



EnerRocket™

CONTINUOUSLY SAFEGUARDING

ESC 100-12 FR

SMF VRLA RECHARGEABLE BATTERY

**LONG
LIFE
SERIES**

APPLICATIONS

UPS Systems
Telecommunication Systems
Fire Alarm Safety & Security Systems
Medical Equipment

COMPLIANCE STANDARDS

IEC 60896 PART 21 & 22
BS6290-4
EUROBAT- HIGH Performance

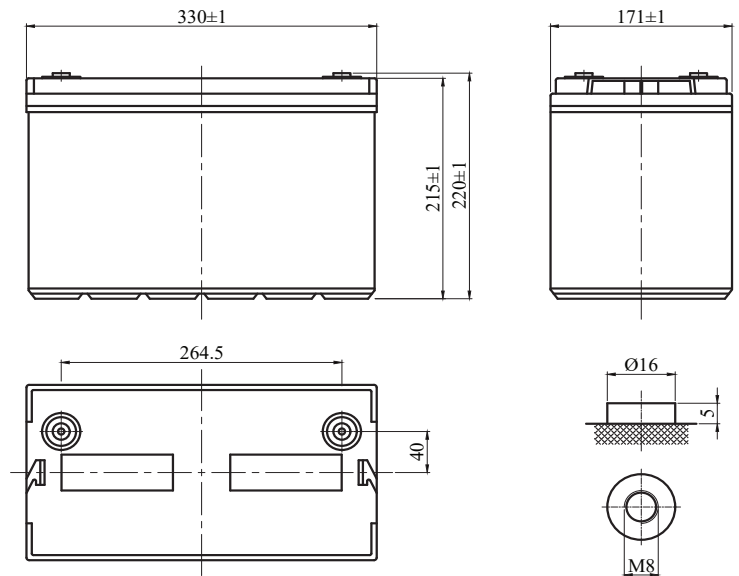
TECHNICAL FEATURES



- Non-Spillable Sealed Construction
- Absorptive Glass Mat System (AGM System)
- ABS (Acrylonitrile Butadiene Styrene) construction
- Gas Recombination
- Venting System for low internal pressure
- Low Self-Discharge
- Heavy-Duty, Highly Optimized Grids
- High Power Output

CHARACTERISTICS

Nominal Voltage	12 V	
Design Life	12 Years	
Capacity (25°C)	10 Hour rate	100Ah
Internal Resistance (25°C, 100% Charge)	≤5.7 mΩ	
Self Discharge (20°C)	1 Month	Remaining Capacity 97%
Operating Temperature	Discharge	-20°C - 60°C
	Charge	-10°C - 60°C
	Storage	-20°C - 60°C
Normal Operating Temperature	25°C ± 3°C	
Maximum Discharge current (25°C)	500A (5sec)	
Maximum Charging current (25°C)	30A	
Short Circuit Current	2100A	
Charge Methods	14.4 to 14.7 V	
Constant Voltage Charge 77°F (25°C) - Cycle use	Temp. Compensation -30mV/°C	
Charge methods	13.4 to 13.8V	
Constant Voltage Charge 77°F (25°C) - Standby Use	Temp. Compensation -20mV/°C	



SPECIFICATIONS

Length	Width	Height	Total Height	Weight (kg)
330mm	171mm	215mm	220mm	28.0 ± 3%

CONSTANT CURRENT DISCHARGE (Amperes) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	173	110	98.9	61.0	45.3	35.0	25.1	22.4
1.65	164	101	95.0	60.6	44.0	33.6	24.6	21.8
1.70	156	97	92.2	59.7	42.7	32.3	24.1	21.5
1.75	145	93	89.3	58.9	41.4	31.3	23.5	21.0
1.80	136	89	87.4	57.1	40.1	30.7	22.8	20.2

CONSTANT POWER DISCHARGE (Watts) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	304	202	198	119	84.3	68.2	48.4	41.9
1.65	299	195	187	117	82.7	67.0	47.8	40.8
1.70	290	190	182	116	80.2	65.8	47.3	40.0
1.75	279	183	176	112	78.2	64.6	46.7	38.1
1.80	270	178	170	109	76.3	63.9	45.9	37.4



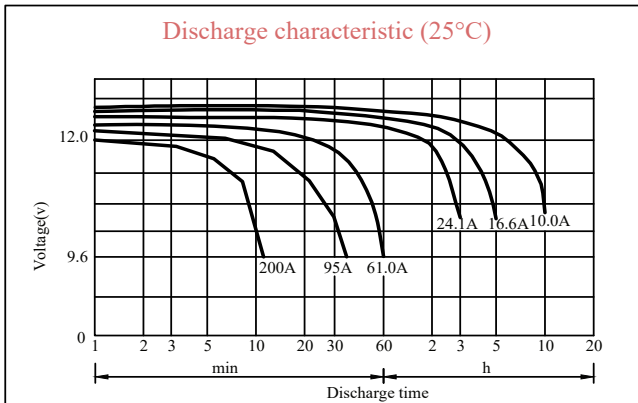
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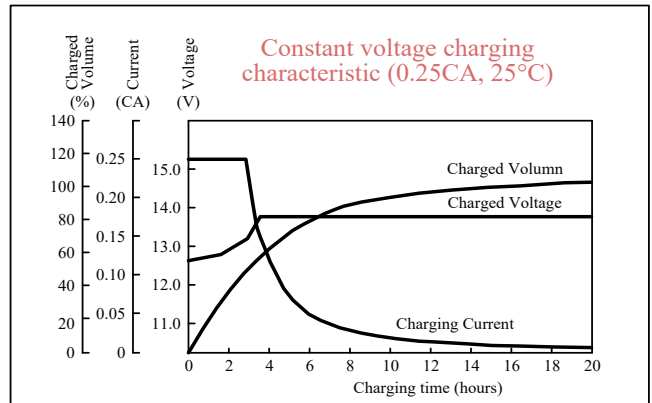
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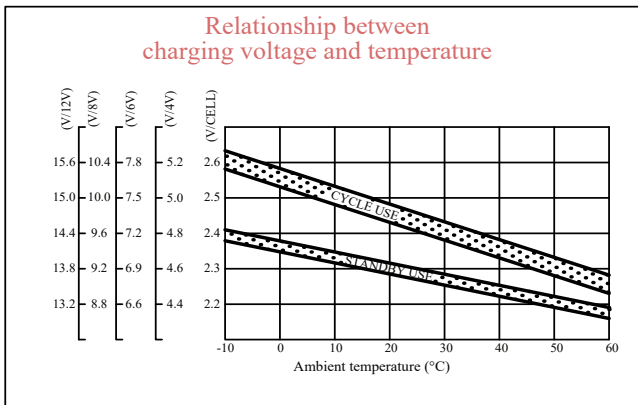
Discharge characteristic (25°C)



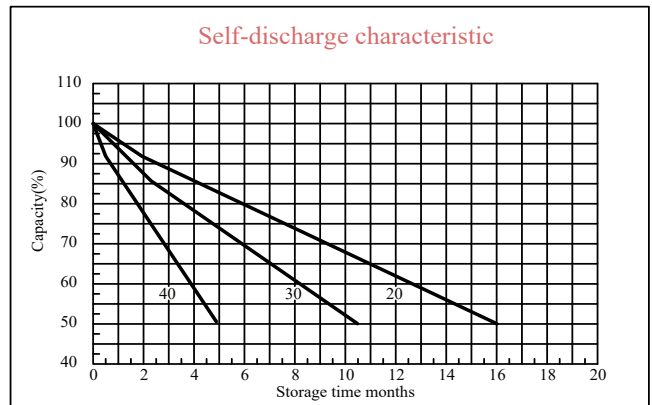
Constant voltage charging characteristic (0.25CA, 25°C)



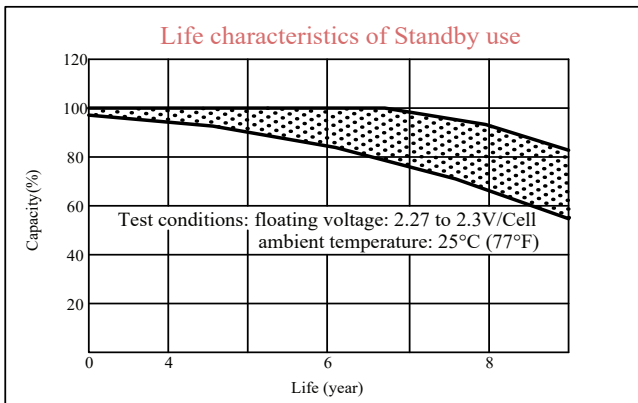
Relationship between charging voltage and temperature



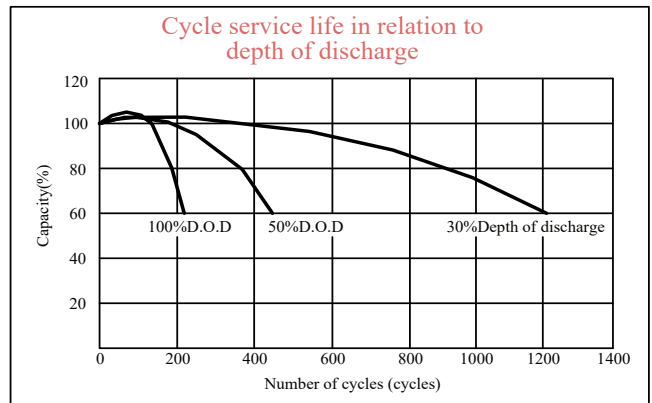
Self-discharge characteristic



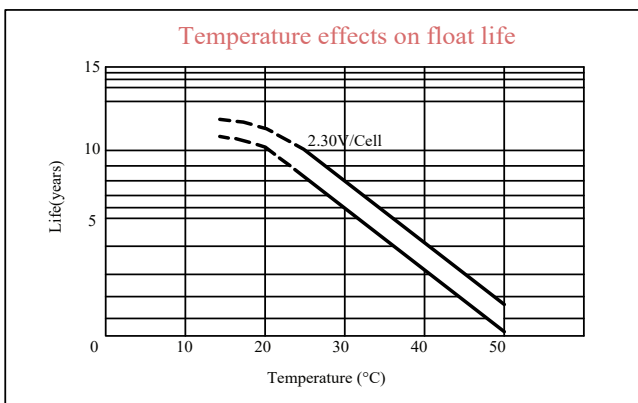
Life characteristics of Standby use



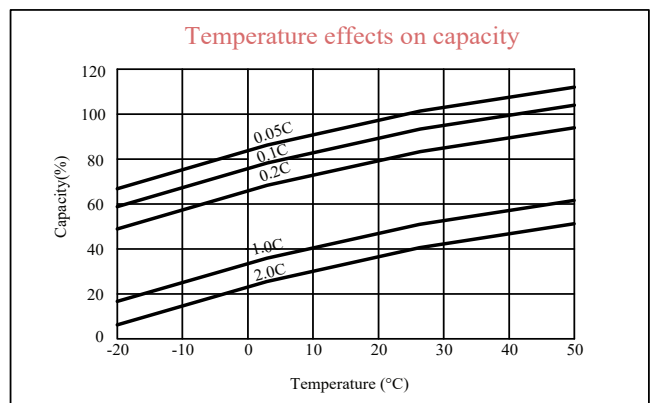
Cycle service life in relation to depth of discharge



Temperature effects on float life



Temperature effects on capacity



Note:
GPSCG reserves the right to make changes to the above values without any notice.
All data and discharge characteristics are average values based on actual discharge cycle tests performed and not minimum values.

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APPLICATIONS

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Telecommunication Systems
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Medical Equipment

COMPLIANCE STANDARDS

IEC 60896 PART 21 & 22
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EUROBAT- HIGH Performance

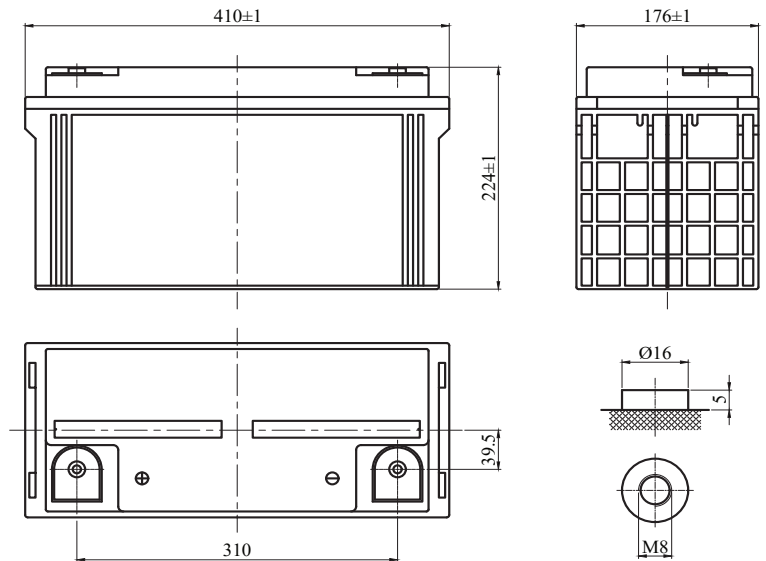
TECHNICAL FEATURES



- Non-Spillable Sealed Construction
- Absorptive Glass Mat System (AGM System)
- ABS (Acrylonitrile Butadiene Styrene) construction
- Gas Recombination
- Venting System for low internal pressure
- Low Self-Discharge
- Heavy-Duty, Highly Optimized Grids
- High Power Output

CHARACTERISTICS

Nominal Voltage	12 V	
Design Life	12 Years	
Capacity (25°C)	10 Hour rate	120Ah
Internal Resistance (25°C, 100% Charge)	≤5.3 mΩ	
Self Discharge (20°C)	1 Month	Remaining Capacity 97%
Operating Temperature	Discharge	-20°C - 60°C
	Charge	-10°C - 60°C
	Storage	-20°C - 60°C
Normal Operating Temperature	25°C ± 3°C	
Maximum Discharge current (25°C)	950A (5sec)	
Maximum Charging current (25°C)	36A	
Short Circuit Current	2250A	
Charge Methods	14.4 to 14.7 V	
Constant Voltage Charge 77°F (25°C) - Cycle use	Temp. Compensation -30mV/°C	
Charge methods	13.4 to 13.8V	
Constant Voltage Charge 77°F (25°C) - Standby Use	Temp. Compensation -20mV/°C	



SPECIFICATIONS

Length	Width	Height	Total Height	Weight (kg)
410mm	176mm	224mm	224mm	33.5 ± 5%

CONSTANT CURRENT DISCHARGE (Amperes) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	209	132.0	117	73.3	53.6	42.2	29.9	24.6
1.65	201	126.7	114	72.8	52.5	41.4	29.3	24.3
1.70	193	121.7	110	71.3	51.4	40.5	28.7	24.1
1.75	184	116.8	106	69.1	50.2	39.5	28.0	24.0
1.80	177	110.9	104	67.0	48.8	38.4	27.2	22.2

CONSTANT POWER DISCHARGE (Watts) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	367	243	225	147	101.2	82	58.0	46.9
1.65	354	228	218	145	99.2	80	57.3	45.5
1.70	343	219	211	143	96.2	79	56.6	44.6
1.75	331	213	204	139	93.8	77	56.0	43.7
1.80	319	203	198	134	91.5	75	55.0	43.0



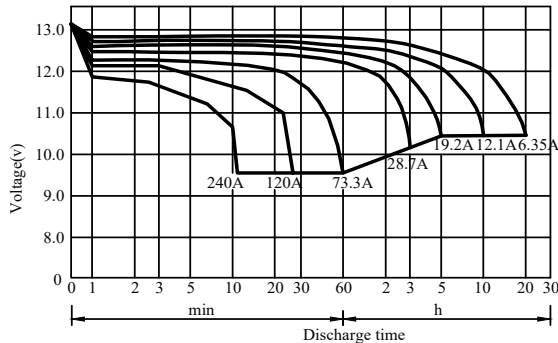
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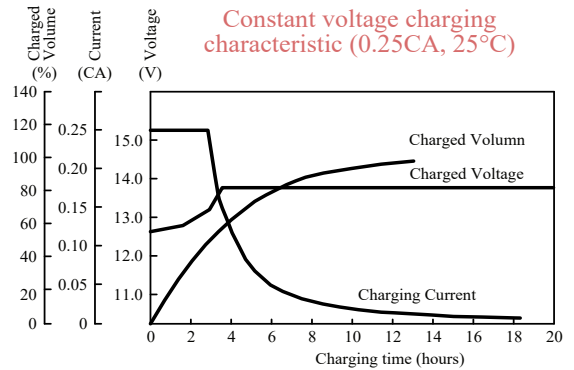
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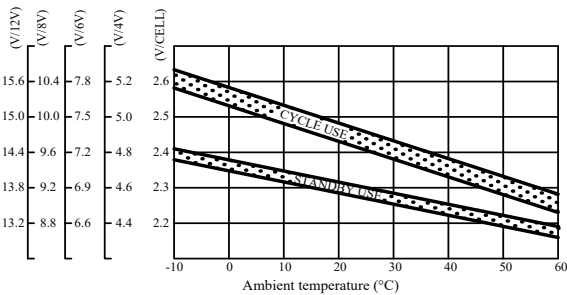
Discharge characteristic (25°C)



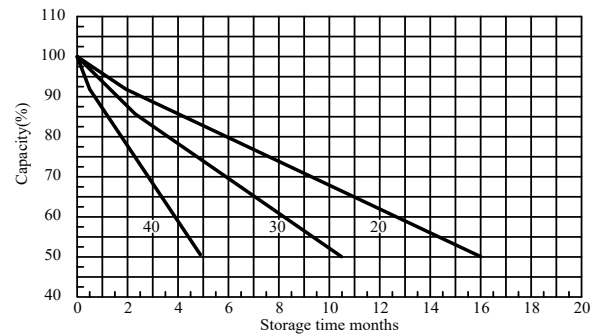
Constant voltage charging characteristic (0.25CA, 25°C)



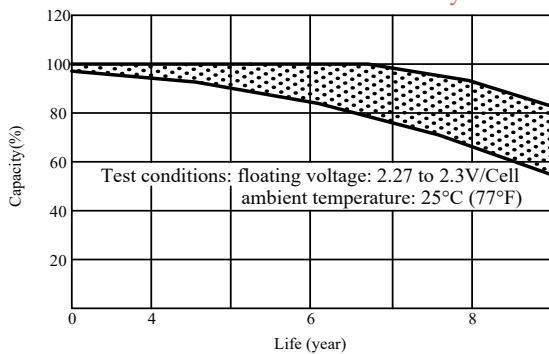
Relationship between charging voltage and temperature



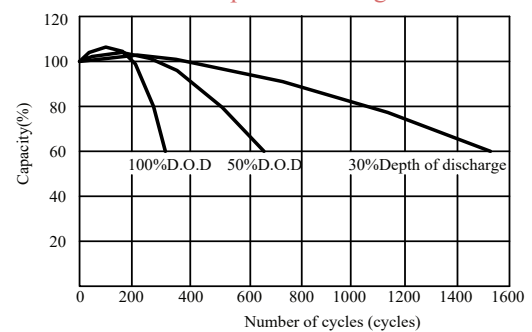
Self-discharge characteristic



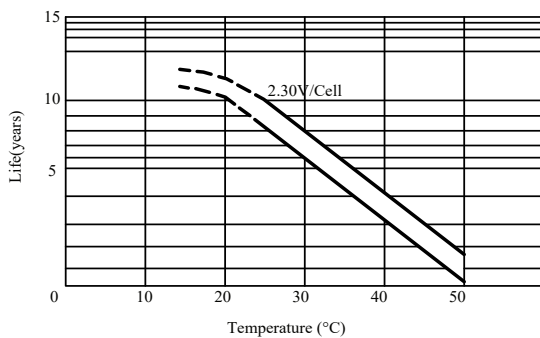
Life characteristics of Standby use



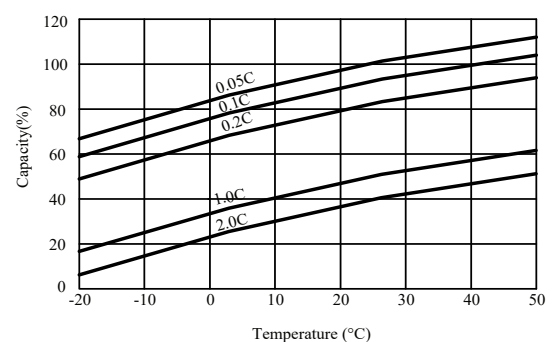
Cycle service life in relation to depth of discharge



Temperature effects on float life



Temperature effects on capacity



Note:
GPSCG reserves the right to make changes to the above values without any notice.
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APPLICATIONS

UPS Systems
Telecommunication Systems
Fire Alarm Safety & Security Systems
Medical Equipment

COMPLIANCE STANDARDS

IEC 60896 PART 21 & 22
BS6290-4
EUROBAT- HIGH Performance

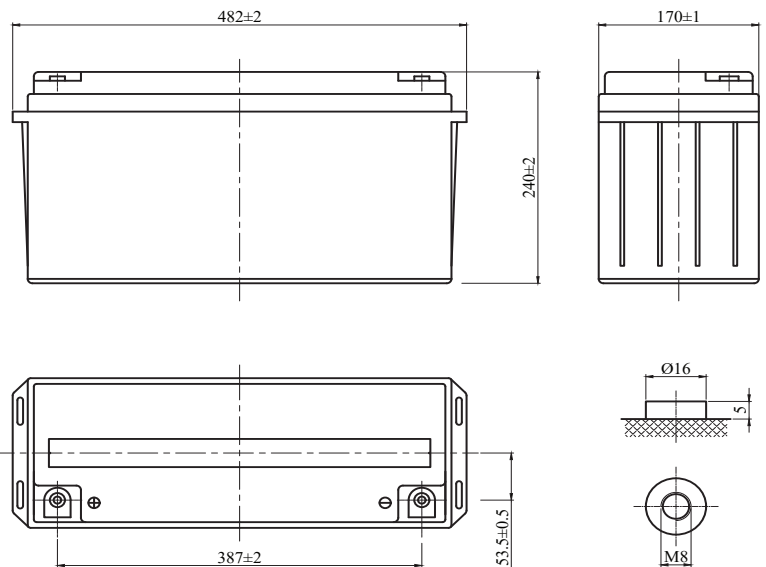
TECHNICAL FEATURES



- Non-Spillable Sealed Construction
- Absorptive Glass Mat System (AGM System)
- ABS (Acrylonitrile Butadiene Styrene) construction
- Gas Recombination
- Venting System for low internal pressure
- Low Self-Discharge
- Heavy-Duty, Highly Optimized Grids
- High Power Output

CHARACTERISTICS

Nominal Voltage	12 V	
Design Life	12 Years	
Capacity (25°C)	10 Hour rate	153Ah
Internal Resistance (25°C, 100% Charge)		≤4.0 mΩ
Self Discharge (20°C)	1 Month	Remaining Capacity 97%
Operating Temperature	Discharge	-20°C - 60°C
	Charge	-10°C - 60°C
	Storage	-20°C - 60°C
Normal Operating Temperature		25°C ± 3°C
Maximum Discharge current (25°C)		1000A (5sec)
Maximum Charging current (25°C)		45A
Short Circuit Current		2800A
Charge Methods Constant Voltage Charge 77°F (25°C) - Cycle use		14.4 to 14.7 V Temp. Compensation -30mV/°C
Charge methods Constant Voltage Charge 77°F (25°C) - Standby Use		13.4 to 13.8V Temp. Compensation -20mV/°C



SPECIFICATIONS

Length	Width	Height	Total Height	Weight (kg)
482mm	170mm	240mm	240mm	42.5 ± 5%

CONSTANT CURRENT DISCHARGE (Amperes) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	300	186	173	98.6	72.0	57.8	44.7	33.00
1.65	281	177	163	95.2	69.8	55.4	43.4	32.01
1.70	264	167	155	92.1	67.7	53.2	41.6	31.05
1.75	247	158	149	89.3	65.7	51.6	40.5	30.12
1.80	226	153	143	84.5	63.7	50.1	39.8	29.21

CONSTANT POWER DISCHARGE (Watts) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	524.9	434	314.5	185.3	136	118	85.4	61.4
1.65	499.1	419	300.0	179.9	133	114	83.3	59.5
1.70	473.0	404	286.7	175.3	130	110	80.2	57.8
1.75	449.3	388	277.0	170.5	126	94	78.2	56.3
1.80	416.4	374	269.0	163.7	122	88	77.1	54.9



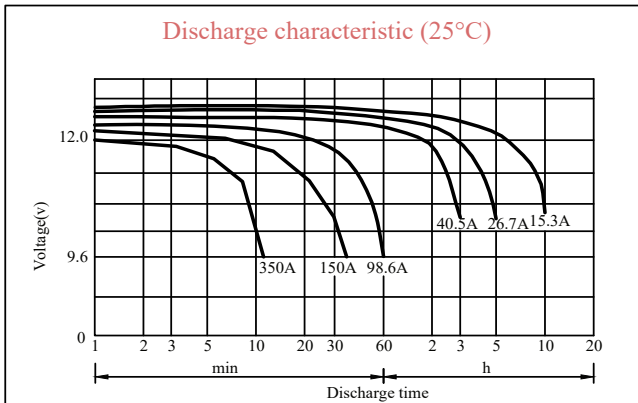
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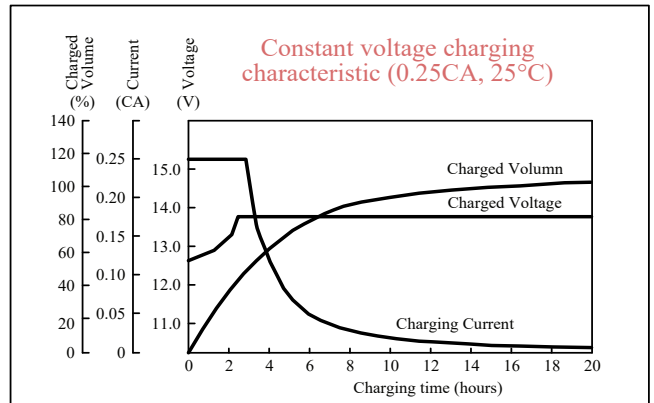
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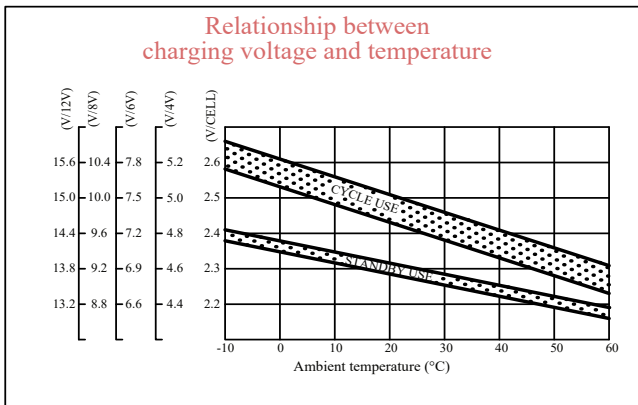
Discharge characteristic (25°C)



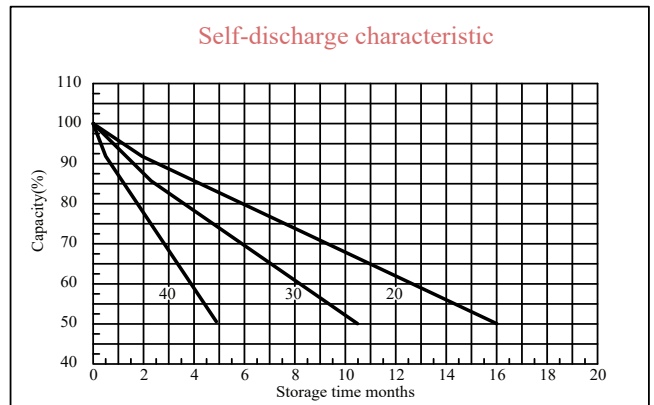
Constant voltage charging characteristic (0.25CA, 25°C)



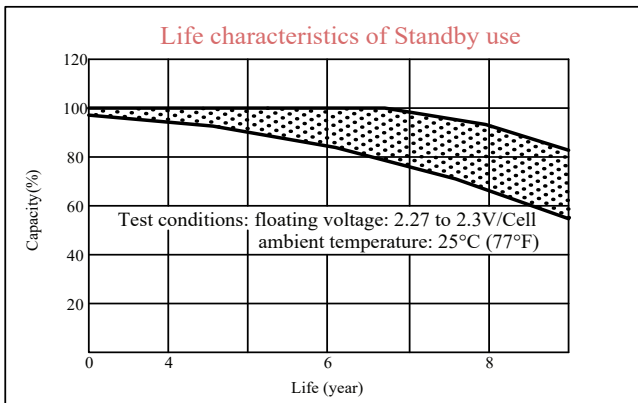
Relationship between charging voltage and temperature



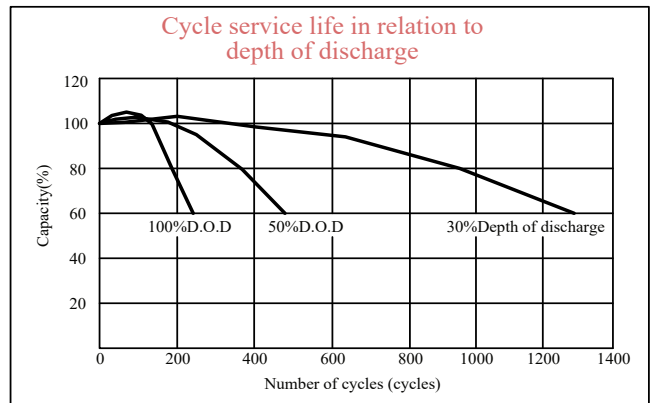
Self-discharge characteristic



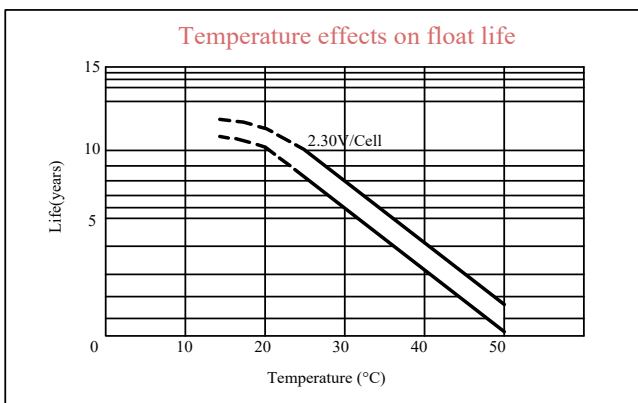
Life characteristics of Standby use



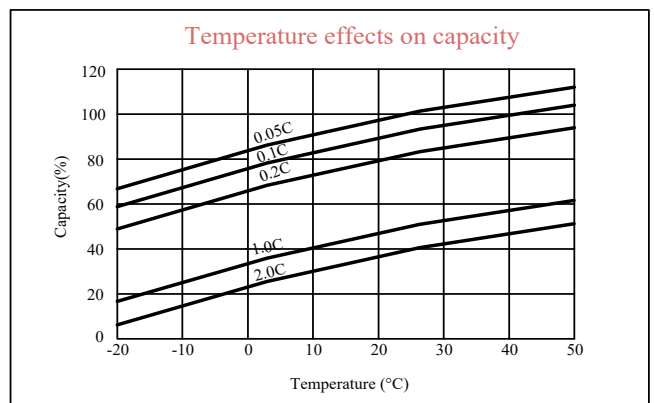
Cycle service life in relation to depth of discharge



Temperature effects on float life



Temperature effects on capacity



Note:
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APPLICATIONS

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IEC 60896 PART 21 & 22
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EUROBAT- HIGH Performance

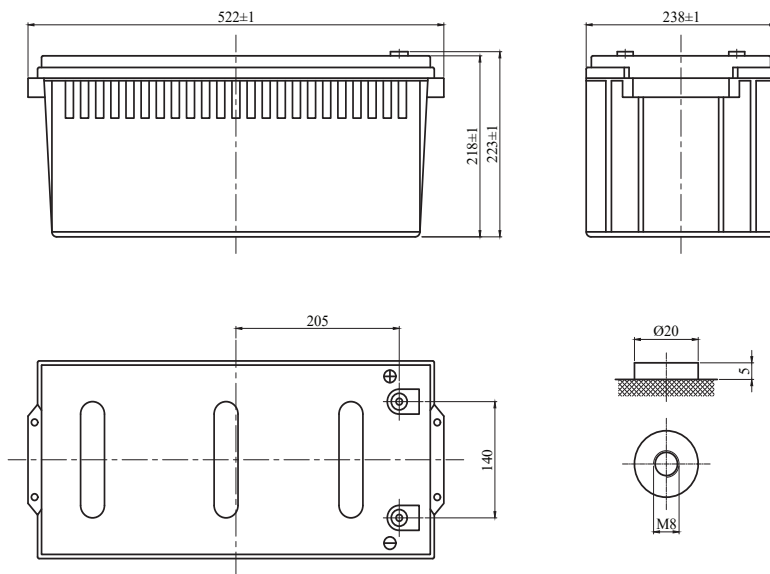
TECHNICAL FEATURES



- Non-Spillable Sealed Construction
- Absorptive Glass Mat System (AGM System)
- ABS (Acrylonitrile Butadiene Styrene) construction
- Gas Recombination
- Venting System for low internal pressure
- Low Self-Discharge
- Heavy-Duty, Highly Optimized Grids
- High Power Output

CHARACTERISTICS

Nominal Voltage	12 V	
Design Life	12 Years	
Capacity (25°C)	10 Hour rate	200Ah
Internal Resistance (25°C, 100% Charge)	≤4.0 mΩ	
Self Discharge (20°C)	1 Month	Remaining Capacity 97%
Operating Temperature	Discharge	-20°C - 60°C
	Charge	-10°C - 60°C
	Storage	-20°C - 60°C
Normal Operating Temperature	25°C ± 3°C	
Maximum Discharge current (25°C)	1000A (5sec)	
Maximum Charging current (25°C)	60A	
Short Circuit Current	3300A	
Charge Methods	14.4 to 14.7 V	
Constant Voltage Charge 77°F (25°C) - Cycle use	Temp. Compensation -30mV/°C	
Charge methods	13.4 to 13.8V	
Constant Voltage Charge 77°F (25°C) - Standby Use	Temp. Compensation -20mV/°C	



SPECIFICATIONS

Length	Width	Height	Total Height	Weight (kg)
522mm	238mm	218mm	223mm	59.1 ± 5%

CONSTANT CURRENT DISCHARGE (Amperes) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	327	280	196	129	91	71	50.3	44
1.65	308	269	188	126	88	68	49.1	43
1.70	288	259	181	123	85	65	48.2	41
1.75	269	250	175	120	83	64	47.1	40
1.80	250	240	168	117	80	62	45.7	39

CONSTANT POWER DISCHARGE (Watts) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	566	480	374	248	181	137	97.4	82
1.65	547	464	360	243	177	134	96.1	79
1.70	530	449	347	238	173	131	94.8	77
1.75	512	434	332	233	169	128	93.4	75
1.80	482	409	319	228	164	124	92.4	73



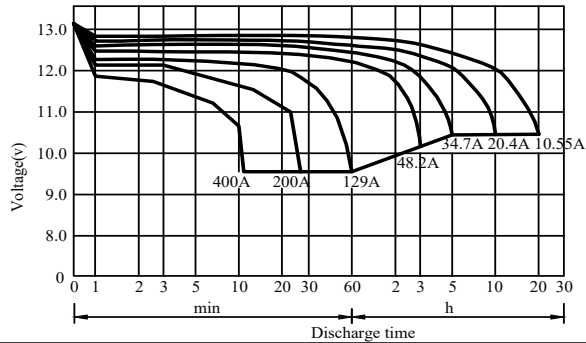
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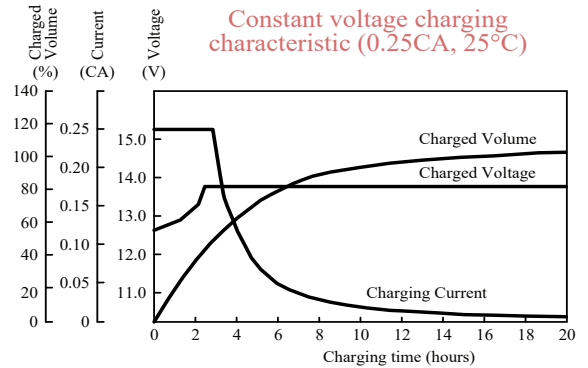
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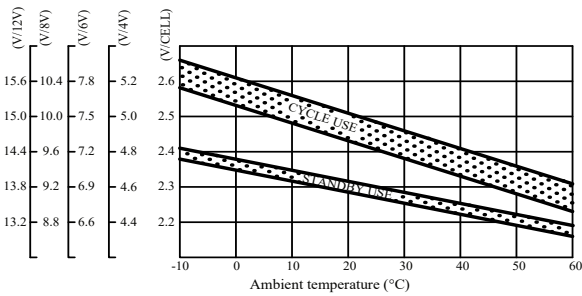
Discharge characteristic (25°C)



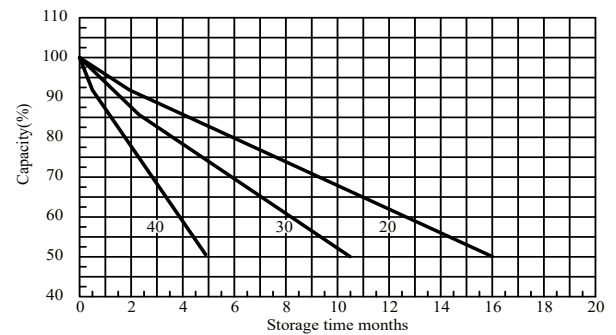
Constant voltage charging characteristic (0.25CA, 25°C)



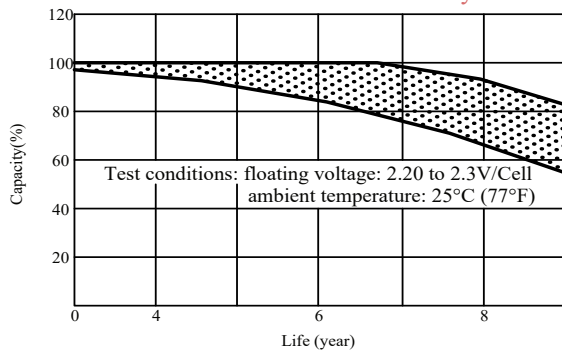
Relationship between charging voltage and temperature



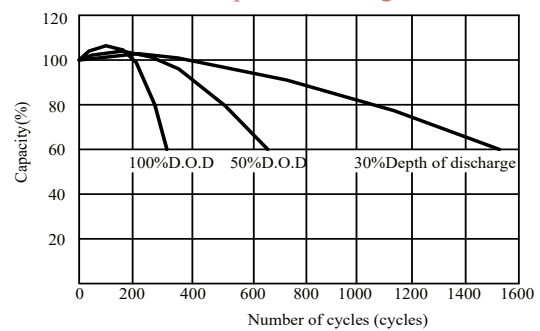
Self-discharge characteristic



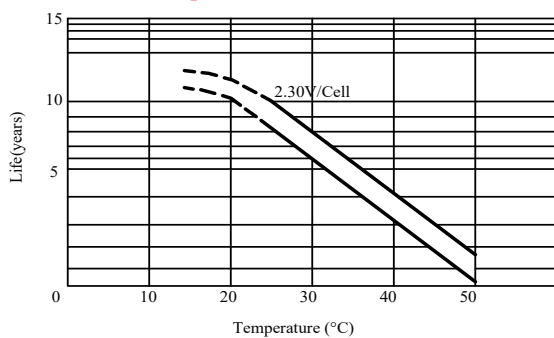
Life characteristics of Standby use



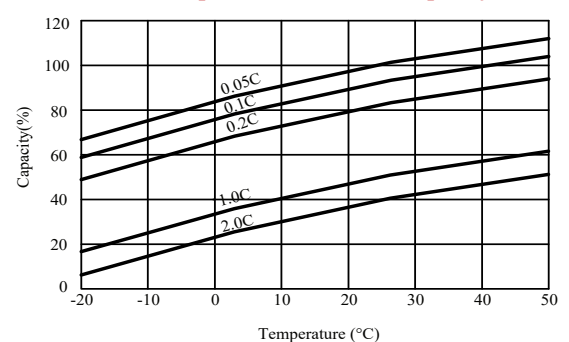
Cycle service life in relation to depth of discharge



Temperature effects on float life



Temperature effects on capacity



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CONTINUOUSLY SAFEGUARDING

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APPLICATIONS

UPS Systems
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COMPLIANCE STANDARDS

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EUROBAT- HIGH Performance

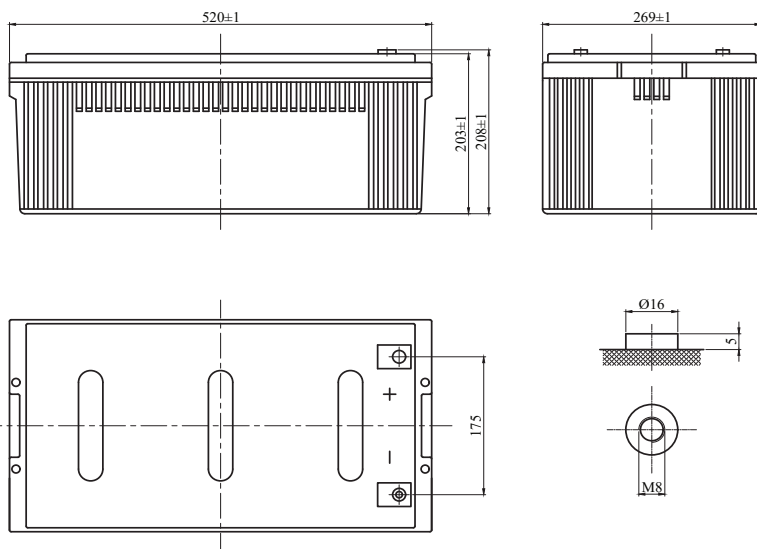
TECHNICAL FEATURES



- Non-Spillable Sealed Construction
- Absorptive Glass Mat System (AGM System)
- ABS (Acrylonitrile Butadiene Styrene) construction
- Gas Recombination
- Venting System for low internal pressure
- Low Self-Discharge
- Heavy-Duty, Highly Optimized Grids
- High Power Output

CHARACTERISTICS

Nominal Voltage	12 V	
Design Life	12 Years	
Capacity (25°C)	10 Hour rate	230Ah
Internal Resistance (25°C, 100% Charge)	≤2.8 mΩ	
Self Discharge (20°C)	1 Month	Remaining Capacity 97%
Operating Temperature	Discharge	-20°C - 60°C
	Charge	-10°C - 60°C
	Storage	-20°C - 60°C
Normal Operating Temperature	25°C ± 3°C	
Maximum Discharge current (25°C)	1100A (5sec)	
Maximum Charging current (25°C)	69A	
Short Circuit Current	4300A	
Charge Methods	14.4 to 14.7 V	
Constant Voltage Charge 77°F (25°C) - Cycle use	Temp. Compensation -30mV/°C	
Charge methods	13.4 to 13.8V	
Constant Voltage Charge 77°F (25°C) - Standby Use	Temp. Compensation -20mV/°C	



SPECIFICATIONS

Length	Width	Height	Total Height	Weight (kg)
520mm	269mm	203mm	208mm	72.6 ± 5%

CONSTANT CURRENT DISCHARGE (Amperes) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	371	307	242	153	111	89.6	68.5	54.0
1.65	367	304	241	151	110	88.8	68.2	53.8
1.70	365	302	240	150	109	88.3	67.8	53.5
1.75	359	298	236	149	108	87.3	66.8	53.0
1.80	348	290	233	148	107	87.0	66.5	52.6

CONSTANT POWER DISCHARGE (Watts) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	677	573	469	296	213	172	131	103
1.65	673	570	466	294	212	171	130	103
1.70	666	564	462	291	210	169	129	102
1.75	658	558	459	288	208	168	128	101
1.80	649	552	455	284	205	166	126	100



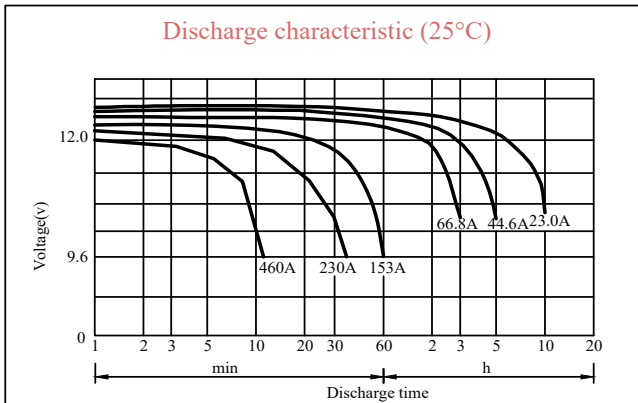
EnerRocket™
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ESC 230-12 FR

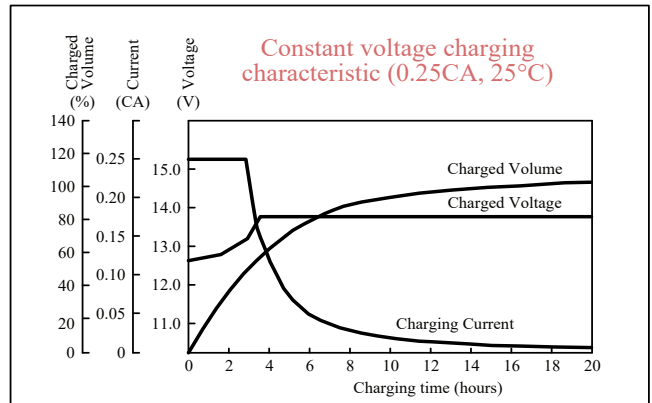
SMF VRLA RECHARGEABLE BATTERY

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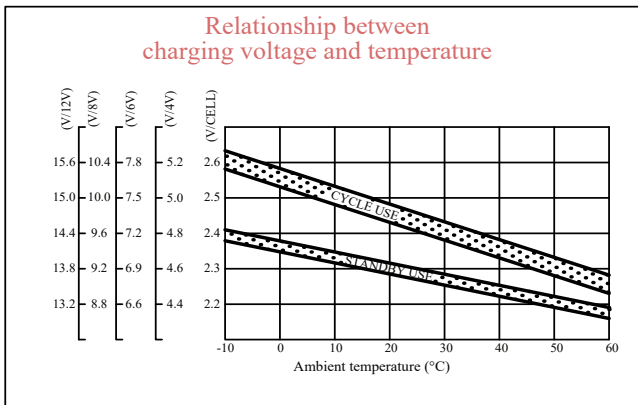
Discharge characteristic (25°C)



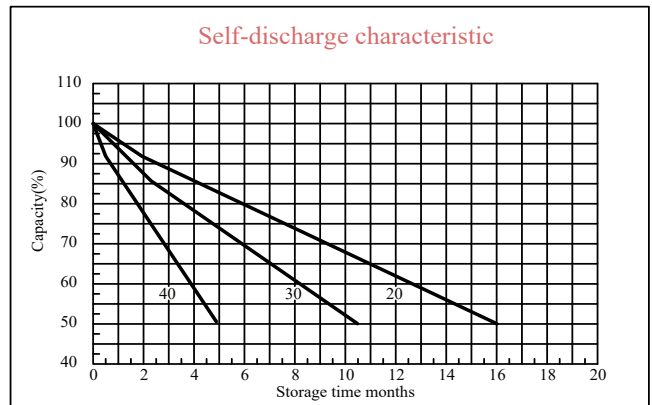
Constant voltage charging characteristic (0.25CA, 25°C)



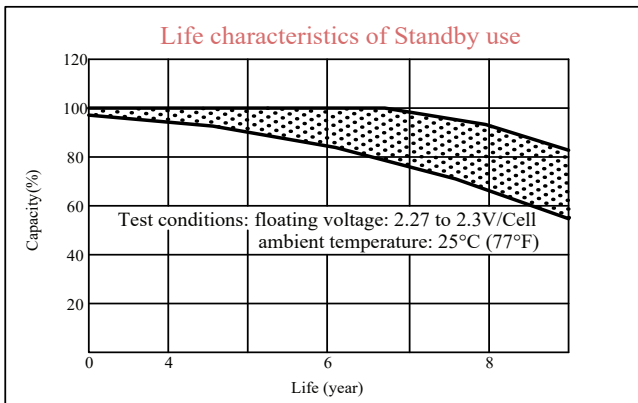
Relationship between charging voltage and temperature



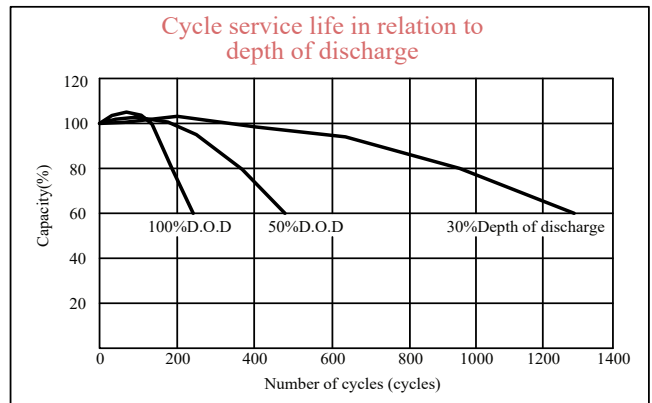
Self-discharge characteristic



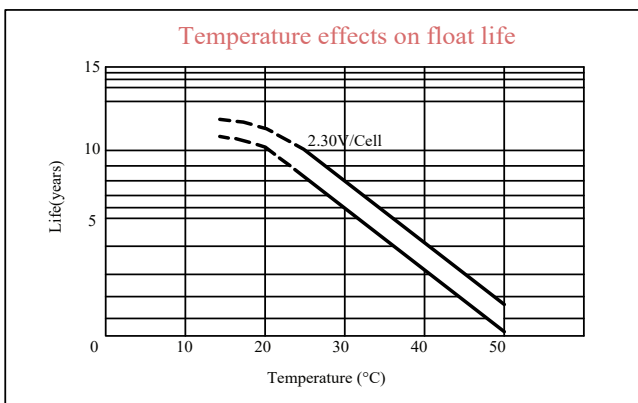
Life characteristics of Standby use



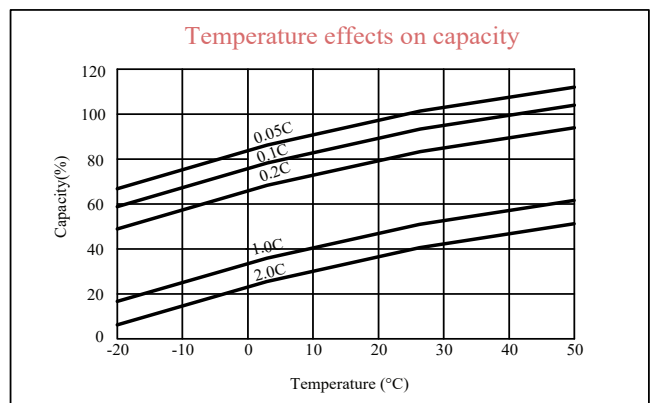
Cycle service life in relation to depth of discharge



Temperature effects on float life



Temperature effects on capacity



Note:
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APPLICATIONS

UPS Systems
Telecommunication Systems
Fire Alarm Safety & Security Systems
Medical Equipment

COMPLIANCE STANDARDS

IEC 60896 PART 21 & 22
BS6290-4
EUROBAT- HIGH Performance

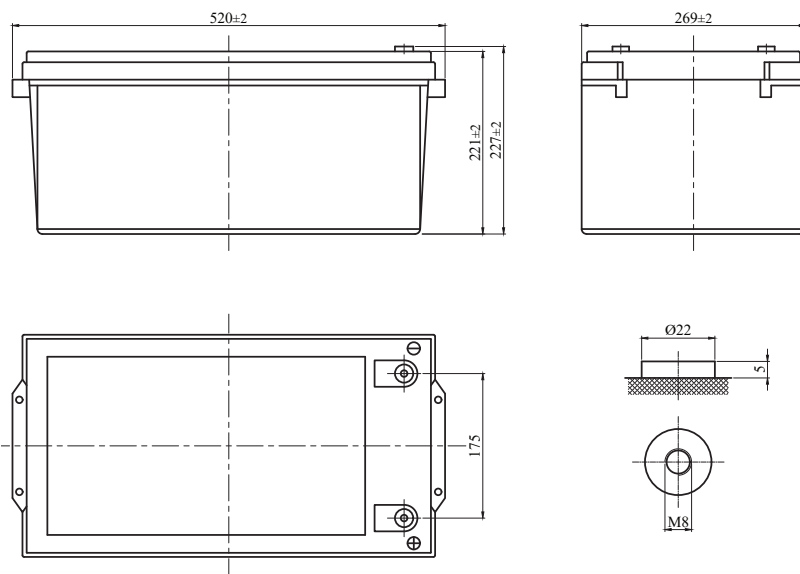
TECHNICAL FEATURES



- Non-Spillable Sealed Construction
- Absorptive Glass Mat System (AGM System)
- ABS (Acrylonitrile Butadiene Styrene) construction
- Gas Recombination
- Venting System for low internal pressure
- Low Self-Discharge
- Heavy-Duty, Highly Optimized Grids
- High Power Output

CHARACTERISTICS

Nominal Voltage	12 V	
Design Life	12 Years	
Capacity (25°C)	10 Hour rate	250Ah
Internal Resistance (25°C, 100% Charge)		≤3.0 mΩ
Self Discharge (20°C)	1 Month	Remaining Capacity 97%
Operating Temperature	Discharge	-20°C - 60°C
	Charge	-10°C - 60°C
	Storage	-20°C - 60°C
Normal Operating Temperature		25°C ± 3°C
Maximum Discharge current (25°C)		1250A (5sec)
Maximum Charging current (25°C)		75A
Short Circuit Current		4300A
Charge Methods Constant Voltage Charge 77°F (25°C) - Cycle use		14.4 to 14.7 V Temp. Compensation -30mV/°C
Charge methods Constant Voltage Charge 77°F (25°C) - Standby Use		13.4 to 13.8V Temp. Compensation -20mV/°C



SPECIFICATIONS

Length	Width	Height	Total Height	Weight (kg)
520mm	269mm	221mm	227mm	74.0 ± 0%

CONSTANT CURRENT DISCHARGE (Amperes) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	463	307	274	160	111	89.6	72.3	54.0
1.65	430	304	258	153	110	88.8	69.5	53.8
1.70	415	302	252	150	109	88.3	68.3	53.5
1.75	386	298	240	146	108	87.3	66.3	53.0
1.80	357	290	229	142	107	87.0	64.2	52.6

CONSTANT POWER DISCHARGE (Watts) AT 25°C

End Voltage Volts/Cell	15min	20min	30min	1h	1.5h	2h	3h	4h
1.60	810	573	497	300	213	182	135	103
1.65	770	570	475	291	212	175	133	103
1.70	747	564	465	285	210	172	131	122
1.75	705	558	449	278	208	165	127	101
1.80	660	552	434	268	205	160	123	100



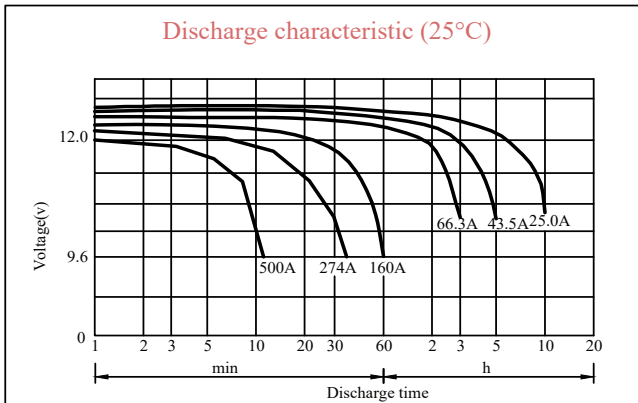
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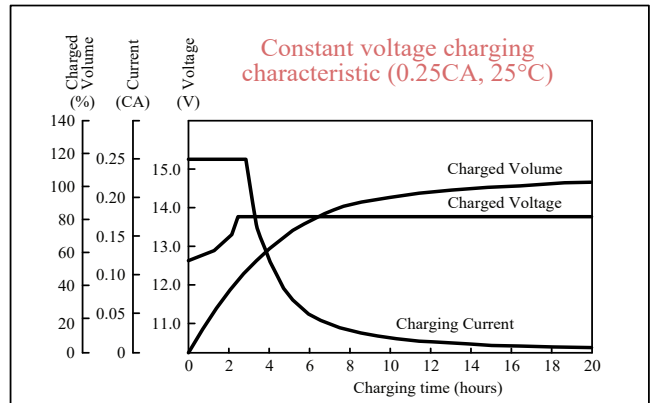
SMF VRLA RECHARGEABLE BATTERY

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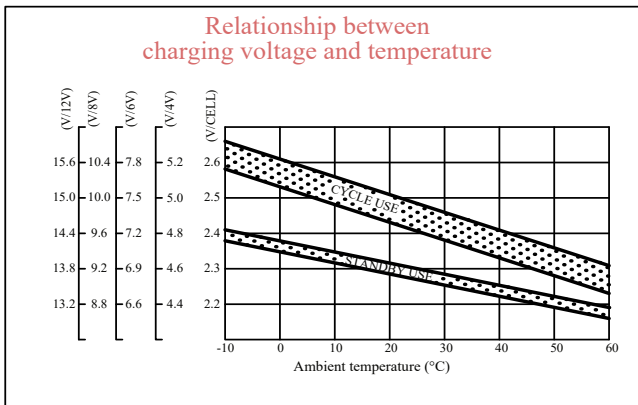
Discharge characteristic (25°C)



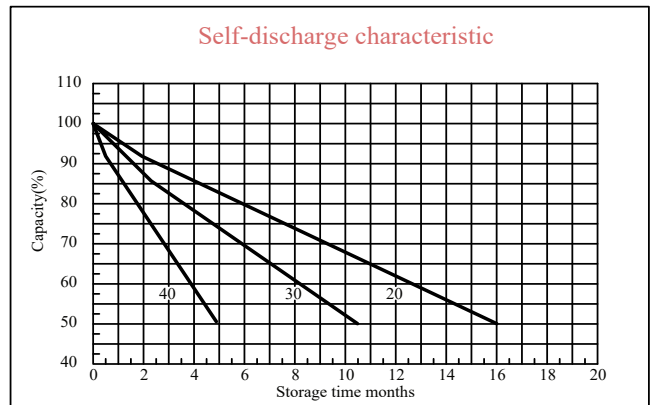
Constant voltage charging characteristic (0.25CA, 25°C)



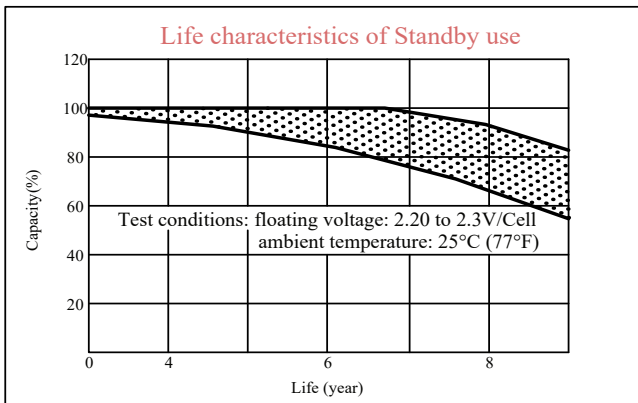
Relationship between charging voltage and temperature



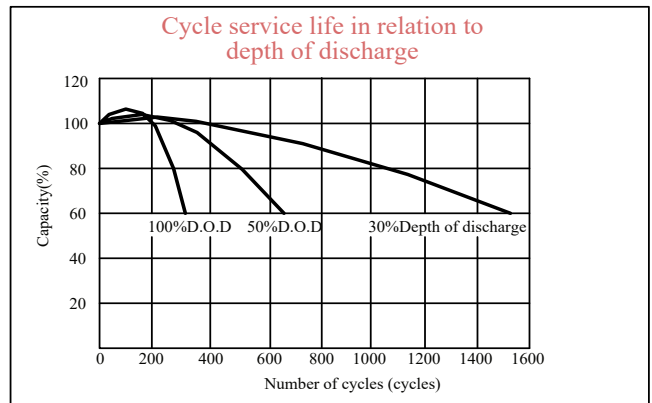
Self-discharge characteristic



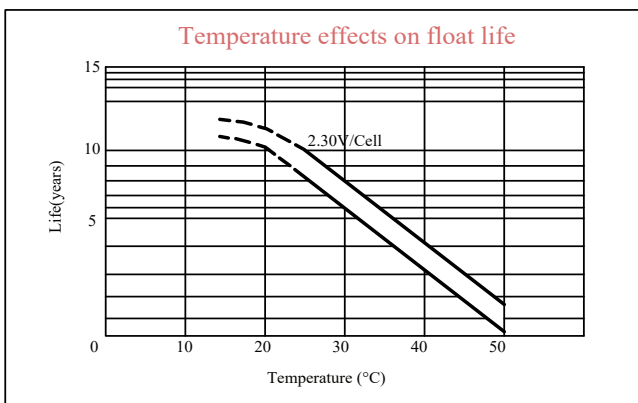
Life characteristics of Standby use



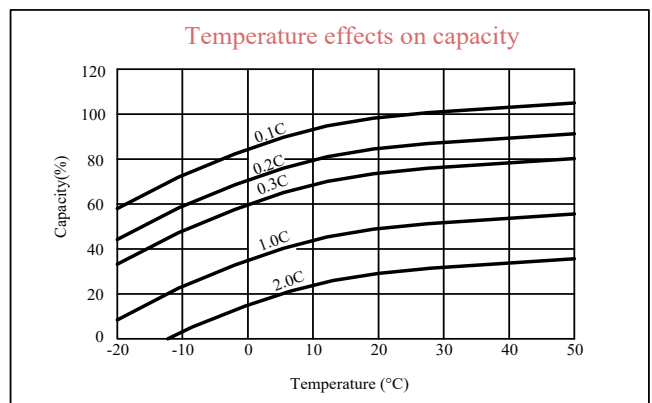
Cycle service life in relation to depth of discharge



Temperature effects on float life



Temperature effects on capacity



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