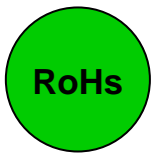


SPECIFICATION FOR APPROVAL



CUSTOMER _____

CUSTOMER'S DWG NO. _____

REVISION NO. _____

CUSTOMER'S PART NO. _____

TECSTAR'S PART NO. _____

TL201209-R82K

QUANTITY _____

PCS

ITEM _____

DATE

SEP/03/2009

| | “√” | CUSTOMER'S SIGNATURE | NOTE |
|---------------------|-----|----------------------|------|
| FULL APPROVED | | | |
| CONDITONAL APPROVED | | | |
| REJECTED | | | |



TECSTAR TECHNOLOGY CO., LTD.

NO. 820-1 Kou Shih Rd. Yang Mei Chen
Taoyuan Hsien, Taiwan, R.O.C.
TEL : 886-3-4788701
FAX : 886-3-4788702
www tecstar.com.tw

SPECIFICATION FOR APPROVAL

| | | | |
|--------------------------------|----------------|-------------------------|---------------|
| CUSTOMER: | | CUSTOMER'S P/N: | |
| VENDOR'S P/N: | | TL201209-R82K | |
| <p>DIMENSION:(m/m)</p> | | A | 2.0 ± 0.2 m/m |
| | | B | 1.2 ± 0.2 m/m |
| | | C | 0.9 ± 0.2 m/m |
| | | D | 0.5 ± 0.3 m/m |
| | | E | m/m |
| | | F | m/m |
| | | G | m/m |
| | | H | m/m |
| | | I | m/m |
| | | J | m/m |
| | | K | m/m |
| | | L | m/m |
| | | M | m/m |
| | | N | m/m |
| O | m/m | | |
| ELECTRICAL REQUIREMENTS | | TEST INSTRUMENTS | |
| L | 820 ± 10% nH | TEST FREQ. | 25MHz/100mV |
| Q | 25 MIN. | TEST FREQ. | 25MHz/100mV |
| Srf | 100 MHz MIN. | TEST FREQ. | MHz |
| Rdc | 1.00 OHM. MAX. | TEST FREQ. | MHz |
| Idc | 150 mA MAX. | TEST FREQ. | MHz |
| | | | |
| | | | |
| DRAWN BY | | CHECKED BY | |
| Juli Wang | | John Chuang | |
| APPROVED BY | | APPROVED BY | |
| Lionel Lin | | Lionel Lin | |

- HP 4338A MILLIOHMMETER
- HP 4195A NETWORK/SPECTRUM ANALYZER
- HP 4284A BIAS CURRENT SOURCE
- HP 4285A PRECISION LCR METER
- HP 4286A PRECISION LCR METER
- HP 4291B RF IMPEDANCE /MATERIAL ANALYZER
- HP 6632A DC POWER SUPPLY

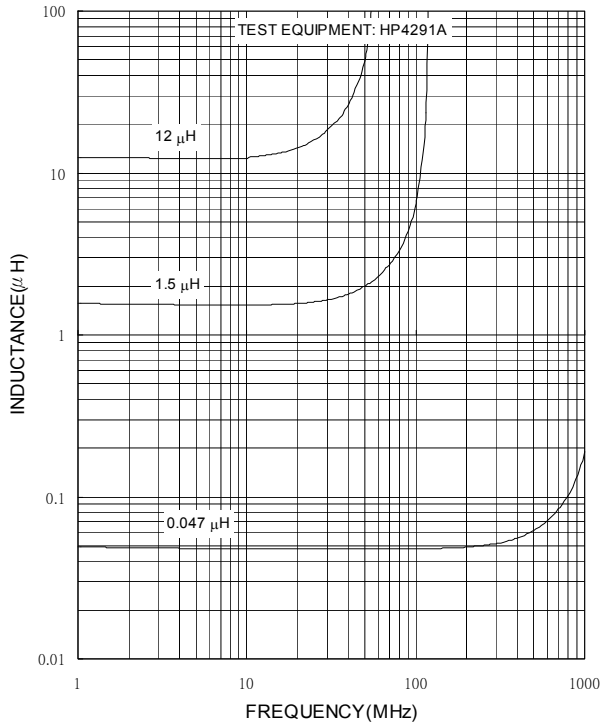
TEST DATA

| | | | | | | | |
|-----------------|---------------|---------------|---------------|---------------|----------------|-------------|--------------|
| CUSTOMER: | | | | | | | |
| CUSTOMER'S P/N: | | | | | | SERIES NO: | TL2640 |
| VENDOR'S P/N: | | TL201209-R82K | | | | DATE: | 03-SEP-2009 |
| MEAS | A | B | C | D | L | Q | Rdc |
| ITEM | (m/m) | (m/m) | (m/m) | (m/m) | (nH) | | (Ω) |
| SPEC | 2.0 ± 0.2 | 1.2 ± 0.2 | 0.9 ± 0.2 | 0.5 ± 0.3 | $820 \pm 10\%$ | 25 MIN. | 1.00 MAX. |
| TEST FREQ. | | | | | 25 MHz | 25 MHz | |
| 1 | 2.02 | 1.22 | 0.88 | 0.53 | 835.0 | 63.7 | 0.319 |
| 2 | 2.03 | 1.24 | 0.90 | 0.52 | 843.9 | 62.5 | 0.270 |
| 3 | 2.04 | 1.25 | 0.89 | 0.48 | 801.0 | 65.3 | 0.287 |
| 4 | 2.01 | 1.23 | 0.92 | 0.52 | 818.7 | 64.2 | 0.268 |
| 5 | 2.03 | 1.21 | 0.91 | 0.50 | 818.0 | 64.4 | 0.276 |
| 6 | 2.02 | 1.22 | 0.90 | 0.53 | 802.6 | 64.8 | 0.273 |
| 7 | 2.02 | 1.23 | 0.89 | 0.51 | 812.6 | 60.4 | 0.289 |
| 8 | 2.01 | 1.22 | 0.92 | 0.52 | 823.0 | 61.3 | 0.279 |
| 9 | 2.05 | 1.21 | 0.87 | 0.49 | 836.5 | 60.6 | 0.317 |
| 10 | 2.03 | 1.21 | 0.91 | 0.52 | 820.6 | 61.4 | 0.275 |
| AVG. | 2.03 | 1.22 | 0.90 | 0.52 | 821.2 | 62.9 | 0.285 |
| R | 0.04 | 0.04 | 0.05 | 0.05 | 42.9 | 4.9 | 0.051 |
| DRAWN BY | | | CHECKED BY | | | APPROVED BY | |
| Juli Wang | | | John Chuang | | | Lionel Lin | |

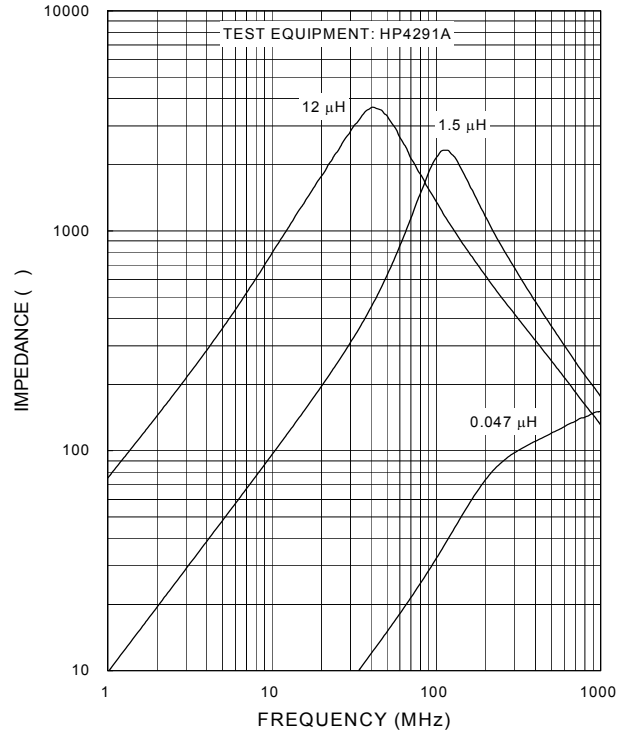
TYPICAL ELECTRICAL CHARACTERISTICS CURVE

TL2012 Type

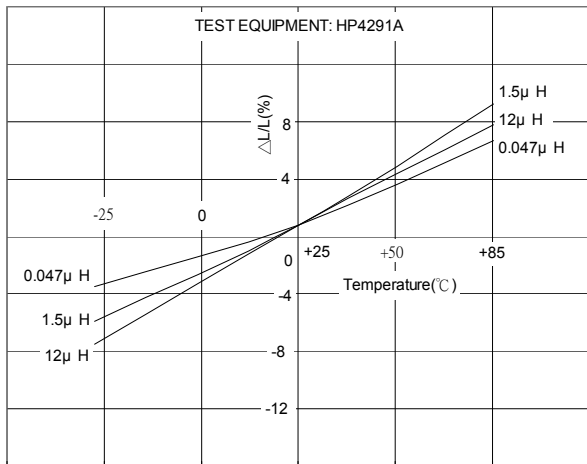
Inductance VS. Frequency



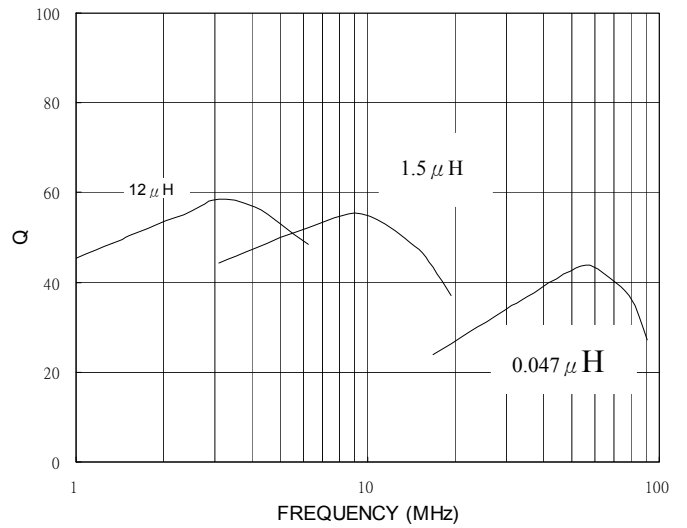
Impedance VS. Frequency



Inductance VS. Temperature

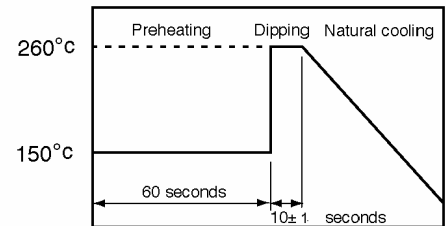


Q VS. Frequency

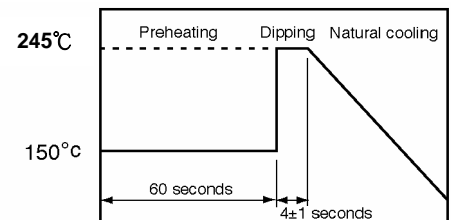


RELIABILITY TEST

| Item | Performance | Test condition |
|--|--|---|
| Operating temperature range | -55 °C to + 125 °C | |
| Storage temperature and umidity ranges | 40 °C MAX., 70% RH MAX. | |
| Soldering heat resistance | The chip shall not be cracks. More than 75% of terminal electrode shall be covered with solder. | Preheat: 150 °C, 60 seconds Solder temperature : 260 ± 5 °C Flux: Rosin Dip time: 10 ± 1 seconds |



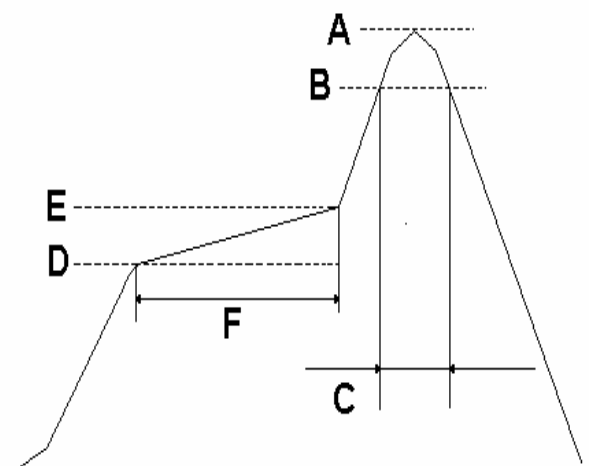
| | | |
|---------------|---|---|
| Solderability | More than 90% of the terminal electrode shall be covered with new solder. | Preheat: 150 °C, 60 seconds Solder temperature: 245 ± 5 °C Flux: Rosin Dip time: 4 ± 1 seconds |
|---------------|---|---|



Recommended Soldering Conditions

(REFLOW TEMPERATURE PROFILE) **Lead-Free**

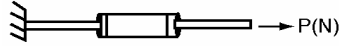
| | |
|---|-----------------------------|
| A | $260 \pm 5^{\circ}\text{C}$ |
| B | $230 \pm 5^{\circ}\text{C}$ |
| C | $30 \pm 10 \text{ sec}$ |
| D | 150°C |
| E | 180°C |
| F | $90 \pm 30 \text{ sec}$ |



RELIABILITY TEST

Terminal strength

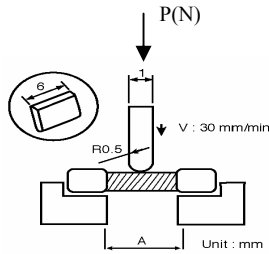
The terminal electrode and the body shall not be damaged by the forces applied on the right conditions.



| Type | P (kgf) | Time (s) |
|----------|---------|----------|
| T□100505 | 0.3 | |
| T□160808 | 0.5 | |
| T□201209 | 0.6 | |
| T□201212 | 0.8 | |
| T□321611 | 1.0 | |
| T□322513 | 1.0 | 30 ± 5 |
| T□451616 | 1.0 | |
| T□453215 | 1.5 | |
| TA3216M4 | 0.5 | |

Bending strength

The body shall not be damaged by the forces applied on the right conditions.

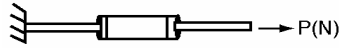


| Type | A (mm) | P (kgf) |
|----------|--------|---------|
| T□160808 | 1.0 | 0.5 |
| T□201209 | 1.4 | 1.0 |
| T□201212 | 1.4 | 1.2 |
| T□321611 | 2.0 | 2.0 |
| T□322513 | 2.0 | 2.5 |
| T□451616 | 2.5 | 2.5 |
| T□453215 | 2.7 | 2.5 |
| TA3216M4 | 1.4 | 1.0 |

RELIABILITY TEST

Terminal strength

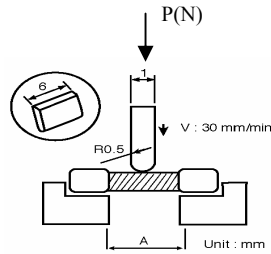
The terminal electrode and the body shall not be damaged by the forces applied on the right conditions.



| Type | P (kgf) | Time (s) |
|----------|---------|----------|
| T□100505 | 0.3 | |
| T□160808 | 0.5 | |
| T□201209 | 0.6 | |
| T□201212 | 0.8 | |
| T□321611 | 1.0 | |
| T□322513 | 1.0 | 30 ± 5 |
| T□451616 | 1.0 | |
| T□453215 | 1.5 | |
| TA3216M4 | 0.5 | |

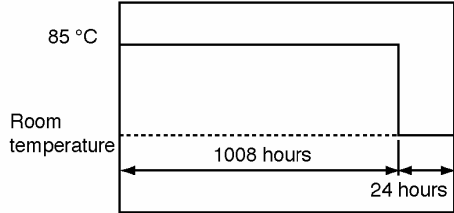
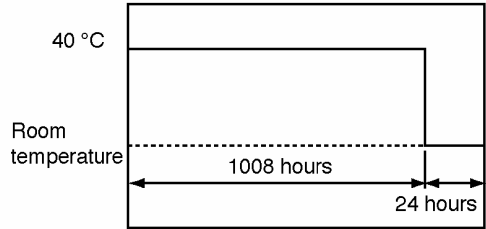
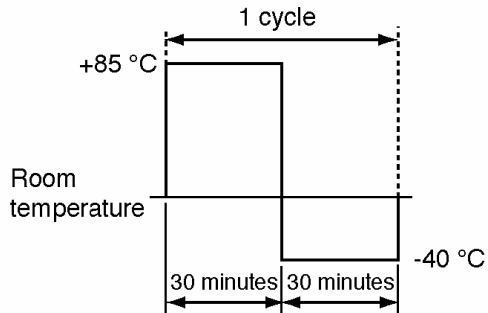
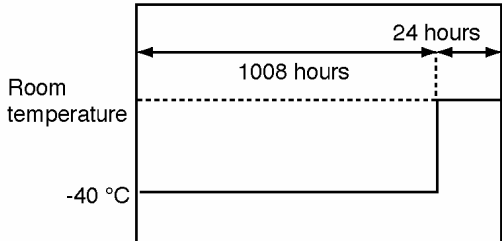
Bending strength

The body shall not be damaged by the forces applied on the right conditions.



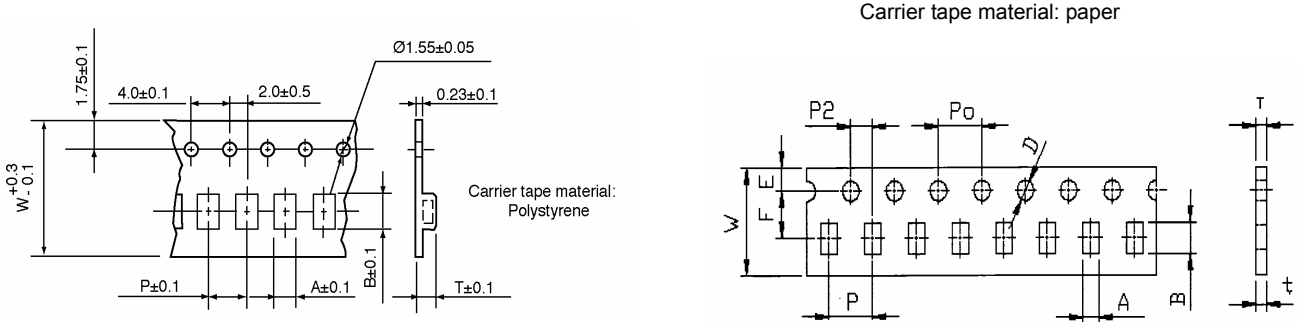
| Type | A (mm) | P (kgf) |
|----------|--------|---------|
| T□160808 | 1.0 | 0.5 |
| T□201209 | 1.4 | 1.0 |
| T□201212 | 1.4 | 1.2 |
| T□321611 | 2.0 | 2.0 |
| T□322513 | 2.0 | 2.5 |
| T□451616 | 2.5 | 2.5 |
| T□453215 | 2.7 | 2.5 |
| TA3216M4 | 1.4 | 1.0 |

RELIABILITY TEST

| Item | Performance | Test condition |
|-----------------------------------|--|--|
| High temperature resistance | Appearance : Ferrite shall not be damaged. Inductance : Within±10% of the initial value. Q: Within±30% of the initial value. | Temperature: 85±2°C Testing time: 1008±12 hours Measurement: After placing for 24 hours min  |
| Humidity resistance | Appearance: Ferrite shall not be damaged. Inductance: Within±10% of the initial value Q: Within±30 % of the initial value. | Humidity: 90 to 95% RH Temperature: 40±2°C Testing time: 1008±12 hours Measurement: After placing for 24 hours min  |
| Thermal Shock | Appearance: Cracking, chipping or any other defects harmful to the characteristics shall not be allowed. Inductance: Within±10% of the initial value Q: Within±30% of the initial value. | Temperature: -40°C, +85°C, kept stabilized for 30 minutes each Cycle: 100 cycles Measurement: After placing for 24 hours min  |
| Low temperature storage life test | Appearance: Cracking, chipping or any other defects harmful to the characteristics shall not be allowed. Inductance: Within±10% of the initial value. Q: Within±30% of the initial value. | Temperature: -40±2°C Testing time: 1008±12 hours Measurement: After placing for 24 hours min  |

PACKAGING

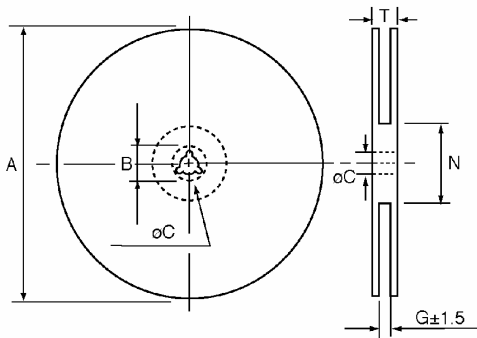
- Tape dimensions and packaging quantities



| material: Paper (Dimensions in mm) | | | | | | |
|---|------|------|---|---|------|--------------|
| TYPE | A | B | W | P | T | CHIPS / REEL |
| 100505 | 0.62 | 1.12 | 8 | 2 | 0.60 | 10000 |
| 160808 | 1.10 | 1.90 | 8 | 4 | 0.95 | 4000 |
| 201209 | 1.50 | 2.30 | 8 | 4 | 0.95 | 4000 |
| material: Polystyrene (Dimensions in mm) | | | | | | |
| TYPE | A | B | W | P | T | CHIPS / REEL |
| 160808 | 1.01 | 1.80 | 8 | 4 | 1.02 | 4000 |
| 201209 | 1.42 | 2.25 | 8 | 4 | 1.04 | 4000 |
| 201212 | 1.50 | 2.35 | 8 | 4 | 1.45 | 2000 |
| 321611 | 1.88 | 3.50 | 8 | 4 | 1.27 | 3000 |

- Reel dimensions

Material: Paper, Plastic



Dimensions in mm

| TYPE | 8mm | 12mm |
|------|----------|----------|
| A | 178±2 | 178±2 |
| B | 21.0±0.8 | 21.0±0.8 |
| C | 13.0±0.8 | 13.0±0.8 |
| G | 10.0 | 14.0 |
| N | 75 | 75 |
| T | 12.5 | 16.5 |

