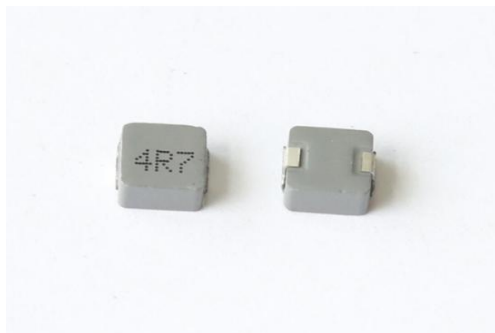


# SMD POWER INDUCTORS / MCSM Series



## Feature

1. Lowest height(3.0mm/max)in this package footprint.
2. Lowest DCR/uH, inthis package size.
3. Ultra low buzz noise,due to composite construction.
4. Frequency up to 1MHz

## Application

1. PDA/notebook/desktop/server applications
2. High current POL converters
3. Battery powered devices
4. DC/DC converter in distributed power systems or VRM applications.

## Product Identification

**MC SM 42 - 4R7 M**  
**A B C D E**

A. company logo .

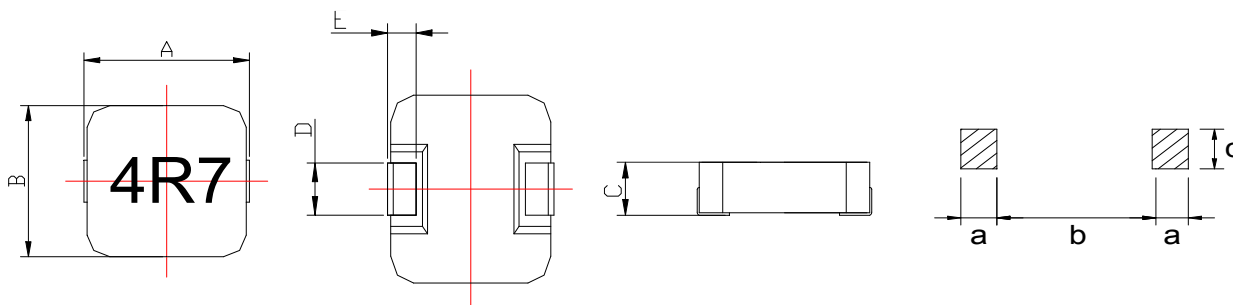
C.Dimension.

E. Tolerance. ( N=±30% M=±20% K=±10% )

B. Series name.

D. Inductance. ( See Details )

## Shape & Dimensions



Unit: mm

Series	A	B	C	D	E	a	b	c
MCSM42	4.5±0.5	4.1±0.5	2.0 Max	1.7±0.5	1.0±0.5	1.5 ref	2.5 ref	2.2 ref
MCSM52	5.5±0.5	5.0±0.5	2.0 Max	1.7±0.5	1.2±0.5	2.0 ref	3.0 ref	2.5 ref
MCSM53	5.5±0.5	5.0±0.5	3.0 Max	1.7±0.5	1.2±0.5	2.0 ref	3.0 ref	2.5 ref
MCSM615	7.3±0.3	6.7±0.3	1.5 Max	2.9±0.5	1.6±0.5	2.5 ref	3.7 ref	3.5 ref
MCSM62	7.6 Max	6.8 Max	2.0 Max	2.9±0.5	1.6±0.5	2.5 ref	3.7 ref	3.5 ref
MCSM625	7.6 Max	6.8 Max	2.5 Max	2.9±0.5	1.6±0.5	2.5 ref	3.7 ref	3.5 ref
MCSM63	7.6 Max	6.8 Max	3.2 Max	2.9±0.5	1.6±0.5	2.5 ref	3.7 ref	3.5 ref
MCSM65	7.6 Max	6.8 Max	5.0 Max	2.9±0.5	1.6±0.5	2.5 ref	3.7 ref	3.5 ref
MCSM104	11.5 Max	10.3Max	4.2 Max	2.9±0.5	2.2±0.5	3.5 ref	6.0 ref	4.0 ref
MCSM123	13.8 Max	12.9 Max	3.7 Max	3.6±0.5	2.3±0.5	2.9 ref	7.9 ref	5.0 ref
MCSM125	13.8 Max	12.9 Max	5.0 Max	3.6±0.5	2.3±0.5	2.9 ref	7.9 ref	5.0 ref
MCSM127	13.8 Max	12.9 Max	6.5 Max	3.6±0.5	2.3±0.5	2.9 ref	7.9 ref	5.0 ref

■ Electrical characteristics (MCSM42 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM42ZR10M	0.10	4.00	22.00	12.00
MCSM42ZR22M	0.22	6.60	12.50	9.00
MCSM42ZR47M	0.47	14.00	9.50	7.00
MCSM42ZR56M	0.56	16.00	8.50	6.50
MCSM42Z1R0M	1.00	27.00	7.00	4.50
MCSM42Z1R5M	1.50	46.00	6.00	4.00
MCSM42Z2R2M	2.20	58.00	5.00	3.00
MCSM42Z3R3M	3.30	87.00	4.00	2.50

■ Electrical characteristics (MCSM52 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM52ZR10M	0.10	3.90	45.00	17.00
MCSM52ZR22M	0.22	5.20	22.00	15.00
MCSM52ZR33M	0.33	8.20	25.00	12.00
MCSM52ZR47M	0.47	9.40	21.00	11.50
MCSM52ZR68M	0.68	12.40	15.00	10.00
MCSM52Z1R0M	1.00	20.00	16.00	7.00
MCSM52Z2R2M	2.20	50.10	12.50	4.20
MCSM52Z3R3M	3.30	85.50	8.50	3.30
MCSM52Z4R7M	4.70	116.60	5.00	2.80

NOTES:

Operating: -25°C ~ +120°C ( Including self-temperature rise)

Test Frequency:100KHZ/0.25V

Saturation Rated Current that will cause initial inductance value approximately 25% rolloff. (Ta=25±5°C)

Temperature Rise Current that will cause temperature rise approximate 40°C without core loss. (Ta=25±5°C)

■ Electrical characteristics (MCSM53 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM53ZR10M	0.10	3.16	27.00	23.00
MCSM53ZR22M	0.22	4.52	21.00	15.50
MCSM53ZR33M	0.33	5.56	19.00	13.70
MCSM53ZR47M	0.47	7.04	16.00	12.20
MCSM53ZR68M	0.68	8.96	13.50	10.20
MCSM53ZR82M	0.82	11.90	13.00	9.30
MCSM53Z1R0M	1.00	13.70	12.00	9.20
MCSM53Z1R5M	1.50	20.70	11.00	7.20
MCSM53Z2R2M	2.20	29.20	10.00	5.80
MCSM53Z3R3M	3.30	54.70	8.50	5.00
MCSM53Z4R7M	4.70	77.50	8.20	3.50

■ Electrical characteristics (MCSM615 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM615ZR22M	0.22	5.20	22.00	14.00
MCSM615ZR33M	0.33	7.60	19.50	11.00
MCSM615ZR47M	0.47	10.30	16.00	9.50
MCSM615ZR68M	0.68	12.00	15.00	7.50
MCSM615ZR82M	0.82	17.00	13.00	7.00
MCSM615Z1R0M	1.00	21.00	12.00	6.50
MCSM615Z1R5M	1.50	42.50	9.50	5.00
MCSM615Z2R2M	2.20	54.00	6.50	4.50
MCSM615Z3R3M	3.30	63.00	6.00	4.20
MCSM615Z4R7M	4.70	85.00	5.00	3.80
MCSM615Z6R8M	6.80	135.00	3.50	2.60
MCSM615Z100M	10.00	175.00	3.20	2.40

NOTES:

Operating: -25°C ~ +120°C ( Including self-temperature rise)

Test Frequency:100KHZ/0.25V

Saturation Rated Current that will cause initial inductance value approximately 25% rolloff. (Ta=25±5°C)

Temperature Rise Current that will cause temperature rise approximate 40°C without core loss. (Ta=25±5°C)

■ Electrical characteristics (MCSM62 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM62ZR10M	0.10	3.50	40.00	18.00
MCSM62ZR15M	0.15	5.20	38.00	15.00
MCSM62ZR22M	0.22	5.70	26.00	14.00
MCSM62ZR33M	0.33	7.00	18.00	12.00
MCSM62ZR47M	0.47	9.30	18.00	11.00
MCSM62ZR68M	0.68	13.90	17.00	9.00
MCSM62ZR82M	0.82	15.90	17.00	8.00
MCSM62Z1R0M	1.00	18.30	14.00	7.00
MCSM62Z1R5M	1.50	34.00	13.00	4.00
MCSM62Z2R2M	2.20	46.00	11.50	3.75
MCSM62Z3R3M	3.30	60.10	10.00	3.25
MCSM62Z4R7M	4.70	78.00	8.00	3.00

■ Electrical characteristics (MCSM625 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM625ZR10M	0.10	1.70	50.00	30.00
MCSM625ZR22M	0.22	3.20	34.00	21.00
MCSM625ZR33M	0.33	4.10	22.00	18.00
MCSM625ZR47M	0.47	6.50	21.00	13.50
MCSM625ZR68M	0.68	9.40	18.00	11.00
MCSM625ZR82M	0.82	11.80	17.00	10.00
MCSM625Z1R0M	1.00	14.20	16.00	9.00
MCSM625Z1R5M	1.50	21.20	15.00	7.50
MCSM625Z2R2M	2.20	34.00	14.00	6.50
MCSM625Z3R3M	3.30	51.60	13.00	5.00
MCSM625Z4R7M	4.70	63.00	10.00	4.50
MCSM625Z6R8M	6.80	95.00	9.00	3.50
MCSM625Z8R2M	8.20	106.00	8.00	3.00
MCSM625Z100M	10.00	129.00	7.00	2.50

NOTES:

Operating: -25°C ~ +120°C ( Including self-temperature rise)

Test Frequency:100KHZ/0.25V

Saturation Rated Current that will cause initial inductance value approximately 25% rolloff. (Ta=25±5°C)

Temperature Rise Current that will cause temperature rise approximate 40°C without core loss. (Ta=25±5°C)

■ Electrical characteristics (MCSM63 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM63ZR10M	0.10	1.70	60.00	32.50
MCSM63ZR15M	0.15	2.50	50.00	28.00
MCSM63ZR22M	0.22	2.80	40.00	23.00
MCSM63ZR33M	0.33	3.90	30.00	20.00
MCSM63ZR47M	0.47	4.50	26.00	17.50
MCSM63ZR68M	0.68	5.50	25.00	15.50
MCSM63ZR82M	0.82	8.00	24.00	13.00
MCSM63Z1R0M	1.00	10.00	22.00	11.00
MCSM63Z1R5M	1.50	15.00	18.00	9.00
MCSM63Z2R2M	2.20	20.00	14.00	8.00
MCSM63Z3R3M	3.30	30.00	13.50	6.00
MCSM63Z4R7M	4.70	40.00	10.00	5.50
MCSM63Z5R6M	5.60	55.00	9.00	5.00
MCSM63Z6R8M	6.80	60.00	8.00	4.50
MCSM63Z8R2M	8.20	68.00	7.50	4.00
MCSM63Z100M	10.00	105.00	7.00	3.00

■ Electrical characteristics (MCSM65 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM65ZR56M	0.56	3.60	12.00	20.00
MCSM65ZR68M	0.68	4.50	11.50	18.00
MCSM65ZR82M	0.82	4.90	13.00	16.50
MCSM65Z1R0M	1.00	6.50	15.00	13.00
MCSM65Z1R5M	1.50	9.00	12.00	12.00
MCSM65Z2R2M	2.20	13.60	10.00	10.00
MCSM65Z3R3M	3.30	20.90	8.00	8.00
MCSM65Z4R7M	4.70	30.30	7.00	6.50
MCSM65Z5R6M	5.60	34.40	7.00	6.00
MCSM65Z6R8M	6.80	44.60	5.50	5.50
MCSM65Z8R2M	8.20	50.70	5.00	5.00
MCSM65Z100M	10.00	71.30	4.50	4.50

NOTES:

Operating: -25°C ~ +120°C ( Including self-temperature rise)

Test Frequency:100KHZ/0.25V

Saturation Rated Current that will cause initial inductance value approximately 25% rolloff. (Ta=25±5°C)

Temperature Rise Current that will cause temperature rise approximate 40°C without core loss. (Ta=25±5°C)

■ Electrical characteristics (MCSM104 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM104ZR19M	0.19	0.95	90.00	40.00
MCSM104ZR36M	0.36	1.40	60.00	31.50
MCSM104ZR47M	0.47	1.60	52.00	28.50
MCSM104ZR56M	0.56	1.80	49.00	27.50
MCSM104Z1R0M	1.00	3.70	36.00	17.50
MCSM104Z1R5M	1.50	5.80	27.50	15.00
MCSM104Z2R2M	2.20	10.00	25.60	12.00
MCSM104Z3R3M	3.30	12.00	18.60	10.00
MCSM104Z4R7M	4.70	16.50	17.00	9.50
MCSM104Z5R6M	5.60	19.30	16.00	8.50
MCSM104Z6R8M	6.80	23.30	13.50	8.00
MCSM104Z100M	10.00	36.50	12.00	6.80

■ Electrical characteristics (MCSM123 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM123ZR10M	0.10	0.96	84.00	43.00
MCSM123ZR15M	0.15	1.20	75.00	41.00
MCSM123ZR22M	0.22	1.30	65.00	38.50
MCSM123ZR33M	0.33	1.50	62.00	36.50
MCSM123ZR47M	0.47	2.00	55.00	32.00
MCSM123ZR68M	0.68	2.50	49.00	28.00
MCSM123ZR82M	0.82	3.00	44.00	25.00
MCSM123Z1R0M	1.00	3.50	40.00	24.00
MCSM123Z1R5M	1.50	5.50	35.00	19.00
MCSM123Z2R2M	2.20	8.00	29.00	16.00
MCSM123Z3R3M	3.30	12.00	27.00	12.00
MCSM123Z4R7M	4.70	15.00	24.00	10.00
MCSM123Z5R6M	5.60	19.00	19.00	9.50
MCSM123Z6R8M	6.80	22.00	18.00	9.00
MCSM123Z8R2M	8.20	28.00	16.00	8.50
MCSM123Z100M	10.00	34.00	14.00	7.00

NOTES:

Operating: -25°C ~ +120°C ( Including self-temperature rise)

Test Frequency:100KHZ/0.25V

Saturation Rated Current that will cause initial inductance value approximately 25% rolloff. (Ta=25±5°C)

Temperature Rise Current that will cause temperature rise approximate 40°C without core loss. (Ta=25±5°C)

■ Electrical characteristics (MCSM125 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM125ZR10M	0.10	0.60	118.00	55.00
MCSM125ZR22M	0.22	0.80	110.00	51.00
MCSM125ZR33M	0.33	1.10	80.00	42.00
MCSM125ZR47M	0.47	1.30	65.00	38.00
MCSM125ZR56M	0.56	1.50	55.00	36.00
MCSM125ZR68M	0.68	1.70	54.00	34.00
MCSM125ZR82M	0.82	2.30	53.00	31.00
MCSM125Z1R0M	1.00	2.50	50.00	29.00
MCSM125Z1R5M	1.50	4.10	48.00	23.00
MCSM125Z1R8M	1.80	4.90	40.00	19.00
MCSM125Z2R2M	2.20	5.50	32.00	20.00
MCSM125Z3R3M	3.30	9.20	32.00	15.00
MCSM125Z4R7M	4.70	15.00	27.00	12.00
MCSM125Z5R6M	5.60	16.50	22.00	11.50
MCSM125Z6R8M	6.80	18.50	21.00	11.00
MCSM125Z7R8M	7.80	20.50	18.00	10.00
MCSM125Z8R2M	8.20	22.50	18.00	9.50
MCSM125Z100M	10.00	25.50	16.00	9.00

NOTES:

Operating: -25°C ~ +120°C ( Including self-temperature rise)

Test Frequency:100KHZ/0.25V

Saturation Rated Current that will cause initial inductance value approximately 25% rolloff. (Ta=25±5°C)

Temperature Rise Current that will cause temperature rise approximate 40°C without core loss. (Ta=25±5°C)

■ Electrical characteristics (MCSM127 Series)

Part Number	Inductance L0(uH)	DCR(mΩ)±20%.	I-sat (Amps)	I-rms (Amps)
	100KHz/0.25V	@ 25°C	70%L0	ΔT≤40°C
MCSM127ZR10M	0.10	0.50	120.00	60.00
MCSM127ZR15M	0.15	0.60	118.00	55.00
MCSM127ZR22M	0.22	0.70	112.00	53.00
MCSM127ZR30M	0.30	0.80	72.00	48.00
MCSM127ZR33M	0.33	0.90	65.00	46.00
MCSM127ZR40M	0.40	1.00	64.00	44.00
MCSM127ZR47M	0.47	1.20	63.00	41.00
MCSM127ZR56M	0.56	1.40	62.00	37.00
MCSM127ZR68M	0.68	1.60	60.00	35.00
MCSM127ZR82M	0.82	1.90	50.00	33.00
MCSM127Z1R0M	1.00	2.00	49.00	32.00
MCSM127Z1R5M	1.50	3.00	45.00	27.00
MCSM127Z2R2M	2.20	4.20	40.00	22.00
MCSM127Z3R3M	3.30	6.80	35.00	18.00
MCSM127Z4R7M	4.70	8.70	32.00	13.50
MCSM127Z5R6M	5.60	10.00	32.00	13.50
MCSM127Z6R8M	6.80	14.00	16.50	11.50
MCSM127Z8R2M	8.20	15.50	16.00	10.50
MCSM127Z100M	10.00	17.20	15.50	10.00

NOTES:

Operating: -25°C ~ +120°C ( Including self-temperature rise)

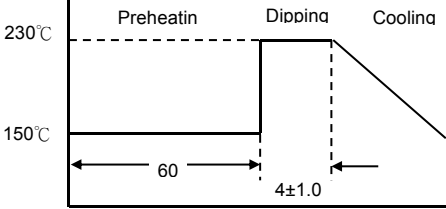
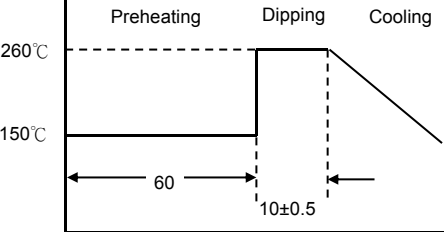
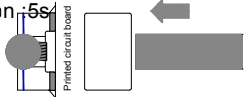
Test Frequency:100KHZ/0.25V

Saturation Rated Current that will cause initial inductance value approximately 25% rolloff. (Ta=25±5°C)

Temperature Rise Current that will cause temperature rise approximate 40°C without core loss. (Ta=25±5°C)



## ■ Reliability and Testing Conditions / Pin Type Power Inductors

Item	Specification	Conditions															
Operating temperature range	-25°C ~ +120°C ( Including self-temperature rise)																
Storage temperature and humidity range	-40°C ~ +85°C , 70% RH Max																
Solderability	More than 90% of the terminal electrode should be covered with solder.	 <p>Unit: Second</p>															
Solder Heat Resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	 <p>Unit: Second</p>															
Heat resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 96 hours in 85±5°C and 2 hour drying under normal condition.															
Cold resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 96 hours in -40±5°C and 2 hour drying under normal condition.															
Thermal shock	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	<p>After 100 cycles of following condition.</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Times (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±5°C</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room Temperature</td> <td>Within 3</td> </tr> <tr> <td>3</td> <td>85±5°C</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room Temperature</td> <td>Within 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Times (min.)	1	-40±5°C	30	2	Room Temperature	Within 3	3	85±5°C	30	4	Room Temperature	Within 3
Step	Temperature (°C)	Times (min.)															
1	-40±5°C	30															
2	Room Temperature	Within 3															
3	85±5°C	30															
4	Room Temperature	Within 3															
Humidity Resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 96 hours in 40±2°C and 90 to 95% humidity , and 2 hour drying under normal condition.															
Vibration Test	Inductance within ±5% of initial value and appearance shall not break.	After vibration for 1hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P-P Amplitudes.															
Terminal strength	The terminal electrode and the ferrite must not be damaged	<p>Solder a chip to test substrate, and then laterally apply a load 10N in the arrow direction, Duration : 5s</p> 															

## ■ Recommended Soldering Conditions

Figure 1. Re-flow Soldering

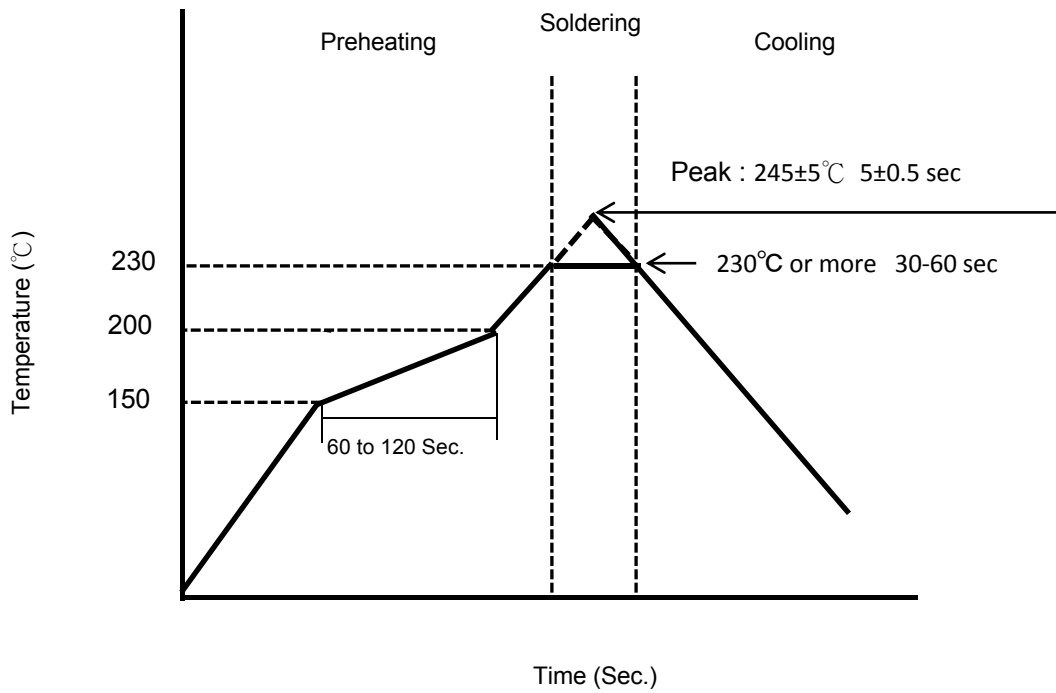
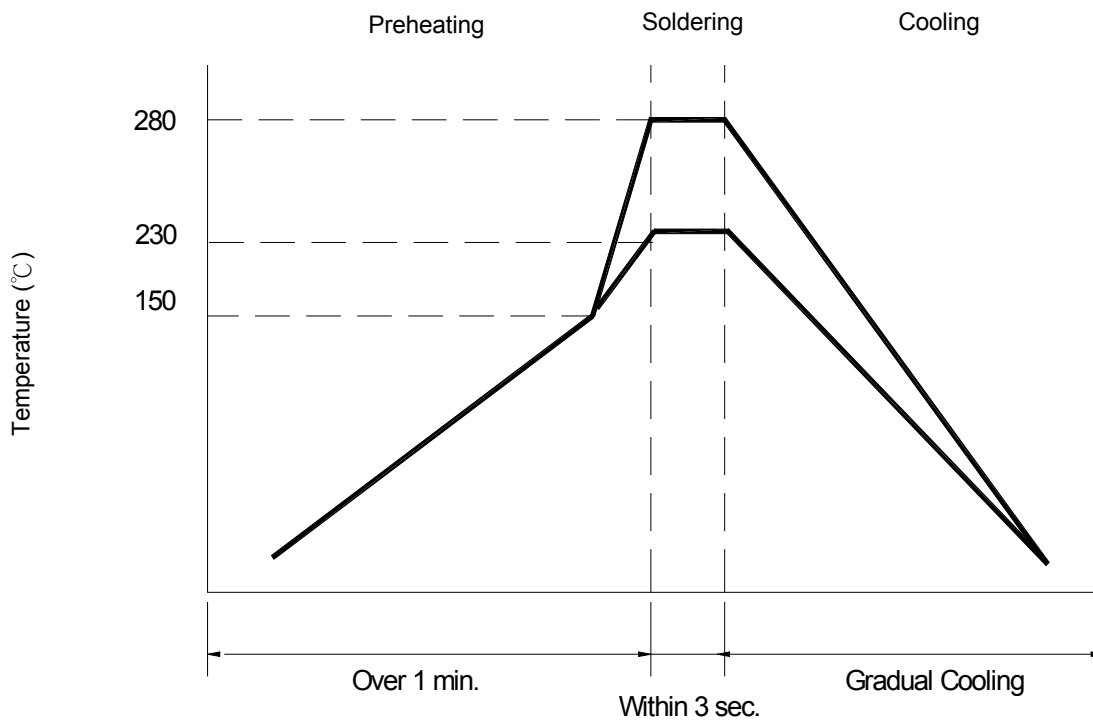
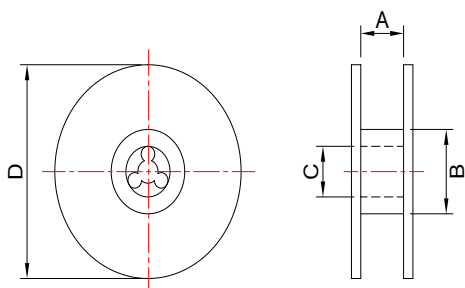


Figure 2. Hand Soldering



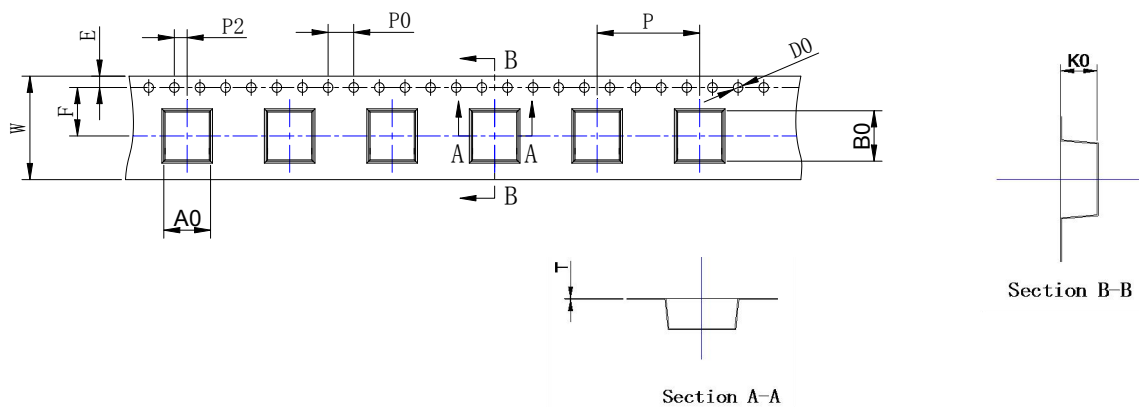
## ■ PACKAGING

### 一、Reel Dimension



P/N	Type	A(mm)	B(mm)	C(mm)	D(mm)
MCSM42	13' x 16	12±0.5	100 ± 2	13.5 ± 0.5	330
MCSM52	13' x 16	16 ± 0.5	100 ± 2	13.5 ± 0.5	330
MCSM53	13' x 16	16 ± 0.5	100 ± 2	13.5 ± 0.5	330
MCSM62	13'x16	16±0.5	100 ± 2	13.5±0.5	330
MCSM625	13'x16	16±0.5	100 ± 2	13.5±0.5	330
MCSM65	13'x16	16±0.5	100 ± 2	13.5±0.5	330
MCSM63	13'x16	16±0.5	100 ± 2	13.5±0.5	330
MCSM104	13'x24	24±0.5	100 ± 2	13.5±0.5	330
MCSM123	13'x24	24±0.5	100 ± 2	13.5±0.5	330
MCSM125	13'x24	24±0.5	100 ± 2	13.5±0.5	330
MCSM127	13'x24	24±0.5	100 ± 2	13.5±0.5	330

### 二、Tape Dimension



P/N	W	AO	BO	KO	P	F	E	PO	P2	T	Quantity (PCS/REEL)
MCSM42	12±0.3	4.6±0.1	5.1±0.1	2.1±0.1	8.0±0.3	5.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	3500
MCSM52	12±0.3	5.4±0.1	6.1±0.1	2.1±0.1	8.0±0.3	5.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	3000
MCSM53	12±0.3	5.4±0.1	6.1±0.1	3.1±0.1	8.0±0.3	5.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	2500
MCSM62	16±0.3	6.9±0.1	7.6±0.1	2.1±0.1	12±0.3	7.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	2000
MCSM625	16±0.3	6.9±0.1	7.6±0.1	2.6±0.1	12±0.3	7.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	2000
MCSM63	16±0.3	6.9±0.1	7.6±0.1	3.1±0.1	12±0.3	7.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	1500
MCSM65	16±0.3	6.9±0.1	7.6±0.1	5.1±0.1	12±0.3	7.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	800
MCSM104	24±0.3	10.3±0.1	11.2±0.1	4.1±0.1	16±0.3	11.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	1000
MCSM123	24±0.3	12.8±0.1	13.8±0.1	3.6±0.1	16±0.3	11.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	1000
MCSM125	24±0.3	12.8±0.1	13.8±0.1	5.1±0.1	16±0.3	11.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	500
MCSM127	24±0.3	12.8±0.1	13.8±0.1	6.6±0.1	16±0.3	11.5±0.1	1.75±0.1	4±0.1	2±0.1	0.35±0.05	500