# LTC2870/LTC2871/LTC2872
# Multiprotocol Transceivers

1.8V to $V_{CC}$

3V to 5.5V

$V_L$

**LTC2872**

$V_{CC}$

**RS485 TERMINATION**

**OFF** | **ON**

**RS485**

120 Ω

120 Ω

**RS232**
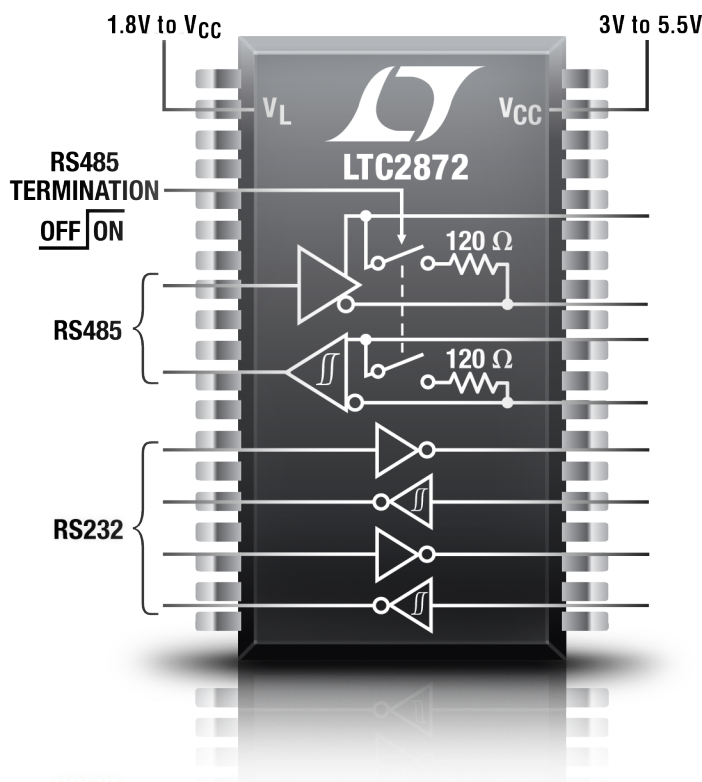
The LTC®2870/71/72 is a family of multiprotocol transceivers with switchable integrated termination for 3.3V and 5V systems. These devices integrate pin-controlled termination resistors that automatically switch in or out to match the transceiver's protocol selection of RS232 or RS485, allowing for easy interface reconfiguration and elimination of external resistors and control relays. The LTC2870 and LTC2871 can be configured as two RS232 single-ended transceivers or one RS485 differential transceiver on shared (LTC2870) or dedicated (LTC2871) I/O lines, while the LTC2872 can be configured as four RS232 transceivers or two RS485 transceivers, or combinations of both, on shared I/O lines. This on-the-fly configurability helps reduce component count for multiprotocol networks.

## Features

- 3V to 5.5V Supply Voltage Range
- One RS485 or Two RS232 Transceivers per Port
- 20Mbps RS485 and 500kbps RS232
- Automatic Selection of Integrated RS485 (120Ω) and RS232 (5kΩ) Termination Resistors
- Pin-Selectable Half- or Full-Duplex Mode RS485

- Logic Loopback Mode
- High ESD: ±26kV (LTC2870) or ±16kV (LTC2871/LTC2872) On Line I/O; ±4kV On All Other Pins
- 1.7V to 5.5V Logic Interface
- Supports Up to 256 RS485 Nodes
- Full Failsafe RS485 Receiver Eliminates UART Lockup

| | LTC2870 | LTC2871 | LTC2872 |
|---|---|---|---|
| Number of Ports | 1 | 1 | 2 |
| Possible Configurations (RS485 Transceivers + RS232 Transceivers) | 0+0, 0+2, 1+0 | 0+0, 0+1, 0+2, 1+0, 1+1, 1+2 | 0+0, 0+2, 0+4, 1+0, 2+0, 1+2 |
| RS232 and RS485 I/O Pin Sharing per Port | Shared | Dedicated | Shared |
| HBM ESD Rating | ±26kV | ±16kV | ±16kV |
| Packages | 4mm × 5mm QFN-28, TSSOP-28 | 5mm × 7mm QFN-38, TSSOP-38 | 5mm × 7mm QFN-38 |

## LINEAR TECHNOLOGY

## Multiprotocol Transceivers

| Part Number | # of Drivers | # of Receivers | Supply (V) | Protocols Supported | RS232/ RS562 | RS422/ RS485 | V.35 (Async) | V.35 (Sync) | Termi- nation | DCE or DTE | Signals | Additional Signals | ESD (kV) | Temp Grade | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | — Supported Data Rate | | | | | | | | | | |
| LTC1321 | 2 | 2 | ±5 | RS232, RS562, RS422, RS485 | 120kbps | 10Mbps | | | | | | | 10 | C, I | SW-24, N-24 |
| LTC1322 | 4 | 4 | ±5 | RS232, RS562, RS422, RS485 | 120kbps | 10Mbps | | | | | | | 4 | C, I | SW-24, N-24 |
| LTC1323 | 2 | 3 | ±5 | LocalTalk, RS232, RS422 | 120kbps | 2Mbps | | | | DTE | Data, Control | | 4 | | SW-24, SO-24 |
| LTC1334 | 4 | 4 | 5 | RS232, RS562, RS422, RS485 | 120kbps | 5Mbps | | | | | | | 10 | C, I | SSOP-28, SW-28, N-28 |
| LTC1335 | 4 | 4 | 5 | RS562, RS422, RS485 | 120kbps | 10Mbps | | | | | | | 4 | C, I | SW-24, N-24 |
| LTC1343 | 4 | 4 | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | | | 8Mbps | 4Mbps | | DTE or DCE | Data, Clock or Control | LL, RL, TM | 4 | C, I | SSOP-44 |
| LTC1344 | | | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | | | | | ● | | | | 4 | C, I | SSOP-24 |
| LTC1344A | | | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | | | | | ● | | | | 4 | C, I | SSOP-24 |
| LTC1345 | 3 | 3 | 5 | V.35 | | | 10Mbps | 5Mbps | | DTE or DCE | Data, Clock | | 4 | C, I | SW-28, N-28 |
| LTC1346A | 3 | 3 | ±5 | V.35 | | | 10Mbps | 5Mbps | | DTE or DCE | Data, Clock | | 4 | C, I | SW-24 |
| LTC1387 | 2 | 2 | 5 | RS232, RS562, RS422, RS485 | 128kbps | 150kbps or 5Mbps | | | | | | | 4 | C, I | SSOP-20, SW-20 |
| LTC1543 | 3 | 3 | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | | DTE or DCE | Data, Clock | | 4 | C, I | SSOP-28 |
| LTC1544 | 4 | 4 | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | | DTE or DCE | Control | LL | 4 | C, I | SSOP-28 |
| LTC1545 | 5 | 5 | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | | DTE or DCE | Control | LL, RL, TM | 4 | C, I | SSOP-36 |
| LTC1546 | 3 | 3 | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | ● | DTE or DCE | Data, Clock | | 2 | C, I | SSOP-28 |
| LTC2844 | 4 | 4 | 3.3 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | | DTE or DCE | Control | LL | 4 | C, I | SSOP-28 |
| LTC2845 | 5 | 5 | 3.3 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | | DTE or DCE | Control | LL, RL, TM | 4 | C, I | SSOP-36 |
| LTC2846 | 3 | 3 | 3.3 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | ● | DTE or DCE | Data, Clock | | 4 | C, I | SSOP-36 |
| LTC2847 | 3 | 3 | 5 | EIA530, EIA530-A, RS232, RS449, V.35, V.36, X.21 | 128kbps | 10Mbps | 10Mbps | 5Mbps | ● | DTE or DCE | Data, Clock | | 4 | C, I | QFN-38 |
| LTC2870 | 2 | 2 | 3 to 5 | RS232, RS485, RS422 | 500kbps | 20Mbps | | | ● | DTE or DCE | | | 26 | C, I | QFN-28, TSSOP-28 |
| LTC2871 | 2 | 2 | 3 to 5 | RS232, RS485, RS422 | 500kbps | 20Mbps | | | ● | DTE or DCE | | | 16 | C, I | QFN-38, SSOP-38 |
| LTC2872 | 4 | 4 | 3 to 5 | RS232, RS485, RS422 | 500kbps | 20Mbps | | | ● | DTE or DCE | | | 16 | C, I | QFN-38 |

# LTC2872 Typical Applications

### RS485 Mode with Duplex Control
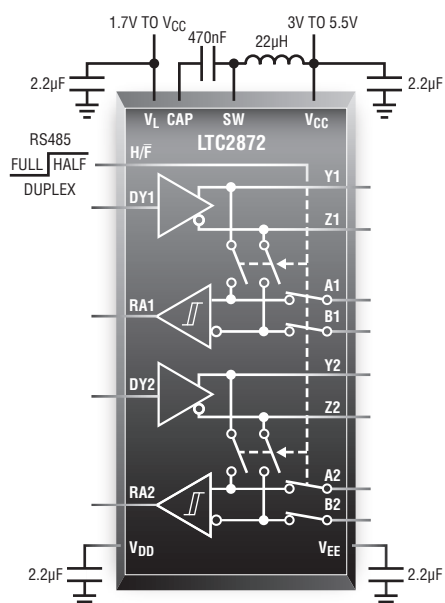
### RS232 Mode
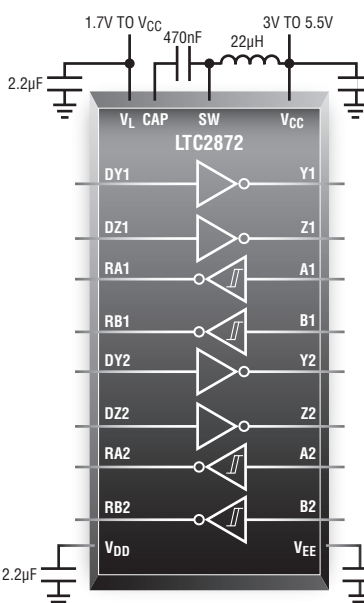
### Mixed Mode with RS485 Termination