

# 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)         |
| TG89-2006NXLF | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.3                               | 0.35 / 0.5                          | TX/RX                 | Pb-Free           |
| TG89-2006NXRL | 1CT:2CT                     | 1:1 | 50 / 200                                 | 9 / 11                    | 0.2 / 0.3                               | 0.35 / 0.5                          | TX/RX                 | 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 July 2016.
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3. The cable side CTs are not present on those TX circuits without CMR chokes.
4. Please contact the factory or representative for individual datasheets or additional information.

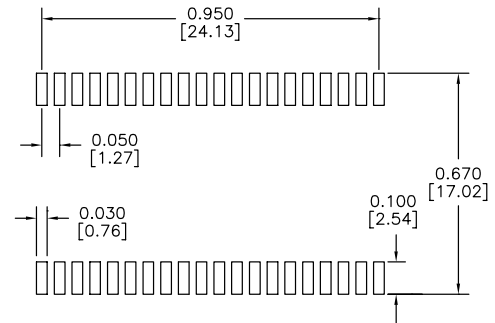
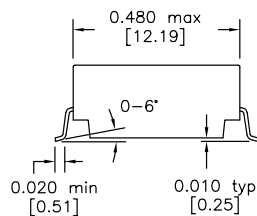
For additional information contact your [local representative](#), or HALO's support staff at (650) 903-3800 or [info@haloelectronics.com](mailto:info@haloelectronics.com)

# HALO Quatra 10BASE-T Transformers

## Circuit Diagram



## Mechanical



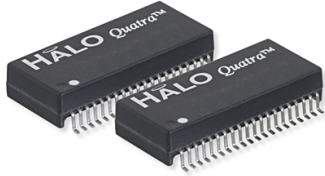
Recommended Solder Pad Layout  
 Dimensions: inch [mm]  
 Co-Planarity: 0.004 [0.10]

US Patent Numbers:  
 5,656,985 6,297,721 B1  
 6,297,720 B1 6,320,489 B1  
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SMD Quad Port 10BASE-T Transformer



## Product Features:

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- UL/EN60950 Recognized
- 100% Compliance Testing
- 1500Vrms Hi-Pot
- Patented Open Frame Construction

| Part Number   | Turns Ratio ±3%<br>TX | RX  | PRI OCL<br>TX/RX<br>(μH typ) | Cw/w<br>TX/RX<br>(pF max) | PRI LL<br>TX/RX<br>(μH max) | PRI DCR<br>TX/RX<br>(Ω 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)         |

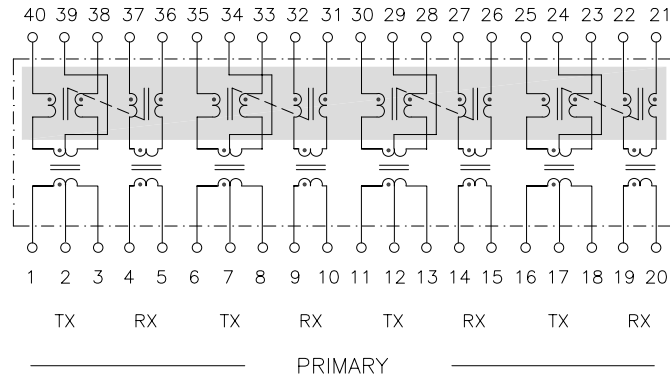
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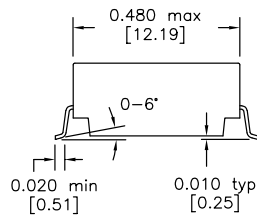
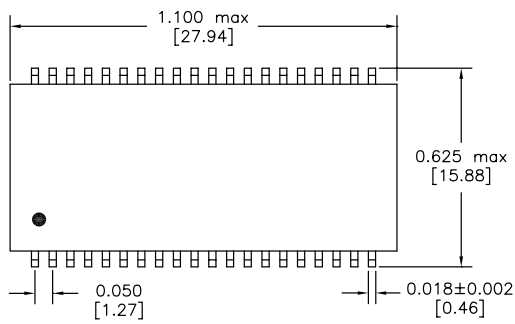
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## Circuit Diagram



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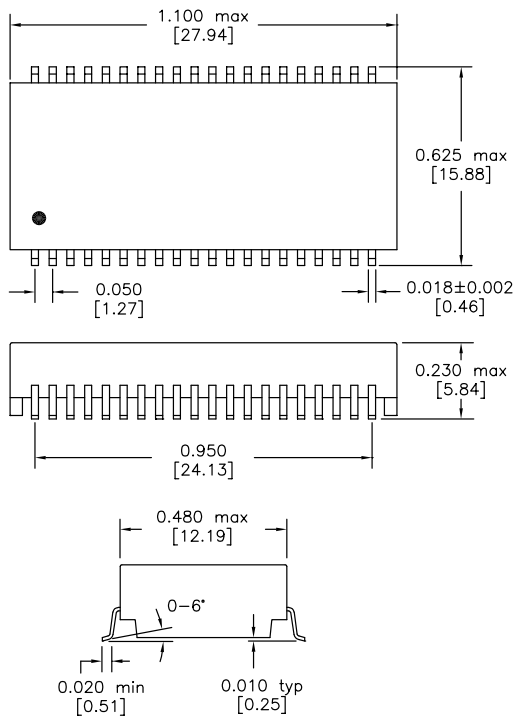
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HALO® Electronics is a leading supplier of high quality communication magnetics including signal transformers, filters, CMR chokes, PoE power transformers, DC/DC converters, and integrated Ethernet connectors. HALO's leading edge technology solutions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



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.