



Distributeur : JBG-METAFIX

SMD Power Inductor (HAPM Series)

FEATURES

Low profile, high current power supplies.

Low loss realized with low DCR.

Ultra low buzz noise.



APPLICATIONS

Ideally used in NB/Desktop/server/Graphic card, LCD TV/Projector, etc as DC-DC Converter.

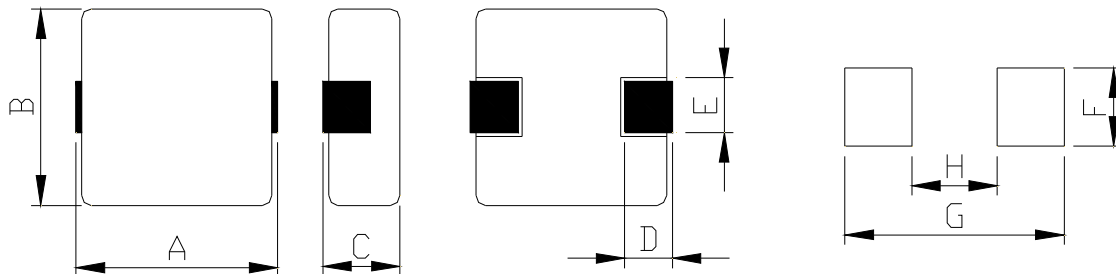
Product Identification

HAPM 0630 E - 3R3 M - LF

① ② ③ ④ ⑤ ⑥

- ① Series name
- ② Product dimensions (0630: 7.8*7.0*3.0 mm)
- ③ Structure code
- ④ Inductance Value (3R3:3.3uH 100: 10uH; 101:100uH)
- ⑤ Inductance Tolerance (M:20% ; N:30%)
- ⑥ Lead free products

Shapes And Dimensions



Series	Dimensions(mm)							
	A(max.)	B(max.)	C(max.)	D	E	F	G	H
HAPM0415F	4.9	4.4	1.5	1.0±0.3	1.5±0.5	2.3	5.0	2.2
HAPM0420F	4.9	4.4	2.0	1.0±0.3	1.5±0.5	2.3	5.0	2.2
HAPM0520F	5.9	5.2	2.0	1.0±0.3	2.0±0.5	2.5	7.0	3.0
HAPM0530F	5.9	5.2	3.0	1.0±0.3	2.0±0.5	2.5	7.0	3.0
HAPM0560F	5.9	5.2	6.0	1.2±0.5	2.0±0.5	2.5	7.0	3.0
HAPM0618F	7.8	7.0	1.8	1.5±0.5	3.0±0.3	3.5	8.4	3.7
HAPM0620F	7.8	7.0	2.0	1.5±0.5	3.0±0.3	3.5	8.4	3.7
HAPM0630F	7.8	7.0	3.0	1.5±0.5	3.0±0.3	3.5	8.4	3.7
HAPM0640F	7.8	7.0	4.0	1.5±0.5	3.0±0.3	3.5	8.4	3.7
HAPM0650F	7.8	7.0	5.0	1.5±0.5	3.0±0.3	3.5	8.4	3.7
HAPM1040F	11.8	10.8	4.0	2.0±0.5	3.0±0.5	4.1	13.6	6.0
HAPM1335F	14.5	13.0	3.5	2.5±0.5	3.5±0.5	4.5	14.5	8.0
HAPM1350F	14.5	13.0	5.0	2.5±0.5	3.5±0.5	4.5	14.5	8.0
HAPM1365F	14.5	13.0	6.5	2.5±0.5	3.5±0.5	4.5	14.5	8.0

Distributeur : JBG-METAFIX**Electrical Characteristics****HAPM0415F Series**

Part Number	L (μ H) $\pm 20\%$	DCR ($m\Omega$) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0415F-1R0M-LF	1.0	45.0	5.0	3.5
HAPM0415F-1R5M-LF	1.5	63.0	4.5	3.0
HAPM0415F-2R2M-LF	2.2	100.0	3.0	2.8

HAPM0420F Series

Part Number	L (μ H) $\pm 20\%$	DCR ($m\Omega$) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0420F-R22M-LF	0.22	8.0	12.0	9.0
HAPM0420F-R36M-LF	0.36	15.0	10.0	7.0
HAPM0420F-R47M-LF	0.47	14.0	9.0	6.0
HAPM0420F-R56M-LF	0.56	18.0	8.0	5.0
HAPM0420F-1R0M-LF	1.0	27.0	7.0	4.5
HAPM0420F-1R5M-LF	1.5	45.0	6.0	4.0
HAPM0420F-2R2M-LF	2.2	58.0	4.0	3.0
HAPM0420F-3R3M-LF	3.3	87.0	3.0	2.0
HAPM0420F-4R7M-LF	4.7	150.0	3.0	2.0
HAPM0420F-100M-LF	10.0	200.0	1.8	1.5

HAPM0520F Series

Part Number	L (μ H) $\pm 20\%$	DCR ($m\Omega$) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0520F-1R0M-LF	1.0	17.0	8.0	6.0
HAPM0520F-1R5M-LF	1.5	25.0	7.0	5.0
HAPM0520F-2R2M-LF	2.2	45.0	6.0	4.0
HAPM0520F-3R3M-LF	3.3	80.0	5.0	3.5
HAPM0520F-4R7M-LF	4.7	85.0	3.5	3.0
HAPM0520F-6R8M-LF	6.8	100.0	3.0	2.0
HAPM0520F-100M-LF	10.0	190.0	2.5	1.5

Distributeur : JBG-METAFIX**Electrical Characteristics****HAPM0530F Series**

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0530F-1R0M-LF	1.0	16.0	8.0	6.0
HAPM0530F-1R5M-LF	1.5	22.0	7.0	4.5
HAPM0530F-2R2M-LF	2.2	35.0	6.5	4.0
HAPM0530F-3R3M-LF	3.3	38.0	6.0	3.5
HAPM0530F-4R7M-LF	4.7	85.0	4.5	3.0
HAPM0530F-6R8M-LF	6.8	85.0	4.5	3.7
HAPM0530F-100M-LF	10.0	100.0	2.8	2.0

HAPM0560F Series

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0560F-220M-LF	22.0	140.0	2.0	1.5

HAPM0618F Series

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0618F-1R0M-LF	1.0	22.0	14.0	7.0
HAPM0618F-2R2M-LF	2.2	35.0	9.0	4.0
HAPM0618F-3R3M-LF	3.3	68.0	8.0	3.5
HAPM0618F-4R7M-LF	4.7	78.0	5.0	3.5
HAPM0618F-5R6M-LF	5.6	137.0	3.8	2.8
HAPM0618F-6R8M-LF	6.8	137.0	3.5	2.8
HAPM0618F-100M-LF	10.0	137.0	3.0	2.0

HAPM0620F Series

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0620F-1R0M-LF	1.0	20.0	14.0	7.0
HAPM0620F-2R2M-LF	2.2	37.0	10.0	6.0
HAPM0620F-3R3M-LF	3.3	64.0	7.0	3.3
HAPM0620F-4R7M-LF	4.7	70.0	5.0	3.0
HAPM0620F-6R8M-LF	6.8	115.0	4.0	3.0
HAPM0620F-100M-LF	10.0	120.0	3.5	2.8

Distributeur : JBG-METAFIX**Electrical Characteristics****HAPM0630F Series**

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0630F-R22M-LF	0.22	3.5	40.0	20.0
HAPM0630F-R33M-LF	0.33	3.9	30.0	20.0
HAPM0630F-R47M-LF	0.47	4.5	25.0	17.5
HAPM0630F-R56M-LF	0.56	5.5	24.0	15.5
HAPM0630F-R68M-LF	0.68	5.5	23.0	15.5
HAPM0630F-R82M-LF	0.82	8.0	20.0	13.0
HAPM0630F-1R0M-LF	1.0	9.0	16.0	11.0
HAPM0630F-1R5M-LF	1.5	16.0	18.0	9.0
HAPM0630F-2R2M-LF	2.2	20.0	12.0	8.0
HAPM0630F-3R3M-LF	3.3	30.0	10.0	6.0
HAPM0630F-4R7M-LF	4.7	40.0	9.0	5.5
HAPM0630F-5R6M-LF	5.6	60.0	7.0	5.0
HAPM0630F-6R8M-LF	6.8	60.0	6.0	4.5
HAPM0630F-8R2M-LF	8.2	80.0	6.0	4.0
HAPM0630F-100M-LF	10 .0	105.0	5.5	3.0
HAPM0630F-150M-LF	15.0	140.0	3.5	2.8
HAPM0630F-220M-LF	22.0	167.0	3.0	2.5

HAPM0640F Series

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0640F-R33M-LF	0.33	3.8	30.0	20.0
HAPM0640F-R56M-LF	0.56	4.5	25.0	17.0
HAPM0640F-R68M-LF	0.68	5.5	20.0	13.0
HAPM0640F-1R0M-LF	1.0	8.5	19.0	12.0
HAPM0640F-1R5M-LF	1.5	15.0	16.0	10.0
HAPM0640F-2R2M-LF	2.2	18.0	14.0	8.5
HAPM0640F-3R3M-LF	3.3	20.0	13.0	7.0
HAPM0640F-4R7M-LF	4.7	28.0	8.0	6.0

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HAPM0650F Series

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM0650F-R22M-LF	0.22	3.5	45.0	20.0
HAPM0650F-R47M-LF	0.47	4.5	21.0	18.0
HAPM0650F-R68M-LF	0.68	6.5	19.0	14.0
HAPM0650F-R82M-LF	0.82	7.5	18.0	14.0
HAPM0650F-1R0M-LF	1.0	8.5	18.0	13.0
HAPM0650F-1R5M-LF	1.5	9.0	15.0	10.0
HAPM0650F-2R2M-LF	2.2	12.5	12.0	8.0
HAPM0650F-3R3M-LF	3.3	20.9	9.0	7.0
HAPM0650F-4R7M-LF	4.7	25.0	6.5	5.5
HAPM0650F-6R8M-LF	6.8	38.0	6.0	5.0
HAPM0650F-100M-LF	10 .0	60.0	5.3	4.5
HAPM0650F-150M-LF	15.0	85.0	4.0	2.5
HAPM0650F-220M-LF	22.0	85.0	3.0	2.0
HAPM0650F-330M-LF	33.0	237.0	2.5	2.0
HAPM0650F-470M-LF	47.0	280.0	2.5	1.9

HAPM1040F Series

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM1040F-R33M-LF	0.33	1.4	50.0	30.0
HAPM1040F-R36M-LF	0.36	1.4	50.0	30.0
HAPM1040F-R47M-LF	0.47	1.8	38.0	26.0
HAPM1040F-R56M-LF	0.56	1.8	33.0	23.0
HAPM1040F-R68M-LF	0.68	3.0	32.0	23.0
HAPM1040F-1R0M-LF	1.0	4.1	28.0	18.0
HAPM1040F-1R5M-LF	1.5	5.8	27.0	16.0
HAPM1040F-2R2M-LF	2.2	9.0	24.0	12.0
HAPM1040F-3R3M-LF	3.3	13.5	16.0	10.0
HAPM1040F-4R7M-LF	4.7	16.5	13.0	8.0
HAPM1040F-5R6M-LF	5.6	25.0	12.0	8.0
HAPM1040F-6R8M-LF	6.8	28.0	9.0	6.5
HAPM1040F-8R2M-LF	8.2	30.0	9.0	5.5
HAPM1040F-100M-LF	10.0	36.5	9.0	5.0
HAPM1040F-150M-LF	15.0	48.0	7.0	4.0
HAPM1040F-220M-LF	22.0	60.0	5.0	3.5
HAPM1040F-330M-LF	33.0	155.0	4.5	3.0
HAPM1040F-470M-LF	47.0	155.0	3.0	3.0

Distributeur : JBG-METAFIX**Electrical Characteristics****HAPM1335F Series**

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM1335F-R47M-LF	0.47	2.0	55.0	32.0
HAPM1335F-R68M-LF	0.68	2.5	49.0	28.0
HAPM1335F-1R0M-LF	1.0	3.5	40.0	23.0
HAPM1335F-1R5M-LF	1.5	5.5	35.0	19.0
HAPM1335F-2R2M-LF	2.2	8.0	29.0	16.0
HAPM1335F-3R3M-LF	3.3	12.0	27.0	12.0
HAPM1335F-4R7M-LF	4.7	15.0	24.0	10.0
HAPM1335F-6R8M-LF	6.8	22.0	18.0	9.0
HAPM1335F-8R2M-LF	8.2	28.0	16.0	8.5
HAPM1335F-100M-LF	10	34.0	14.0	7.0
HAPM1335F-220M-LF	22	90.0	4.5	3.0

HAPM1350F Series

Part Number	L (uH) $\pm 20\%$	DCR (m Ω) max	Isat (A) Typ.	Irms (A) Typ.
HAPM1350F-R47M-LF	0.47	1.5	40.0	25.0
HAPM1350F-R56M-LF	0.56	1.7	38.0	22.0
HAPM1350F-R68M-LF	0.68	1.8	36.0	20.0
HAPM1350F-R82M-LF	0.82	2.5	35.0	19.0
HAPM1350F-1R0M-LF	1.0	3.5	34.0	18.0
HAPM1350F-1R5M-LF	1.5	4.1	34.0	18.0
HAPM1350F-2R2M-LF	2.2	4.5	25.0	16.0
HAPM1350F-3R3M-LF	3.3	13.0	22.0	15.0
HAPM1350F-4R7M-LF	4.7	15.0	20.0	12.0
HAPM1350F-5R6M-LF	5.6	17.0	19.0	12.0
HAPM1350F-6R8M-LF	6.8	19.0	18.0	11.0
HAPM1350F-8R2M-LF	8.2	22.5	17.0	10.0
HAPM1350F-100M-LF	10.0	25.5	13.0	9.0
HAPM1350F-150M-LF	15.0	60.0	11.0	6.0
HAPM1350F-220M-LF	22.0	70.0	8.0	4.0
HAPM1350F-330M-LF	33.0	80.0	6.0	3.0
HAPM1350F-470M-LF	47.0	90.0	5.5	2.5
HAPM1350F-560M-LF	56.0	180.0	4.0	2.0
HAPM1350F-680M-LF	68.0	210.0	3.5	1.5

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Part Number	L (uH) ±20%	DCR (mΩ) max	Isat (A) Typ.	Irms (A) Typ.
HAPM1365F-R56M-LF	0.56	1.7	60.0	30.0
HAPM1365F-R68M-LF	0.68	1.8	54.0	28.0
HAPM1365F-R82M-LF	0.82	2.0	50.0	25.0
HAPM1365F-1R0M-LF	1.0	2.5	47.0	25.0
HAPM1365F-1R5M-LF	1.5	3.5	42.0	22.0
HAPM1365F-2R2M-LF	2.2	4.5	38.0	18.0
HAPM1365F-3R3M-LF	3.3	8.2	28.0	13.0
HAPM1365F-4R7M-LF	4.7	14.0	21.0	14.0
HAPM1365F-5R6M-LF	5.6	15.0	18.0	11.0
HAPM1365F-6R8M-LF	6.8	13.0	16.5	10.0
HAPM1365F-8R2M-LF	8.2	25.0	16.0	10.0
HAPM1365F-100M-LF	10.0	25.0	15.5	10.0
HAPM1365F-150M-LF	15.0	38.0	9.0	6.0
HAPM1365F-220M-LF	22.0	48.0	7.5	5.0
HAPM1365F-330M-LF	33.0	66.0	5.5	4.0
HAPM1365F-470M-LF	47.0	90.0	5.0	3.5
HAPM1365F-560M-LF	56.0	110.0	4.0	3.0
HAPM1365F-680M-LF	68.0	123.0	3.0	2.5

Note 1. : All test data is referenced to 25°C ambient.

Note 2. : Test Condition: 100KHz, 1.0Vrms

Note 3. : Irms : DC current (A) that will cause an approximate ΔT of 40°C

Note 4. : Isat : DC current (A) that will cause L0 to drop approximately 30%

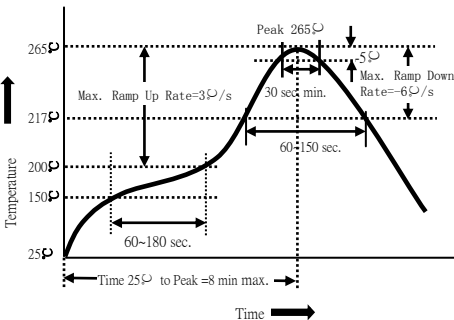
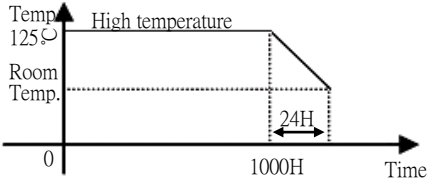
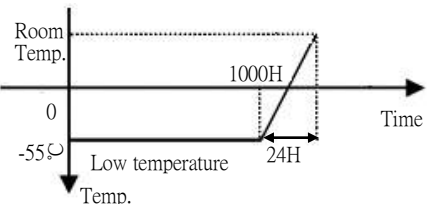
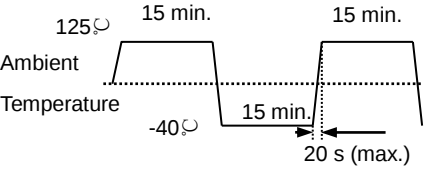
Note 5 : Operating Temperature Range -55°C to + 125°C

Note 6 : The part temperature (ambient + temp rise) should not exceed 125°C under the worst case operating conditions. Circuit design , component placement, PWB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.

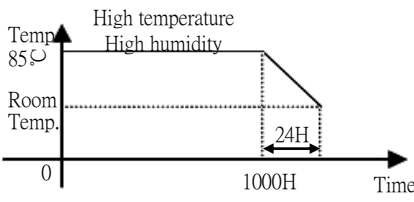
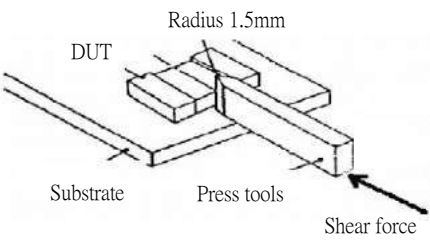
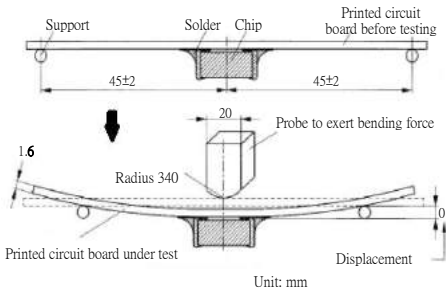
Note 7 : The rated current as listed is either the saturation current or the heating current depending on which value is lower.

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Reliability

No.	Item	Requirements	Test Methods and Remarks	Reference	Sample Size
1	Solderability	(1) No case deformation or change in appearance. (2) Terminal area must have 95% min. solder coverage.	①Temperature: $255 \pm 5^{\circ}\text{C}$, flux 5-10 s. ②Sample immersion tin furnace $5 \pm 0.5\text{s}$. ③Immersed and in and out of speed: $25 \pm 6\text{mm/s}$.	AEC-Q200 (J-STD-002)	15
2	Resistance to Soldering Heat		①The peak temperature: $260 \pm 5 / -0^{\circ}\text{C}$. ②Reflow: 3 times. ③Temperature curve is as below: 	AEC-Q200 (MIL-STD-202 Method 210)	30
3	High Temperature Storage		①Temperature: $125 \pm 2^{\circ}\text{C}$. ②Time : 1000 hours. ③Measurement at 24 ± 4 hours after test conclusion. 	AEC-Q200 (MIL-STD-202 Method 108)	77
4	Low Temperature Storage	(1) No case deformation or change in appearance. (2) $ \Delta L_0/L_0 \leq 10\%$	①Temperature: $-55 \pm 2^{\circ}\text{C}$. ②Time : 1000 hours. ③Measurement at 24 ± 4 hours after test conclusion. 	JESD22-A119	77
5	Thermal shock		①First -40°C for 15 minutes, last 125°C 15 minutes as 1 cycle. Go through 300 cycles. ②Max transfer time is 20 second. ③Measurement at 24 ± 4 hours after test conclusion. 	MIL-STD-202 Method 107	30

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No.	Item	Requirements	Test Methods and Remarks	Reference	Sample Size
6	Humidity Resistance	(1) No case deformation or change in appearance. (2) $ \Delta L_0/L_0 \leq 10\%$	①1000 hours, 85°C/85%RH. ②Unpowered. ③Measurement at 24±4 hours after test conclusion. 	AEC-Q200 (MIL-STD-202 Method 103)	77
7	Terminal Strength	No case deformation or change in appearance.	①The test samples shall be soldered to the board. ②17.64N, 60s,X,Y direct. 	AEC-Q200 (AEC-Q200-006)	30
8	Board Flex	(1) No case deformation or change in appearance. (2) $ \Delta L_0/L_0 \leq 10\%$	①Part mounted on a 100mm*40mm FR4 PCB board, which is 1.6±0.2 mm thick and as a Layer-thickness 35 μm ± 10 μm. ②Bending speed is 1mm/s. ③Keeping the P.C Board 2 mm minimum for 60 seconds. 	AEC-Q200 (AEC-Q200-005)	30
9	Drop		①Height: 1 m, Free fall, 10times. ②Direction: 1 Angle, 1side, 2surface.	JESD22-B111	30
10	Vibration		①Frequency range : 10~2000Hz. ②Amplitude: 1.5mm or 20 G. ③Sweep time and duration: 10~2000~10Hz for 20 minutes. ④Each four hours(12 times) in X,Y,Z direction, 12 hours in total.	AEC-Q200 (MIL-STD-202 Method 204)	30



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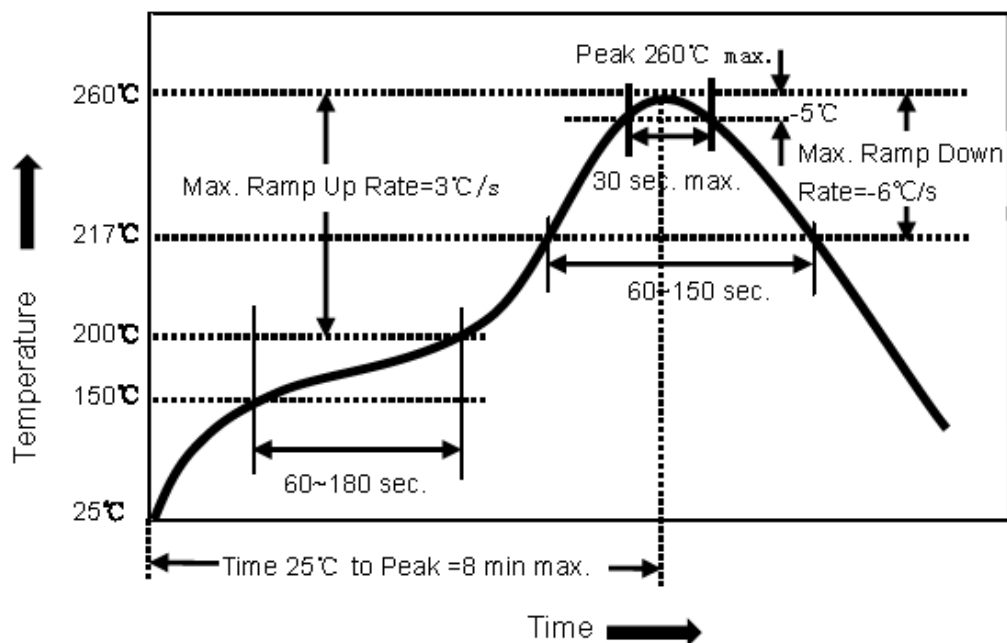
No.	Item	Requirements	Test Methods and Remarks	Reference	Sample Size
11	Loading at High Temperature	(1) No case deformation or change in appearance. (2) $ \Delta L/L \leq 10\%$	①Temperature: $85 \pm 2^\circ\text{C}$. ②Time : 1000 hours. ③Applied Current : Rated current. ④Measurement at 24 ± 4 hours after test conclusion.	AEC-Q200 (MIL-PRF-27)	77

*All above experiments items need 3 Lot., sample size is as specified in the table above.

*Sample size standard is from AEC-Q200 : qualification sample size requirements.

Recommended Soldering Conditions

(1) Reflow soldering conditions



*Above reflow soldering curve is from J-STD-020D.

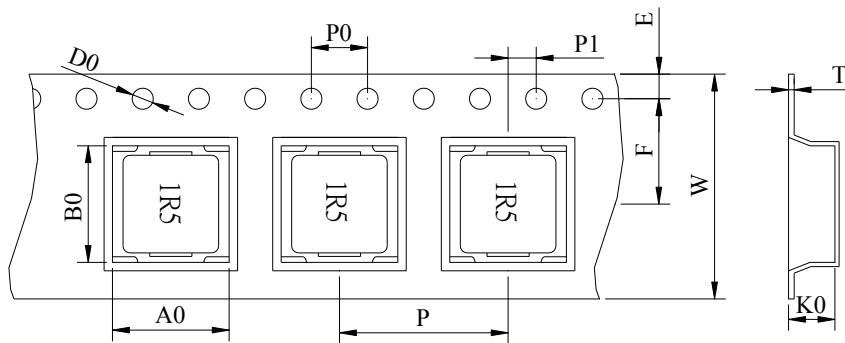
(2) Iron soldering

The following conditions must be strictly followed when using a soldering iron.

Pre-heating	150°C 1 minute
Tip temperature	350°C max
Soldering iron output	30w max
End of soldering iron	Φ 1mm max
Soldering time	3 seconds max

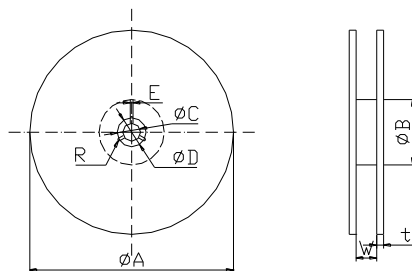
**Distributeur : JBG-METAFIX**
Packaging

(1) Dimension of tape (Unit: mm)



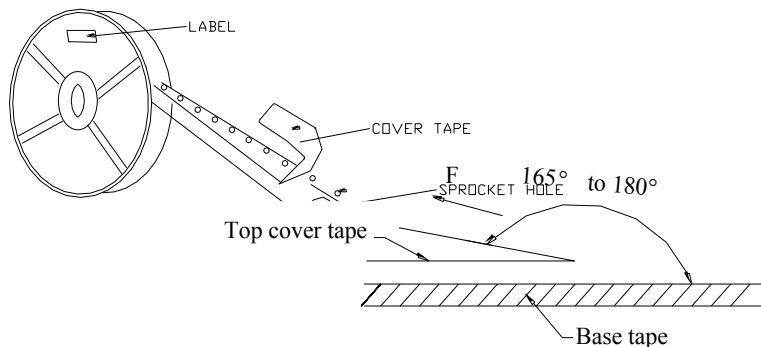
W	16.0±0.3
F	7.5±0.1
E	1.75±0.1
A0	7.15±0.2
B0	8.3±0.2
P	12.0±0.1
P0	4.0±0.1
P1	2.0±0.05
K0	3.3±0.2
T	0.40±0.1
Φ D0	1.5+0.1/-0.0

(2) Dimension of reel (Unit: mm)



A	330
B	100
C	13.0±1.0
D	20.0±1.0
E	2.0±0.5
R	R1.0
W	17.0±1.0
t	2.0±0.2

(3) Taping figure and drawing direction

**Products Storage**

(1) Storage period

Products which inspected in over 12 months ago should be examined and used, which can be confirmed with inspection No. marked on the container. Solderability should be checked if this period is exceeded.

(2) Storage conditions

Products should be storage in the warehouse on the following conditions:

Temperature: -10 ~+ 35℃

Humidity : Less than 70% relative and humidity

No rapid change on temperature and humidity.

(3) Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solderability.

(4) Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.

(5) Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.

(6) Products should be storage under the airtight packaged condition.