

ANALOG PRODUCTS

MC33790 FACT SHEET



33790 DISTRIBUTED SYSTEM INTERFACE (DSI) PHYSICAL INTERFACE

The 33790 is a dual channel physical layer interface IC for the Distributed Systems Interface (DSI) bus. It connects DSI masters to DSI slave sensors and actuators. It provides power to the slave sensors and actuators over the DSI bus and supports bi-directional communication between the slave and master ICs over this same bus wire.

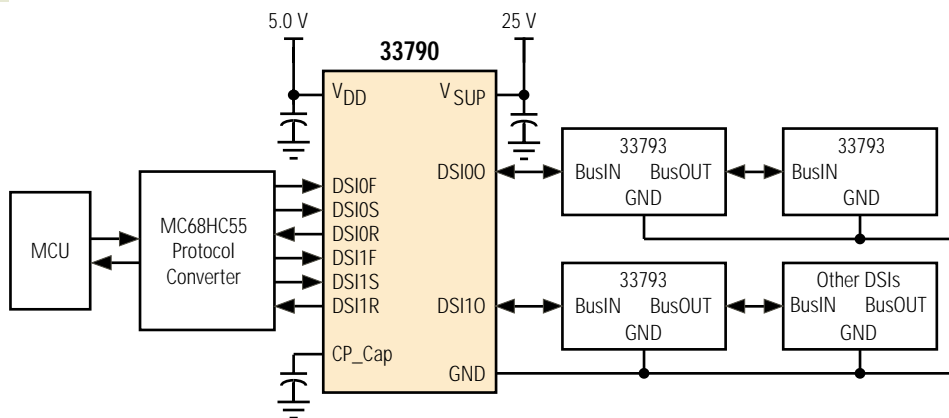
When used with other DSI family parts, remote sensing and control can be easily and inexpensively accomplished. The Simplified Application Diagram shows how some of these parts can be used. Up to 30 remote devices can be supported by a single 33790.

The MC68HC55 is an SPI-to-DSI protocol converter that is made to match the pin connections of the 33790 and allow any MCU with an SPI to generate a DSI bus.

APPLICATIONS

- Simple Bus for Remote Control and Sensing
- Automotive, Aircraft, Marine and Industrial Control and Safety Systems
- Heating and Air-Conditioning

Simplified Application Diagram



CUSTOMER BENEFITS

- Lower cost sensing and control system
- Bus carries both power and bi-directional communications
- No critical clock components needed
- Each part can handle up to 30 remote devices
- Controlled voltage slew rates reduce EMI

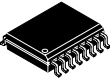
Performance	Typical Values
Operating Voltage	8.0 – 25 V
Data Rate	5 k – 150 kB/s
Bus $R_{DS(on)}$	6.0 Ω
Bus Drive Current	150 mA/Channel
ESD	± 2000 V
Operating Temp	$-40^{\circ}\text{C} \leq T_A \leq 85^{\circ}\text{C}$

SAFETY/SECURITY
DISTRIBUTED SYSTEM

FEATURES

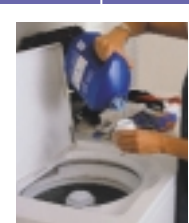
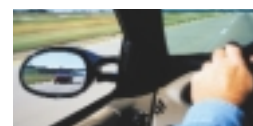
- Complete power source, transmitter, and receiver for two independent DSI busses
- Waveshaped voltage mode transmitter (reduced EMI)
- Pinout matched to MC68HC55 for easy PCB layout
- Independent 150 mA current limit per channel output
- Logic input thresholds are 3.3 V and 5.0 V compatible
- Additional devices available for comparison in Analog Selector Guide SG1002/D

Protection	Detect	Limiting	Shut Down	Auto Retry
Over Current/SC	•	•	•	
Over Temperature	•		•	•

Ordering Information	Package	Ship Method	Motorola Part Number
	16 SOICW	Rail T/R	**33790DW **33790DWR2
Data Sheet Order Number			MC33790/D
Contact Sales for Evaluation Kit Availability			
**Prefix Index: PC = Eng Samples; XC = In Qual; MC = Production			

QUESTIONS

- Are you working with vehicular safety or sensing systems?
- Do you need an inexpensive way to remotely power, measure, and control things?
- Are you currently using an MCU at remote locations to provide communications, control, and measurement? The DSI bus family of parts can do this in place of the MCU with a single low-cost part and eliminate the MCU power supplies, software, and many support components at the remote location.



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MC33790FS/D
Rev. 1