



## DS14C88/DS14C89A Quad CMOS Line Driver/Receiver

### General Description

The DS14C88 and DS14C89A, pin-for-pin replacements for the DS1488/MC1488 and the DS1489/MC1489, are line drivers/receivers designed to interface data terminal equipment (DTE) with data communications equipment (DCE). These devices translate standard TTL or CMOS logic levels to/from levels conforming to RS-232-C and CCITT V.24 standards.

Both devices are fabricated in low threshold CMOS metal gate technology. They provide very low power consumption in comparison to their bipolar equivalents; 900  $\mu$ A versus 26 mA for the receiver and 500  $\mu$ A versus 25 mA for the driver.

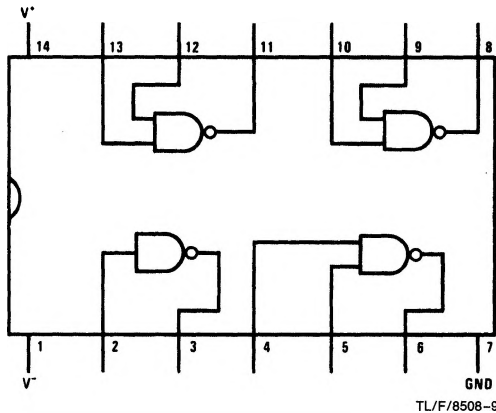
The DS14C88/DS14C89A simplify designs by eliminating the need for external capacitors. For the DS14C88, slew rate control in accordance with RS-232-C is provided on chip, eliminating the output capacitors. For the DS14C89A, noise pulse rejection circuitry eliminates the need for response control filter capacitors. When replacing the DS1489 with DS14C89A, the response control filter pins can be tied high, low or not connected.

### Features

- Meets EIA RS-232-C and CCITT V.24 standard
- Low power consumption
- Pin-for-pin equivalent to DS1488/MC1488 and DS1489/MC1489
- Low Delay Slew
- DS14C88 Driver
  - Power-off source impedance 300 $\Omega$  min.
  - Wide operating voltage range: 4.5V–12.6V
  - TTL/LSTTL compatible
- DS14C89A
  - Internal noise filter
  - Inputs withstand  $\pm 30$ V
  - Fail-safe operating mode
  - Internal input threshold with hysteresis

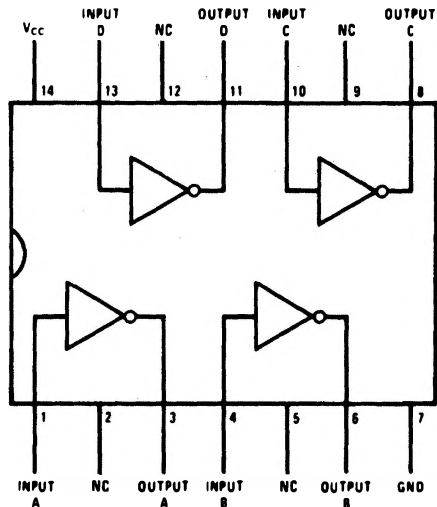
### Connection Diagrams

**DS14C88 Dual-In-Line Package**



Order Number DS14C88J, DS14C88N and DS14C88M  
See NS Package Number J14A, M14A or N14A

**DS14C89A Dual-In-Line Package**



Order Number DS14C89AJ, DS14C89AM or DS14C89AN  
See NS Package Number J14A, M14A or N14A