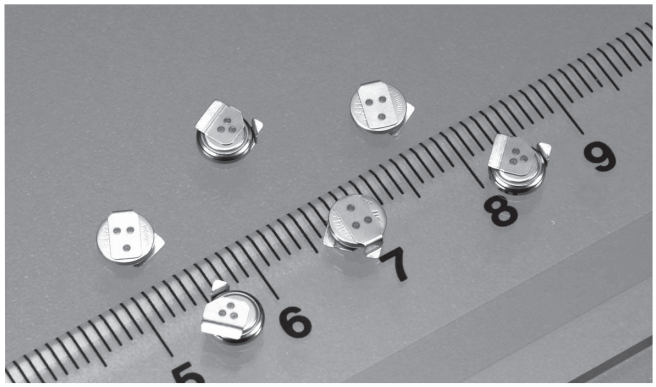
XH311HG/XH311HU/XH414HG



The XH series capacitor has a better discharge characteristic above 3V. It is an environmentally friendly product that is reflow mounted by Pb-free soldering. It features high capacity, and long-term reliability, as well as a wide operating voltage range. It is thus suitable for backup power supply of clock and memory functions on mobile and information devices.

FEATURES

- Pb-free reflowable:
  Superior heat resistance (260°C peak) allows reflow soldering by Pb-free solder
- Wide operating voltage range from 0V to 3.3V
- High capacity: 0.08F with “414” size
- Long Cycle Life:
  At least 10,000 times of charge/discharge
- Simple charging circuit (constant voltage charging)
- Wide operating temperature range:
  Operating temperature range: –20°C to +60°C
  For using the battery at a temperature out of the above temperature range, please consult us.
- RoHS Compliant

APPLICATIONS

Backup power supply for memory and clock functions of smartphone, tablet, cellphone, PHS, cordless phone, digital still camera, game machine, and printer, etc.

SPECIFICATIONS

Type	Electrical Specifications (Normal Temperature)*1			Size		Weight (g)
	Maximum Use Voltage (V)	Capacitance (F)	Internal Impedance*2 (Ω)	Diameter (mm)	Height (mm)	
XH311HG	3.3	0.02	300	3.8	1.1	0.04
XH311HU	3.3	0.035	150	3.8	1.1	0.04
XH414HG	3.3	0.08	100	4.8	1.4	0.06

*1. Normal temperature: 23°C ± 3°C. Electrical characteristics and aging degradation of the products depend on temperature.
*2. Value measured using AC (Alternating Current) method at the discharged state.

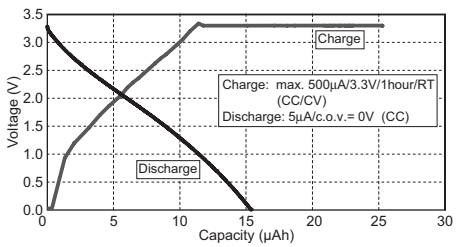
<APPLICATION NOTES>

- **Prohibition ripple charging**
  A ripple (high frequency fluctuation of voltage) in the charge voltage extremely lowers the capacitor performance.
  Be sure to charge capacitors with a stable voltage.
- **Charge voltage**
  The age deterioration of the capacitor depends on the charge voltage.
  The age deterioration is accelerated as charge voltage goes higher.
- **Usage environment**
  Aging degradation of the capacitor varies depending on the usage environment (temperature and humidity).
  Contact us for further details.

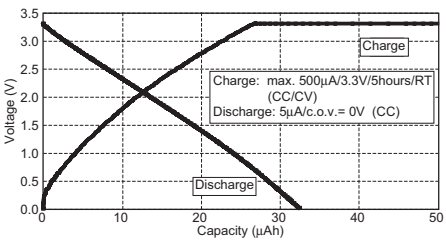
CHARACTERISTICS

Charge/discharge characteristics

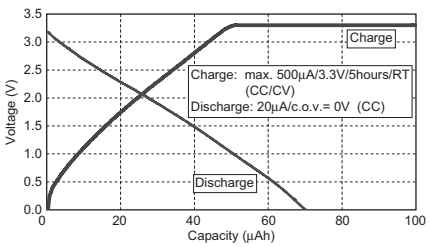
XH311HG



XH311HU



XH414HG

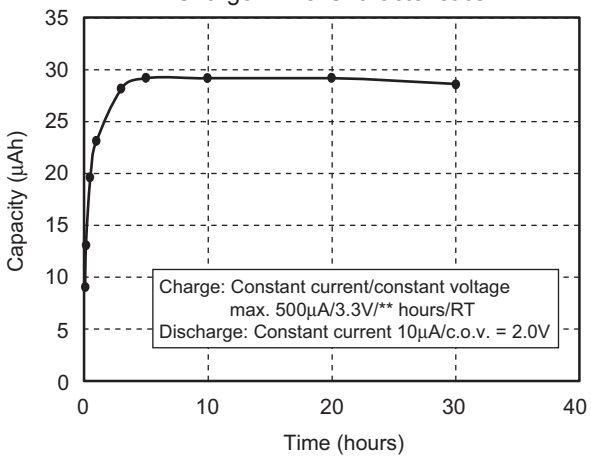


*c.o.v.…Cut off Voltage

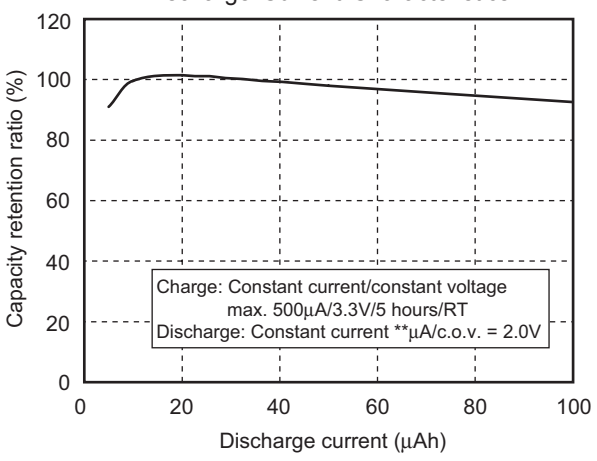
CHARACTERISTICS

XH414HG

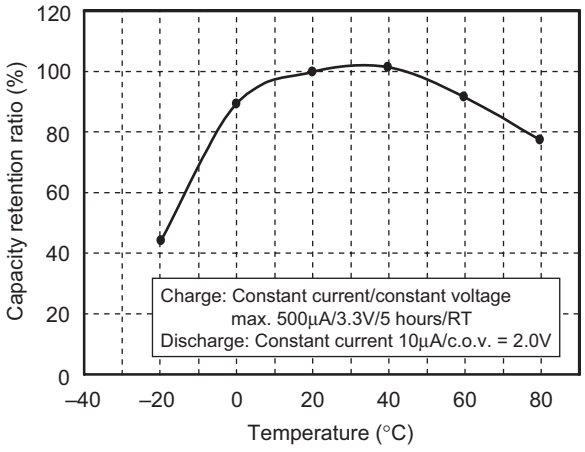
Charge Time Characteristics



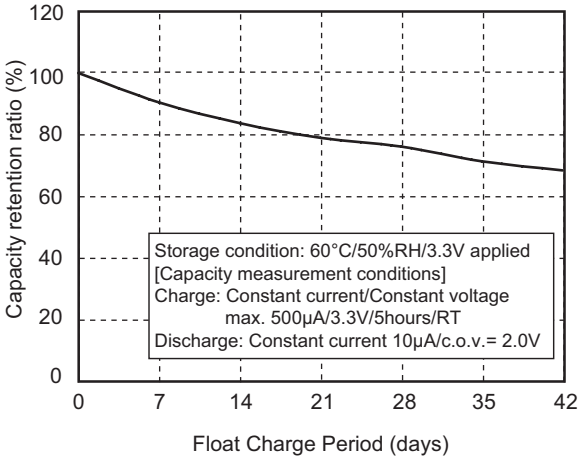
Discharge Current Characteristics



Temperature Characteristics

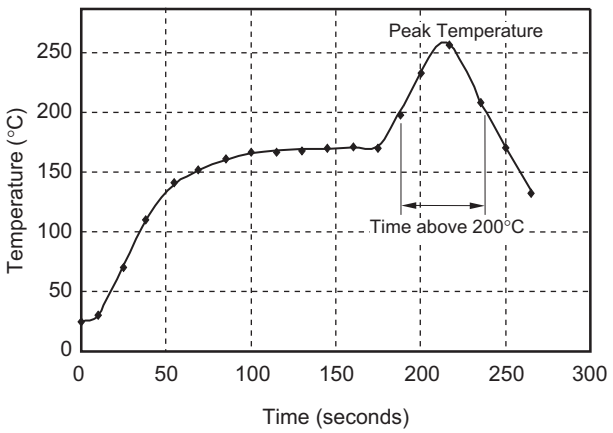


Float-Charge Characteristics (60ºC, 50%RH)



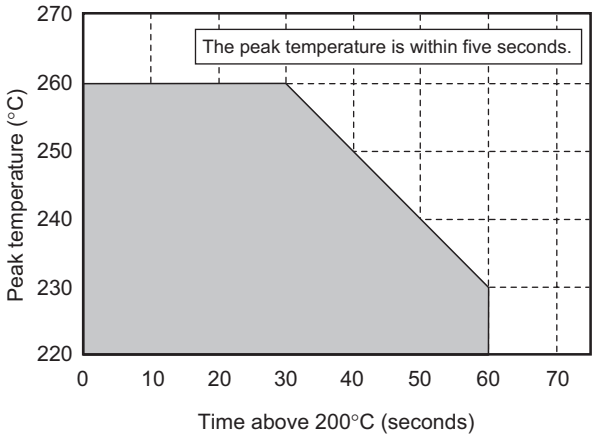
REFLOW SOLDERING CONDITIONS

Reflow Profile Example



The times of repeated reflow soldering must be two times or less.
The Temperature must be measured at top of the cell.

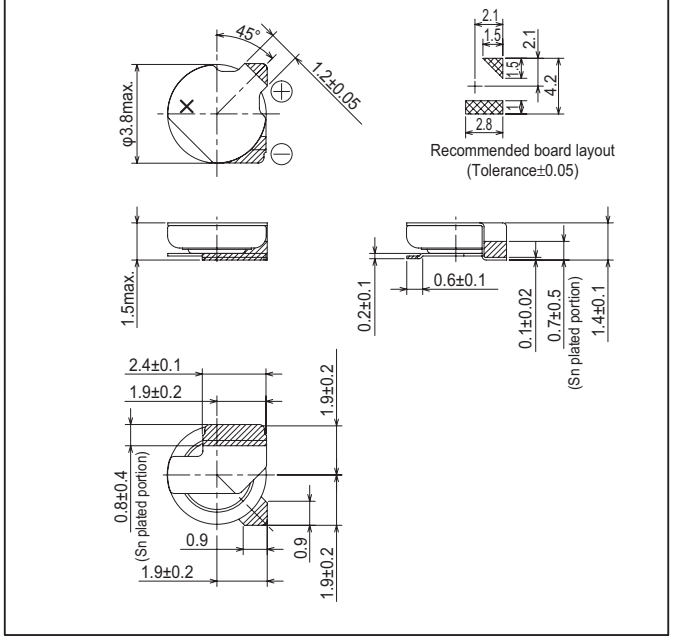
Recommended Reflow Condition



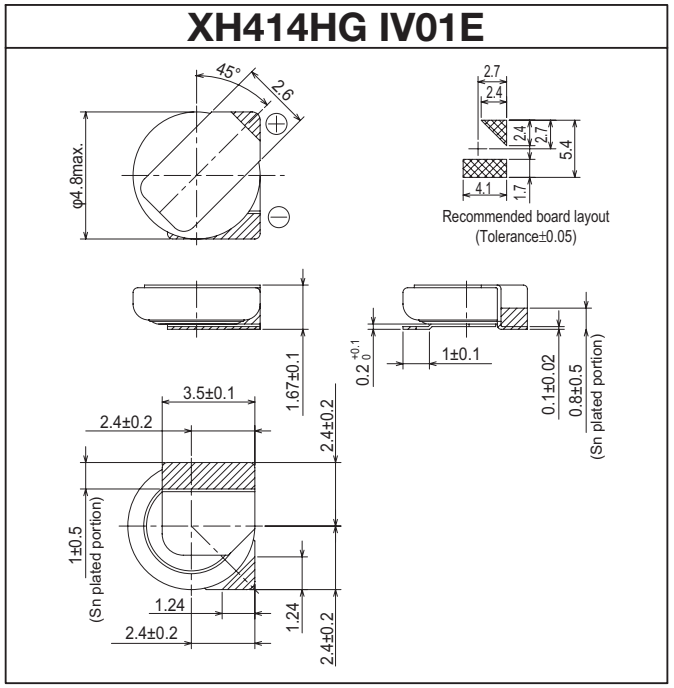
Max.260°C (within 5 seconds)

STANDARD TERMINALS

XH311HG IV07E
XH311HU IV07E

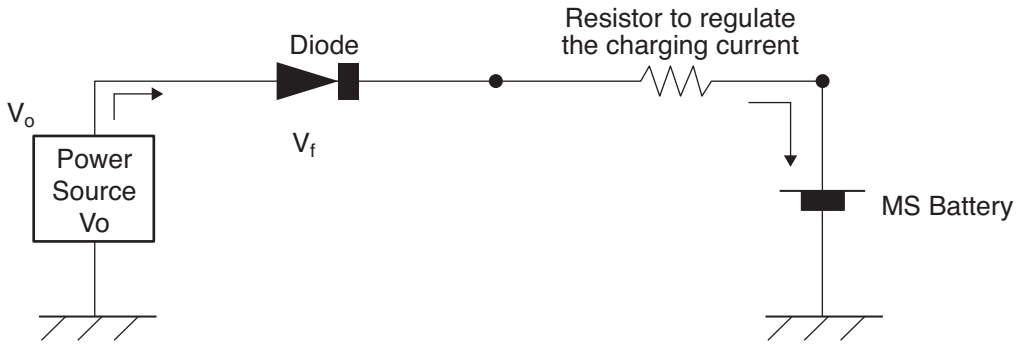


XH414HG IV01E



- Units: mm
- The hatched parts are tin plated (Sn: 100%).

1. Charging circuit for MS Lithium Rechargeable Battery



A resistor must be inserted to regulate the charging current, because our rechargeable batteries have a limit for charging current.
Please see the below table for recommended resister values.
Those values are minimum for each battery type and "Vo" in the charging circuit.
For example, MS614SE and Vo 3.3V, the resister value should be 620 ohm or more.
Please use a diode that has very low Vf (forward voltage drop), to prevent losing the actual charging voltage to MS battery.
The charging voltage "Vo" must Not be higher than 3.3V.

Table of minimum resistor values.

	MS414GE	MS412FE	MS518SE	MS614SE	MS621FE MS621T	MS920SE MS920T
Vo	Resistor	Resistor	Resistor	Resistor	Resistor	Resistor
(V)	(ohm)	(ohm)	(ohm)	(ohm)	(ohm)	(ohm)
3.3	2,000	2,000	1,500	620	620	620
3.2	1,600	1,600	1,000	430	430	430
3.1	1,600	1,600	820	330	330	330
3.0	1,500	1,500	750	300	300	300
2.9	1,500	1,500	750	300	300	300
2.8	1,500	1,500	750	300	300	300

Discharge capacity depends on charging voltage (Please see Page 7)
Lower than 3V charging may cause lower discharge capacity.

For TS Lithium Rechargeable Battery or other batteries, please contact us.

2. Charging circuit for XH capacitor and CPH capacitor

You do not need to insert a resister to regulate charging current.
Our XH capacitor or CPH capacitor do not have a limit for charging current.
The charging voltage "Vo" must Not be higher than 3.3V.
Please use a diode that has very low Vf (forward voltage drop), to prevent losing the actual charging voltage to capacitor.
This guidance is for XH capacitors and CPH capacitors.
For CPX capacitor or other capacitors, please contact us.