

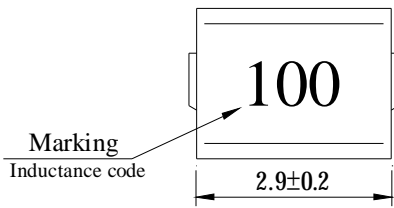
SPECIFICATION FOR APPROVAL

REF : 20100129-I

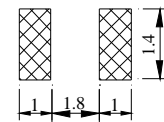
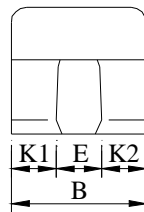
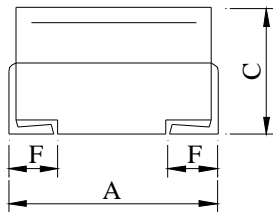
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| | | | |
|------------|---------------------|----------------|------------------|
| PROD. NAME | WOUND CHIP INDUCTOR | ABC'S DWG NO. | CM3225□□□□L□-□□□ |
| | | ABC'S ITEM NO. | |

I . CONFIGURATION & DIMENSIONS :

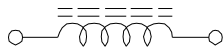


- A : 3.2±0.4 m/m
- B : 2.5±0.2 m/m
- C : 2.2±0.2 m/m
- E : 1.0±0.2 m/m
- F : 0.6^{+0.3}₋₀ m/m
- ※ ΔK= | K1-K2 | =0.25⁺⁰ m/m



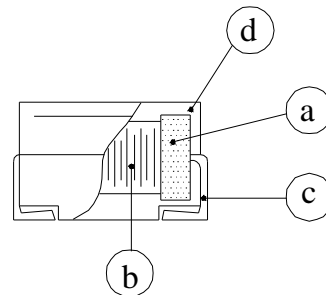
(PCB Pattern)

II . SCHEMATIC DIAGRAM :



III . MATERIALS :

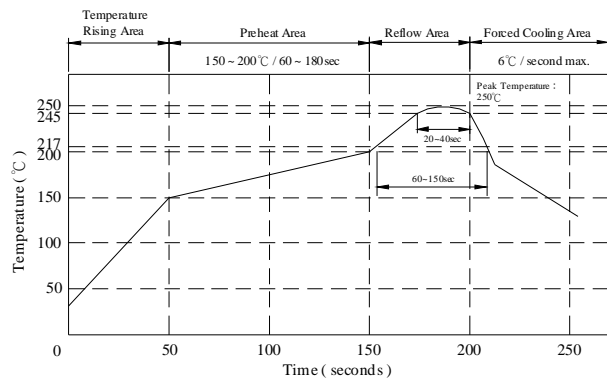
- a . Core : Ferrite DR core
- b . Wire : Enamelled copper wire (class H)
- c . Terminal : Cu/Sn
- d . Encapsulate : Epoxy novolac molding compound
- e . Remark : Products comply with RoHS' requirements



IV . GENERAL SPECIFICATION :

- a . Temp. rise : 20°C max.
- b . Ambient temp. : 100°C max.
- c . Storage temp. : -40°C ----+125°C
- d . Operating temp. : -40°C ----+125°C
- e . Terminal pull strength : 1.5 kg min.
- f . Rated current : Current cause
inductance drop within 10%
- g . Resistance to solder heat : 260°C.10 secs.
- h . Resistance to solvent : Per MIL-STD-202F

Reflow profile
 Peak Temp : 250°C max.
 Max time above 245°C : 20~40sec max.
 Max time above 217°C : 60~150sec max.
 200°C~250°C Average Ramp-up Rate : 3°C/second max.



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| | | | |
|------------|---------------------|----------------|------------------|
| PROD. NAME | WOUND CHIP INDUCTOR | ABC'S DWG NO. | CM3225□□□□L□-□□□ |
| | | ABC'S ITEM NO. | |

V . ELECTRICAL CHARACTERISTICS :

| DWG No. | Inductance (μ H) | Q min. | Test Freq (MHz) | SRF (MHz) min. | RDC (Ω) max. | IDC (mA) max |
|------------------|--------------------------|-----------|--------------------|----------------------|-----------------------------|--------------------|
| CM3225R12ML□-□□□ | 0.120±20% | 30 | 25.2 | 500 | 0.22 | 450 |
| CM3225R15ML□-□□□ | 0.150±20% | 30 | 25.2 | 450 | 0.25 | 450 |
| CM3225R18ML□-□□□ | 0.180±20% | 30 | 25.2 | 400 | 0.28 | 450 |
| CM3225R22ML□-□□□ | 0.220±20% | 30 | 25.2 | 350 | 0.32 | 450 |
| CM3225R27ML□-□□□ | 0.270±20% | 30 | 25.2 | 320 | 0.36 | 450 |
| CM3225R33ML□-□□□ | 0.330±20% | 30 | 25.2 | 300 | 0.40 | 450 |
| CM3225R39ML□-□□□ | 0.390±20% | 30 | 25.2 | 250 | 0.45 | 450 |
| CM3225R47ML□-□□□ | 0.470±20% | 30 | 25.2 | 220 | 0.50 | 450 |
| CM3225R56ML□-□□□ | 0.560±20% | 30 | 25.2 | 180 | 0.55 | 450 |
| CM3225R68ML□-□□□ | 0.680±20% | 30 | 25.2 | 160 | 0.60 | 450 |
| CM3225R82ML□-□□□ | 0.820±20% | 30 | 25.2 | 140 | 0.65 | 450 |
| CM32251R0KL□-□□□ | 1.000±10% | 30 | 7.96 | 120 | 0.70 | 400 |
| CM32251R2KL□-□□□ | 1.200±10% | 30 | 7.96 | 100 | 0.75 | 390 |
| CM32251R5KL□-□□□ | 1.500±10% | 30 | 7.96 | 85 | 0.85 | 370 |
| CM32251R8KL□-□□□ | 1.800±10% | 30 | 7.96 | 80 | 0.90 | 350 |
| CM32252R2KL□-□□□ | 2.200±10% | 30 | 7.96 | 75 | 1.00 | 320 |
| CM32252R7KL□-□□□ | 2.700±10% | 30 | 7.96 | 70 | 1.10 | 290 |
| CM32253R3KL□-□□□ | 3.300±10% | 30 | 7.96 | 60 | 1.20 | 260 |
| CM32253R9KL□-□□□ | 3.900±10% | 30 | 7.96 | 55 | 1.30 | 250 |
| CM32254R7KL□-□□□ | 4.700±10% | 30 | 7.96 | 50 | 1.50 | 220 |
| CM32255R6KL□-□□□ | 5.600±10% | 30 | 7.96 | 45 | 1.60 | 200 |
| CM32256R8KL□-□□□ | 6.800±10% | 30 | 7.96 | 40 | 1.80 | 180 |
| CM32258R2KL□-□□□ | 8.200±10% | 30 | 7.96 | 35 | 2.00 | 170 |
| CM3225100KL□-□□□ | 10.000±10% | 30 | 2.52 | 30 | 2.10 | 150 |
| CM3225120KL□-□□□ | 12.000±10% | 30 | 2.52 | 20 | 2.50 | 140 |
| CM3225150KL□-□□□ | 15.000±10% | 30 | 2.52 | 20 | 2.80 | 130 |
| CM3225180KL□-□□□ | 18.000±10% | 30 | 2.52 | 20 | 3.30 | 120 |
| CM3225220KL□-□□□ | 22.000±10% | 30 | 2.52 | 20 | 3.70 | 110 |
| CM3225270KL□-□□□ | 27.000±10% | 30 | 2.52 | 20 | 5.00 | 80 |
| CM3225330KL□-□□□ | 33.000±10% | 30 | 2.52 | 17 | 5.60 | 70 |
| CM3225390KL□-□□□ | 39.000±10% | 30 | 2.52 | 16 | 6.40 | 65 |
| CM3225470KL□-□□□ | 47.000±10% | 30 | 2.52 | 15 | 7.00 | 60 |
| CM3225560KL□-□□□ | 56.000±10% | 30 | 2.52 | 13 | 8.00 | 55 |
| CM3225680KL□-□□□ | 68.000±10% | 30 | 2.52 | 12 | 9.00 | 50 |
| CM3225820KL□-□□□ | 82.000±10% | 30 | 2.52 | 11 | 10.00 | 45 |
| CM3225101KL□-□□□ | 100.000±10% | 20 | 0.796 | 10 | 11.00 | 40 |
| CM3225121KL□-□□□ | 120.000±10% | 20 | 0.796 | 10 | 11.00 | 70 |
| CM3225151KL□-□□□ | 150.000±10% | 20 | 0.796 | 8 | 15.00 | 65 |

- 1). □: Packaging information . . . [A]: Bulk [B]: Taping Reel
 2). "- □□□": Reference code

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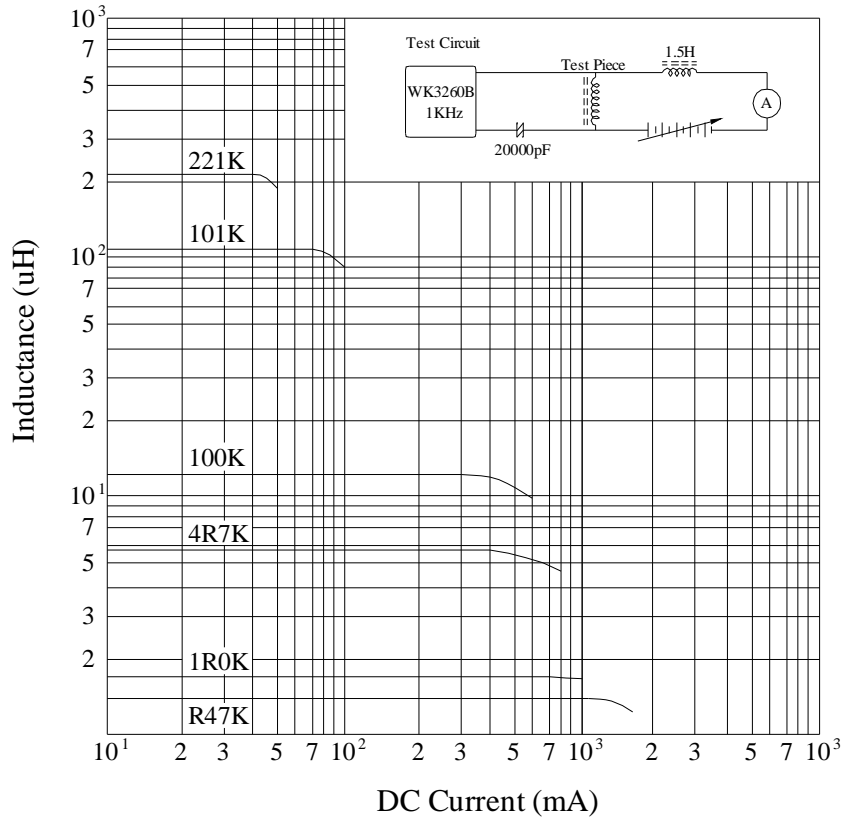
REF: 20100129-I

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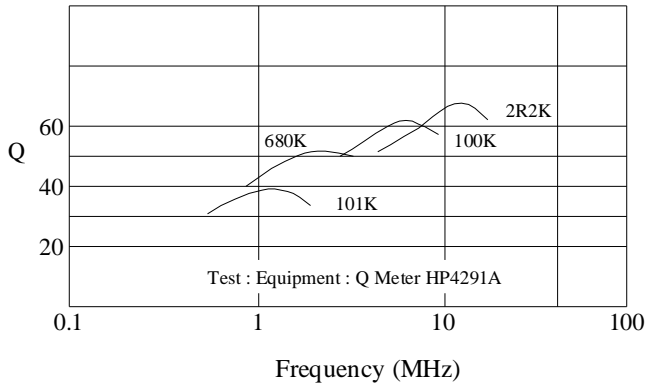
| | | | |
|------------|---------------------|----------------|------------------|
| PROD. NAME | WOUND CHIP INDUCTOR | ABC'S DWG NO. | CM3225□□□□L□-□□□ |
| | | ABC'S ITEM NO. | |

VI . CURVE :

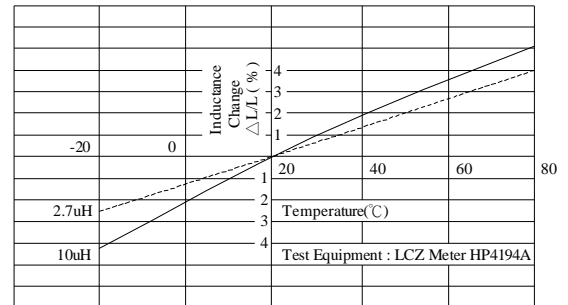
@ Inductance VS. DC Superposition Characteristics



@ Q VS. Frequency Response



@ Inductance Change VS. Temperature Response



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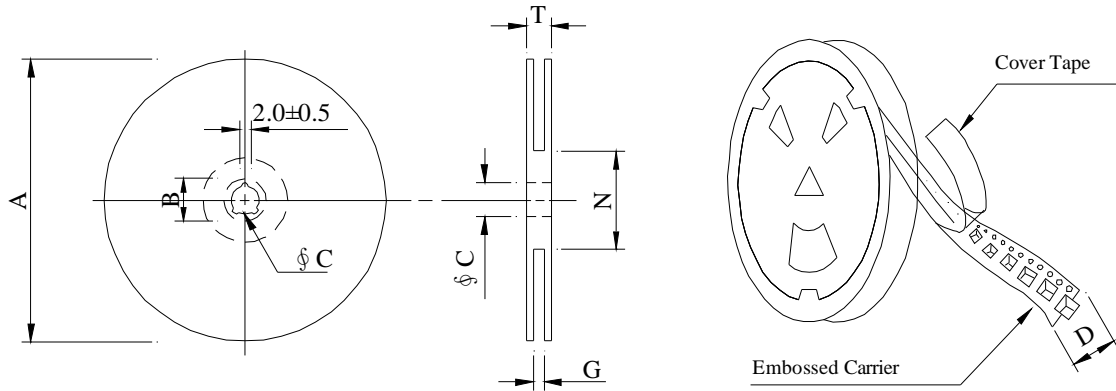
REF : 20100129-I

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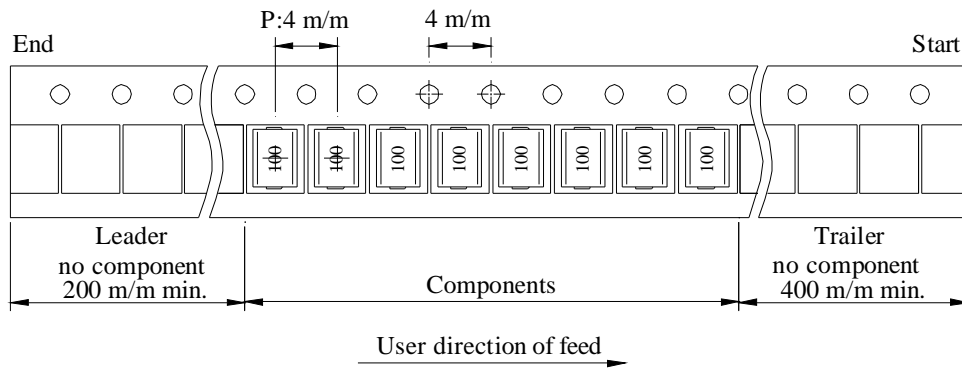
| | | | |
|------------|---------------------|----------------|------------------|
| PROD. NAME | WOUND CHIP INDUCTOR | ABC'S DWG NO. | CM3225□□□□L□-□□□ |
| | | ABC'S ITEM NO. | |

VII . PACKAGING INFORMATION :

(1) Configuration



※Carrier Tape Width : D



※ There is no differentiation or directions of polarity (marking) in the packaging method.

(2) Dimensions

Unit:m/m

| Style | A | B | C | D | G | N | T |
|------------|-----|--------|--------|---|------------------|------------------|------|
| 07 - 08 | 178 | 21±0.8 | 13 | 8 | 10 ⁺⁰ | 50 ⁻⁰ | 12.5 |
| 07(S) - 08 | 183 | 21±0.8 | 13 | 8 | 10 ⁺⁰ | 50 ⁻⁰ | 12.5 |
| 13 - 08 | 330 | 21±0.8 | 13±0.5 | 8 | 10 ⁺⁰ | 50 ⁻⁰ | 12.5 |

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

| Series | Inner : Reel | | | Outer : Carton | | |
|--------|--------------|-----------|------------|----------------|-----------|--------------|
| | Q'TY (pcs) | G.W. (gw) | Style | Q'TY (pcs) | G.W. (Kg) | Size (cm) |
| CM3225 | 1,000 | 110 | 07 - 08 | 50,000 | 7.50 | 41 x 39 x 22 |
| CM3225 | 2,000 | 220 | 07(S) - 08 | 100,000 | 15.00 | 41 x 39 x 22 |
| CM3225 | 7,000 | 770 | 13 - 08 | 84,000 | 9.80 | 41 x 39 x 22 |

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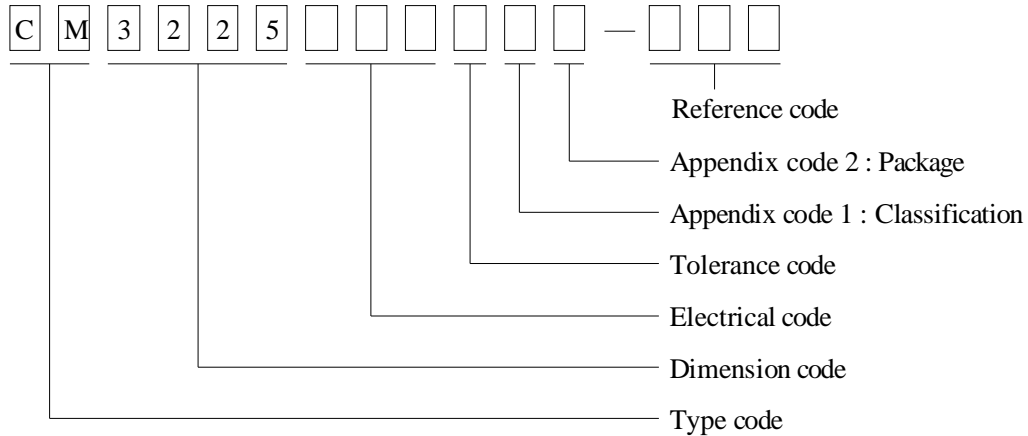
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| | | | |
|---------------|---------------------|----------------|------------------|
| PROD. NAME | WOUND CHIP INDUCTOR | ABC'S DWG NO. | CM3225□□□□L□-□□□ |
| | | ABC'S ITEM NO. | |

VIII . DWGING NUMBER EXPRESSION :



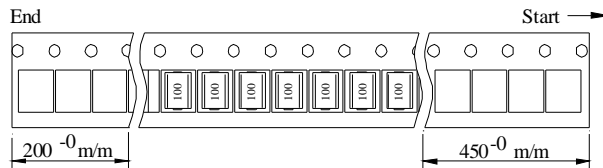
Appendix code 1 : Product Classification

- L : Lead Free Standard products comply with RoHS' requirements
- 1 ~ 9 : Lead Free Special products comply with RoHS' requirements

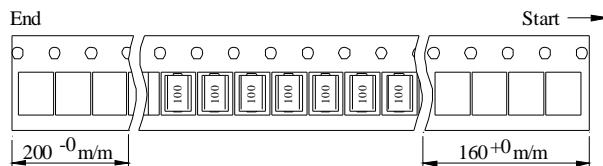
Appendix code 2 : Package Information

| Code | Inner package | Inner package QTY | Remark |
|------|------------------------|-------------------|--------|
| A | Bag | 1000 pcs | |
| B | T / R (Reel package) | 1000 pcs | UCT |
| C | T / R (Reel package) | 2000 pcs | UCT |
| D | T / R (Reel package) | 7000 pcs | UCT |
| E | T / R (Reel package) | 1000 pcs | UCT |
| F | T / R (Reel package) | 2000 pcs | UCT |

Note : ① package code "B" & "C" & "E" :



Note : ② package code "F" :



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| | | | |
|------------|---------------------|----------------|------------------|
| PROD. NAME | WOUND CHIP INDUCTOR | ABC'S DWG NO. | CM3225□□□□L□-□□□ |
| | | ABC'S ITEM NO. | |

IX . RELIABILITY TEST :

| Test item | Specification | Test condition / Test method |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| ● Electrical performance test | | |
| Inductance L | Refer to standard electrical characteristic list | □HP4194A with HP-16034E test fixture |
| Q | | |
| Self resonance frequency SRF | | □HP4291A with HP-16093A test fixture |
| DC Resistance RDC | | CH-502AC |
| Rated current IDC | | Applied the current to coils , The Inductance change shall be less than 10% to initial value & temperature rise shall not be more than 20°C |
| Temperature rise test | 20°C max. | 1 . Applied the allowed DC current for 10 minutes 2 . Temperature measure by digital surface thermometer |
| Over load test | After test , Inductors shall be no evidence of electrical and mechanical damage | Applied 2 times of rated allowed DC current to inductor for a period of 5 minutes |
| Withstanding voltage test | After tset , Inductors shall be no evidence of electrical and mechanical damage | AC voltage of 1000VAC applied between inductors terminal and coating for 5 seconds |
| Insulation resistance test | 1000 MΩ min . | 100 VDC applied between inductor terminal and coating |
| ● Mechanical performance test | | |
| Vibration test (Low frequency) | 1 . Inductors shall be no evidence of electrical and mechanical damage 2 . Inductance shall not change more than±5% 3 . Q Shall not change more than ±20% | 1 . Amplitude : 1.5 m/m 2 . Frequency : 10 -- 55 -- 10 Hz / 1min. 3 . Direction : X , Y , Z 4 . Duration : 2 hrs / X , Y , Z |
| Shock test | | Inductors shall be dropped 10 times from a height of 1m onto 3cm wooden board |
| Resistance to soldering heat | | Temp : 260±5°C Time : 10±1.0 sec. |

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| | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| PROD. NAME | WOUND CHIP INDUCTOR | ABC'S DWG NO. | CM3225□□□□L□-□□ |
| | | ABC'S ITEM NO. | |
| Terminal strength-pull test | Terminal shall not be loosened or ruptured | A 0.5kg load shall be applied to both Terminals in the axis direction for 1 minute . | |
| Solderability test | The terminal shall be at least 90% covered with solder | After fluxing , Inductor shall be dipped in a melted solder bath at 240±5°C for 5 seconds . | |
| Resistance to solvent test | There shall be no case deformation change in appearance or obliteration of marking | MIL-STD-202F , Method 215D | |
| ● Climatic test | | | |
| Temperature characteristic | 1 . Inductors shall be no evidence of electrical and mechanical damage 2 . Inductance shall not change more than ±10% 3 . Q shall not change more than ±20% | -40°C -- +125°C | |
| Humidity test | | 1 . Temp : 40±2°C 2 . R.H. : 90 -- 95% 3 . Time : 96±2 hours | |
| Cold test | | 1 . Temp : -25±2°C 2 . Time : 96±2 hours | |
| Thermal shock test | | <pre> graph LR subgraph Cycle1 RT1[Room temp] -- 15 mins --> T1[-40±2°C] T1 -- 30 mins --> RT1 end subgraph Cycle2 RT2[Room temp] -- 15 mins --> T2[+125±2°C] T2 -- 30 mins --> RT2 end </pre> | |
| Dry heat test | | 1 . Temp : 85±2°C 2 . Time : 96±2 hours | |
| High temperature load life test | There shall be no evidence of short or open circuiting | 1 . Temp : 85±2°C 2 . Time : 1000±12 hours 3 . Load : Allowed DC current | |
| Humidity load life | | 1 . Temp : 40±2°C 2 . R.H. : 90 -- 95% 3 . Time : 1000±12 hours 4 . Load : Allowed DC current | |
| ● Note : Unless otherwise specified , Allow the specimen to stand at room temperature for 1 hour or more but not more than 2 hours , Measure the electrical and mechanical performances | | | |

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| | | | |
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| | | ABC'S ITEM NO. | |

X . UL CARD :

OBMW2 August 27, 1999

Magnet Wire-Component

ELEKTRISOLA (MALAYSLA) SDN BHD E143312

IALAN DAMN SATU IANDA BAIK 28750 BENTONG, PAHANG
DARUL MAKMUR MALAYSIA

| Mtl Dsg | Mark Dsg | Coating Type | | ANSI Typ | Temp Class |
|---------------|--------------|-----------------------------|-------|----------|------------|
| | | BC | OC | | |
| Estersol 160 | E180 | Polyesterimide (solderable) | --- | MW-77 | 180 |
| Amldester 200 | A200 | Polyesterimide | --- | MW-74 | 200 |
| Polysol-N 155 | PN155 | Polyurethane | Nylon | MW-80, | 155, |
| | | | | MW-28 | 100 |
| Polysol 155 | P155 | Polyurethane | --- | MW-79, | 155, |
| | | | | MW-79 | 130 |
| Polysol 155g | Pg155 | Polyurethane | --- | MW-79 | 130 |
| Polysol 155p | Pp155,Gp155 | Polyurethane | --- | MW-79 | 155 |
| Polysol 160 | P160 | Polyurethane | --- | MW-79 | 155 |
| Polysol 180 | P180 | Polyurethane | --- | MW-79 | 155 |
| Polysol 170 | P170 or G170 | Polyurethane | --- | MW-79 | 156 |
| Polysol-N 180 | PN180 | Polyurethane | Nylon | --- | 180 |

Marking : Company name/material designation or marked designation and factory identification on package ok reel

See General Information preceding These Recognitions
For use only in equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

OMFZ2 March 4, 1994

Component-Plastics

CHANG CHUN PLASTICS CO LTD E59481 (S)

(F1-cont. from F card)

| | | | | | | | | | | | |
|-----------|-----|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| BM-21 | ALL | 0.79 | 94HB | 50 | 50 | 50 | --- | --- | --- | --- | --- |
| BM-22 | ALL | 0.79 | 94HB | 50 | 50 | 50 | --- | --- | --- | --- | --- |
| BM-23 | ALL | 0.79 | 94V-0 | 50 | 50 | 50 | --- | --- | --- | --- | --- |
| EME-1100 | BK | 0.84 | 94V-0 | 130 | 130 | 130 | --- | --- | --- | --- | --- |
| | BK | 6.4 | 94V-0 | 130 | 130 | 130 | --- | --- | --- | --- | --- |
| EME-1200 | BK | 0.84 | 94V-0 | 130 | 130 | 130 | --- | --- | --- | --- | --- |
| | BK | 6.4 | 94V-0 | 130 | 130 | 130 | --- | --- | --- | --- | --- |
| EME-5961C | BK | 0.3 | 94V-0 | 130 | 130 | 130 | --- | --- | --- | --- | --- |
| | BK | 3.1 | 94V-0 | 130 | 130 | 130 | --- | --- | --- | --- | --- |

Reports: January 19, 1988; January 19, 1988; January 19, 1988; June 2, 1988;
June 2, 1998; June 2, 1988.

Replaces E59481C dated February 7, 1989. (Cont. on C1 card)
262854001 N7047 Underwriters Laboratories Inc.® D11/0018965

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