

# IEEE 1394B Firewire 1.062Gb Transceiver Line Interface Module

Copperhead Series



- Small package incorporating active transmit and passive receive circuits with integrated isolation transformers
- Low power dissipation
- Low transmit/receive jitter
- Recommended for distances up to 20 meters
- IC grade transfer-molded package withstands 225°C peak temperature profile.

## TRANSMITTER — Electrical Specifications @ 25°C — Operating Temperature -55°C to +125°C

| Part Number  | Input Data Voltage - V <sub>IL</sub> (V) |      |      | Input Data Voltage - V (mV) |      |      | Input Voltage Differential - V <sub>IN</sub> (mV) |     |      | Input Current - I <sub>IL</sub> (μA) | Input Current - I <sub>IH</sub> (μA) | Differential Rate - DR (mV) |      |      |
|--------------|------------------------------------------|------|------|-----------------------------|------|------|---------------------------------------------------|-----|------|--------------------------------------|--------------------------------------|-----------------------------|------|------|
|              | MIN                                      | TYP  | MAX  | MIN                         | TYP  | MAX  | MIN                                               | TYP | MAX  | MAX                                  | MAX                                  | MIN                         | TYP  | MAX  |
| TM1062TXDUA  | 1.35                                     | 1.63 | 1.88 | 2.07                        | 2.33 | 2.58 | 150                                               | 800 | 1200 | 40                                   | 150                                  | 1350                        | 1400 | 1500 |
| TM1062TXHUA  | 1.35                                     | 1.63 | 1.88 | 2.07                        | 2.33 | 2.58 | 150                                               | 800 | 1200 | 500                                  | 750                                  | 1350                        | 1400 | 1500 |
| TM1062TX3DUA | 1.35                                     | 1.63 | 1.88 | 2.07                        | 2.33 | 2.58 | 150                                               | 800 | 1200 | 500                                  | 750                                  | 1350                        | 1400 | 1500 |

## TRANSMITTER — Additional Electrical Specifications @ 25°C — Operating Temperature -55°C to +125°C

| Part Number  | Power Dissipation (mW) | θ <sub>ja</sub> (°C/W) |        | Input Voltage (V <sub>CC</sub> ±10%) | Data Rate - DR (Mb/s) |      | Total P-P Transmit Jitter (pS) |     | Output Rise-Fall Time (20-80%) (pS) |     | Return Loss (dB) |
|--------------|------------------------|------------------------|--------|--------------------------------------|-----------------------|------|--------------------------------|-----|-------------------------------------|-----|------------------|
|              | TYP                    | @85°C                  | @125°C | TYP                                  | MIN                   | MAX  | TYP                            | MAX | TYP                                 | MAX | MIN              |
| TM1062TXDUA  | 232                    | 41                     | 39     | 3.3V                                 | 246                   | 1062 | 62                             | 94  | 275                                 | 400 | -12              |
| TM1062TXHUA  | 232                    | 41                     | 39     | 3.3V                                 | 246                   | 1062 | 62                             | 94  | 275                                 | 400 | -12              |
| TM1062TX3DUA | 700                    | 34                     | 30     | 3.3V                                 | 246                   | 1062 | 62                             | 94  | 275                                 | 400 | -12              |

## TRANSFORMER COUPLED RECEIVER — Electrical Specifications @ 25°C — Operating Temp. -55°C to +125°C

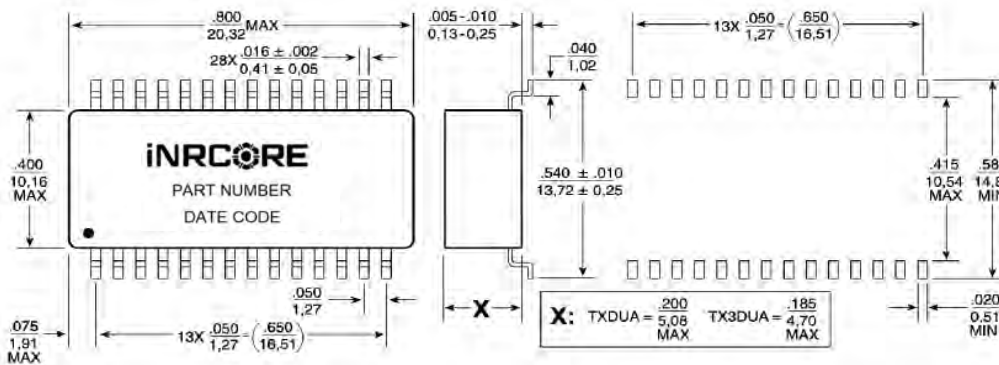
| Part Number  | Turns Ratio | Primary Inductance - L <sub>M</sub> (μH) | Rise Time (20%-80%) (pS) | Data Rate - DR (Mb/s) |      | Winding Resistance - DCR (W) | Insertion loss (dB) | Return Loss (dB) |
|--------------|-------------|------------------------------------------|--------------------------|-----------------------|------|------------------------------|---------------------|------------------|
|              | TYP         | MIN                                      | MAX                      | MIN                   | MAX  | MAX                          |                     |                  |
| TM1062TXDUA  | 1:1         | 4.5                                      | 300                      | 246                   | 1062 | 0.2                          | -2 MAX              | -12 MIN          |
| TM1062TXHUA  | 1:1         | 4.5                                      | 300                      | 246                   | 1062 | 0.2                          | -2 MAX              | -12 MIN          |
| TM1062TX3DUA | 1:1         | 4.5                                      | 300                      | 246                   | 1062 | 0.2                          | -2 MAX              | -12 MIN          |

Note: 1. From Date Code 1921 (YYvw) on: minimum differential signal level 100% tested to 1350mV.

2. Add suffix "T" to part number for Tape and Reel

## Mechanical

### TM1062TXDUA / TM1062TX3DUA

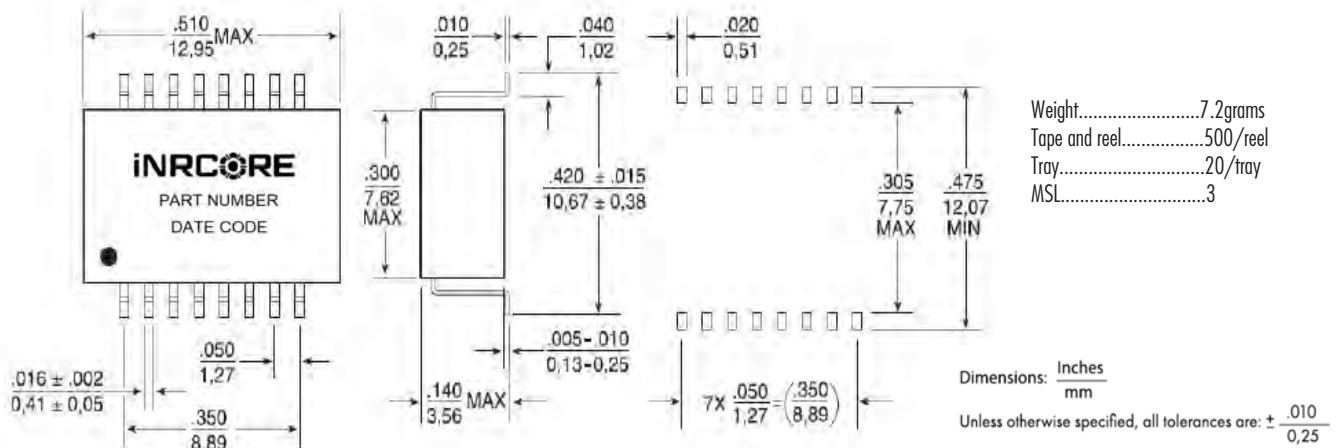


# IEEE 1394B Firewire 1.062Gb Transceiver Line Interface Module Copperhead Series



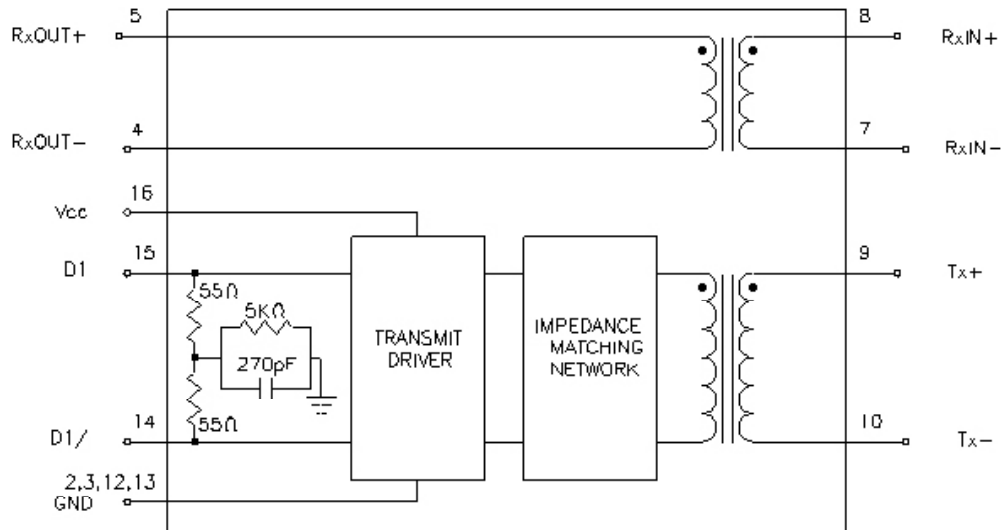
## Mechanical

### TM1062TXHUA



## Electrical Schematic

### TM1062TXHUA

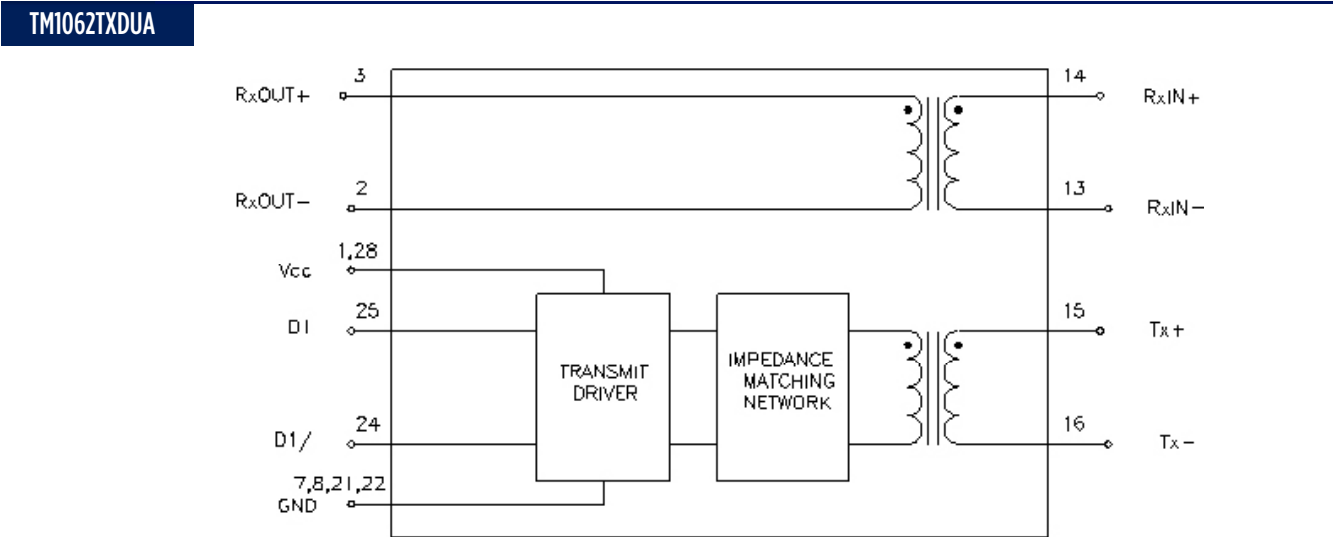


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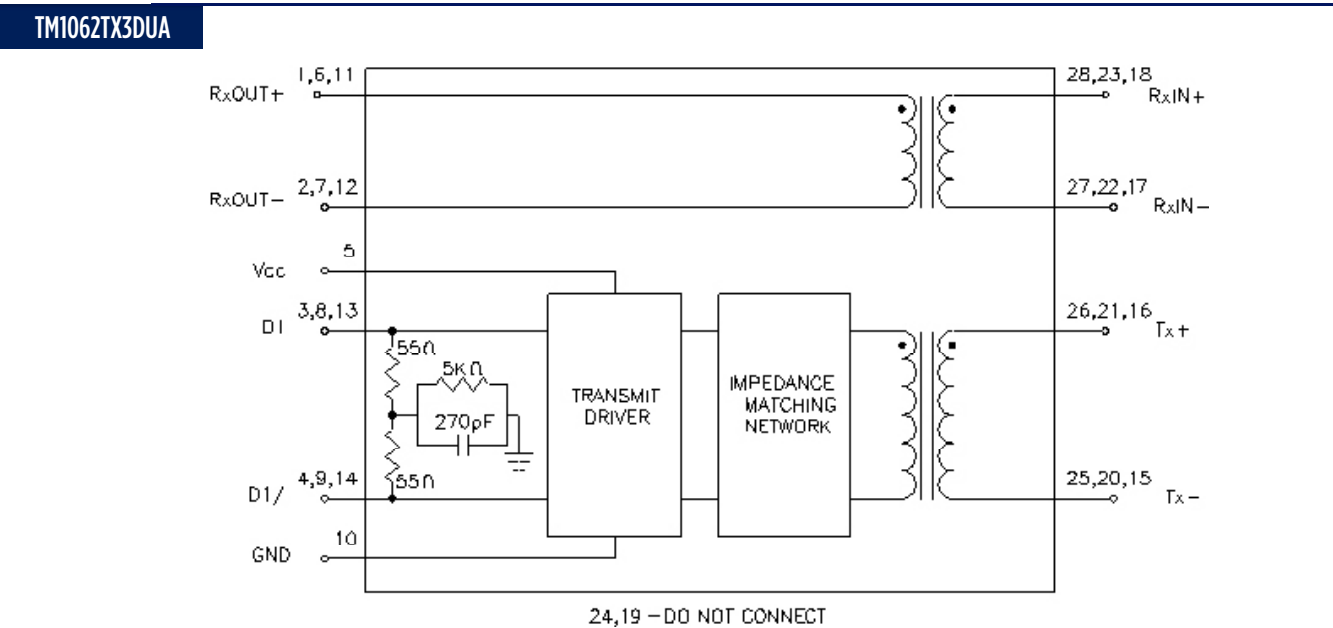
Copperhead Series



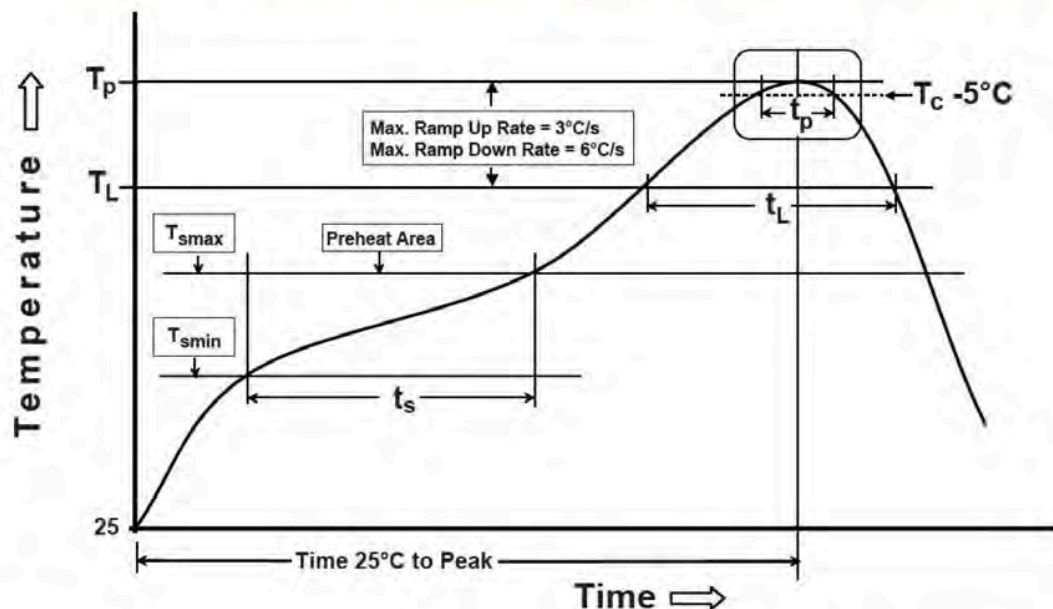
Electrical Schematic



Electrical Schematic



Transceiver Tin/Lead Recommended Reflow Profile (Based on J-STD-020D)



| T <sub>SMIN</sub><br>(°C) | T <sub>SMAX</sub><br>(°C) | T <sub>L</sub><br>(°C) | T <sub>P</sub><br>(°C MAX) | t <sub>S</sub><br>(s) | t <sub>L</sub><br>(s) | t <sub>P</sub><br>(s MAX) | Ramp-up rate<br>(T <sub>L</sub> to T <sub>P</sub> ) | Ramp-down rate<br>(T <sub>P</sub> to T <sub>L</sub> ) | Time<br>25°C to peak temperature<br>(s MAX) |
|---------------------------|---------------------------|------------------------|----------------------------|-----------------------|-----------------------|---------------------------|-----------------------------------------------------|-------------------------------------------------------|---------------------------------------------|
| 100                       | 150                       | 183                    | 225                        | 60-120                | 60-150                | 20                        | 3°C/s MAX                                           | 6°C/s MAX                                             | 360                                         |

Notes:

1. All temperatures measured on the package leads.
2. Maximum times of reflow cycle: 2.

**For More Information**

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