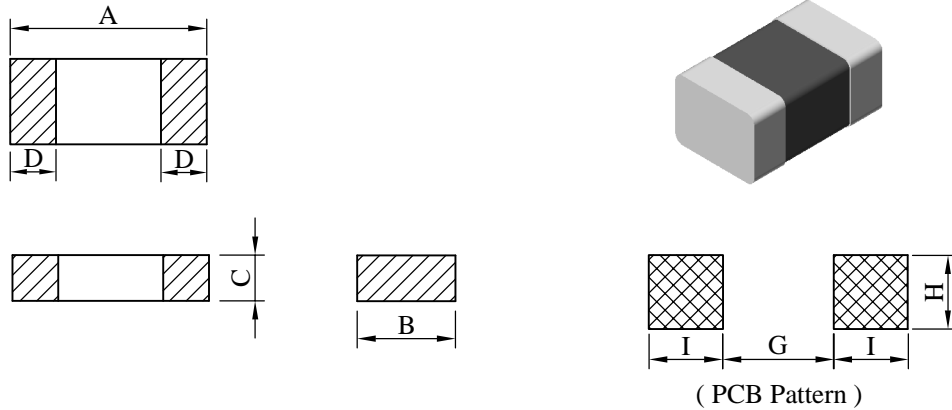


# SPECIFICATION FOR APPROVAL

REF. :

PROD. NAME	Multilayer Chip Inductor	ABC'S DWG NO.		MS20□□□□□□L□-□□□	
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**I . Configuration and dimensions :**



Unit : m/m

Series	A	B	C	D	G	H	I
MS2029	2.00 ± 0.20	1.20 ± 0.20	0.90 ± 0.20	0.50 ± 0.30	0.8	1.0	1.0
MS2022	2.00 ± 0.20	1.20 ± 0.20	1.20 ± 0.20	0.50 ± 0.30	0.8	1.0	1.0

**II . Materials :**

- a . Body : Ferrite
- b . Internal conductor : Silver
- c . Terminal electrode : Ag / Ni / Sn
- d . Product weight : 10.0 (2029) / 14.7 (2022) mg ( ref. )
- e . Products comply with RoHS' requirements
- f . Halogen free available.

**III . General specification :**

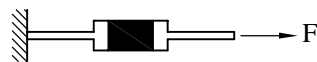
- a . Storage Conditions :

Electrical Performance temp : -55°C ---- +125°C

Terminal Solderability & Packages Material temp : -10°C ---- +40°C and RH 70% max.

- b . Operating temp. : -55°C ---- +125°C

- c . Terminal strength :

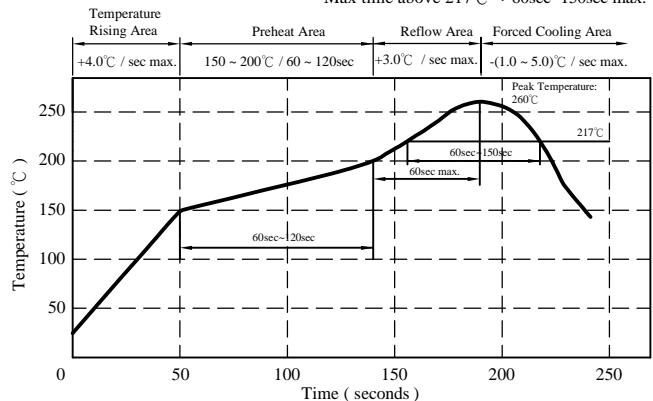


Type	F ( kgf )	Time ( sec )
MS2029	0.6	30±5
MS2022	0.8	

- d . Resistance to soldering heat :

Solder temp. : 260°C  
Dip time : 10 sec max.

Peak Temp : 260°C max.  
Max. Peak Temp - 5°C : 30sec max.  
Max time above 217°C : 60sec~150sec max.



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IV . Electrical characteristics :

DWG No.	Inductance ( $\mu$ H )	Q min.	Test Freq. (MHz)	SRF ( MHz ) min.	RDC ( $\Omega$ ) max.	IDC ( mA ) max.
MS202947NML□-□□□	0.047±20%	15	50	320	0.20	300
MS202968NML□-□□□	0.068±20%	15	50	280	0.20	300
MS202982NML□-□□□	0.082±20%	15	50	255	0.20	300
MS2029R10ML□-□□□	0.100±20%	20	25	235	0.30	250
MS2029R12ML□-□□□	0.120±20%	20	25	220	0.30	250
MS2029R15ML□-□□□	0.150±20%	20	25	200	0.40	250
MS2029R18ML□-□□□	0.180±20%	20	25	185	0.40	250
MS2029R22ML□-□□□	0.220±20%	20	25	170	0.50	250
MS2029R27ML□-□□□	0.270±20%	20	25	150	0.50	250
MS2029R33ML□-□□□	0.330±20%	20	25	145	0.55	250
MS2029R39ML□-□□□	0.390±20%	25	25	135	0.65	200
MS2029R47ML□-□□□	0.470±20%	25	25	125	0.65	200
MS2029R56ML□-□□□	0.560±20%	25	25	115	0.75	150
MS2029R68ML□-□□□	0.680±20%	25	25	105	0.80	150
MS2029R82ML□-□□□	0.820±20%	25	25	100	1.00	150
MS20291R0ML□-□□□	1.000±20%	45	10	75	0.40	50
MS20291R2ML□-□□□	1.200±20%	45	10	65	0.50	50
MS20291R5ML□-□□□	1.500±20%	45	10	60	0.50	50
MS20291R8ML□-□□□	1.800±20%	45	10	55	0.60	50
MS20292R2ML□-□□□	2.200±20%	45	10	50	0.65	30
MS20222R7ML□-□□□	2.700±20%	45	10	45	0.75	30
MS20223R3ML□-□□□	3.300±20%	45	10	41	0.80	30
MS20223R9ML□-□□□	3.900±20%	45	10	38	0.90	30
MS20224R7ML□-□□□	4.700±20%	45	10	35	1.00	30
MS20225R6ML□-□□□	5.600±20%	50	4	32	0.90	15
MS20226R8ML□-□□□	6.800±20%	50	4	29	1.00	15

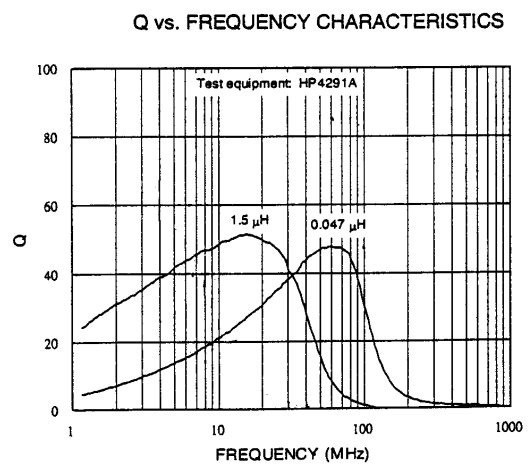
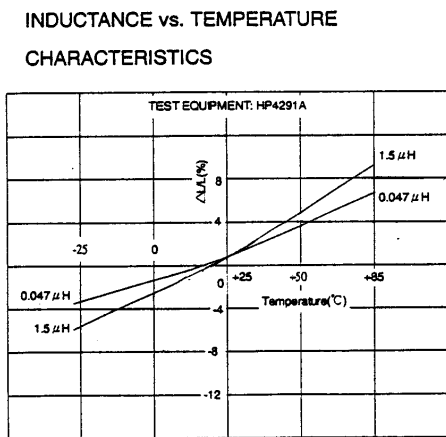
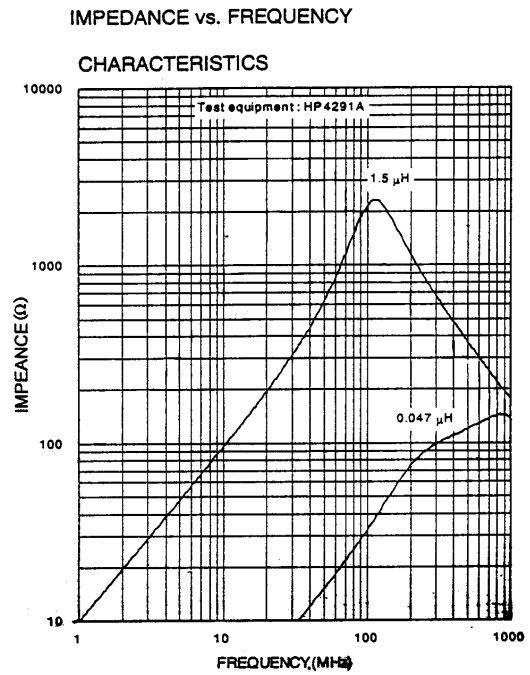
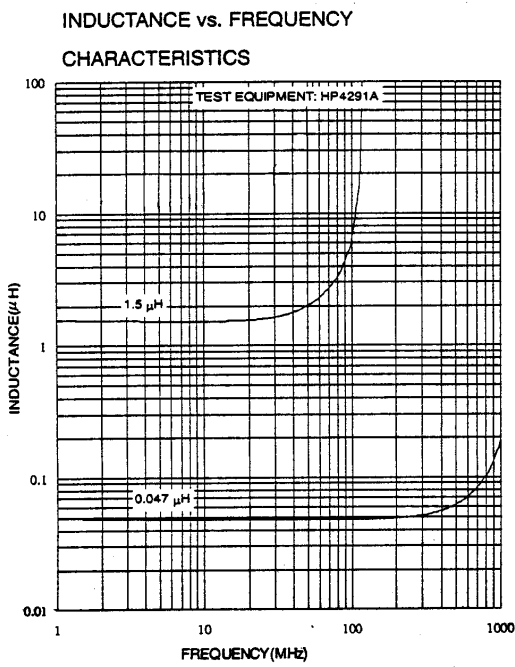
- 1). □ : Packaging information : □ Code
- 2). "- □□□ " : Reference code
- 3). Electrical specifications at 25°C

# SPECIFICATION FOR APPROVAL

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V . Curve :



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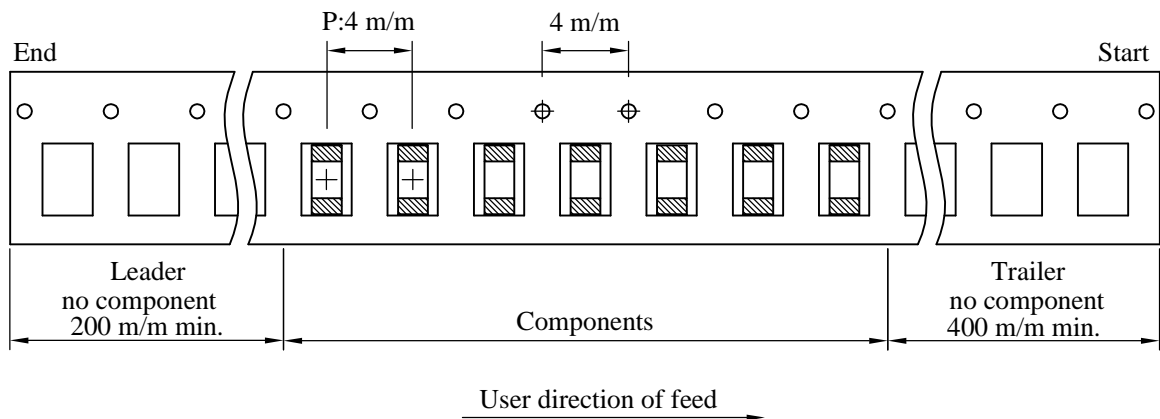
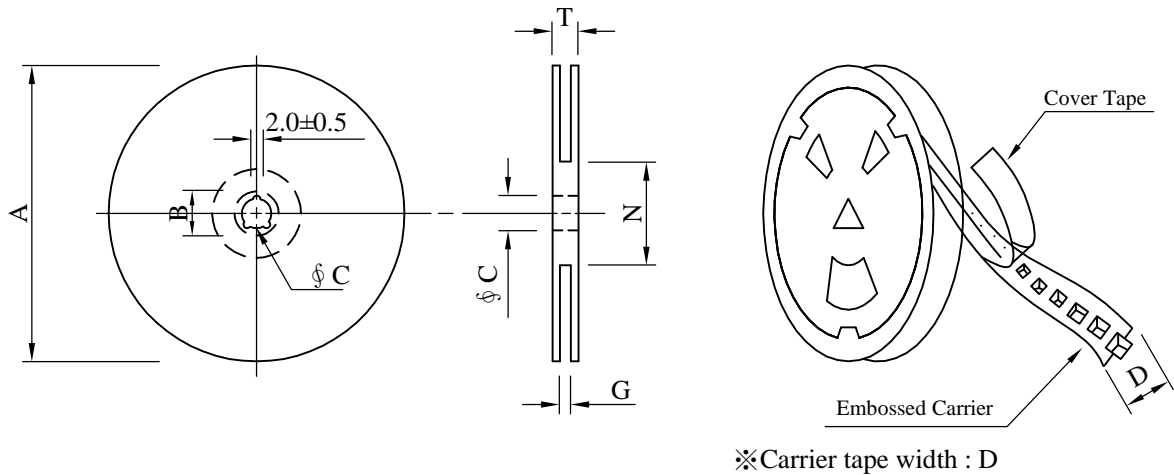
# SPECIFICATION FOR APPROVAL

REF. :

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## VI . Packaging information :

### (1) Configuration



### (2) Dimensions

Unit:m/m

Style	A	B	C	D	G	N	T
07 - 08	178	21±0.8	13	8	10 <sup>+0</sup>	50 <sup>-0</sup>	12.5

### (3) Q'TY & G.W. Per package

Code	Inner : Reel			Outer : Carton			
	Q'TY (pcs)	G.W. (gw)	Style	Q'TY(pcs)	G.W. (Kg)	Size (cm)	
B	MS2029	4,000	120	07 - 08	200,000	8.5	41 x 39 x 22
	MS2022	3,000	142	07 - 08	150,000	9.8	41 x 39 x 22

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# SPECIFICATION FOR APPROVAL

REF. :

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## VII . Reliability test :

Item	Reference documents	Test Condition	Test Specification
1.High Temperature Exposure	MIL-STD-202 Method 108	1.Temperature: 125°C 2.Time:1008 hours. 3.Measurement : After placing for 24 hours min.	1.Body: No damage 2.Inductance shall not change more than ±20%.
2.Low Temperature Exposure	JESD22-A 119	1.Temperature: -55°C 2.Time:1008 hours. 3.Measurement : After placing for 24 hours min.	1.Body: No damage 2.Inductance shall not change more than ±20%.
3.Temperature Cycling	JESD22-A 104	1.Temperature: -55°C ~ 125°C 2.Number of cycle:100 cycle 3.Dwell time:30 minutes 4.Measurement : After placing for 24 hours min.	1.Body: No damage 2.Inductance shall not change more than ±20%.
4.Biased Humidity Test	MIL-STD-202 Method 103	1.Temperature:40±5 °C 2.Time:1008 Hours 3.Humidity: 95% RH. 4.Measurement : After placing for 24 hours min.	1.Body: No damage 2.Inductance shall not change more than ±20%.
5.Vibration Test	MIL-STD-202 Method 204	1.Frequency and Amplitued : 10-55-10 Hz, 1.5 mm. 2.Direction:X, Y, Z 3.Test duration:2 hours for each direction, 6 hours in total.	Appearance: No damage
6.Resistance To Soldering Heat Test	MIL-STD-202 Method 210	1.Solder Temp. : 265±3°C 2.Immersion time : 6±1 sec 3.Preheating : 100°C to 150°C, 1 minute. 4.Measurement : After placing for 24 hours min.	1.Appearance: No damage 2.Inductance shall not change more than ±20%.
7.Solderability Test	J-STD-002	1.Preheat : 150°C, 60 seconds 2.Solder temperature : 245±5°C 3.Flux 4.Dip time : 4±1 seconds	The terminal shall be at least 90% covered with fresh solder.
8.Terminal Strength Test	IEC 60068-2-21	1.Apply push force to samples mounted on PCB. 2.Force: Refer to product specification. 3.Dwell time : >25 seconds.	The terminal electrode and the body shall not be damaged by the forces applied on the right conditions.
9.Board Flex	JIS-C-6429	1.Deflection speed : 1 mm/ sec 2.Amount of deflection : 2 mm 3.Span : 90 mm 4.Direction for test : Bottom of PCB 5.Holding time : 60 seconds.	1.Appearance: No damage 2.The terminal electrode and the body shall not be damaged by the forces applied on the right conditions.

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