Resistors

Soldering conditions for Resistors

Lead free paste (Sn-3Ag-0.5Cu) version

Recommended solder material

Lead-Free Solder Paste : Sn-3Ag-0.5Cu

Recommended reflow soldering conditions

Applicable series

MCR / MCRS / MCRL / ESR / KTR / SDR / SFR / MNR / LTR / LTR low ohmic / UCR series PMR / PML / GMR / PSR series



Recommended flow soldering conditions

Peak temperature : 265°C , 10s max. Number of times one time : 1 time

Not applicable series

MCR004 / MNR02 / MNR04 / MNR12 / MNR14 / MNR15 / MNR18 PMR01 / PMR03 / PMR10 / PMR18 / PML / PSR series

Recommended washing conditions

Applicable series
MCR (except for MCR004) / MCRS / MCRL / MNR (except for MNR15 / 18)
ESR / KTR / SDR / SFR / LTR / LTR low ohmic / UCR / PMR / PML / GMR / PSR series

Temperature	: 350°C
Time	: 3s Max.
	: 4s Max. (PSR100 / 330 / 350 series)
	: 10s Max. (PSR400 / 500 series)
Times	: 1 time

Recommended washing conditions

Applicable series

MCR / MCRS / MCRL / MNR / ESR / KTR / SDR / SFR / LTR / LTR low ohmic / UCR series

PMR / PML / GMR / PSR series

1.Washing liquid

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

*Alternative Fluorocarbon : 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	25~28kHz, 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

[Land pattern diagram]]

Applicable Series : MCR/MCRS/MCRL/ESR/KTR/ SDR/SFR/UCR series



[Land pattern diagram2]

Applicable Series : LTR/LTR low ohmic series



*The direction between electrodes (chip L dimension/short hand direction) is direction

<MCR/MCRS/MCRL/ESR/KTR/SDR/SFR series>

Series	MCP	MORE	MCDI	ESD	ИТР	SDD			Dimensio	ons (mm)	
Inch	MCR	MCRS	MCRL	ESK	KIK	SDR	SFR	А	В	С	D
01005	MCR004	-	-	-	-	-	-	0.12	0.48	0.22	0.18
0201	MCR006	-	-	-	-	-	-	0.30	0.84	0.30	0.27
0402	MCR01	MCR01S	-	ESR01	-	-	SFR01	0.50	1.30	0.50	0.40
0603	MCR03	MCR03S	-	ESR03	KTR03	SDR03	SFR03	1.00	2.00	0.80	0.50
0805	MCR10	MCR10S	MCR10L	ESR10	KTR10	SDR10	SFR10	1.20	2.60	1.15	0.70
1206	MCR18	MCR18S	MCR18L	ESR18	KTR18	-	SFR18	2.20	4.00	1.50	0.90
1210	MCR25	MCR25S	-	ESR25	KTR25	-	SFR25	2.20	4.00	2.30	0.90
1210	-	-	MCR25L	-	-	-	-	2.20	4.00	2.50	0.90
2010	MCR50	MCR50S	-	-	-	-	-	3.80	6.00	2.30	1.10
2010	-	-	MCR50L	-	-	-	-	3.80	6.00	2.50	1.10
2512	MCR100	MCR100S	-	-	-	-	-	5.10	8.10	3.00	1.50
2012	-	-	MCR100L	-	-	-	-	3.30	8.10	3.30	2.40

<UCR series>

Series			Dimensio	ons (mm)	
Inch	UCK	А	В	С	D
0201	UCR006	0.30	0.84	0.30	0.27
0402	UCR01	0.50	1.80	0.50	0.65
0603	UCR03	0.50	2.50	0.90	1.00
0805	UCR10	0.80	3.40	1.30	1.30
1206	UCR18	1.40	4.00	1.80	1.30

<LTR/LTR low ohmic series>

Series		LTR Low		Dimensio	ons (mm)	
Inch	LIK	resistance	А	В	С	D
0509	LTR10	-	0.50	2.70	2.00	1.10
0000	-	LTR10L	0.50	1.98	2.20	0.74
0610	LTR18	-	0.60	2.90	3.20	1.15
0612	-	LTR18	0.55	2.91	3.20	0.73
1020	LTR50	-	0.75	3.35	5.00	1.30
1020	-	LTR50	0.80	3.36	5.00	1.28
1225	LTR100	-	0.83	3.69	6.40	1.43
	-	LTR100L	0.89	5.01	6.40	2.06

[Land pattern diagram3]

<MNR02/12 series>



<MNR04/14 series>



<MNR15 series>



<MNR18 series>



Series	MNID	Dimensions (mm)						
Inch	IVIINE	А	В	С	D	E	P1	P2
0402×2	MNR02	0.50	0.35~0.40	0.50	1.50	-	0.65~0.70	-
0402×4	MNR04	0.50	0.40	0.50	1.50	0.30	0.50	0.50~0.55
0603×2	MNR12	1.00	0.40~0.60	0.70~0.80	2.40~2.60	-	0.80~1.00	-
0603×4	MNR14	1.00	0.40~0.60	0.70~0.80	2.40~2.60	0.40	0.80	0.80~0.90
0603×5	MNR15	1.00	0.48	0.70~0.80	2.40~2.60	0.32	0.64	0.72
0603×8	MNR18	1.00	0.30	0.70~0.80	2.40~2.60	-	0.50	-

[Land pattern diagram]

Applicable Series : PMR/GMR/PSR series



[Land pattern diagram(5)]

Applicable Series : PML series



*The direction between electrodes (chip L dimension / short hand direction) is direction B.

<PML series>

<PMR series>

Series	DMD		Dimensio	ons (mm)	
Inch	FIVIR	А	В	С	D
0402	PMR01	0.50	1.80	0.50	0.65
0603	PMR03	0.50	2.50	0.90	1.00
0805	PMR10	0.80	3.40	1.30	1.30
1206	PMR18	0.60	4.00	1.80	1.70
1210	PMR25	1.00	4.00	2.80	1.50
2010	PMR50	1.80	6.00	2.80	2.10
2512	PMR100	1.20	6.80	3.40	2.80

Series	Series Dimensions (mm)					
Inch		А	В	С	D	
0508	PML10	0.140	1.600	2.000	0.730	
0612	PML18	0.325	2.675	3.200	1.175	
1020	PML50	0.800	3.350	5.000	1.275	
1225	PML100	0.800	4.200	6.400	1.700	

<GMR series>

Series	CMP		Dimensio	ons (mm)	
Inch	GINIK	А	В	С	D
2010	GMR50	0.60	6.00	3.00	2.70
2512	GMR100	0.60	6.80	3.60	3.10
2817	GMR320	0.60	7.40	4.60	3.40

<PSR series>

Series Inch	PSR	Dimensions (mm)			
		А	В	С	D
2512	PSR100	3.40	7.00	3.40	1.80
2525	PSR330	3.40	7.00	6.70	1.80
3222	PSR350	3.50	8.70	5.80	2.60
3921	PSR400	5.60	11.00	6.20	2.70
5931	PSR500	5.60	16.00	8.75	5.20

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