

## Soldering conditions for Resistors Lead free paste (Sn-3Ag-0.5Cu) version

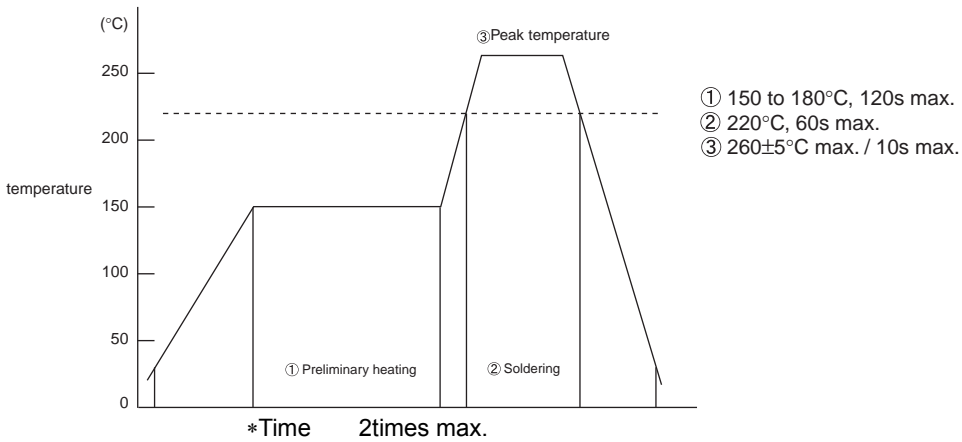
### CONTENTS

Recommended conditions for reflow soldering	2/5
Recommended conditions for flow soldering	2/5
Recommended conditions for manual soldering	2/5
Recommended conditions for washing	3/5
Sample of land pattern	4/5

### ● Recommended reflow soldering conditions

Corresponded products

MCR series / MNR series / ESR series / KTR series / TRR series /  
LTR series / PMR series / PML series / UCR series / PSR series



### ● Recommended flow soldering conditions

Peak temperature 265°C, 10s max.

Number of times one time

Corresponded products

MCR series (except for MCR004 series) / MNR series (except for MNR02 / 04 / 12 / 14 / 15 / 18 series) /  
ESR series / KTR series / LTR series / TRR series / PSR series

### ● Recommended hand soldering conditions

Temperature 350°C

Time 3s Max.

Times one time

Watt 20W Max.

Corresponded products

MCR series (except for MCR004 / 006 series) / MNR series (except for MNR15 / 18 series) /  
ESR series / KTR series / TRR series / LTR series / PMR series / PML series / UCR series / PSR series

● **Recommended washing conditions**

Corresponded products

MCR series / MNR series / ESR series / KTR series / TRR series /  
LTR series / PMR series / PML series / UCR series

\*Please contact us about PSR series.

1. Washing liquid

washing liquid	manufacturers
water	–
ethanol	–
methanol	–
pine alpha ST-100S	ARAKAWA CHEMICAL
clean through 750H	KAO
technocare FRW-1	TOSHIBA TECHNOCARE

\*Alternative HCFC : The use of HCFC as AK225AES left to the discretion of customers.

2. Condition of washing

washing bath		time	temperature	remarks
first bath	ultrasonic bath	less than 2min	less than 60°C	25 to 28kHz, 15W / L
second bath	immersion bath	less than 2min	less than 40°C	
third bath	immersion bath	less than 2min	room temperature	

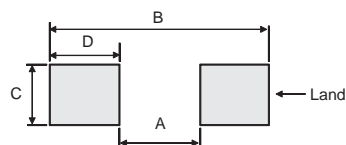
3. Condition of drying

	time	temperature	remarks
Drying machine	less than 5min	less than 100°C	

●Sample of land pattern

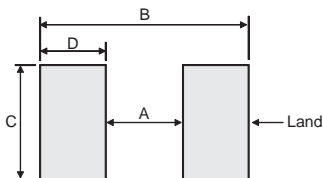
(Unit : mm)

MCR / ESR / KTR / TRR



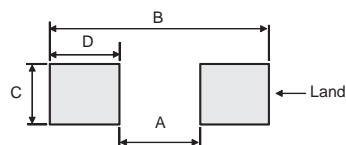
MCR	ESR	KTR	TRR	Dimensions			
				A	B	C	D
MCR004	-	-	-	0.2	0.4	0.16	0.1
MCR006	-	-	-	0.3	0.84	0.3	0.27
MCR01	ESR01	-	TRR01	0.5	1.3	0.5	0.4
MCR03	ESR03	KTR03	TRR03	1.0	2.0	0.8	0.5
MCR10	ESR10	KTR10	TRR10	1.2	2.6	1.15	0.7
MCR18	ESR18	KTR18	TRR18	2.2	4.0	1.5	0.9
MCR25	ESR25	KTR25	-	2.2	4.0	2.3	0.9
MCR50	-	-	-	3.8	6.0	2.3	1.1
MCR100	-	-	-	5.1	8.1	3.0	1.5

LTR / LTR - Low ohmic -



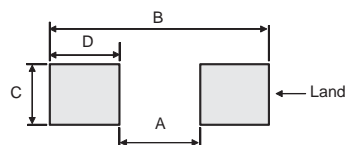
LTR	LTR -low ohmic-	Dimensions			
		A	B	C	D
LTR10		0.50	2.70	2.00	1.10
LTR18		0.60	2.90	3.20	1.15
LTR50	-	0.75	3.35	5.00	1.30
LTR100		0.83	3.69	6.4	1.43

UCR



Part No.	Dimensions			
	A	B	C	D
UCR01	0.5	1.8	0.5	0.65
UCR03	0.5	2.5	0.9	1.0
UCR10	0.8	3.4	1.3	1.3
UCR18	1.4	4.0	1.8	1.3

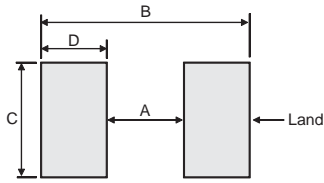
PMR/PMR - Jumper type -



Part No.	Dimensions			
	A	B	C	D
PMR01	0.5	1.8	0.5	0.65
PMR03	0.5	2.5	0.9	1.0
PMR10	0.8	3.4	1.3	1.3
PMR18	1.0	4.0	1.8	1.5
PMR25	1.0	4.0	2.8	1.5
PMR50	1.8	6.0	2.8	2.1
PMR100	1.2 (1mΩ) 2.4 (2,3,4,6mΩ, Jumper) 3.0 (5,7,8,9,10mΩ)	6.8 (1mΩ) 7.6 (2 to 10mΩ, Jumper)	3.4 (1mΩ) 3.8 (2 to 10mΩ, Jumper)	2.8 (1mΩ) 2.6 (2,3,4,6mΩ, Jumper) 2.3 (5,7,8,9,10mΩ)

(Unit : mm)

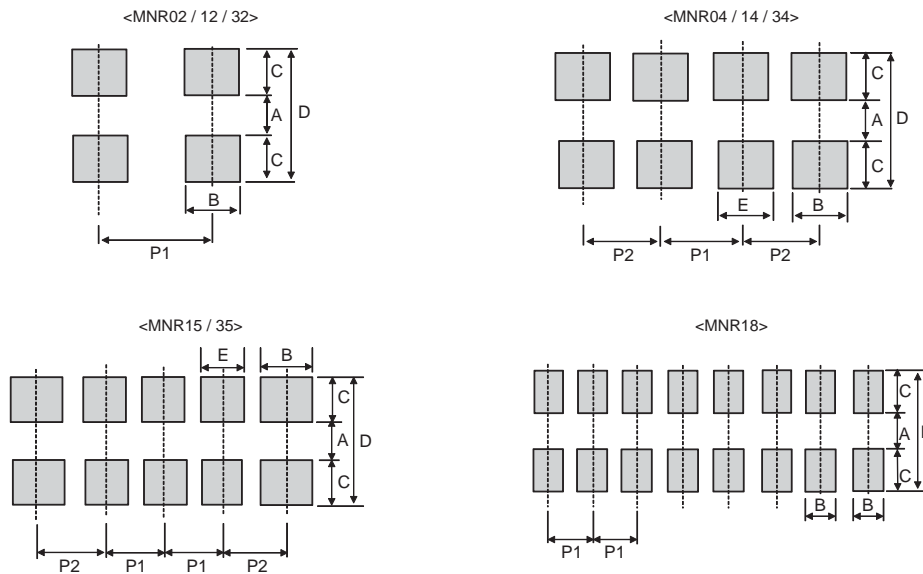
PML



Part No.	A	B	C	D
PML10	0.14	1.6	2.0	0.73
PML18	0.325	2.675	3.2	1.175
PML100	0.8	4.2	6.4	1.7

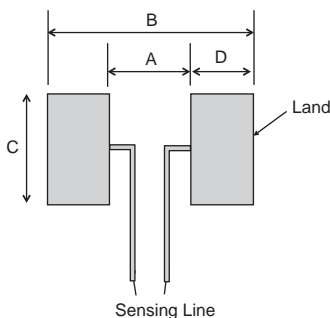
MNR

Land



Part No.	A	B	C	D	E	P1	P2
MNR02	0.5	0.35 to 0.4	0.5	1.5	-	0.65 to 0.7	-
MNR04	0.5	0.4	0.5	1.5	0.3	0.5	0.5 to 0.55
MNR12	1.0	0.4 to 0.6	0.7 to 0.8	2.4 to 2.6	-	0.8 to 1.0	-
MNR14	1.0	0.4 to 0.6	0.7 to 0.8	2.4 to 2.6	0.4	0.8	0.8 to 0.9
MNR15	1.0	0.48	0.7 to 0.8	2.4 to 2.6	0.32	0.64	0.72
MNR18	1.0	0.3	0.7 to 0.8	2.4 to 2.6	-	0.5	-
MNR32	2.1	0.8 to 1.0	0.8 to 1.0	3.7 to 4.1	-	1.27 to 1.6	-
MNR34	2.1	0.8 to 1.0	0.8 to 1.0	3.7 to 4.1	0.7 to 0.8	1.27 to 1.35	1.27 to 1.45
MNR35	2.1	0.8 to 1.0	0.8 to 1.0	3.7 to 4.1	0.7 to 0.8	1.27 to 1.3	1.27 to 1.4

PSR



Type	A	B	C	D
PSR500	5.60	16.00	8.75	5.20
PSR400		11.00	6.20	2.70

\*This land pattern is only for standard pattern.  
This does not guarantee the characteristics of the parts

## Notes

- 1) The information contained herein is subject to change without notice.
- 2) Before you use our Products, please contact our sales representative and verify the latest specifications :
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.  
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
- 4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.
- 5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.
- 6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.
- 7) The Products specified in this document are not designed to be radiation tolerant.
- 8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
- 9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.
- 10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.
- 11) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
- 12) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.
- 13) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.
- 14) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.



Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available, please contact us.

## ROHM Customer Support System

<http://www.rohm.com/contact/>