NPP Power Co., Ltd.

NPP
CLEAN ENERGY, SAFE POWER

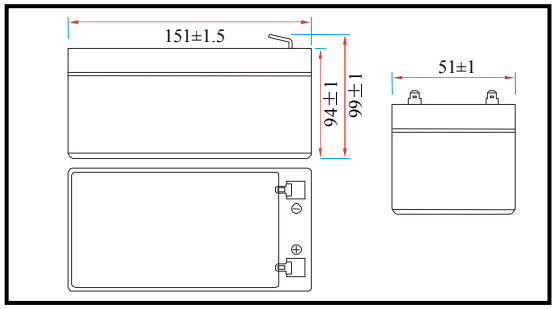
HR1224W (12V24 Watts/cell)

Valve Regulated Lead Acid Battery

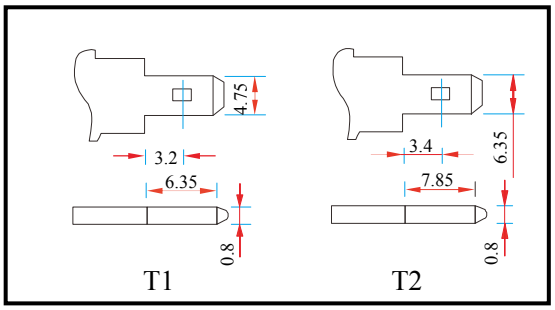
Specifications

Nominal voltage		12V (6 cells per unit)
Rated capacity (15min. rate)		24 Watts/cell /1.67V
Dimensions	Length	151±1.5mm (5.94inch)
	Width	51±1mm (2.01inch)
	Height	94±1mm (3.70inch)
	Total height	99±1mm (3.90inch)
Approx. weight		1.94kg (4.28lbs)±4%

Outer dimensions (mm)



Terminal type (mm)



Characteristics

Capacity (25°C)	15min. rate	24 Watts/cell /1.67V
	20HR	6Ah/10.5V
Terminal type		T2/T1
Internal resistance (Fully charged, 25°C)		Approx. 19mΩ
Capacity affected by temperature (10HR)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Self-discharge (25°C)	3 months	Remaining capacity: 91%
	6 months	Remaining capacity: 82%
	12 months	Remaining capacity: 65%
Nominal operating temperature		25°C± 3°C (77°F± 5°F)
Operating temperature range	Discharge	- 15°C~ 50°C (5°F ~ 122°F)
	Charge	- 10°C~ 50°C (14°F ~ 122°F)
	Storage	- 20°C~ 50°C (-4°F ~ 122°F)
Float charging voltage (25°C)		13.60 to 13.80V Temperature compensation: -18mV/°C/Block
Cyclic charging voltage (25°C)		14.50 to 15.00V Temperature compensation: -30mV/°C/Block
Maximum charging current		1.92A
Maximum discharge current		90A (5 sec.)
Design life		5 years for floating (25°C)
		Eurobat (20°C): 3-5 years, standard commercial

Construction

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

Constant current discharge characteristics unit: Ampere/cell (at 25°C, 77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	60min	2h	3h	4h	5h
1.60V/cell	27.85	17.14	12.85	9.95	6.74	4.99	4.08	2.20	1.57	1.26	1.08
1.67V/cell	26.56	16.39	12.34	9.55	6.52	4.83	3.98	2.19	1.55	1.25	1.07
1.70V/cell	25.92	15.96	12.04	9.35	6.40	4.74	3.92	2.17	1.55	1.24	1.07
1.75V/cell	24.74	15.21	11.63	9.03	6.25	4.63	3.84	2.14	1.54	1.24	1.06
1.80V/cell	23.35	14.35	11.02	8.55	6.02	4.46	3.72	2.09	1.49	1.20	1.03

Constant power discharge characteristics unit: Watt/cell (at 25°C, 77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	60min	2h	3h	4h	5h
1.60V/cell	54.46	34.28	25.90	19.70	13.30	9.88	8.08	4.39	3.15	2.53	2.18
1.67V/cell	51.95	32.73	24.00	18.90	12.90	9.56	7.88	4.35	3.12	2.51	2.16
1.70V/cell	50.64	31.85	24.34	18.50	12.70	9.39	7.76	4.32	3.11	2.50	2.15
1.75V/cell	48.46	30.42	23.50	17.90	12.40	9.16	7.61	4.26	3.09	2.48	2.13
1.80V/cell	45.73	28.76	22.26	16.90	11.90	8.82	7.37	4.15	2.99	2.41	2.07

Note 1: Above characteristics data can be obtained within three charge and discharge cycles.

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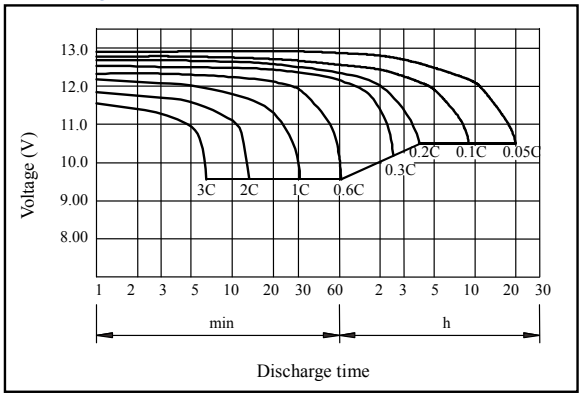
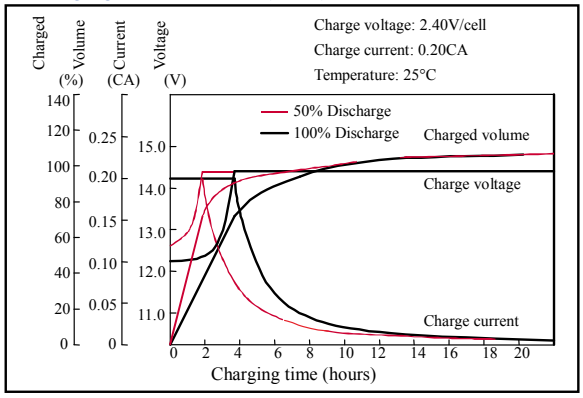
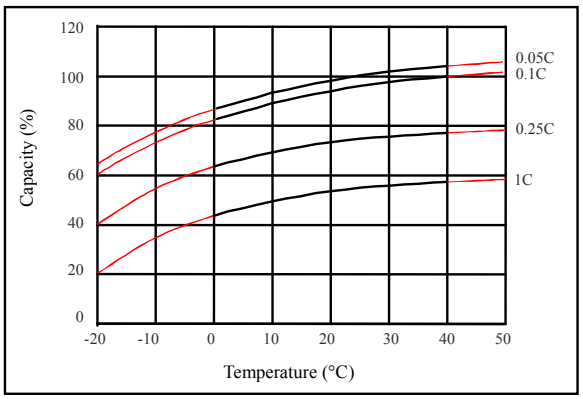
Discharge characteristics (25°C)



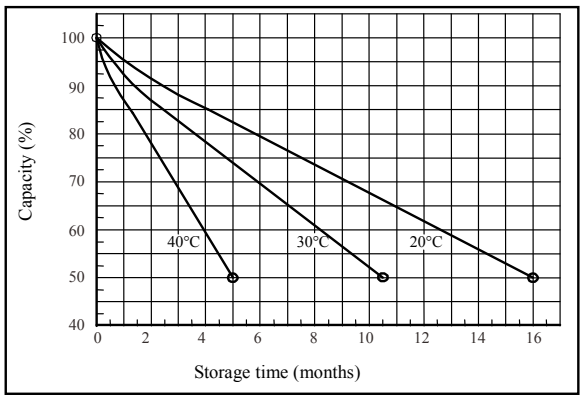
Charging characteristics (25°C)



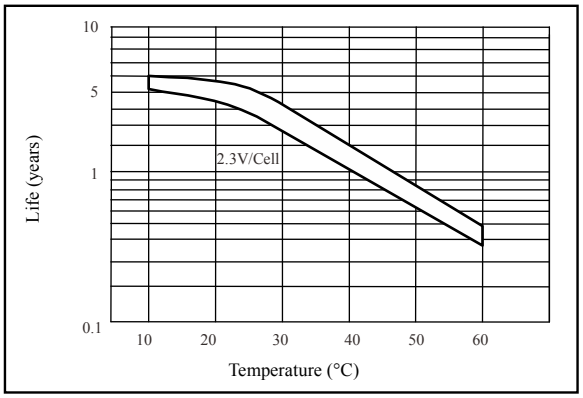
Temperature effects on capacity



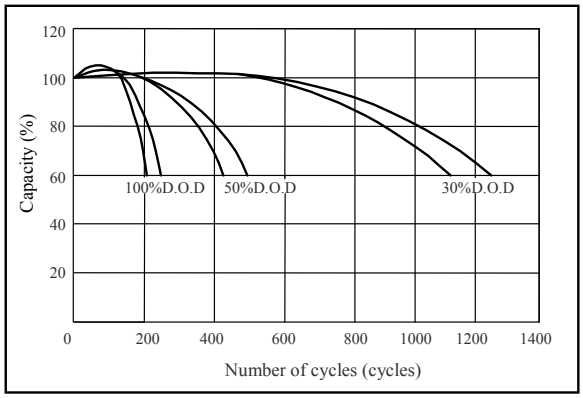
Self-discharge characteristics



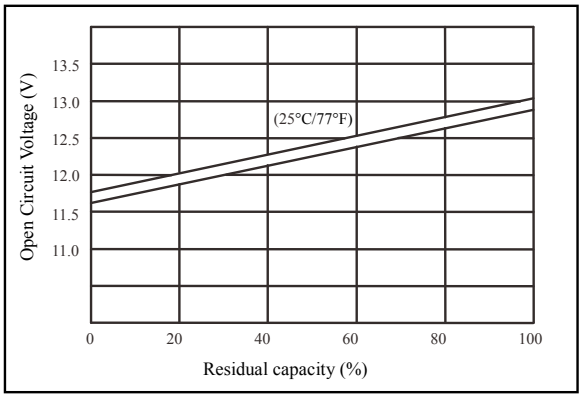
Floating life on temperature



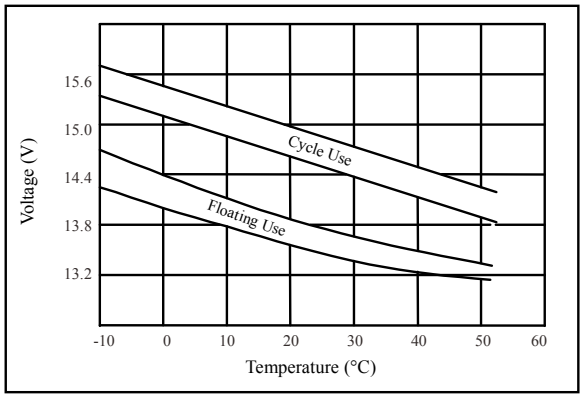
Cycle life on D.O.D (25°C)



Relationship for OCV and capacity (25°C)



Relationship for charging voltage and temperature



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