

BATTERY  
**CSB**



WAY TO THE FUTURE  
CSB WITH YOU

**MU** series

**Large Capacity**

**Up to 20 years**

**Space Saving Design**

**Stability, Dependability and Reliability**

**ENERGY OF INFINITY ▼**

**C**onfidence & Creativity

**S**ervice & Sincerity

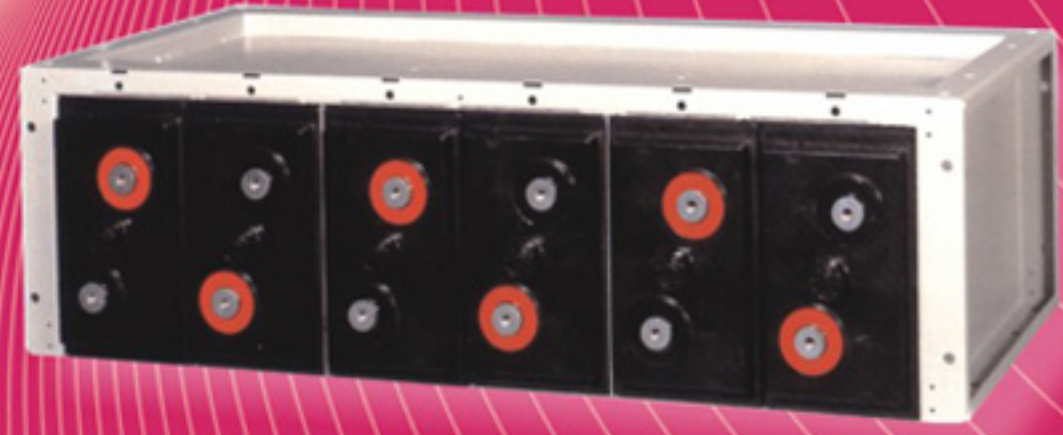
**B**elief & Bravery

**MU**

# MU series

## Applications

- Telecom Systems.
- Switching Mode Rectifier Power Supply.
- Power Equipment Operation.
- Fire Alarms/Security Systems.
- Emergency Lighting.
- Back-up Power for Testing and Measuring Equipment.
- UPS.
- Solar Battery Systems.
- Replacement for Open-type Stationary Lead Acid Batteries.
- Service life of up to 20 years (standby).

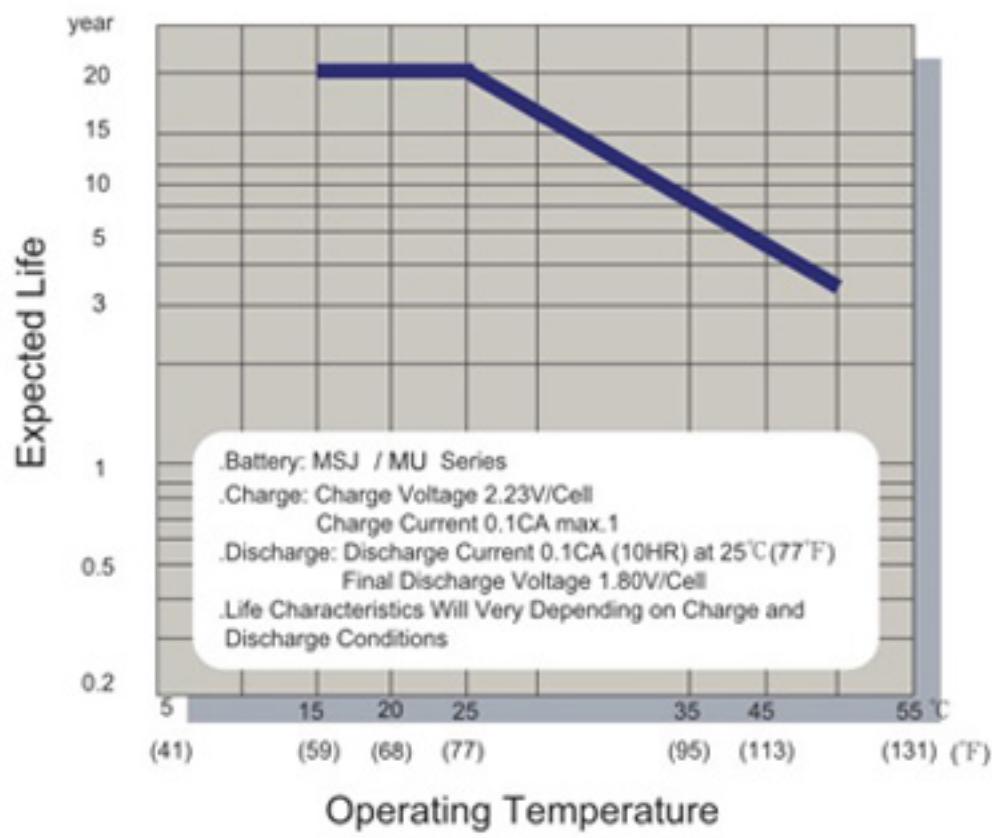


## Features

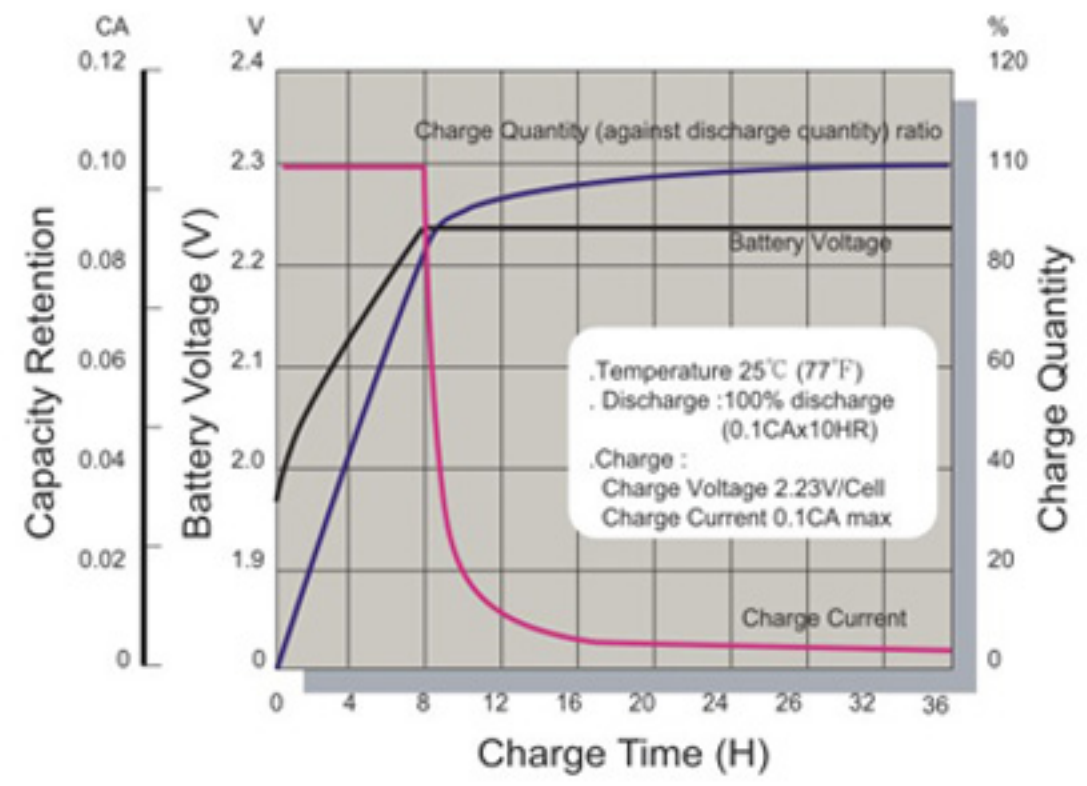
- Single-cell batteries.
- Vertically and horizontally mounted storage batteries.
- Unit construction can reduce installation space and time. High-quake resistance.  
Since two(2)-six(6) cells are housed in an iron frame as one unit and can be combined up to the necessary capacity; there is no need for a battery rack. This can reduce installation space 40-50% and cut installation time in half.
- Container and cover made of flame retardant plastic (UL 94V-0).
- Up to 20 years of life expectancy.
- No water additions or specific gravity measurements are required. There is also no need for an equalization charge. These advantages reduce maintenance expenses.
- The MU series battery can be installed horizontally, with the terminals lining up on the front side, making inspection and voltage readings easier. Since the number of terminals may decrease, checking time can be shortened.
- The MU series battery is manufactured in accordance with JIS C 8707 and qualified by the Battery Equipment Approval Committee of Japan for use in fire alarms, security systems and emergency lighting systems (Approval No.00C 244).
- The MU series battery meets NQAS requirements specified by NTT (Approval No. NQAS 95-1007).
- Grid corrosion resistance is improved through our newly developed lead-calcium-tin alloy, which provides longer life (up to 20 years in float service at 25°C).
- The MU series battery range is in line with EUROBAT specifications for "High Integrity" (10+ years in floating charge conditions).



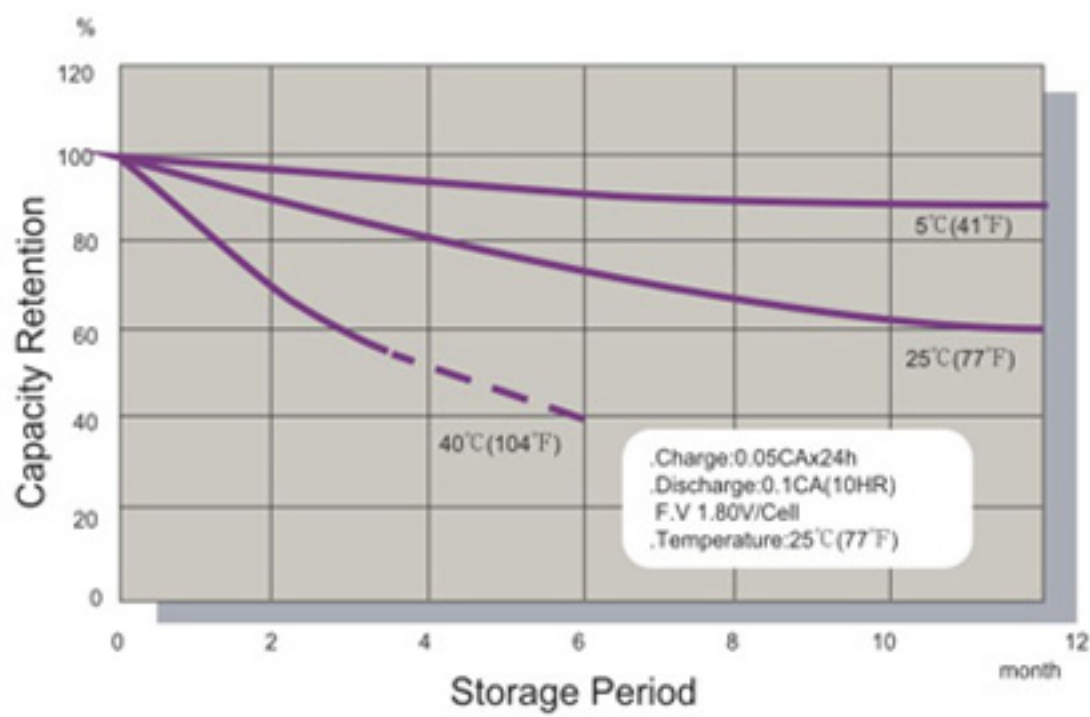
### Expected Life V.S Operating Temperature



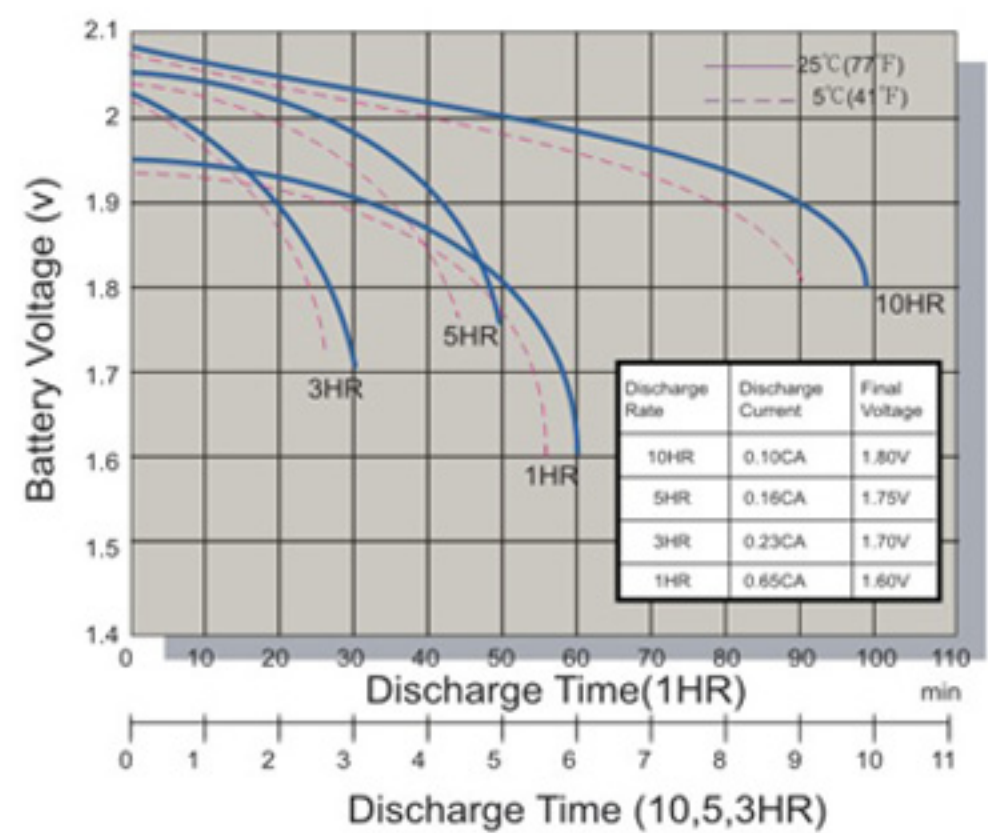
### Typical Constant Voltage Charge Characteristics



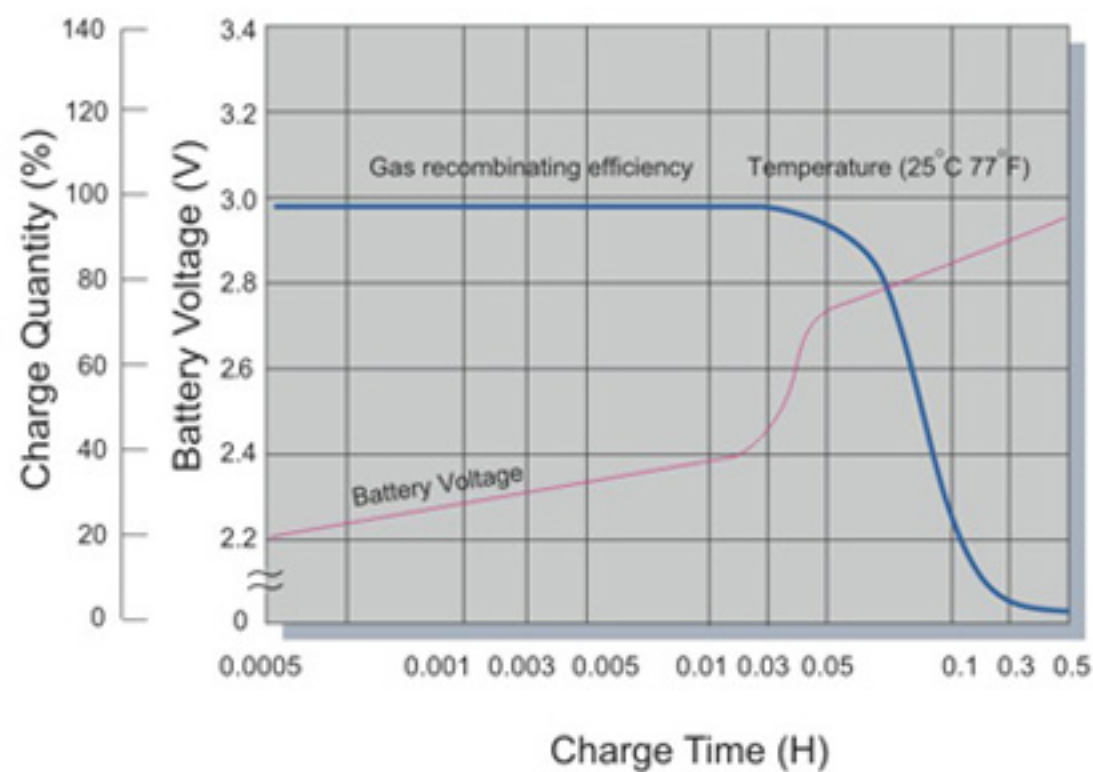
### Capacity Retention Characteristics



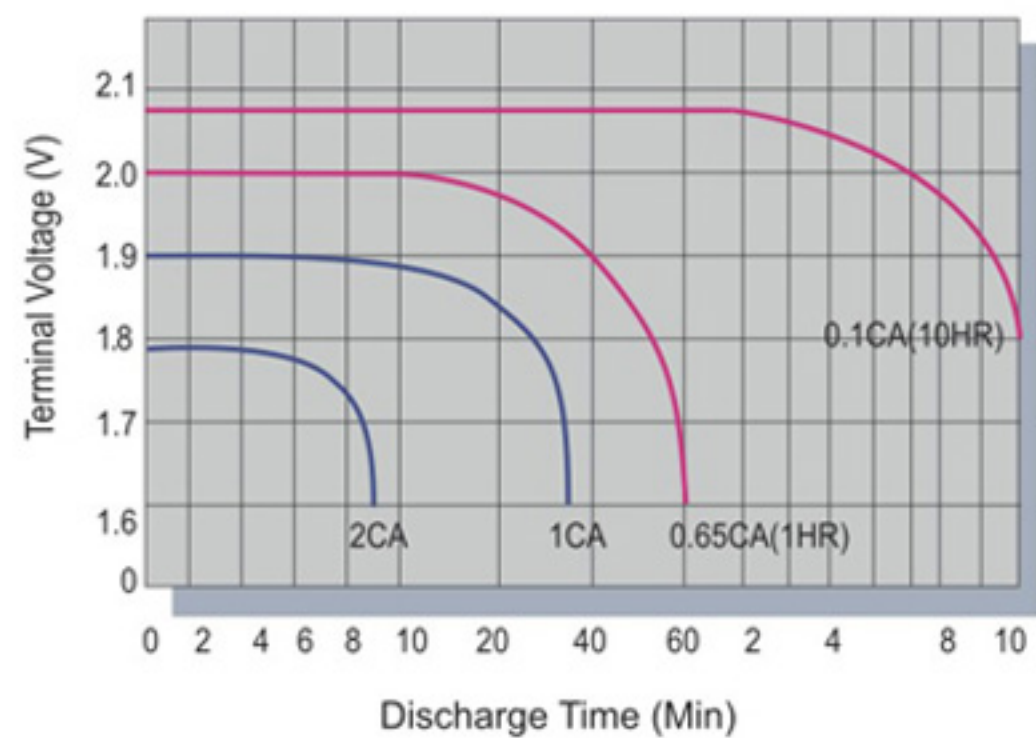
### Discharge Characteristics



### Oxygen Recombination Efficiency Chart



### Terminal Voltage (v) and Discharge Time



### Specifications

Battery Type	Nominal Voltage(V)	Nominal Capacity (10Hr)(Ah)	Weight (Approx. Kg)	Energy Density (Wh/l)	Specific Energy (Wh/kg)	Internal Resistance. Approx (mΩ)	Max. Discharge Current 5 sec (A)	Dimensions (mm)				Max. Charging Current (A)	Charging (V)
								Overall Height (H)	Container Height (h)	Length (L)	Width (W)		
MU1000	2	1000	62.50	79.0	32.00	0.1~0.4	6,000	508±3.0	486±3.0	303±3.0	172±3.0	300.00	2.23±0.02/Cell AT25°C(77°F) Temp. Coefficient -3.3mV/°C (-1.8mV/°F)
MU1500	2	1500	91.50	82.1	32.79	0.1~0.4	9,000	497±3.0	486±3.0	437±3.0	172±3.0	450.00	

**MU1000****Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)**

F.V/Time	30MIN	60MIN	90MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	1087	678	509	417	313	246	205	175	137	112
1.67V	1042	662	498	407	306	242	200	172	134	110
1.70V	983	637	483	394	295	235	194	167	130	106
1.75V	901	602	459	377	283	227	188	162	127	104
1.80V	807	553	427	355	267	216	179	155	122	100
1.83V	714	503	394	331	250	204	169	146	117	95.0

F.V/Time	30MIN	60MIN	90MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	1707	1173	886	734	554	438	369	317	249	205
1.67V	1678	1152	872	724	548	436	364	315	247	204
1.70V	1642	1121	855	709	534	430	357	311	243	199
1.75V	1541	1066	817	682	515	418	348	303	239	197
1.80V	1420	990	769	650	491	402	335	291	231	190
1.83V	1307	920	725	619	470	388	323	279	225	183

**MU1500****Constant Current Discharge Characteristics Unit:Amperes(25°C, 77°F)**

F.V/Time	30MIN	60MIN	90MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	1630	1,017	763	625	470	369	308	263	205	169
1.67V	1563	993	746	610	459	362	301	258	201	165
1.70V	1475	956	725	591	442	353	291	251	195	160
1.75V	1351	904	688	566	425	341	282	243	190	156
1.80V	1210	830	641	433	401	324	269	232	183	150
1.83V	1071	754	591	497	375	305	254	220	175	143

F.V/Time	30MIN	60MIN	90MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	2559	1759	1328	1100	832	657	554	476	373	309
1.67V	2516	1728	1306	1086	822	652	548	472	370	305
1.70V	2463	1683	1283	1064	800	646	535	467	365	301
1.75V	2310	1600	1225	1024	774	627	522	454	357	295
1.80V	2130	1486	1154	975	738	603	503	436	346	285
1.83V	1960	1380	1087	929	705	580	485	420	336	276

All information are suggest to change without notification. Please consult CSB website ([www.csb-battery.com](http://www.csb-battery.com)) for latest information.

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