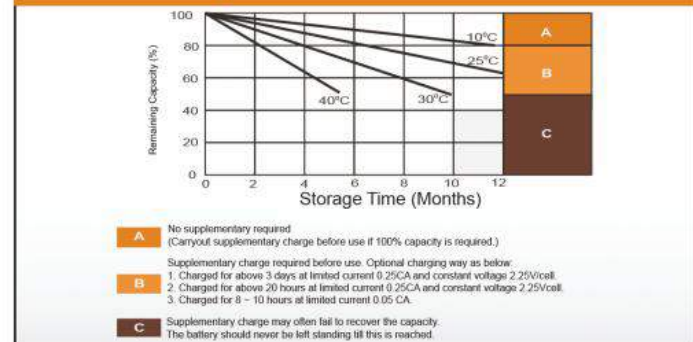
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 120-12

12V 120AH

General



FZA 120-12 / VRLA GEL



Physical Specification

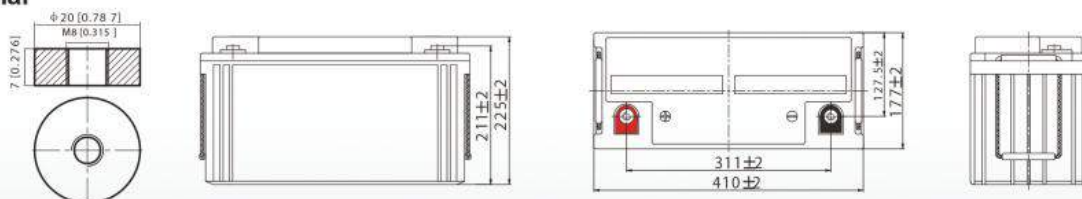
Part Number:	FZA 120-12
Length:	410 ± 2 mm (16.14 inches)
Width:	177 ± 2 mm (6.97 inches)
Container Height:	225 ± 2 mm (8.86 inches)
Total Height (with terminal):	225 ± 2 mm (8.86 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	120AH
Terminal Type	Standard Terminal	F11
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	124.8 AH/6.24A	(20hr, 1.80V/cell, 25°C / 77°F)
	120.0 AH/12.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	104.5 AH/20.9A	(5hr, 1.75V/cell, 25°C / 77°F)
	92.1 AH/30.7A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	1300A (5s)	
Internal Resistance	Approx 4.0mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 36.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



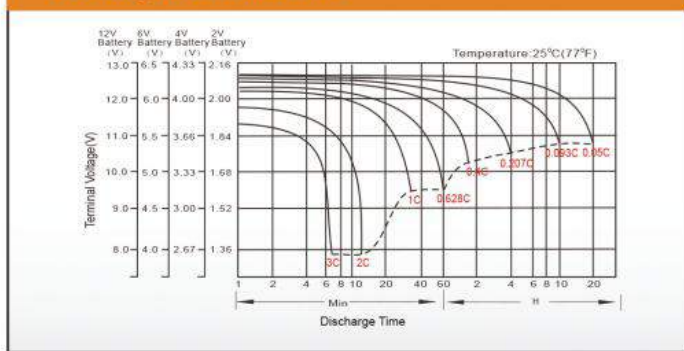
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	250.6	193.7	163.7	140.4	104.2	75.8	60.1	36.5	28.0	23.0	19.5	17.0	13.7	11.5	6.15
1.80V/cell	295.2	216.0	181.0	151.9	111.1	81.0	64.4	39.3	30.0	24.3	20.5	17.8	14.3	12.0	6.24
1.75V/cell	334.1	236.9	194.4	161.6	117.6	85.3	68.0	40.8	30.7	24.8	20.9	18.1	14.5	12.1	6.35
1.70V/cell	381.6	257.8	209.3	172.1	123.6	89.6	71.5	42.4	31.7	25.4	21.3	18.4	14.7	12.2	6.41
1.65V/cell	427.7	278.6	222.7	181.8	130.1	93.9	74.9	43.6	32.5	26.1	21.7	18.8	14.9	12.4	6.47
1.60V/cell	486.7	305.3	236.6	191.9	137.3	98.2	78.1	45.2	33.3	26.6	22.2	19.1	15.1	12.5	6.54

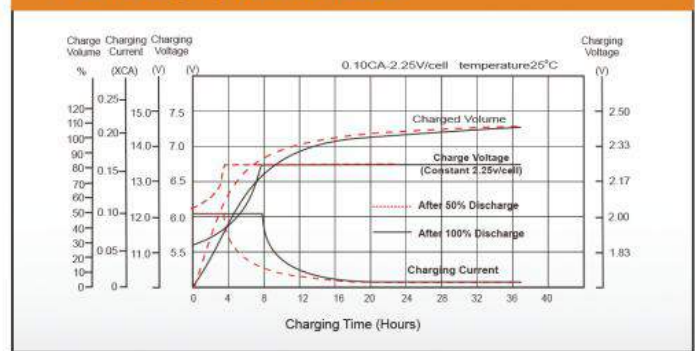
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	458.1	357.8	305.4	264.7	198.5	145.8	116.0	71.0	54.7	45.1	38.3	33.4	27.0	22.8	12.2
1.80V/cell	534.0	394.3	333.1	282.2	208.6	154.4	123.6	75.9	58.2	47.3	39.9	34.9	28.1	23.7	12.3
1.75V/cell	591.5	425.5	353.5	297.3	218.9	161.1	129.9	78.4	59.2	48.1	40.7	35.4	28.4	23.9	12.5
1.70V/cell	656.8	452.5	375.2	314.2	228.8	168.6	136.2	81.3	61.1	49.2	41.4	35.9	28.8	24.1	12.7
1.65V/cell	725.7	484.7	396.3	329.4	238.8	175.2	141.5	83.1	62.4	50.2	42.1	36.5	29.2	24.4	12.8
1.60V/cell	806.8	518.9	414.1	343.9	250.3	182.2	146.9	85.8	63.6	51.2	42.7	37.0	29.5	24.6	12.9

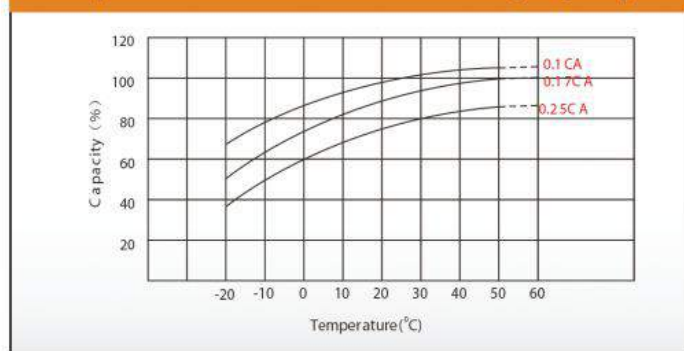
Discharge Characteristics



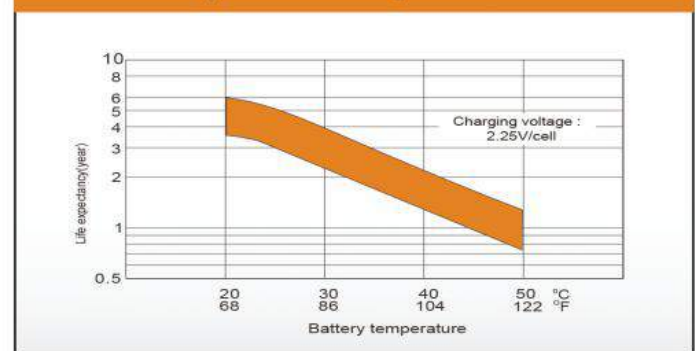
Float Charging Characteristics



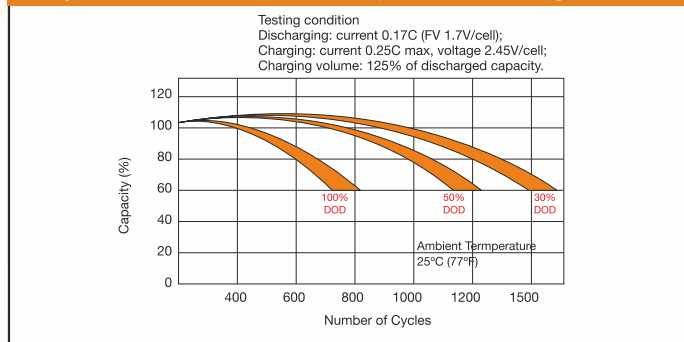
Temperature Effects in Relation to Battery Capacity



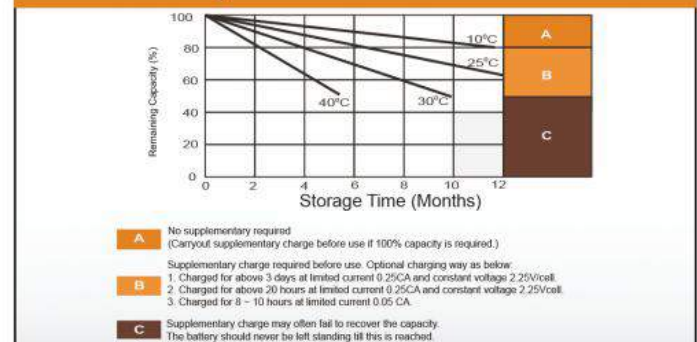
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 140-12

12V 140AH

General



FZA 140-12 / VRLA GEL



Physical Specification

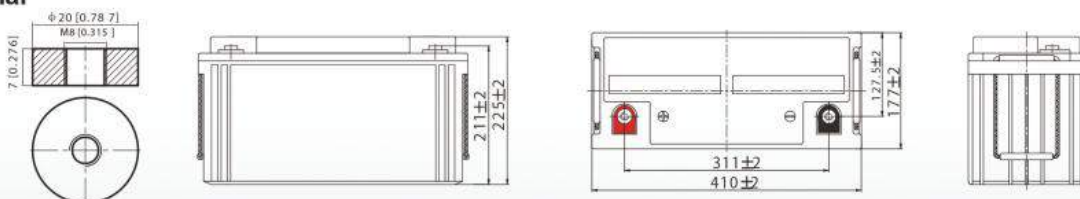
Part Number:	FZA 140-12
Length:	410 ± 2 mm (16.14 inches)
Width:	177 ± 2 mm (6.97 inches)
Container Height:	225 ± 2 mm (8.86 inches)
Total Height (with terminal):	225 ± 2 mm (8.86 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	140 AH
Terminal Type	Standard Terminal	F11
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	124.8 AH/6.24A	(20hr, 1.80V/cell, 25°C / 77°F)
	120.0 AH/12.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	104.5 AH/20.9A	(5hr, 1.75V/cell, 25°C / 77°F)
	92.1 AH/30.7A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	1300A (5s)	
Internal Resistance	Approx 4.0mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 36.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



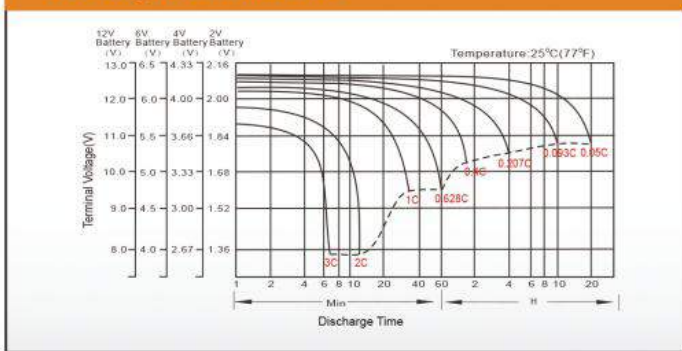
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	250.6	193.7	163.7	140.4	104.2	75.8	60.1	36.5	28.0	23.0	19.5	17.0	13.7	11.5	6.15
1.80V/cell	295.2	216.0	181.0	151.9	111.1	81.0	64.4	39.3	30.0	24.3	20.5	17.8	14.3	12.0	6.24
1.75V/cell	334.1	236.9	194.4	161.6	117.6	85.3	68.0	40.8	30.7	24.8	20.9	18.1	14.5	12.1	6.35
1.70V/cell	381.6	257.8	209.3	172.1	123.6	89.6	71.5	42.4	31.7	25.4	21.3	18.4	14.7	12.2	6.41
1.65V/cell	427.7	278.6	222.7	181.8	130.1	93.9	74.9	43.6	32.5	26.1	21.7	18.8	14.9	12.4	6.47
1.60V/cell	486.7	305.3	236.6	191.9	137.3	98.2	78.1	45.2	33.3	26.6	22.2	19.1	15.1	12.5	6.54

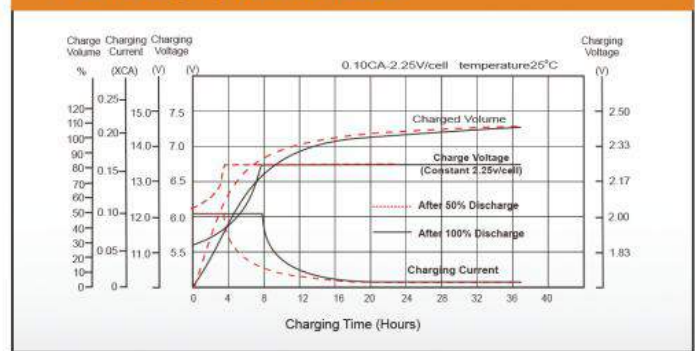
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	458.1	357.8	305.4	264.7	198.5	145.8	116.0	71.0	54.7	45.1	38.3	33.4	27.0	22.8	12.2
1.80V/cell	534.0	394.3	333.1	282.2	208.6	154.4	123.6	75.9	58.2	47.3	39.9	34.9	28.1	23.7	12.3
1.75V/cell	591.5	425.5	353.5	297.3	218.9	161.1	129.9	78.4	59.2	48.1	40.7	35.4	28.4	23.9	12.5
1.70V/cell	656.8	452.5	375.2	314.2	228.8	168.6	136.2	81.3	61.1	49.2	41.4	35.9	28.8	24.1	12.7
1.65V/cell	725.7	484.7	396.3	329.4	238.8	175.2	141.5	83.1	62.4	50.2	42.1	36.5	29.2	24.4	12.8
1.60V/cell	806.8	518.9	414.1	343.9	250.3	182.2	146.9	85.8	63.6	51.2	42.7	37.0	29.5	24.6	12.9

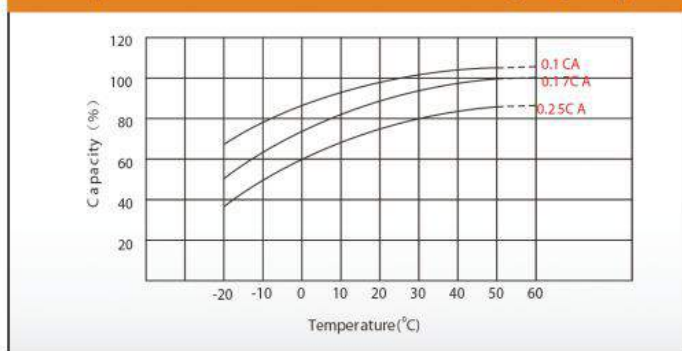
Discharge Characteristics



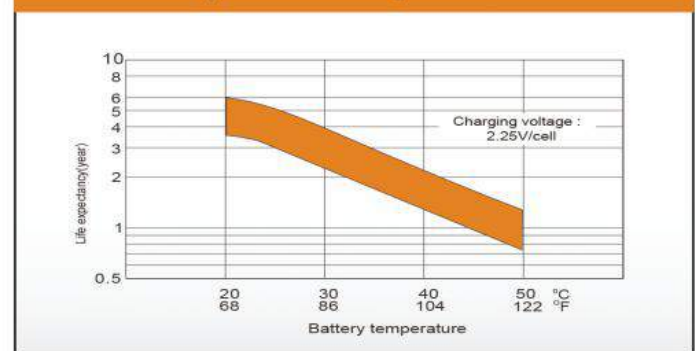
Float Charging Characteristics



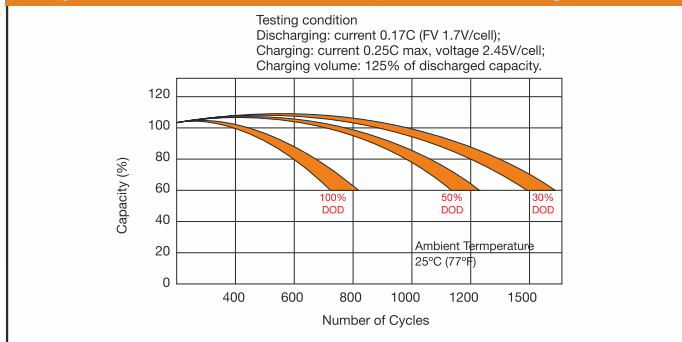
Temperature Effects in Relation to Battery Capacity



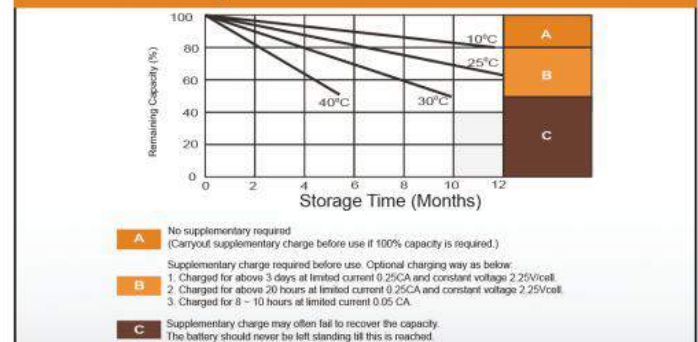
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 150-12 / JEL

12V 150AH

General



FZA 150-12 / VRLA GEL



Physical Specification

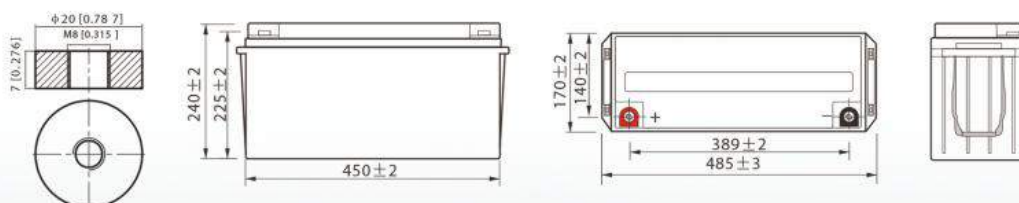
Part Number:	FZA 150-12
Length:	485 ± 2 mm (13.5 inches)
Width:	170 ± 2 mm (6.73 inches)
Container Height:	240 ± 2 mm (10.79 inches)
Total Height (with terminal):	240 ± 2 mm (11.02 inches)

Specifications

Terminal Type	Nominal Voltage	12V
	Nominal Capacity (10HR)	150AH
	Standard Terminal	F11
Container Material	Optional Terminal	-
	Standard Option	ABS
Rated Capacity	Flame Retardant Option (FR)	ABS (UL94:VO)
	156.0 AH/7.80A	(20hr, 1.80V/cell, 25°C / 77°F)
	150.0 AH/15.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	130.5 AH/26.1A	(5hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	115.2 AH/38.4A	(3hr, 1.75V/cell, 25°C / 77°F)
	1500A (5s)	
Internal Resistance	Approx 3.5mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 45.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



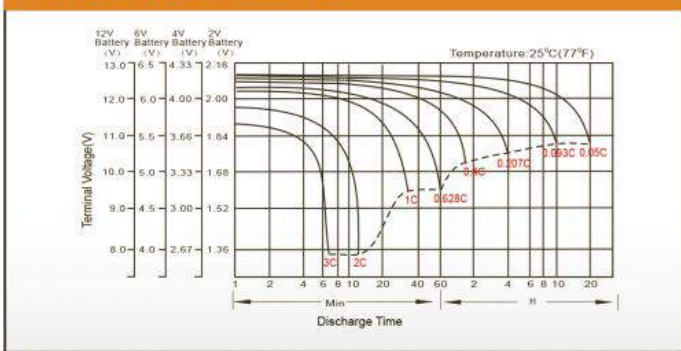
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	259.2	211.5	185.4	156.6	118.5	90.2	74.3	46.5	35.1	28.8	24.4	21.3	17.1	14.4	7.69
1.80V/cell	311.4	243.0	205.8	171.9	129.9	97.4	79.2	49.2	37.6	30.4	25.6	22.3	17.8	15.0	7.80
1.75V/cell	365.4	267.3	223.2	184.5	137.7	102.4	83.1	51.0	38.4	31.0	26.1	22.7	18.1	15.2	7.94
1.70V/cell	401.4	291.6	238.8	198.9	146.7	107.4	86.7	53.0	39.7	31.8	26.6	23.1	18.4	15.3	8.01
1.65V/cell	435.6	315.0	254.4	210.6	154.2	112.2	90.0	54.5	40.7	32.6	27.2	23.5	18.6	15.5	8.09
1.60V/cell	477.0	339.3	269.4	223.2	162.3	117.6	93.9	56.3	41.7	33.3	27.7	23.9	18.9	15.7	8.18

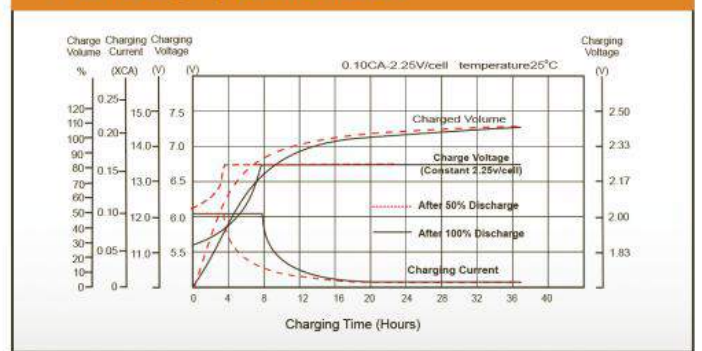
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	473.9	390.7	346.0	295.2	225.9	173.4	143.2	90.3	68.3	56.3	47.9	41.8	33.7	28.5	15.2
1.80V/cell	563.3	443.6	378.9	319.3	243.8	185.8	152.0	94.8	72.8	59.1	49.9	43.6	35.1	29.6	15.4
1.75V/cell	646.9	480.1	405.8	339.4	256.3	193.4	158.7	98.0	74.0	60.1	50.9	44.2	35.5	29.9	15.7
1.70V/cell	690.9	511.9	428.2	363.1	271.5	202.1	165.1	101.7	76.4	61.4	51.7	44.9	36.0	30.2	15.8
1.65V/cell	739.2	547.9	452.6	381.6	283.1	209.3	170.1	103.9	78.0	62.8	52.6	45.6	36.5	30.5	16.0
1.60V/cell	790.7	576.7	471.4	400.0	295.9	218.1	176.5	106.9	79.6	64.0	53.4	46.3	36.8	30.8	16.1

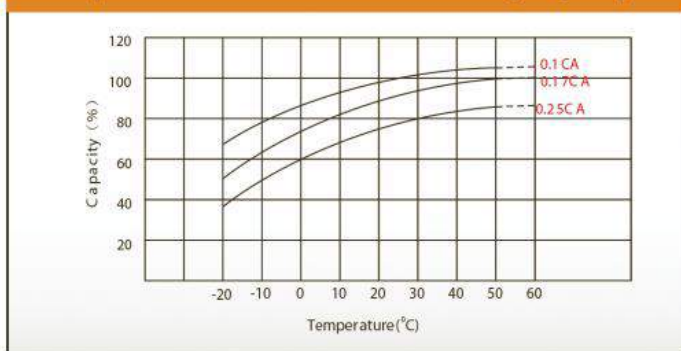
Discharge Characteristics



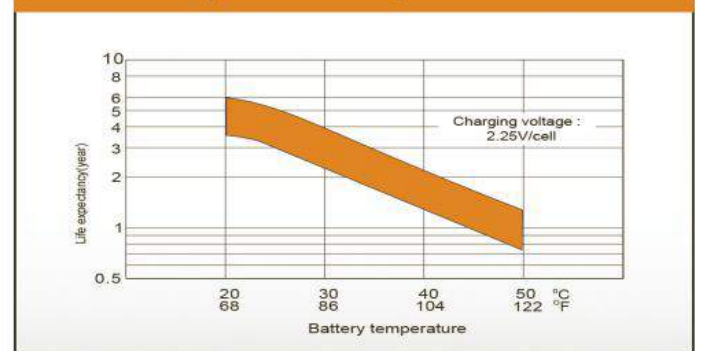
Float Charging Characteristics



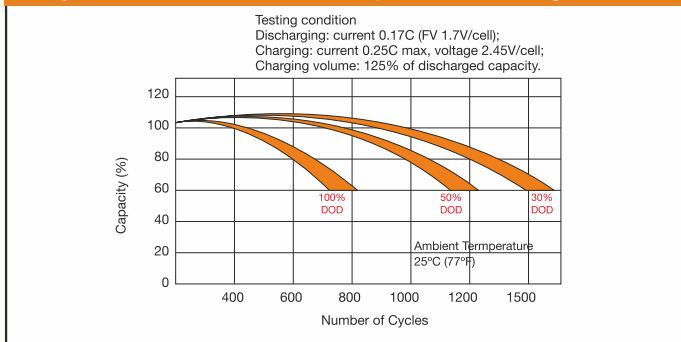
Temperature Effects in Relation to Battery Capacity



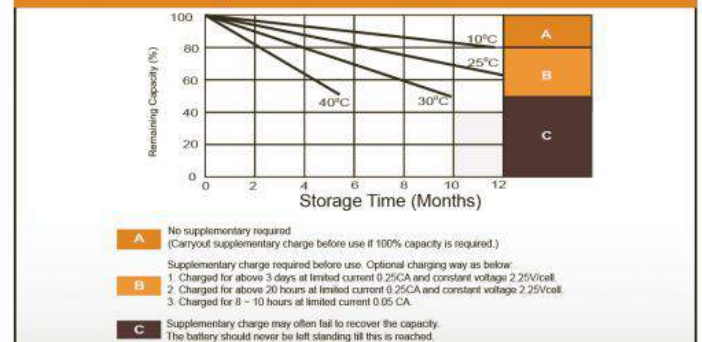
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 160-12 / JEL

12V 160AH

General



FZA 160-12 / VRLA GEL



Physical Specification

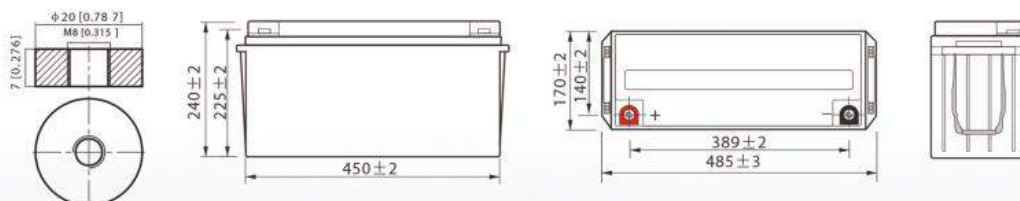
Part Number:	FZA 160-12
Length:	485 ± 2 mm (13.5 inches)
Width:	170 ± 2 mm (6.73 inches)
Container Height:	240 ± 2 mm (10.79 inches)
Total Height (with terminal):	240 ± 2 mm (11.02 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	160 AH
Terminal Type	Standard Terminal	F11
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	156.0 AH/7.80A	(20hr, 1.80V/cell, 25°C / 77°F)
	150.0 AH/15.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	130.5 AH/26.1A	(5hr, 1.75V/cell, 25°C / 77°F)
	115.2 AH/38.4A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	1500A (5s)	
Internal Resistance	Approx 3.5mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 45.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



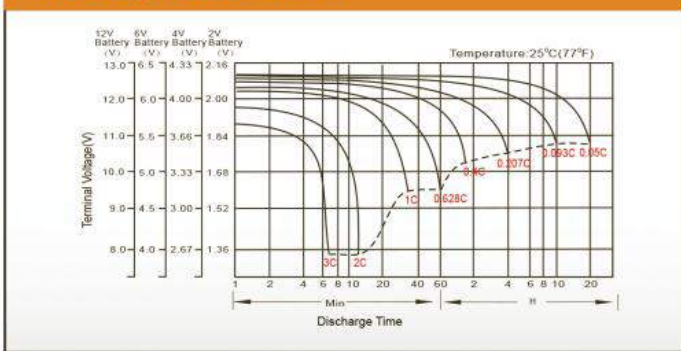
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	259.2	211.5	185.4	156.6	118.5	90.2	74.3	46.5	35.1	28.8	24.4	21.3	17.1	14.4	7.69
1.80V/cell	311.4	243.0	205.8	171.9	129.9	97.4	79.2	49.2	37.6	30.4	25.6	22.3	17.8	15.0	7.80
1.75V/cell	365.4	267.3	223.2	184.5	137.7	102.4	83.1	51.0	38.4	31.0	26.1	22.7	18.1	15.2	7.94
1.70V/cell	401.4	291.6	238.8	198.9	146.7	107.4	86.7	53.0	39.7	31.8	26.6	23.1	18.4	15.3	8.01
1.65V/cell	435.6	315.0	254.4	210.6	154.2	112.2	90.0	54.5	40.7	32.6	27.2	23.5	18.6	15.5	8.09
1.60V/cell	477.0	339.3	269.4	223.2	162.3	117.6	93.9	56.3	41.7	33.3	27.7	23.9	18.9	15.7	8.18

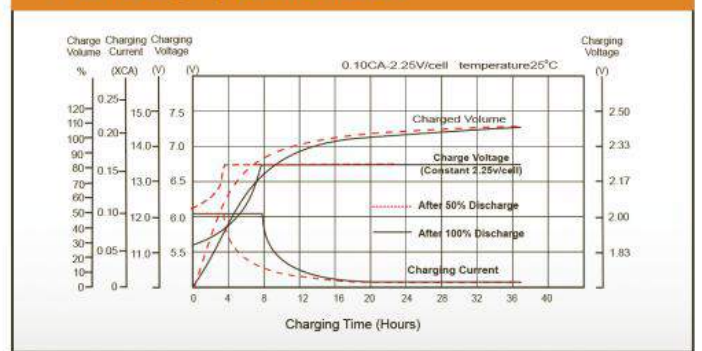
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	473.9	390.7	346.0	295.2	225.9	173.4	143.2	90.3	68.3	56.3	47.9	41.8	33.7	28.5	15.2
1.80V/cell	563.3	443.6	378.9	319.3	243.8	185.8	152.0	94.8	72.8	59.1	49.9	43.6	35.1	29.6	15.4
1.75V/cell	646.9	480.1	405.8	339.4	256.3	193.4	158.7	98.0	74.0	60.1	50.9	44.2	35.5	29.9	15.7
1.70V/cell	690.9	511.9	428.2	363.1	271.5	202.1	165.1	101.7	76.4	61.4	51.7	44.9	36.0	30.2	15.8
1.65V/cell	739.2	547.9	452.6	381.6	283.1	209.3	170.1	103.9	78.0	62.8	52.6	45.6	36.5	30.5	16.0
1.60V/cell	790.7	576.7	471.4	400.0	295.9	218.1	176.5	106.9	79.6	64.0	53.4	46.3	36.8	30.8	16.1

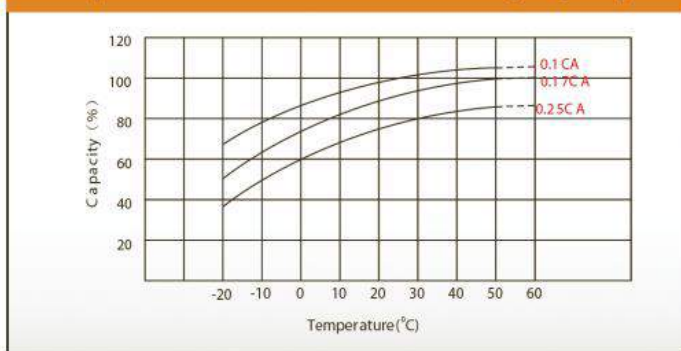
Discharge Characteristics



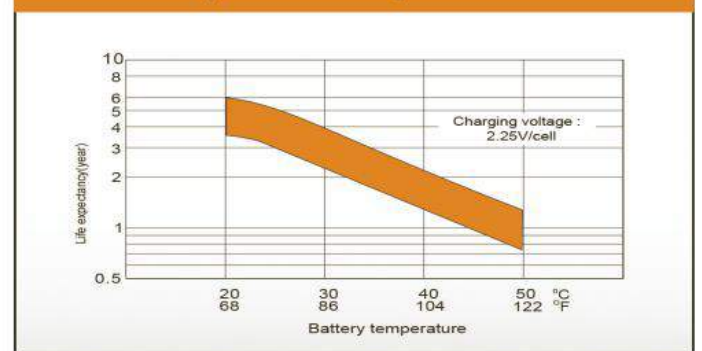
Float Charging Characteristics



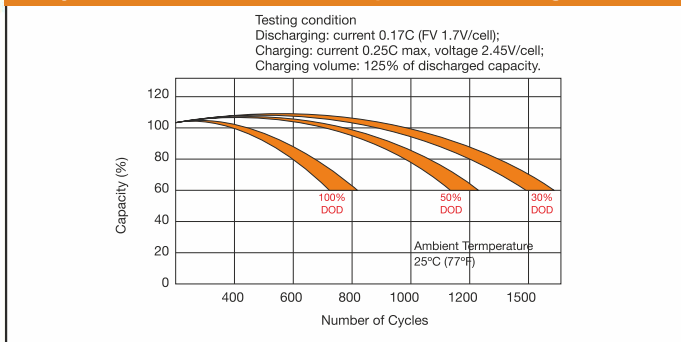
Temperature Effects in Relation to Battery Capacity



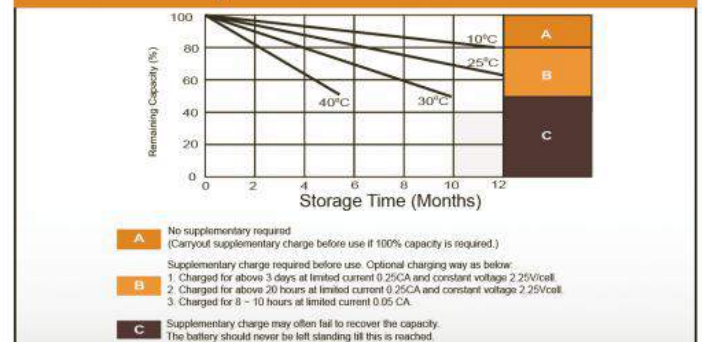
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 200-12

12V 200AH

General



FZA 200-12 / VRLA GEL



Physical Specification

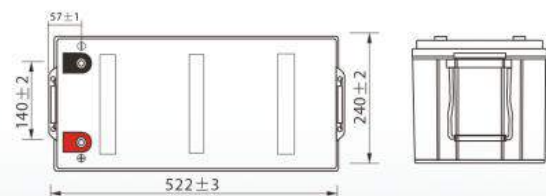
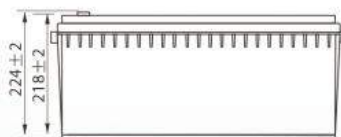
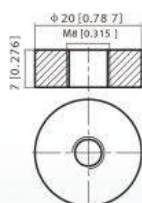
Part Number:	FZA 200-12
Length:	522 ± 2 mm (20.55 inches)
Width:	240 ± 2 mm (9.45 inches)
Container Height:	218 ± 2 mm (8.58 inches)
Total Height (with terminal):	224 ± 2 mm (8.81 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	200AH
Terminal Type	Standard Terminal	F11
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	208.0 AH/10.4A	(20hr, 1.80V/cell, 25°C / 77°F)
	200.0 AH/20.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	172.5 AH/34.5A	(5hr, 1.75V/cell, 25°C / 77°F)
	156.0 AH/52.0A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	2000A (5s)	
Internal Resistance	Approx 2.7mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 60.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



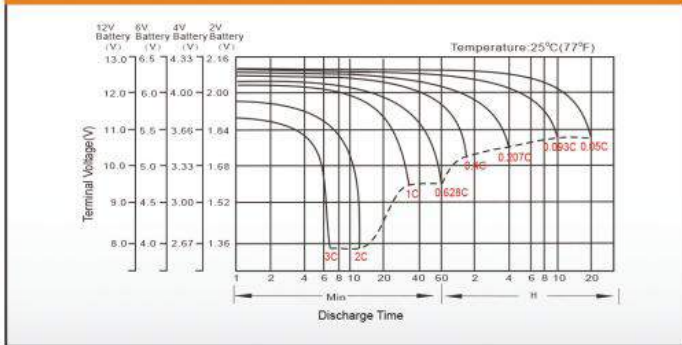
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	342.3	278.4	240.0	204.6	154.8	115.1	94.3	60.1	46.2	37.6	31.3	27.2	22.1	18.9	10.3
1.80V/cell	459.5	343.9	282.4	235.8	179.5	133.9	105.6	65.5	50.6	40.6	33.6	29.2	23.4	20.0	10.4
1.75V/cell	\	377.8	302.0	250.2	189.2	139.0	110.5	68.0	52.0	41.7	34.5	30.0	23.8	20.2	10.5
1.70V/cell	\	411.8	322.5	264.0	196.4	144.5	114.0	70.7	53.5	42.7	35.3	30.6	24.2	20.4	10.7
1.65V/cell	\	444.4	342.9	281.4	204.6	148.1	117.8	72.7	55.8	44.2	36.3	31.3	24.7	20.8	10.8
1.60V/cell	\	476.4	366.7	297.6	216.0	154.4	122.0	75.1	57.5	45.5	37.3	32.0	25.1	21.0	10.9

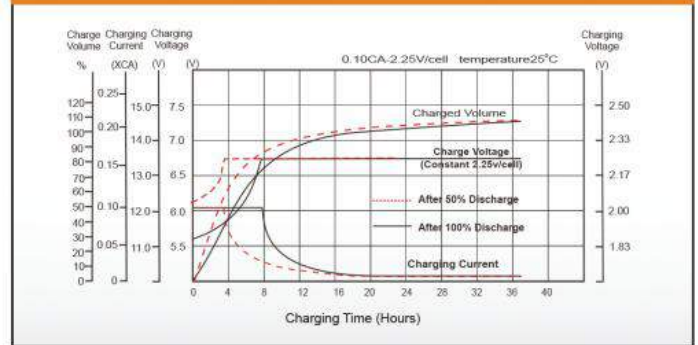
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	625.9	514.3	447.8	385.7	295.0	221.3	181.9	116.6	90.1	73.4	61.3	53.5	43.6	37.4	20.4
1.80V/cell	831.2	627.7	519.9	438.0	336.9	255.4	202.6	126.4	98.1	78.9	65.5	57.2	46.1	39.5	20.6
1.75V/cell	\	678.7	549.2	460.2	352.2	262.5	211.0	130.6	100.5	80.7	67.2	58.6	46.8	39.9	20.7
1.70V/cell	\	723.0	578.2	482.0	363.5	272.0	217.0	135.6	103.1	82.6	68.6	59.7	47.4	40.2	21.1
1.65V/cell	\	773.1	610.1	509.9	375.7	276.3	222.7	138.5	107.0	85.1	70.2	60.8	48.4	41.0	21.4
1.60V/cell	\	809.8	641.7	533.4	393.8	286.4	229.4	142.5	109.8	87.3	72.0	61.9	49.0	41.4	21.5

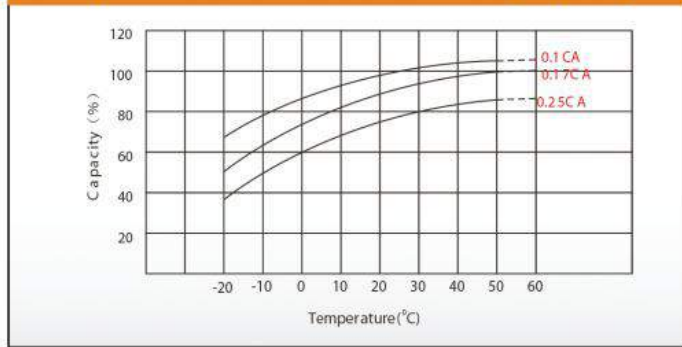
Discharge Characteristics



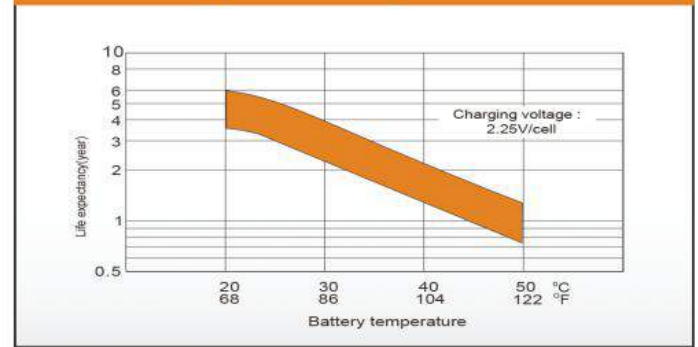
Float Charging Characteristics



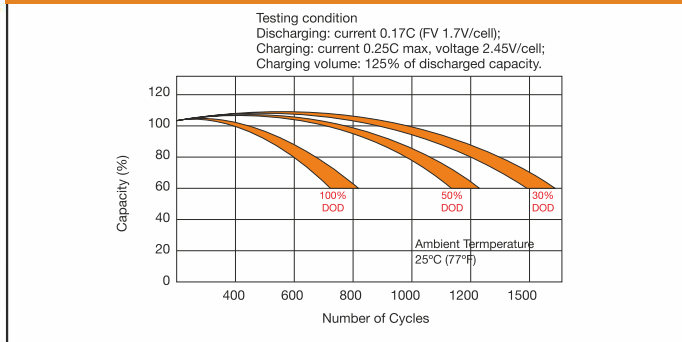
Temperature Effects in Relation to Battery Capacity



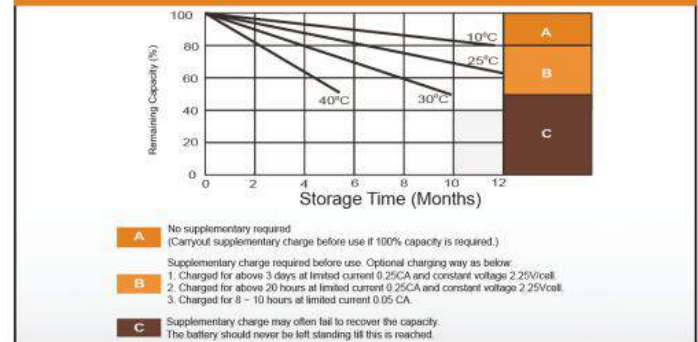
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 210-12

12V 210AH

General



FZA 210-12 / VRLA GEL



Physical Specification

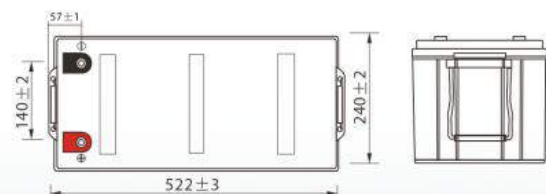
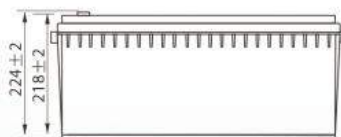
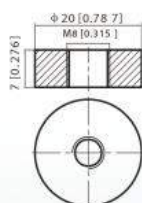
Part Number:	FZA 210-12
Length:	522 ± 2 mm (20.55 inches)
Width:	240 ± 2 mm (9.45 inches)
Container Height:	218 ± 2 mm (8.58 inches)
Total Height (with terminal):	224 ± 2 mm (8.81 inches)

Specifications

Terminal Type	Nominal Voltage	12V
	Nominal Capacity (10HR)	210 AH
	Standard Terminal	F11
Container Material	Optional Terminal	-
	Standard Option	ABS
Rated Capacity	Flame Retardant Option (FR)	ABS (UL94:VO)
	208.0 AH/10.4A	(20hr, 1.80V/cell, 25°C / 77°F)
	200.0 AH/20.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	172.5 AH/34.5A	(5hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	156.0 AH/52.0A	(3hr, 1.75V/cell, 25°C / 77°F)
	2000A (5s)	
Internal Resistance	Approx 2.7mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 60.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



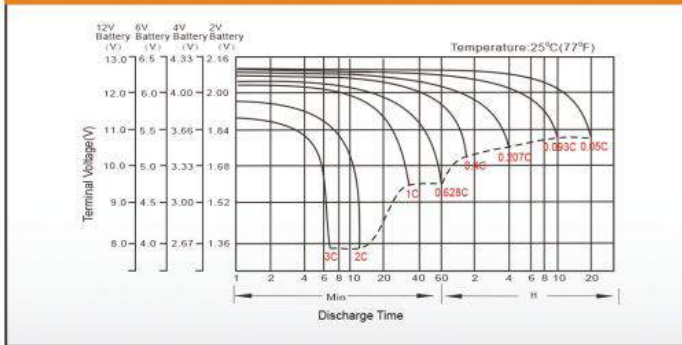
Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	342.3	278.4	240.0	204.6	154.8	115.1	94.3	60.1	46.2	37.6	31.3	27.2	22.1	18.9	10.3
1.80V/cell	459.5	343.9	282.4	235.8	179.5	133.9	105.6	65.5	50.6	40.6	33.6	29.2	23.4	20.0	10.4
1.75V/cell	\	377.8	302.0	250.2	189.2	139.0	110.5	68.0	52.0	41.7	34.5	30.0	23.8	20.2	10.5
1.70V/cell	\	411.8	322.5	264.0	196.4	144.5	114.0	70.7	53.5	42.7	35.3	30.6	24.2	20.4	10.7
1.65V/cell	\	444.4	342.9	281.4	204.6	148.1	117.8	72.7	55.8	44.2	36.3	31.3	24.7	20.8	10.8
1.60V/cell	\	476.4	366.7	297.6	216.0	154.4	122.0	75.1	57.5	45.5	37.3	32.0	25.1	21.0	10.9

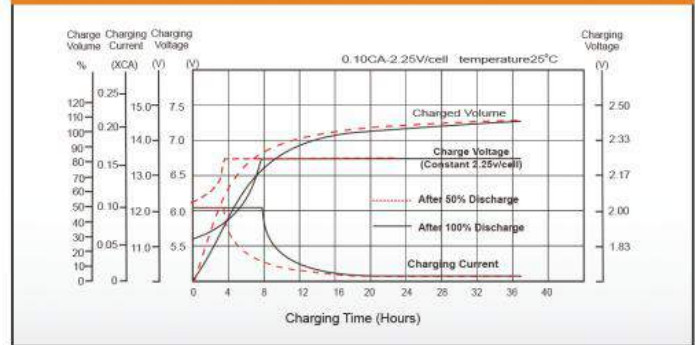
Constant Power Discharge (Watts) at 25 °C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	625.9	514.3	447.8	385.7	295.0	221.3	181.9	116.6	90.1	73.4	61.3	53.5	43.6	37.4	20.4
1.80V/cell	831.2	627.7	519.9	438.0	336.9	255.4	202.6	126.4	98.1	78.9	65.5	57.2	46.1	39.5	20.6
1.75V/cell	\	678.7	549.2	460.2	352.2	262.5	211.0	130.6	100.5	80.7	67.2	58.6	46.8	39.9	20.7
1.70V/cell	\	723.0	578.2	482.0	363.5	272.0	217.0	135.6	103.1	82.6	68.6	59.7	47.4	40.2	21.1
1.65V/cell	\	773.1	610.1	509.9	375.7	276.3	222.7	138.5	107.0	85.1	70.2	60.8	48.4	41.0	21.4
1.60V/cell	\	809.8	641.7	533.4	393.8	286.4	229.4	142.5	109.8	87.3	72.0	61.9	49.0	41.4	21.5

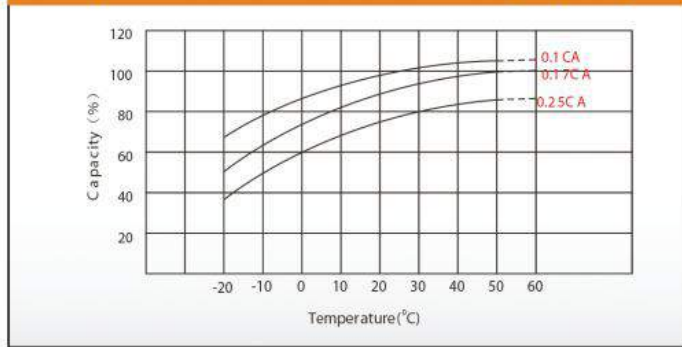
Discharge Characteristics



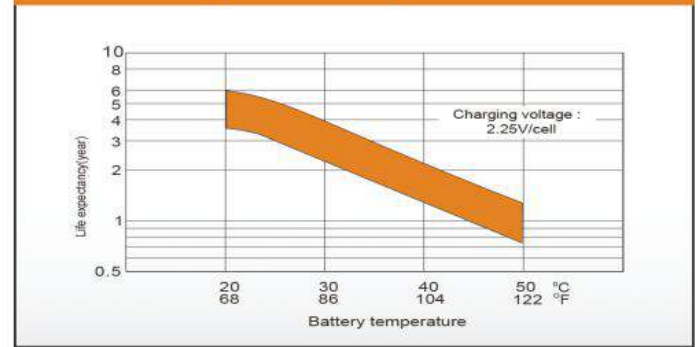
Float Charging Characteristics



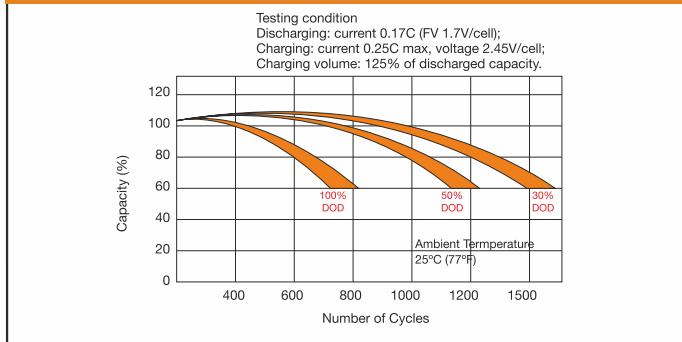
Temperature Effects in Relation to Battery Capacity



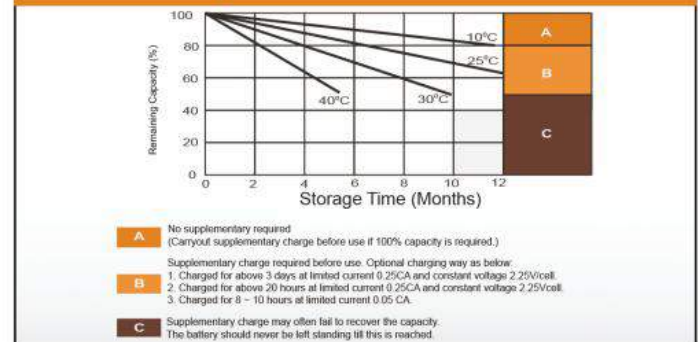
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



FZA 225-12

12V 225AH

General



FZA 225-12 / VRLA GEL



Physical Specification

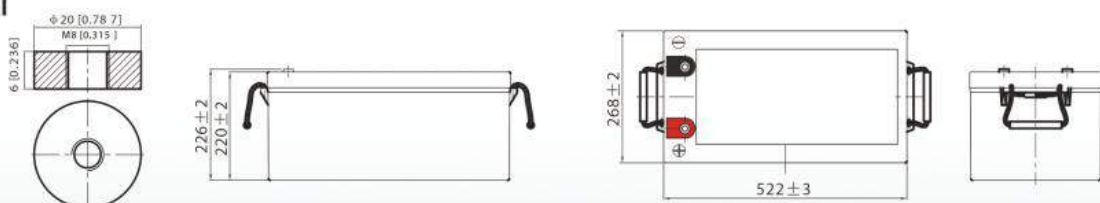
Part Number:	FZA 225-12
Length:	522 ± 2 mm (20.55 inches)
Width:	268 ± 2 mm (10.55 inches)
Container Height:	220 ± 2 mm (8.66 inches)
Total Height (with terminal):	226 ± 2 mm (8.90 inches)

Specifications

	Nominal Voltage	12V
	Nominal Capacity (10HR)	225 AH
Terminal Type	Standard Terminal	F11
	Optional Terminal	-
Container Material	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
Rated Capacity	260.0 AH/13.0A	(20hr, 1.80V/cell, 25°C / 77°F)
	250.0 AH/25.0A	(10hr, 1.80V/cell, 25°C / 77°F)
	215.4 AH/43.0A	(5hr, 1.75V/cell, 25°C / 77°F)
	195.2 AH/65.05A	(3hr, 1.75V/cell, 25°C / 77°F)
Max Discharge Current	2500A (5s)	
Internal Resistance	Approx 2.5mΩ	
Discharge Characteristics	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 75.0A. Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Design Floating Life at 20°C	10 Years	

Dimensions

F11 Terminal



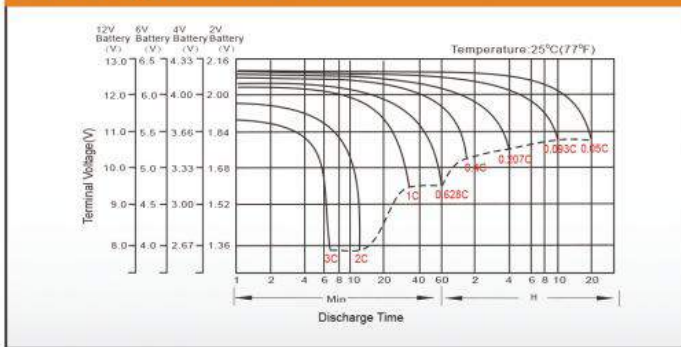
Constant Current Discharge (Amperes) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	427.9	336.4	286.1	239.3	190.2	143.9	117.9	75.1	59.4	48.5	39.1	34.0	27.6	23.6	12.88
1.80V/cell	/	429.8	345.7	282.9	224.4	167.4	132.0	81.9	63.9	51.8	42.0	36.5	29.3	25.0	13.00
1.75V/cell	/	472.3	377.6	304.3	233.0	173.7	138.1	85.0	65.1	52.9	43.0	37.5	29.8	25.3	13.13
1.70V/cell	/	/	403.1	319.8	242.5	180.7	142.5	88.4	66.9	54.3	44.2	38.3	30.2	25.5	13.38
1.65V/cell	/	/	428.6	339.7	255.8	185.2	147.3	90.8	69.7	56.2	45.4	39.1	30.7	26.0	13.55
1.60V/cell	/	/	458.4	361.9	270.1	193.0	152.5	93.9	71.9	58.0	46.9	40.0	31.0	26.3	13.63

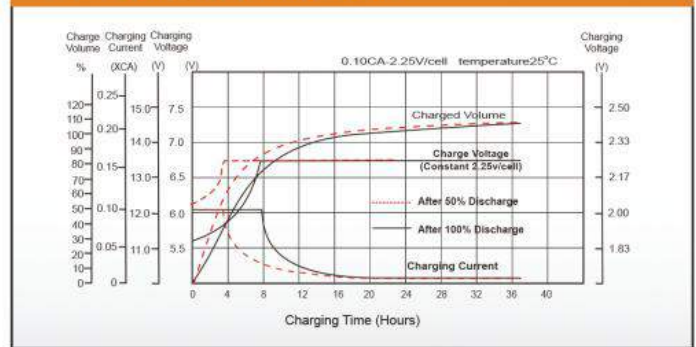
Constant Power Discharge (Watts) at 25 °C (77 °F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	782.3	621.4	533.8	451.0	362.5	276.7	227.3	145.8	115.7	94.8	76.6	66.9	54.5	46.7	25.5
1.80V/cell	/	784.6	636.3	525.3	421.2	319.3	253.3	158.0	123.8	100.7	81.9	71.5	57.7	49.4	25.7
1.75V/cell	/	848.3	686.5	559.7	433.6	328.2	263.8	163.3	125.6	102.6	83.8	73.2	58.5	49.8	25.9
1.70V/cell	/	/	722.7	583.8	448.8	340.0	271.2	169.4	128.9	105.1	85.7	74.6	59.3	50.3	26.4
1.65V/cell	/	/	762.6	615.6	469.6	345.4	278.3	173.2	133.7	108.3	87.8	76.0	60.1	51.2	26.7
1.60V/cell	/	/	802.1	648.6	492.3	358.0	286.7	178.1	137.2	111.3	90.4	77.4	60.5	51.7	26.8

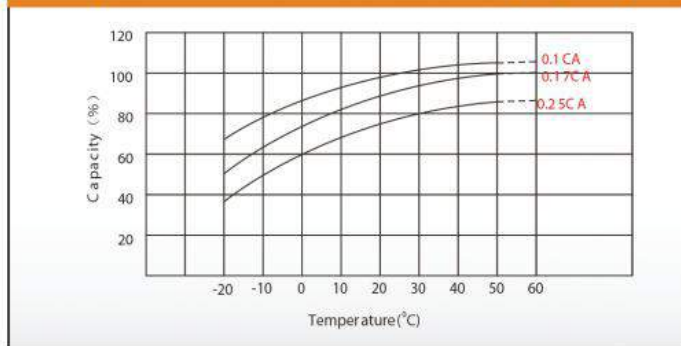
Discharge Characteristics



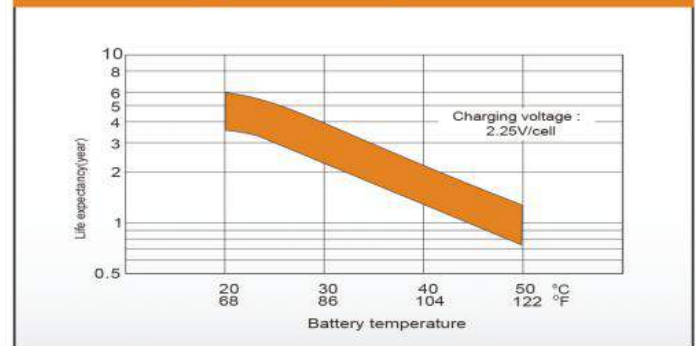
Float Charging Characteristics



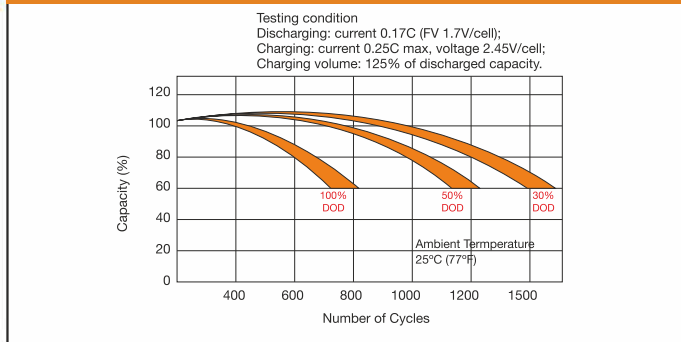
Temperature Effects in Relation to Battery Capacity



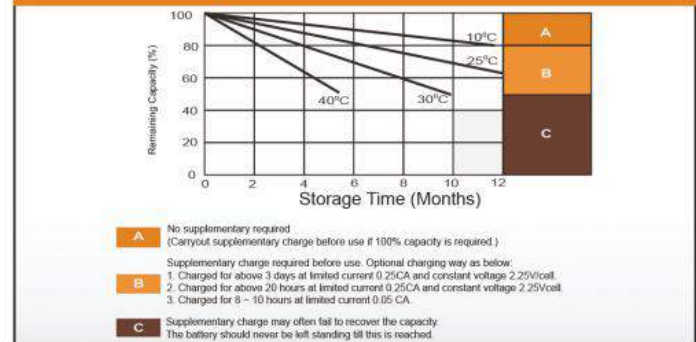
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics





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