

ISMFM Series

SMD High Frequency, High Current Power Inductors

TRIGON
COMPONENTS



FEATURES

- Lowest height
- Shielded construction
- Lowest DCR / μH
- Handles high transient current spikes without saturation
- Ultra low buzz noise
- Up to 5MHz frequency
- RoHS Compliant

APPLICATIONS

- Excellent for power line DC-DC converters
- Battery powered devices
- High current power supplies
- PDA/notebook/desktop/server application
- Other handheld electronic equipment

ORDERING CODE

ISMFM 1175 K R15 T
(1) (2) (3) (4) (5)

- (1) Inductor Series Code
- (2) Element Size Code
Width and Height
0603, 1004, 1203,
1205, 1207...etc
- (3) Tolerance Code:
K: $\pm 10\%$
- (4) Inductance:
e.g.: R15: 0.15 μH
- (5) Package:
T: Taping & Reel

※Please refer to complete
Ordering Code (ISMFP-Ord) for more
ordering options.

Configurations:

Figure 1 (ISMFM9080)

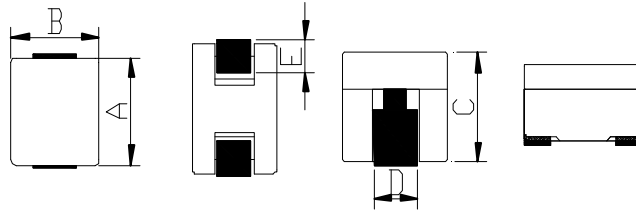


Figure 2 (ISMFM7050/8050/1050)

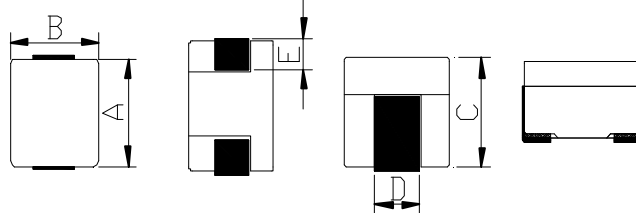


Figure 3 (ISMFM1070/1080/1175)

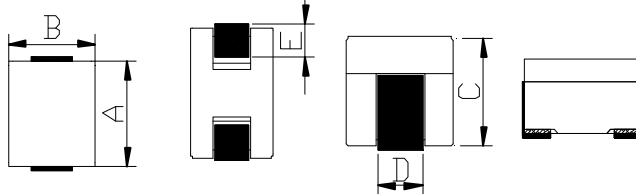
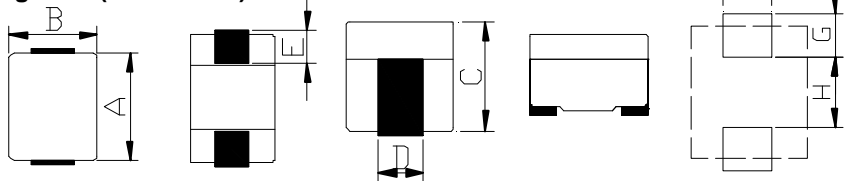


Figure 4 (ISMFM7032)



Inductor

Dimension (mm)

Size code	A (max)	B (max)	C (max)	D ± 0.2	E ± 0.2	F (Ref)	G (Ref)	H (Ref)
ISMFM7032	7.35	6.60	3.18	2.80	1.65	3.25	2.15	3.35
ISMFM7050	7.00	7.00	4.95	2.45	1.52	3.10	2.00	3.35
ISMFM8050	7.62	7.49	4.96	3.12	2.16	3.43	2.79	2.40
ISMFM9080	9.60	6.40	8.0	2.14	2.30	2.54	3.20	4.00
ISMFM1050	10.2	7.00	4.95	2.50	1.52	3.10	2.00	6.35
ISMFM1070	10.5	8.00	7.00	2.10	2.20	2.60	3.00	5.00
ISMFM1080	10.2	8.00	8.00	2.10	2.54	2.54	3.56	4.06
ISMFM1175	11.2	7.20	7.50	1.90	2.50	2.10	3.10	5.00

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Electrical Characteristics Series

Part Number	Inductance (nH)	DCR @ 20°C (mΩ) (Max)	DCR tolerance	Isat 1 (A) @ 25°C (AMP/Max)	Isat 2 (A) @ 125°C (AMP/Max)	Irms @ ΔT=40°C (AMP/Max)
ISMFM7032KR08□	80	1.35	±10%	32.0	27.0	28.0
ISMFM7032KR10□	100	1.35		27.0	23.0	28.0
ISMFM7032KR12□	120	1.35		22.0	19.0	28.0
ISMFM7032KR15□	150	1.35		16.0	13.0	28.0
ISMFM7050KR07□	72	0.25	±8%	65.0	50.0	43.0
ISMFM7050KR10□	105	0.25		44.0	34.0	43.0
ISMFM7050KR12□	120	0.25		37.0	30.0	43.0
ISMFM7050KR15□	150	0.25		30.0	24.0	43.0
ISMFM7050KR18□	180	0.25		25.0	20.0	43.0
ISMFM7050KR22□	226	0.25		20.0	16.0	43.0
ISMFM8050KR03□	32	0.17		110.0	95.0	65.0
ISMFM8050KR06□	58	0.17		83.0	61.0	65.0
ISMFM8050KR07□	72	0.17		67.0	49.0	65.0
ISMFM8050KR10□	100	0.17		50.0	35.0	65.0
ISMFM8050KR20□	200	0.17	20.0	16.0	65.0	
ISMFM9080KR10□	100	0.29	±5%	94.0	81.0	51.0
ISMFM9080KR12□	120	0.29		79.0	68.0	51.0
ISMFM9080KR15□	150	0.29		65.0	54.5	51.0
ISMFM9080KR22□	220	0.29		44.0	37.5	51.0
ISMFM9080KR28□	280	0.29		34.0	29.0	51.0
ISMFM9080KR30□	300	0.29		32.5	27.5	51.0

Inductor

- ※ Inductance test frequency: 100KHz / 0.1V
- ※ Isat1: Peak current for approximately 20% rolloff at +25°C
- ※ Isat2: Peak current for approximately 20% rolloff at +125°C
- ※ I rms DC current for an approximate temperature rise of 40°C without core loss.
- ※ Tolerance : K=±10%

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Electrical Characteristics Series

Part Number	Inductance (nH)	DCR @ 20°C (mΩ) (Max)	DCR tolerance	Isat 1 (A) @ 25°C (AMP/Max)	Isat 2 (A) @ 125°C (AMP/Max)	Irms @ ΔT=40°C (AMP/Max)
ISMFM1050KR08□	80	0.39	±7.5%	90.0	64.0	53.0
ISMFM1050KR10□	100	0.39		73.0	57.0	53.0
ISMFM1050KR12□	120	0.39		60.0	48.0	53.0
ISMFM1050KR15□	150	0.39		47.0	37.0	53.0
ISMFM1050KR22□	220	0.39		33.0	26.0	53.0
ISMFM1070KR12□	115	0.29	±5%	94.0	86.0	61.0
ISMFM1070KR15□	150	0.29		75.0	60.0	61.0
ISMFM1070KR17□	170	0.29		66.0	53.0	61.0
ISMFM1070KR18□	180	0.29		60.0	50.0	61.0
ISMFM1070KR22□	220	0.29		50.0	40.0	61.0
ISMFM1070KR23□	230	0.29		48.0	40.0	61.0
ISMFM1070KR27□	270	0.29		41.0	33.0	61.0
ISMFM1070KR30□	300	0.29		35.0	30.0	61.0
ISMFM1070KR33□	330	0.29		33.0	26.5	61.0
ISMFM1070KR39□	390	0.29		28.0	22.5	61.0
ISMFM1070KR47□	470	0.29		23.5	19.0	61.0
ISMFM1080KR12□	120	0.18		95.0	77.0	68.0
ISMFM1080KR15□	150	0.18		79.0	66.0	68.0
ISMFM1080KR18□	180	0.18		62.0	52.0	68.0
ISMFM1080KR22□	220	0.18		58.0	47.0	68.0
ISMFM1175KR12□	120	0.29	90.0	72.0	55.0	
ISMFM1175KR15□	150	0.29	70.0	56.0	55.0	
ISMFM1175KR23□	230	0.29	45.0	36.0	55.0	
ISMFM1175KR30□	300	0.29	35.0	28.0	55.0	
ISMFM1175KR40□	400	0.29	25.0	20.0	55.0	
ISMFM1175KR51□	510	0.29	18.0	12.4	55.0	

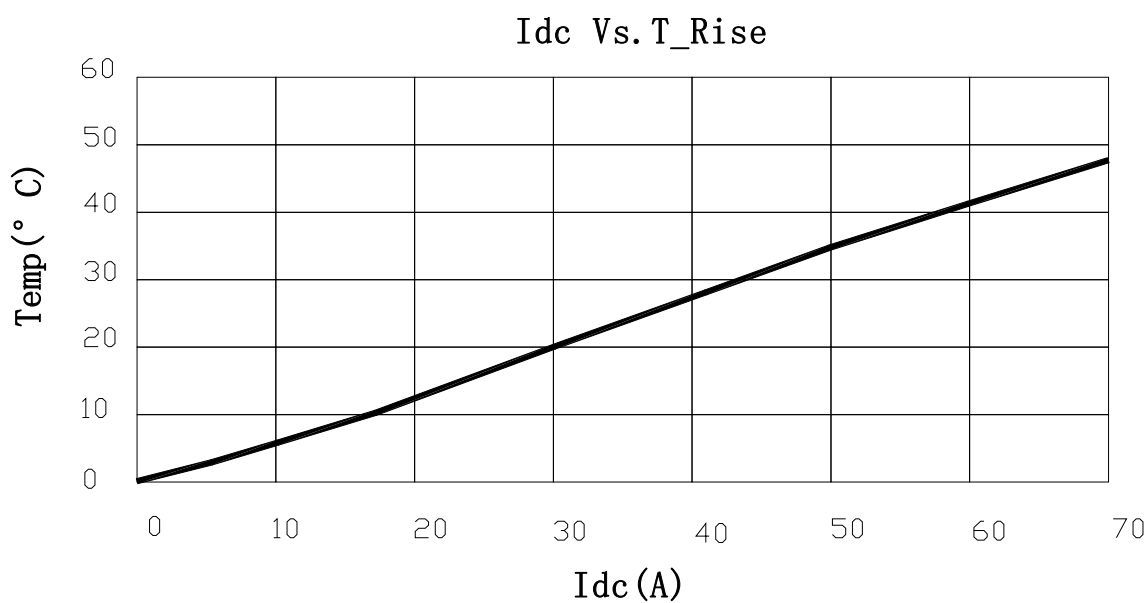
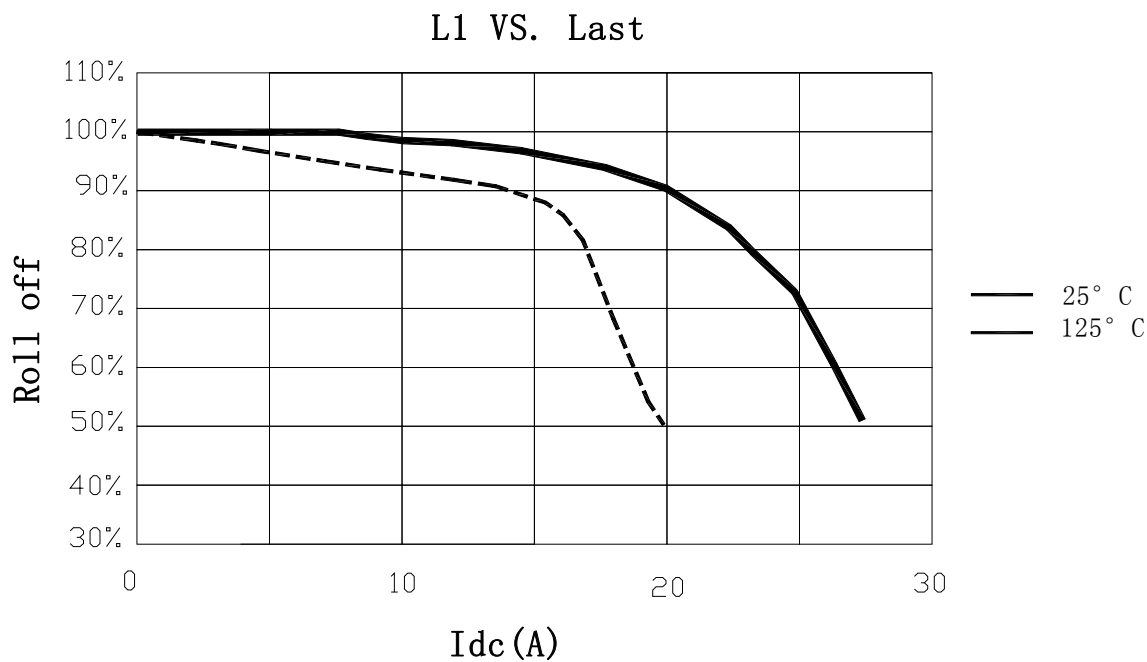
- ※ Inductance test frequency: 100KHz / 0.1V
- ※ Isat1: Peak current for approximately 20% rolloff at +25°C
- ※ Isat2: Peak current for approximately 20% rolloff at +125°C
- ※ I_{rms} DC current for an approximate temperature rise of 40°C without core loss.
- ※ Tolerance : K= ± 10%

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CURVE:



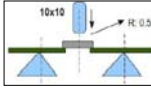
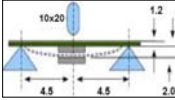
Inductor

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Reliability Test:

SN	Test Item	Test Method	Standard	Samples (Pcs)
1	Thermal Shock	Temperature:-40° C/+85° C kept stabilized for 30 minutes; each Cycle:100 Cycles(power off)	No appearance deformation Inductance deviation within $\pm 5\%$	30
2	Humidity Temperature	Humidity:90%-95%RH; Temperature:40 $\pm 2^{\circ}$ C Test Time:500 ± 12 Hours	No appearance deformation Inductance deviation within $\pm 5\%$	30
3	High Temperature	Temperature:105 $\pm 2^{\circ}$ C Test Time:500 ± 12 Hours	No appearance deformation Inductance deviation within $\pm 5\%$	30
4	Low Temperature	Temperature:-40 $\pm 2^{\circ}$ C Test Time:500 ± 12 Hours	No appearance deformation Inductance deviation within $\pm 5\%$	30
5	Temperature and Humidity Cycle	Temperature Humidity Time 25° C $\pm 2^{\circ}$ C 90% - 95% RH 3.0 Hours 55° C $\pm 2^{\circ}$ C 95% - 96% RH 5.0 Hours 25° C $\pm 2^{\circ}$ C 90% - 95% RH 3.0 Hours Cycle:100 Cycles	No appearance deformation Inductance deviation within $\pm 5\%$	30
6	Reflow Heating Resistance	IR-Reflow(3 Times) Preheat:150~200° C Time:60-120 SEC Peak Temp:255 $\pm 5^{\circ}$ C Time:30 SEC Reflow Temp. above 217° C Time:60-150 SEC	No appearance deformation Inductance deviation within $\pm 5\%$	30
7	Iron Heating Resistance	Soldering Temp:350 $\pm 5^{\circ}$ C Time:3 ± 1 Seconds	No appearance deformation Inductance deviation within $\pm 5\%$	30
8	Withstand Voltage	100 VDC/ 1 Minute,Between core & winding	No dielectric breakdown	30
9	Rated Current	Temperature:25 $\pm 3^{\circ}$ C; Test Time:10 Minutes Load:Rated Current	Inductance and Temp. Rise variation within spec.	30
10	Bending Strength	Uint:mm IR-Reflow(2times) Force: 1kgf/min. 	No appearance deformation Inductance deviation within $\pm 3\%$	30
11	Flexure Strength	Uint:mm IR-Reflow(2times) Solder cream 0.15mm. 	No appearance deformation Inductance deviation within $\pm 3\%$	30
12	Electrode Strength	Mounted on PCB Pushed in X, Y direction, Strength:5N for 10+/-2 seconds.	No electrode detachment No appearance deformation Inductance deviation within $\pm 3\%$	30
13	Vibration	Frequency:10Hz-55Hz Amplitude:1.5mm Direction:X, Y, Z Time:2 Hours each Product:After packing.	No appearance deformation Inductance deviation within $\pm 3\%$	30
14	Dropping	Freely dropped down; Height:1m; Dirction:1 Angle ridge;3 Surfaces. Product:After packing.	No appearance deformation Inductance deviation within $\pm 3\%$	30

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PERFORMANCE SPECIFICATION:

Item	Specificatoin	Conditions															
Solderbility	More than 90% of the terminal electrode should be covered with solder.	<p>Unit: Second</p> <p>Solder temperature: $245\pm 5^{\circ}\text{C}$ Dip time: 4 ± 1.0 sec</p>															
Solder Heat Resistance	Inductance within $\pm 20\%$ of initial value and appearance shall not break.	<p>Unit: Second</p> <p>Solder temperature: $245\pm 5^{\circ}\text{C}$ Dip time: 4 ± 1.0 sec</p>															
Heat resistance	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break.	After 500 ± 12 hours in $40\pm 2^{\circ}\text{C}$ and 2 hour drying under normal condition.															
Cold resistance	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break.	After 500 ± 12 hours in $40\pm 2^{\circ}\text{C}$ and 2 hour drying under normal condition.															
Thermal shock	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break.	After 10 cycles of following condition. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temperature ($^{\circ}\text{C}$)</th> <th>Times (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40 ± 2</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room Temperature</td> <td>Within 3</td> </tr> <tr> <td>3</td> <td>105 ± 5</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room Temperature</td> <td>Within 3</td> </tr> </tbody> </table>	Step	Temperature ($^{\circ}\text{C}$)	Times (min.)	1	-40 ± 2	30	2	Room Temperature	Within 3	3	105 ± 5	30	4	Room Temperature	Within 3
Step	Temperature ($^{\circ}\text{C}$)	Times (min.)															
1	-40 ± 2	30															
2	Room Temperature	Within 3															
3	105 ± 5	30															
4	Room Temperature	Within 3															
Humidity Resistance	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break.	After 500 ± 12 hours in $40\pm 2^{\circ}\text{C}$ and 90 to 95% humidity, and 2 hour drying under normal condition.															
* Vibration Test	Inductance within $\pm 20\%$ of initial value and appearance shall not break.	After vibration for 1 hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P P Amplitudes.															
* Drop Test	Inductance within $\pm 20\%$ of initial value and appearance shall not break.	Drop 10 times on a concrete floor from a height of 75cm															
* For New Item Reliability Test																	

Inductor

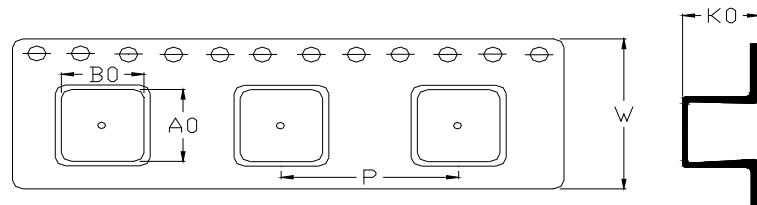
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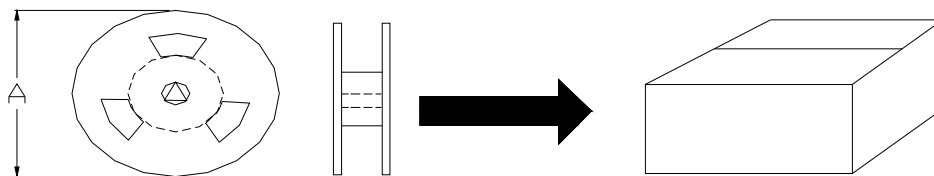
PACKAGING:

Tape Dimensions



Reel

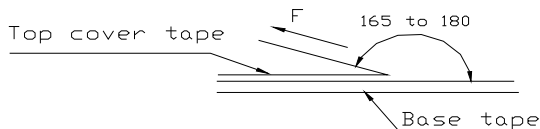
Box



Unit: mm

Tape	DIMENSIONS (UNIT: mm)						QTY (PCS/REEL)	QTY (REEL/BOX)
	A	W	P	B0	A0	K0		
ISMFM7032	330	16	12	6.6	7.5	3.3	1500	5
ISMFM7050	330	16	12	7.2	7.2	5.1	1000	5
ISMFM8050	330	16	12	7.7	7.9	5.1	1000	5
ISMFM9080	330	24	12	6.7	10.0	8.3	700	4
ISMFM1050	330	24	12	7.2	10.4	5.1	1000	4
ISMFM1070	330	24	16	8.2	10.8	7.3	500	4
ISMFM1080	330	24	16	8.2	10.3	8.25	500	4
ISMFM1175	330	24	16	7.5	11.5	7.6	500	4

Tearing Off Force



The force tearing off cover tape is 15 to 60 grams			
in the arrow direction under the following conditions			
Room Temp (°C)	Room Humidity (%)	Room atn (hPa)	Teaming Speed (mm/min)
5~35	45~85	860~1060	300.0

※ Storage Conditions

1. Temperature and humidity conditions:
Less than 40°C and 70% RH.
2. Recommended products should be used
within 6 months from the time of delivery.
3. The packaging material should be kept where
no chlorine or sulfur exists in the air.

※ Transportation

1. Products should be handled with care to avoid damage
or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly
recommended for individual components.
3. Bulk handling should ensure that abrasion and
mechanical shock are minimized.