

## RECOMMENDED SOLDERING CONDITIONS

### ◆ SURFACE MOUNT TYPE

#### Alchip™ MVA/MVE/MZS/MZL/MZR/MZJ/MZA/MVY/MZF/MZE/MZK/MLA/MLF/MLK/MVL/MVJ/MXB/MHS/MVH/MHL/MHB/MHJ/MHK/MKB

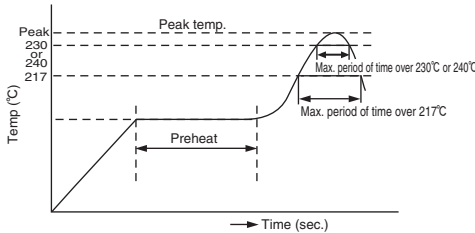
The following conditions are recommended for air convection and infrared reflow soldering on the SMD products onto a glass epoxy circuit boards by cream solder. The dimensions of the glass epoxy boards with resist are 90×50×0.8mm for D55 to KG5 case code SMD capacitors and 180×90×0.8mm for LH0 to MNO case codes SMD capacitors.

The temperatures shown are the surface temperature values on the top of the can and on the capacitor terminals.

Reflow should be performed twice or less. (The only MHS series : 3times or less)

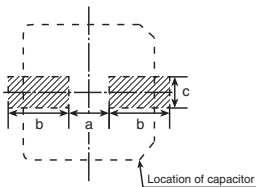
Please ensure that the capacitor became cold enough to the room temperature (5 to 35°C) before the second reflow and the third reflow (The only MHS series). Consult with us when performing reflow profile in IPC / JEDEC (J-STD-020)

#### ● Recommended soldering heat conditions (Except for Conductive Polymer Aluminum Solid Capacitors)



Series	Size code	Voltage range (V <sub>dc</sub> )	Preheat	Time maintained above 217°C	Time maintained above 230°C	Peak temp.	Reflow number
MVA, MVE, MZS MZL, MZR, MZJ, MZA, MVY, MZF, MZE, MZK, MLA, MLF, MLE, MLK, MVL, MVJ, MVH, MHL, MHB, MHJ, MHK, MXB, MKB	D55 to F90	4 to 63V (Except 63V for MVH)	150 to 180°C 120sec. max.	90sec. max.	60sec. max.	260°Cmax.	2 times or less
		63V(MVH), 80V		60sec. max.	40sec. max.	250°Cmax.	2 times or less
MVA, MVE, MZS MZL, MZR, MZJ, MZA, MVY, MZF, MZE, MZK, MLA, MLF, MLE, MLK, MVL, MVJ, MVH, MHL, MHB, MHJ, MHK, MXB, MKB	H63 to JA0	4 to 50V	150 to 180°C 120sec. max.	60sec. max.	30sec. max.	245°Cmax.	2 times or less
		63 to 100, 400V		30sec. max.	20sec. max.	240°Cmax.	2 times or less
MVA, MVE, MZS MZL, MZR, MZJ, MZA, MVY, MZF, MZE, MZK, MLA, MLF, MLE, MLK, MVL, MVJ, MVH, MHL, MHB, MHJ, MHK, MXB, MKB	KE0 to MNO	6.3 to 50V	150 to 180°C 120sec. max.	30sec. max.	20sec. max.	240°Cmax.	2 times or less
		63 to 450V		20sec. max.	—	230°Cmax.	2 times or less

#### ● Recommended Solder Land on PC Board



▨ : Solder land on PC board

Series	Size code	Voltage range (V <sub>dc</sub> )	Preheat	Time maintained above 217°C	Time maintained above 240°C	Peak temp.	Reflow number
MHS	KE0 to MNO	16 to 100V	150 to 180°C 120sec. max.	70sec. max.	20sec. max.	245°Cmax.	3 times or less

[mm]

Size code	Terminal code : A			Terminal code : G		
	a	b	c	a	b	c
D55, D60, D61, D73	1.0	2.6	1.6			
E55, E60, E61, E73	1.4	3.0	1.6			
F55, F60, F73, F90	1.9	3.5	1.6			
F61, F80	1.9	3.5	1.6	1.9	3.5	3.3
H63	2.3	4.5	1.6			
HA0	3.1	4.2	2.2	3.1	4.2	3.5
JA0	4.5	4.4	2.2	4.5	4.4	3.5
KE0, KG5, KNO	4.0	5.7	2.5	3.4	6.3	9.3
LH0, LNO	6.0	6.9	2.5	4.7	7.8	9.6
MH0, MNO	6.0	7.9	2.5	4.7	8.8	9.6

### ◆ RADIAL LEAD AND SNAP-IN TYPE

#### ● Recommended soldering heat conditions

Preheat : 150°C 120 seconds max. (Radial lead type)

Flow : 260±5°C max. 10±1 seconds max.

(Or 380±10°C max. 3±0.5 seconds max.: hand soldering)

#### ◆ PRECAUTIONS FOR USERS

##### Soldering method

The capacitors of Alchip-series have no capability to withstand such dip or wave soldering as totally immerses components into a solder bath.

##### Reflow soldering

Reflow the capacitors within recommended reflow soldering conditions. Verify there is no temperature stress to the capacitors because the following differences might degrade capacitors electrically and mechanically. Please consult us if other reflow conditions are employed.

1. Location of components : Temperature increases at the edge of PC board more than the center.
2. Population of PC board : The lower the component population is, the more temperature rises.
3. Material of PC board : A ceramic made board needs more heat than a glass epoxy made board. The heat increase may cause damage to the capacitors.
4. Thickness of PC board : A thicker board needs more heat than a thinner board. The heat increase may damage the capacitors.
5. Size of PC board : A larger board needs more heat than a smaller board. The heat increase may damage the capacitors.
6. Solder thickness  
If very thin cream solder paste is to be used for SMD types, please consult with us.
7. Location of infrared ray lamps : IR reflow as well as hot plate reflow heats only on the reverse side of the PC board to lessen heat stress to the capacitors.
8. Please consult us about vapor phase soldering (VPS).

##### Rework of soldering

Use a soldering iron for rework. Do not exceed an iron tip temperature of 380±10°C and an exposure time of 3±0.5 seconds.

##### Mechanical stress

Do not use the capacitors for lifting the PC board and give stress to the capacitor. Avoid bending the PC board. This may damage the capacitors.

##### Cleaning assembly board

Immediately after solvent cleaning, remove residual solvent with an air knife for at least 10 minutes. If the solvent is insufficiently dry, the capacitors may corrode.

##### Coating on assembly board

1. Before curing coating material, remove the cleaning solvents from the assembly board.
2. Before conformal coating, a chloride free pre-coat material is recommended to decrease the stress on the capacitors.

##### Molding with resin

Internal chemical reaction gradually produces gas in the capacitor; then, increasing internal pressure. If the end seal of the capacitor is completely covered by resin the gas will be unable to escape causing a potentially dangerous situation. The chlorine contained resin will penetrate into the end seal, reach the inside element, and cause damage of the capacitor.

##### Others

Refer to PRECAUTIONS AND GUIDELINES.