

# Quatra™ 10BASE-T Transformer

SMD Quad Port 10BASE-T Transformer



## Product Features:

- Four Port 10BASE-T
- IEEE802.3i Compliant
- UL/EN60950 Recognized
- 100% Compliance Testing
- 1500Vrms Hi-Pot
- Patented Open Frame Construction

| Part Number   | Turns Ratio $\pm 3\%$<br>TX | RX  | PRI OCL<br>TX/RX<br>( $\mu\text{H}$ typ) | Cw/w<br>TX/RX<br>(pF max) | PRI LL<br>TX/RX<br>( $\mu\text{H}$ max) | PRI DCR<br>TX/RX<br>( $\Omega$ max) | Optional CMR<br>Choke | RoHS <sup>1</sup> |
|---------------|-----------------------------|-----|------------------------------------------|---------------------------|-----------------------------------------|-------------------------------------|-----------------------|-------------------|
| TG44-1406NXLF | 1CT:1.41                    | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | N/A                   | Pb-Free           |
| TG44-1406NXRL | 1CT:1.41                    | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | N/A                   | RoHS (7a)         |
| TG45-1406NXLF | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX                    | Pb-Free           |
| TG45-1406NXRL | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX                    | RoHS (7a)         |
| TG46-1406NXLF | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX/RX                 | Pb-Free           |
| TG46-1406NXRL | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX/RX                 | RoHS (7a)         |
| TG57-1006NXLF | 1CT:1                       | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | N/A                   | Pb-Free           |
| TG57-1006NXRL | 1CT:1                       | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | N/A                   | RoHS (7a)         |
| TG58-1006NXLF | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX                    | Pb-Free           |
| TG58-1006NXRL | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX                    | RoHS (7a)         |
| TG59-1006NXLF | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX/RX                 | Pb-Free           |
| TG59-1006NXRL | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX/RX                 | RoHS (7a)         |
| TG62-1006NXLF | 2CT:1                       | 1:1 | 150                                      | 10                        | 0.6 / 0.3                               | 0.35                                | N/A                   | Pb-Free           |
| TG62-1006NXRL | 2CT:1                       | 1:1 | 150                                      | 10                        | 0.6 / 0.3                               | 0.35                                | N/A                   | RoHS (7a)         |
| TG66-1006NXLF | 2CT:1CT                     | 1:1 | 150                                      | 10                        | 0.9 / 0.3                               | 0.35                                | TX                    | Pb-Free           |
| TG66-1006NXRL | 2CT:1CT                     | 1:1 | 150                                      | 10                        | 0.9 / 0.3                               | 0.35                                | TX                    | RoHS (7a)         |
| TG87-2006NXLF | 1CT:2                       | 1:1 | 50 / 200                                 | 10 / 15                   | 0.15 / 0.2                              | 0.35 / 0.5                          | N/A                   | Pb-Free           |
| TG87-2006NXRL | 1CT:2                       | 1:1 | 50 / 200                                 | 10 / 15                   | 0.15 / 0.2                              | 0.35 / 0.5                          | N/A                   | RoHS (7a)         |
| TG88-2006NXLF | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.15                              | 0.35 / 0.5                          | TX                    | Pb-Free           |
| TG88-2006NXRL | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.15                              | 0.35 / 0.5                          | TX                    | RoHS (7a)         |
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| TG89-2006NXRL | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.3                               | 0.35 / 0.5                          | TX/RX                 | RoHS (7a)         |

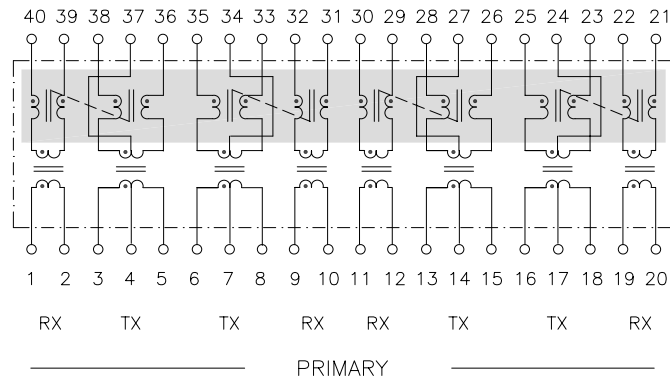
## Notes:

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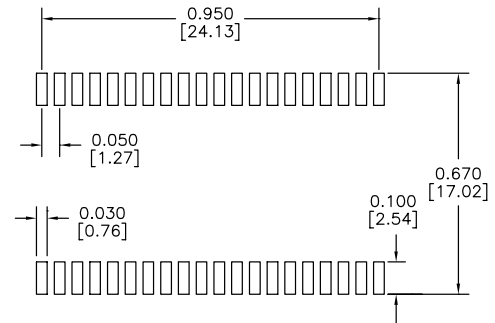
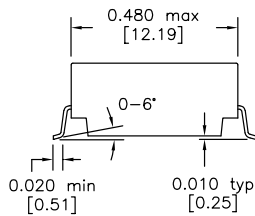
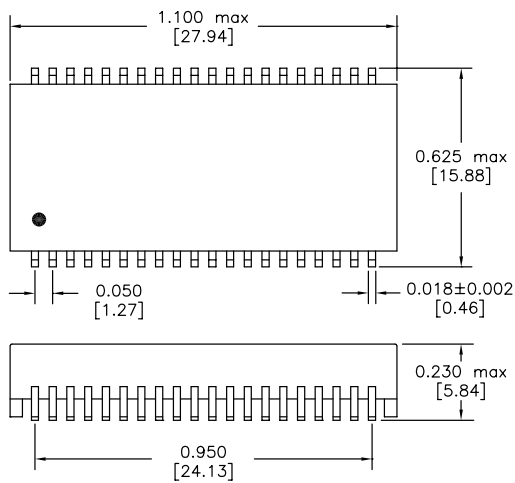
For additional information contact your [local representative](#), or HALO's support staff at (650) 903-3800 or [info@haloelectronics.com](mailto:info@haloelectronics.com)

# HALO Quatra 10BASE-T Transformers

## Circuit Diagram



## Mechanical



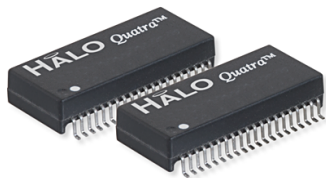
Recommended Solder Pad Layout  
Dimensions: inch [mm]  
Co-Planarity: 0.004 [0.10]

US Patent Numbers:  
5,656,985 6,297,721 B1  
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| Part Number   | Turns Ratio $\pm 3\%$<br>TX | RX  | PRI OCL<br>TX/RX<br>( $\mu\text{H typ}$ ) | Cw/w<br>TX/RX<br>(pF max) | PRI LL<br>TX/RX<br>( $\mu\text{H max}$ ) | PRI DCR<br>TX/RX<br>( $\Omega$ max) | Optional CMR<br>Choke | RoHS <sup>1</sup> |
|---------------|-----------------------------|-----|-------------------------------------------|---------------------------|------------------------------------------|-------------------------------------|-----------------------|-------------------|
| TG41-S010NXLF | 1CT:2.5CT                   | 1:1 | 35 / 200                                  | 15                        | 0.1 / 0.4                                | 0.3 / 0.5                           | TX/RX                 | Pb-Free           |
| TG41-S010NXRL | 1CT:2.5CT                   | 1:1 | 35 / 200                                  | 15                        | 0.1 / 0.4                                | 0.3 / 0.5                           | TX/RX                 | RoHS (7a)         |
| TG44-S010NXLF | 1CT:1.41                    | 1:1 | 140                                       | 12                        | 0.4                                      | 0.4                                 | N/A                   | Pb-Free           |
| TG44-S010NXRL | 1CT:1.41                    | 1:1 | 140                                       | 12                        | 0.4                                      | 0.4                                 | N/A                   | RoHS (7a)         |
| TG45-S010NXLF | 1CT:1.41CT                  | 1:1 | 140                                       | 12                        | 0.4                                      | 0.4                                 | TX                    | Pb-Free           |
| TG45-S010NXRL | 1CT:1.41CT                  | 1:1 | 140                                       | 12                        | 0.4                                      | 0.4                                 | TX                    | RoHS (7a)         |
| TG46-S010NXLF | 1CT:1.41CT                  | 1:1 | 140                                       | 12                        | 0.4                                      | 0.4                                 | TX/RX                 | Pb-Free           |
| TG46-S010NXRL | 1CT:1.41CT                  | 1:1 | 140                                       | 12                        | 0.4                                      | 0.4                                 | TX/RX                 | RoHS (7a)         |
| TG57-S010NXLF | 1CT:1CT                     | 1:1 | 100                                       | 12                        | 0.3                                      | 0.3                                 | N/A                   | Pb-Free           |
| TG57-S010NXRL | 1CT:1CT                     | 1:1 | 100                                       | 12                        | 0.3                                      | 0.3                                 | N/A                   | RoHS (7a)         |
| TG58-S010NXLF | 1CT:1CT                     | 1:1 | 100                                       | 12                        | 0.3                                      | 0.3                                 | TX                    | Pb-Free           |
| TG58-S010NXRL | 1CT:1CT                     | 1:1 | 100                                       | 12                        | 0.3                                      | 0.3                                 | TX                    | RoHS (7a)         |
| TG59-S010NXLF | 1CT:1CT                     | 1:1 | 100                                       | 12                        | 0.3                                      | 0.3                                 | TX/RX                 | Pb-Free           |
| TG59-S010NXRL | 1CT:1CT                     | 1:1 | 100                                       | 12                        | 0.3                                      | 0.3                                 | TX/RX                 | RoHS (7a)         |
| TG62-S010NXLF | 2CT:1                       | 1:1 | 150                                       | 10                        | 0.6 / 0.3                                | 0.35                                | N/A                   | Pb-Free           |
| TG62-S010NXRL | 2CT:1                       | 1:1 | 150                                       | 10                        | 0.6 / 0.3                                | 0.35                                | N/A                   | RoHS (7a)         |
| TG66-S010NXLF | 2CT:1CT                     | 1:1 | 150                                       | 10                        | 0.9 / 0.3                                | 0.35                                | TX/RX                 | Pb-Free           |
| TG66-S010NXRL | 2CT:1CT                     | 1:1 | 150                                       | 10                        | 0.9 / 0.3                                | 0.35                                | TX/RX                 | RoHS (7a)         |
| TG87-S010NXLF | 1CT:2                       | 1:1 | 50 / 200                                  | 9 / 11                    | 0.75 / 0.15                              | 0.35 / 0.5                          | N/A                   | Pb-Free           |
| TG87-S010NXRL | 1CT:2                       | 1:1 | 50 / 200                                  | 9 / 11                    | 0.75 / 0.15                              | 0.35 / 0.5                          | N/A                   | RoHS (7a)         |
| TG88-S010NXLF | 1CT:2CT                     | 1:1 | 50 / 200                                  | 9 / 11                    | 0.2 / 0.15                               | 0.35 / 0.5                          | TX                    | Pb-Free           |
| TG88-S010NXRL | 1CT:2CT                     | 1:1 | 50 / 200                                  | 9 / 11                    | 0.2 / 0.15                               | 0.35 / 0.5                          | TX                    | RoHS (7a)         |
| TG89-S010NXLF | 1CT:2CT                     | 1:1 | 50 / 200                                  | 9 / 14                    | 0.2 / 0.3                                | 0.2 / 0.3                           | TX/RX                 | Pb-Free           |
| TG89-S010NXRL | 1CT:2CT                     | 1:1 | 50 / 200                                  | 9 / 14                    | 0.2 / 0.3                                | 0.2 / 0.3                           | TX/RX                 | RoHS (7a)         |

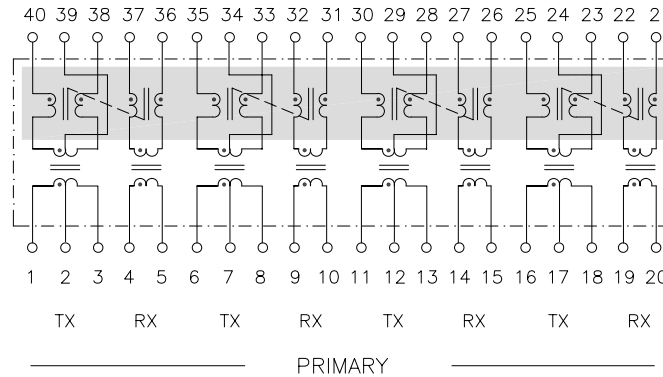
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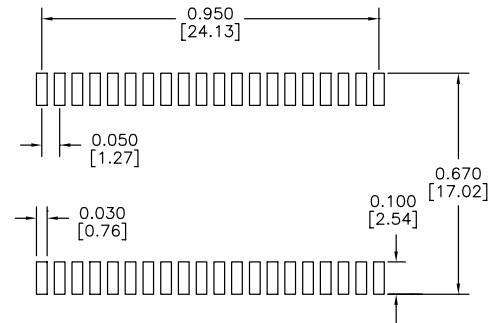
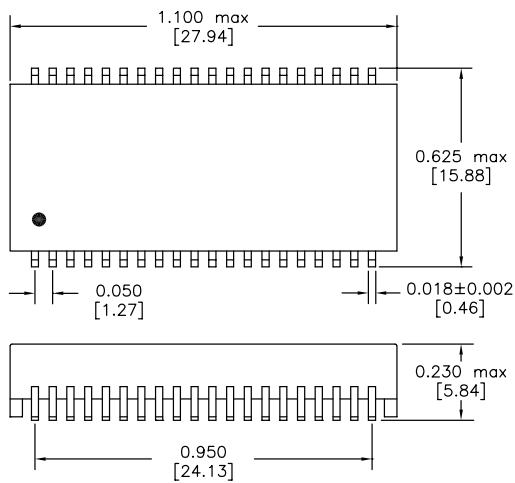
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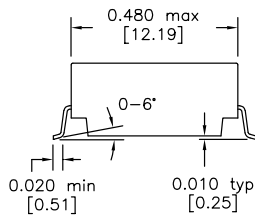
## Circuit Diagram



## Mechanical



Recommended Solder Pad Layout  
Dimensions: inch [mm]  
Co-Planarity: 0.004 [0.10]



US Patent Numbers:  
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|---------------|-----------------------------|-----|------------------------------------------|---------------------------|-----------------------------------------|-------------------------------------|-----------------------|-------------------|
| TG44-S020NXLF | 1CT:1.41                    | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | N/A                   | Pb-Free           |
| TG44-S020NXRL | 1CT:1.41                    | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | N/A                   | RoHS (7a)         |
| TG45-S020NXLF | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX                    | Pb-Free           |
| TG45-S020NXRL | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX                    | RoHS (7a)         |
| TG46-S020NXLF | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX/RX                 | Pb-Free           |
| TG46-S020NXRL | 1CT:1.41CT                  | 1:1 | 140                                      | 12                        | 0.4                                     | 0.4                                 | TX/RX                 | RoHS (7a)         |
| TG57-S020NXLF | 1CT:1                       | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | N/A                   | Pb-Free           |
| TG57-S020NXRL | 1CT:1                       | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | N/A                   | RoHS (7a)         |
| TG58-S020NXLF | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX                    | Pb-Free           |
| TG58-S020NXRL | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX                    | RoHS (7a)         |
| TG59-S020NXLF | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX/RX                 | Pb-Free           |
| TG59-S020NXRL | 1CT:1CT                     | 1:1 | 100                                      | 12                        | 0.3                                     | 0.3                                 | TX/RX                 | RoHS (7a)         |
| TG62-S020NXLF | 2CT:1                       | 1:1 | 150                                      | 10                        | 0.6 / 0.3                               | 0.35                                | N/A                   | Pb-Free           |
| TG62-S020NXRL | 2CT:1                       | 1:1 | 150                                      | 10                        | 0.6 / 0.3                               | 0.35                                | N/A                   | RoHS (7a)         |
| TG66-S020NXLF | 2CT:1CT                     | 1:1 | 150                                      | 10                        | 0.9 / 0.3                               | 0.35                                | TX/RX                 | Pb-Free           |
| TG66-S020NXRL | 2CT:1CT                     | 1:1 | 150                                      | 10                        | 0.9 / 0.3                               | 0.35                                | TX/RX                 | RoHS (7a)         |
| TG87-S020NXLF | 1CT:2                       | 1:1 | 50 / 200                                 | 9 / 11                    | 0.075 / 0.15                            | 0.35 / 0.5                          | N/A                   | Pb-Free           |
| TG87-S020NXRL | 1CT:2                       | 1:1 | 50 / 200                                 | 9 / 11                    | 0.075 / 0.15                            | 0.35 / 0.5                          | N/A                   | RoHS (7a)         |
| TG88-S020NXLF | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.15                              | 0.35 / 0.5                          | TX                    | Pb-Free           |
| TG88-S020NXRL | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.15                              | 0.35 / 0.5                          | TX                    | RoHS (7a)         |
| TG89-S020NXLF | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.3                               | 0.35 / 0.5                          | TX/RX                 | Pb-Free           |
| TG89-S020NXRL | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.3                               | 0.35 / 0.5                          | TX/RX                 | RoHS (7a)         |

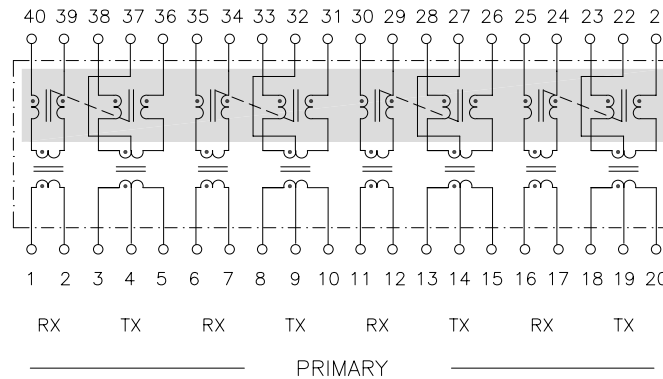
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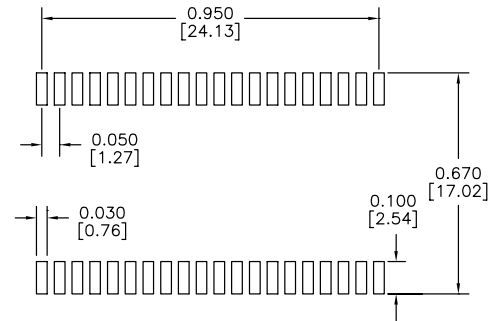
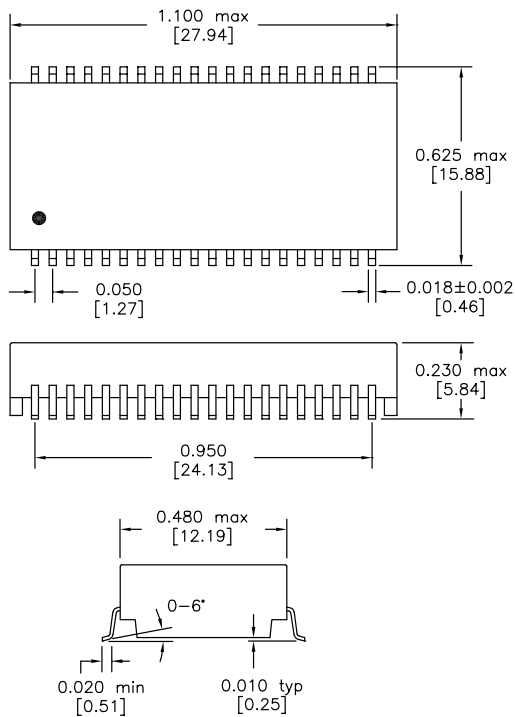
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Co-Planarity: 0.004 [0.10]

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ELECTRONICS, INC.

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HALO® Electronics is a leading supplier of high quality communication magnetics including signal transformers, filters, CMR chokes, PoE power transformers, DC/DC converters, and integrated Ethernet connectors. HALO's leading edge technology solutions are manufactured in ISO9001 and ISO14001 factories offering high quality products at a competitive price.