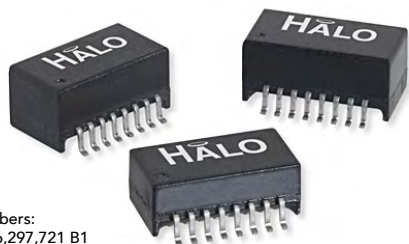


# ULTRA™ Family of Transformers

SMD Single Port 10/100BASE-TX Isolation Modules



US Patent Numbers:  
5,656,985 6,297,721 B1  
6,297,720 B1 6,320,489 B1  
6,344,785 B1 6,662,431 B1

## Product Features:

- ULTRA™, E-ULTRA™, and ULTRA-II™
- IEEE802.3u Compliant
- UL/EN62368 Recognized
- 100% Electrical Testing
- 1500Vrms Hi-Pot
- Patented Open Frame Construction

| ULTRA™<br>Part Number | Circuit Package |    | Temp.<br>Range | Turns Ratio ±3%<br>(1-3:16-14) (6-8:11-9) |            | Cw/w<br>(pF) | PRI LL<br>(μH max) | PRI DCR<br>(Ω max) | RoHS¹     |
|-----------------------|-----------------|----|----------------|-------------------------------------------|------------|--------------|--------------------|--------------------|-----------|
| TG110-S050N2LF        | A               | N2 | 0 to 70°C      | 1CT:1CT                                   | 1CT:1CT    | 35 max       | 0.4                | 0.9                | Pb-Free   |
| TG110-S050N2RL        | A               | N2 | 0 to 70°C      | 1CT:1CT                                   | 1CT:1CT    | 35 max       | 0.4                | 0.9                | RoHS (7a) |
| TG110-S055N2LF        | B               | N2 | 0 to 70°C      | 1CT:1CT                                   | 1CT:1CT    | 35 max       | 0.4                | 0.9                | Pb-Free   |
| TG110-S055N2RL        | B               | N2 | 0 to 70°C      | 1CT:1CT                                   | 1CT:1CT    | 35 max       | 0.4                | 0.9                | RoHS (7a) |
| TG110-S120N2LF        | B               | N2 | 0 to 70°C      | 2CT:1CT                                   | 1CT:1CT    | 30 max       | 0.9                | 0.9                | Pb-Free   |
| TG110-S120N2RL        | B               | N2 | 0 to 70°C      | 2CT:1CT                                   | 1CT:1CT    | 30 max       | 0.9                | 0.9                | RoHS (7a) |
| TG110-S125N2LF        | B               | N2 | 0 to 70°C      | 1CT:1CT                                   | 2CT:1CT    | 30 max       | 0.4                | 0.9                | Pb-Free   |
| TG110-S125N2RL        | B               | N2 | 0 to 70°C      | 1CT:1CT                                   | 2CT:1CT    | 35 max       | 0.4                | 0.9                | RoHS (7a) |
| TG110-S131N2LF        | B               | N2 | 0 to 70°C      | 1.41CT:1CT                                | 1CT:1CT    | 35 max       | 0.4                | 1.5                | Pb-Free   |
| TG110-S131N2RL        | B               | N2 | 0 to 70°C      | 1.41CT:1CT                                | 1CT:1CT    | 35 max       | 0.4                | 1.5                | RoHS (7a) |
| TG110-S139N2LF        | B               | N2 | 0 to 70°C      | 1.25CT:1CT                                | 1CT:1CT    | 15 typ       | 0.9                | 0.9                | Pb-Free   |
| TG110-S139N2RL        | B               | N2 | 0 to 70°C      | 1.25CT:1CT                                | 1CT:1CT    | 15 typ       | 0.9                | 0.9                | RoHS (7a) |
| TG110-S141N5LF        | B               | N5 | 0 to 70°C      | 1CT:1.41CT                                | 1CT:1CT    | 35 typ       | 0.4                | 0.9                | Pb-Free   |
| TG110-S141N5RL        | B               | N5 | 0 to 70°C      | 1CT:1.41CT                                | 1CT:1CT    | 35 typ       | 0.4                | 0.9                | RoHS (7a) |
| TG110-S177N2LF        | B               | N2 | 0 to 70°C      | 1.41CT:1CT                                | 1.41CT:1CT | 30 max       | 0.6                | 0.9                | Pb-Free   |
| TG110-S177N2RL        | B               | N2 | 0 to 70°C      | 1.41CT:1CT                                | 1.41CT:1CT | 30 max       | 0.6                | 0.9                | RoHS (7a) |

| ULTRA-II™       |   |    |           |         |         |        |     |     |           |
|-----------------|---|----|-----------|---------|---------|--------|-----|-----|-----------|
| TG110-3506N6LF² | C | N6 | 0 to 70°C | 1CT:1CT | 1CT:1CT | 20 typ | 0.4 | 1.3 | Pb-Free   |
| TG110-3506N6RL² | C | N6 | 0 to 70°C | 1CT:1CT | 1CT:1CT | 20 typ | 0.4 | 1.3 | RoHS (7a) |
| TG110-S101N6LF² | D | N6 | 0 to 70°C | 1CT:1CT | 1CT:1CT | 20 typ | 0.4 | 1.3 | Pb-Free   |
| TG110-S101N6RL² | D | N6 | 0 to 70°C | 1CT:1CT | 1CT:1CT | 20 typ | 0.4 | 1.3 | RoHS (7a) |

## Notes:

1. Pb-Free parts are RoHS 6/6 compliant. RoHS (7a) parts contain lead per exemption 7a which is set to expire in the future.
2. Not for use in Auto-MDIX circuits/auto-transformer must be on the TX channel.
3. Parts with RL suffix are not recommended for new designs.
4. Contact the factory or your local representative for individual datasheet or additional information.

For additional information contact your [local representative](#), or HALO's support staff at (650) 903-3800 or [info@haloelectronics.com](mailto:info@haloelectronics.com)

# ULTRA™ Family of Transformers

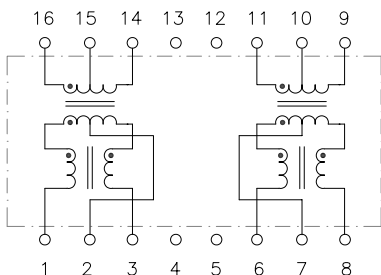


| E-ULTRA™<br>Part Number | Circuit | Package | Temp.<br>Range | Turns Ratio $\pm 3\%$ |            | Cw/w<br>(pF) | PRI/SEC              |                            | RoHS¹     |
|-------------------------|---------|---------|----------------|-----------------------|------------|--------------|----------------------|----------------------------|-----------|
|                         |         |         |                | (1-3:16-14)           | (6-8:11-9) |              | LL<br>( $\mu$ H max) | PRI DCR<br>( $\Omega$ max) |           |
| TG110-E050N5LF          | A       | N5      | -40 to +85°C   | 1CT:1CT               | 1CT:1CT    | 35 max       | 0.4                  | 1.0                        | Pb-Free   |
| TG110-E050N5RL          | A       | N5      | -40 to +85°C   | 1CT:1CT               | 1CT:1CT    | 40 max       | 0.4                  | 1.0                        | RoHS (7a) |
| TG110-E055N5LF          | B       | N5      | -40 to +85°C   | 1CT:1CT               | 1CT:1CT    | 35 max       | 0.4                  | 1.0                        | Pb-Free   |
| TG110-E055N5RL          | B       | N5      | -40 to +85°C   | 1CT:1CT               | 1CT:1CT    | 40 max       | 0.4                  | 1.0                        | RoHS (7a) |
| TG110-E120N5LF          | B       | N5      | -40 to +85°C   | 2CT:1CT               | 1CT:1CT    | 40 max       | 0.9                  | 1.3                        | Pb-Free   |
| TG110-E120N5RL          | B       | N5      | -40 to +85°C   | 2CT:1CT               | 1CT:1CT    | 40 max       | 0.9                  | 1.3                        | RoHS (7a) |
| TG110-E125N5LF          | B       | N5      | -40 to +85°C   | 1CT:1CT               | 2CT:1CT    | 40 max       | 0.9                  | 1.1                        | Pb-Free   |
| TG110-E125N5RL          | B       | N5      | -40 to +85°C   | 1CT:1CT               | 2CT:1CT    | 40 max       | 0.9                  | 1.1                        | RoHS (7a) |
| TG110-E139N5LF          | B       | N5      | -40 to +85°C   | 1.25CT:1CT            | 1CT:1CT    | 30 typ       | 0.4                  | 1.3                        | Pb-Free   |
| TG110-E139N5RL          | B       | N5      | -40 to +85°C   | 1.25CT:1CT            | 1CT:1CT    | 30 typ       | 0.4                  | 1.3                        | RoHS (7a) |

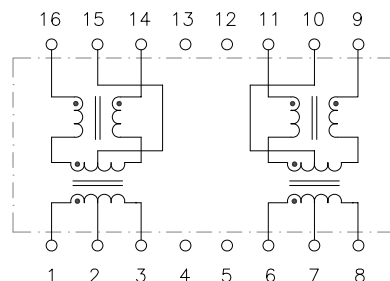
## Notes:

1. Pb-Free parts are RoHS 6/6 compliant. RoHS (7a) parts contain lead per exemption 7a which is set to expire in the future.
2. Parts with RL suffix are not recommended for new designs.
3. Contact the factory or your local representative for individual datasheet or additional information.

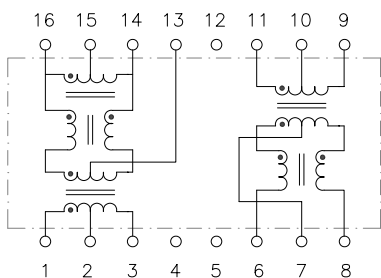
### Circuit A



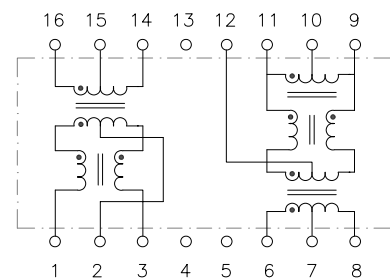
### Circuit B



### Circuit C

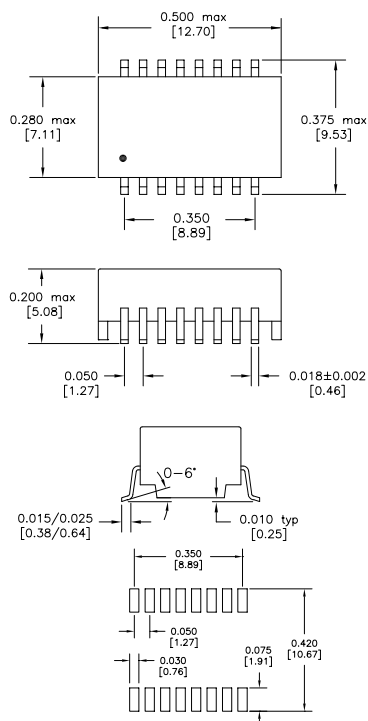


### Circuit D



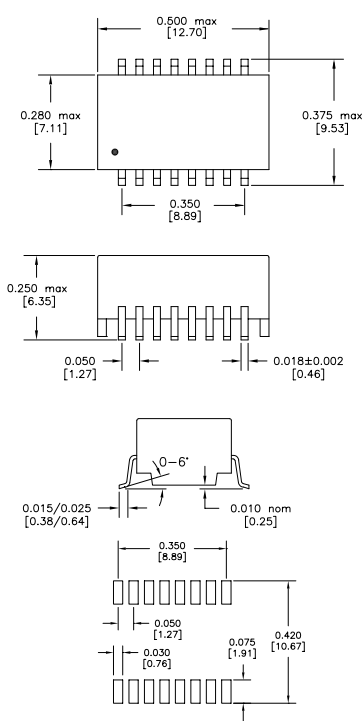
# HALO ULTRA 10/100BASE-TX Ethernet Transformers

## N2 Package



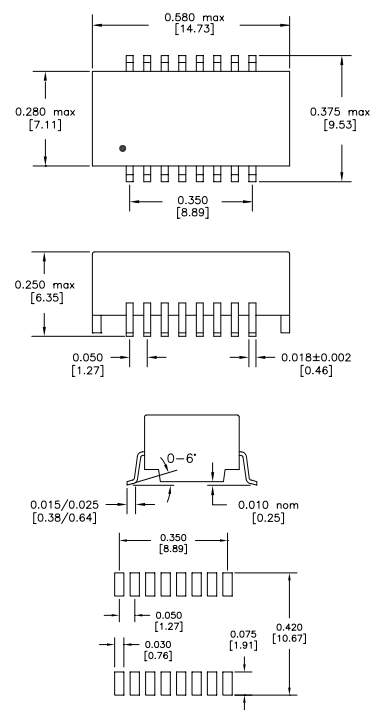
Recommended Solder Pad Dimensions

## N5 Package



Recommended Solder Pad Dimensions

## N6 Package



Recommended Solder Pad Dimensions

Dimensions: inch [mm]

Co-Planarity: 0.004 [0.10]

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