

POSCAP is uniquely structured solid electrolytic capacitor.
Please note the following points in order to take full advantage of the POSCAP's performance and ensure the most stable quality possible. (The crucial precautions is described to page 4 to 6)

Circuit designing cautions

1 Check the rated performance

After checking the operation and installation environments, design the circuit so that it falls within the rated performance range stipulated in this delivery specification.

2 Operating temperature and ripple current

- (a) Set the operating temperature so that it falls within the range stipulated in this delivery specification.
- (b) Do not supply current that exceeds the allowable ripple current. When excessive ripple current is supplied, internal heat increases and reduces the POSCAP's life span.

3 Leakage current

Even when the soldering conditions fall within the range of this delivery specifications, leakage current increases a little on occasion. It also increases a little during high temperature storage, high humidity storage and temperature cycling with no voltage applied. In cases such as these, leakage current will decrease by applying voltage under the condition of below the POSCAP's maximum operating temperature. The speed at which the leakage current is restored is increased by applying voltage when the POSCAP's temperature is close to the maximum operating temperature.

4 Prohibited circuits

Since problems can be expected, the POSCAP cannot be used on the following circuits.

- | | |
|---|---|
| (1) High impedance voltage retention circuits | (4) Circuits greatly affected by leakage current |
| (2) Coupling circuits | (5) The circuit in which two or more POSCAP are connected in a series so as to raise the endurance voltage. |
| (3) Time constant circuits | |

5 Sudden charge and discharge restricted

Sudden charge and discharge are restricted (for maintenance of high-proof reliability).

A protection circuit is recommended for when a sudden charge or discharge causes excessive rush current since this is main cause of short circuit and large leakage current.

Use protection circuits in case the rush current value exceeds 20A.*

Be sure to insert a protection resistor of about 1kΩ for charge and discharge when measuring the leakage current.

※ When TH series use under the ambient temperature more than 105°C : 10A

6 Protect circuit

The failure mode of POSCAP is the short mode. When it breaks down, short electric current flows to it. POSCAP gives off heat by this short current. Do the following consideration in design fully for the safety because it has a bad influence on the part around POSCAP due to this heat.

: A protection circuit and a protection device are set up, and it is made safer as a system.

: A diffuse circuit and so on is set up, and a safe system is taken so that a machine may not break down as to the single trouble.

7 Reduction of failure stress

When POSCAP is used within the rated voltage, it shows a stable characteristic, but it may be damaged in a short circuit when an overvoltage, for instance, is applied.

The time to reach the failure mode can be extended by using POSCAP with reduced ambient temperature, ripple current and applied voltage.

Failure rate

- In the case of the endurance which is 105°C 2,000h.
0.5%/1,000h (Environment temp. : 105°C, Rated voltage or Category voltage applied)
- In the case of the endurance which is 105°C 1,000h or 125°C 1,000h.
1.0%/1,000h (Environment temp. : 105°C, Rated voltage or Category voltage applied)
- In the case of the endurance which is 85°C 1,000h.
1.0%/1,000h (Environment temp. : 85°C, Rated voltage applied)

8 Considerations when soldering

The soldering conditions are to be within the range prescribed in this delivery specification. If the specifications are not followed, there is the possibility of the appearance becoming defective when soldering is conducted under conditions that are harsher than those stipulated.

9 Others

Design circuits after checking the following items.
 Electrical characteristics are affected by temperature and frequency fluctuations.
 Design circuits after checking the amount of fluctuation.

Compensation coefficient of maximum allowable ripple current

It takes advantage in ripple current value of characteristics list and the following coefficient. (For questions regarding TQC series, please ask separately.)

Frequency compensation coefficient

(TPB, TPC, TPD, TPE, TPF, TPG, TPL, TPLF, TPSF, TPU, TA, THseries)

| | 120Hz≤f<1kHz | 1kHz≤f<10kHz | 10kHz≤f<100kHz | 100kHz≤f<1MHz |
|-----------------|--------------|--------------|----------------|---------------|
| 22μF≤C≤100μF | 0.20 | 0.60 | 0.85 | 1.00 |
| 100μF≤C≤330μF | 0.25 | 0.70 | 0.85 | 1.00 |
| 330μF≤C≤1,000μF | 0.30 | 0.75 | 0.90 | 1.00 |

Temperature compensation coefficient

(TPB, TPC, TPD, TPE, TPF, TPG, TPL, TPLF, TPSF, TPU, TA, THseries)

| | Case size code | |
|---------------|--|------|
| | S09,S11,A09,B09, B1,B1G,B15G, B2, B2S, C, C1, C2, C3, D12T, D15T, D2, D2E, D2T, D3L, D3, D4 (THD), D4D | D4 |
| T≤45°C | 1.00 | 1.00 |
| 45°C<T≤85°C | 0.70 | 0.50 |
| ※85°C<T≤105°C | 0.25 | 0.25 |

T:Environment temperature
 ※ THseries :85°C<T≤125°C

Storage conditions

It is necessary to set an environment to prevent a trouble at the time of soldering by the degradation of solder ability or moisture's getting into the molding resin when POSCAP are stored.

(Please refer to page 5. about the general storage conditions)

The storage period is 18 months or shorter after shipment from factories, under the condition that is unopened the storage bag.

Please unseal storage bag just before mounting and be conscious that POSCAP not remain. When remainder unfortunately occurs, return them to storage bag once again and, please seal the unsealing part by adhesive tape etc., including desiccants. Moreover, once open the storage bag, it should be followed the table's Floor Life "Time" and "conditions"

| Level | Floor life | | Applications scope | |
|-------|------------|-------------|--|--|
| | Time | Conditions | Size code | Series |
| 2a | 4 weeks | ≤30°C/60%RH | D12T,D15T,D2E,D2,D2T, D3L,D3,D4,D4D | TPB,TPC,TPE,TPD TH※ ,TPL,TPLF |
| 3 | 168 hours | ≤30°C/60%RH | S09,S11,A09,B09,B1,B1G, B15G,B2,B2S,C1,C3,C2 | TPB,TPC,TPE,TPG,TPSF, TPU,TA,TQC (ALL sizes) |
| 4 | 72 hours | ≤30°C/60%RH | D2 | |
| 5 | 48 hours | ≤30°C/60%RH | D2E,D2,D3L,D4 | TH |

(Conform to IPC/JEDEC J-STD-020C)
 ※Use at 105°C or less

NOTE:The model of MSL "2a" is changed into MSL "3" with the 260°C reflow soldering.