

Microcontroladores

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Tema: Bus I²C

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Ventajas comparativas

- Se requieren solo 2 líneas. serial data line (SDA) y serial clock line (SCL)
- Cada dispositivo conectado al bus se identifica por software biunívocamente. Existe relación Maestro - Esclavo.
- Puede trabajar en modo multi-maestro.
- Tx hasta 100 kbit/s en standard mode ó hasta 400 kbit/s en fast mode
- El número de dispositivos conectados esta limitado por el máximo de capacidad en el bus de 400 pF.

Definiciones y ejemplo

Table 1. Definition of I²C-bus terminology

TERM	DESCRIPTION
Transmitter	The device which sends the data to the bus
Receiver	The device which receives the data from the bus
Master	The device which initiates a transfer, generates clock signals and terminates a transfer
Slave	The device addressed by a master
Multi-master	More than one master can attempt to control the bus at the same time without corrupting the message
Arbitration	Procedure to ensure that, if more than one master simultaneously tries to control the bus, only one is allowed to do so and the message is not corrupted
Synchronization	Procedure to synchronize the clock signals of two or more devices

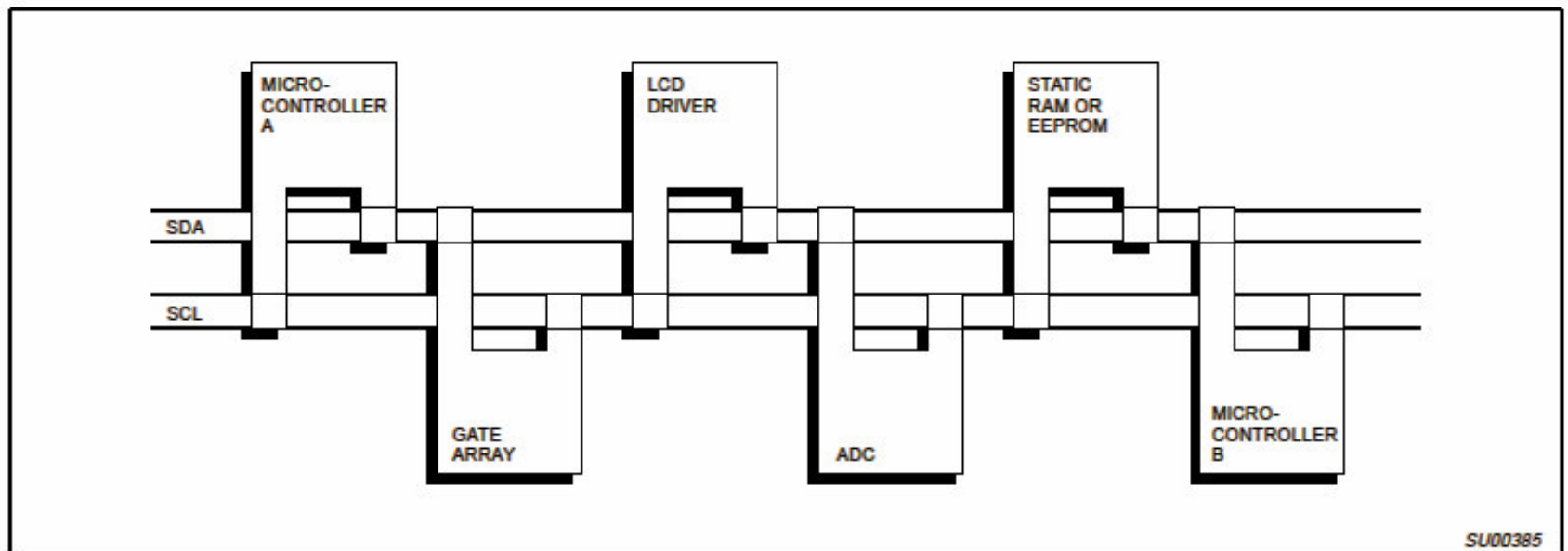


Figure 3. Example of an I²C-bus configuration using two microcontrollers

Esquema básico de conexiones

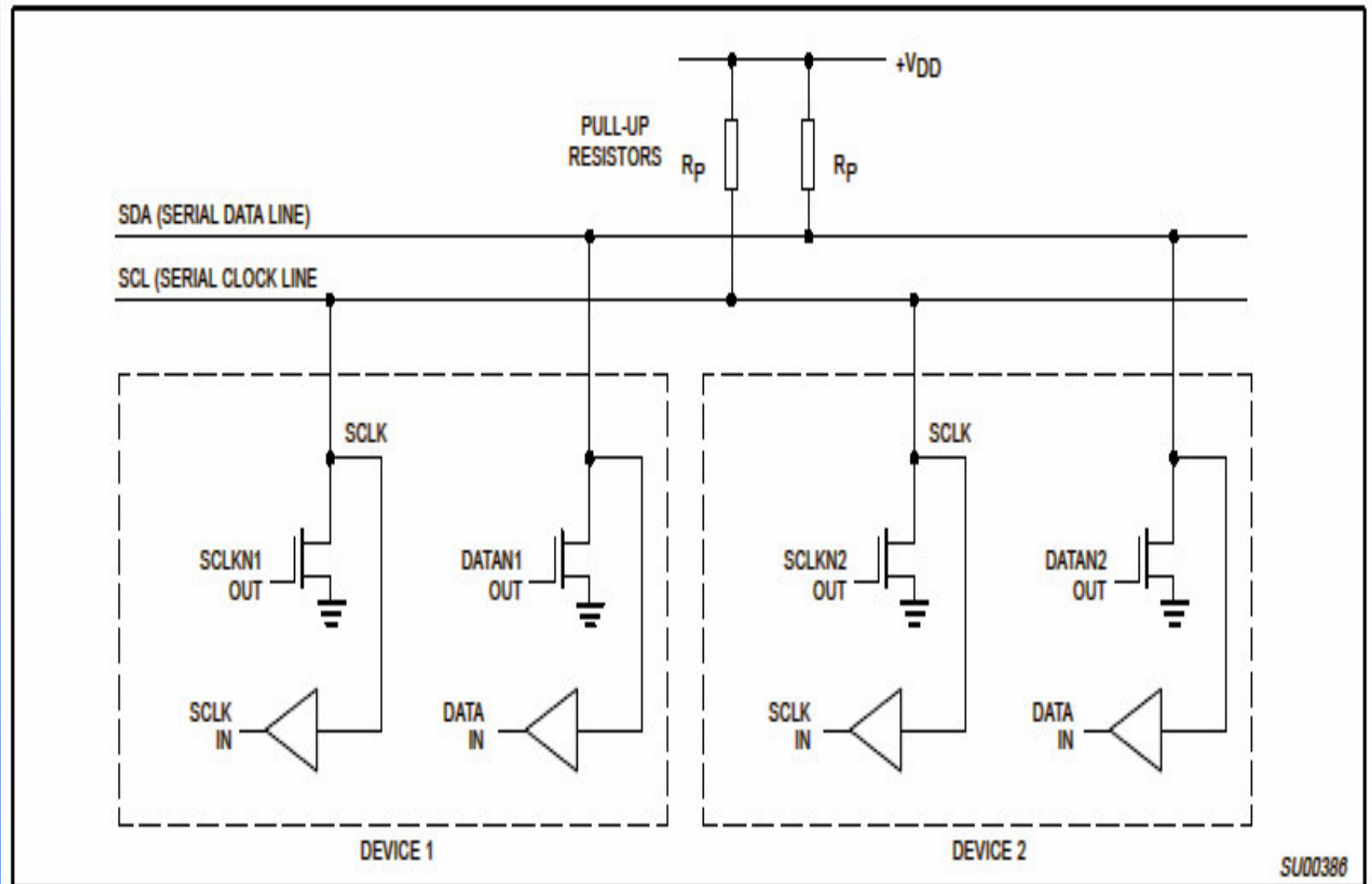


Figure 4. Connection of I²C-bus devices to the I²C-bus

Señales en el bus

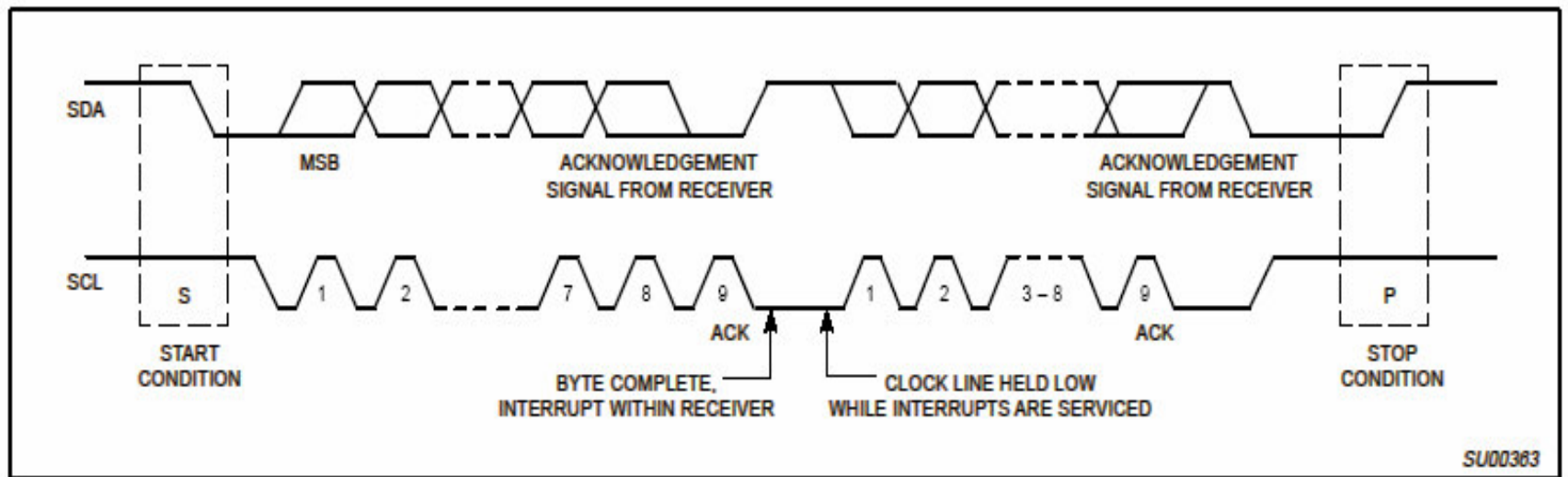


Figure 7. Data transfer on the I²C-bus

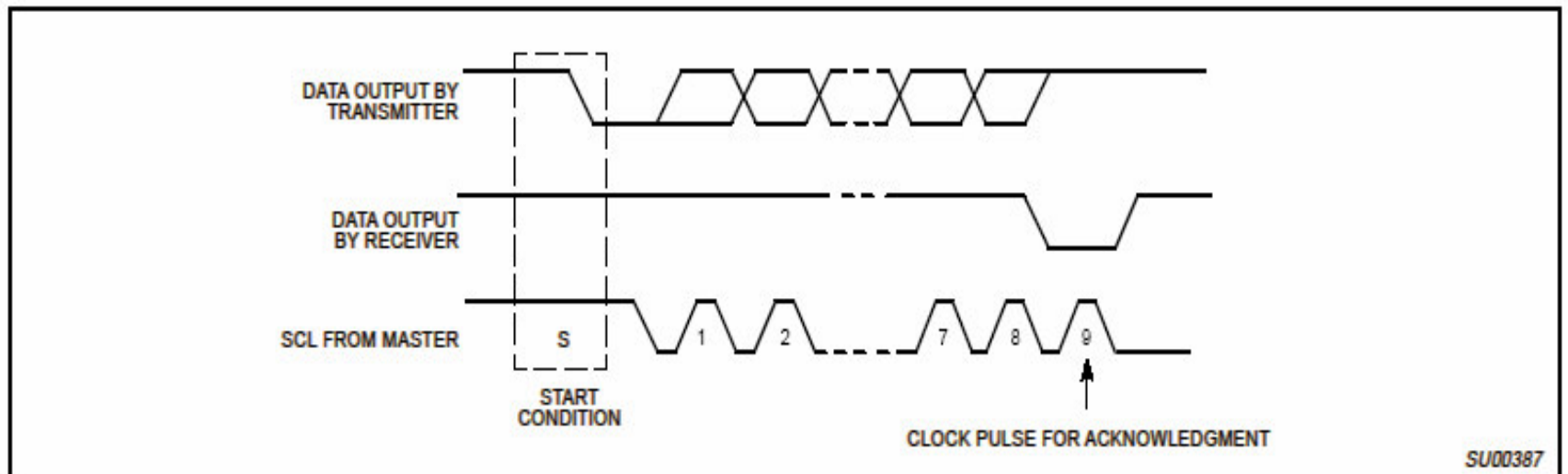


Figure 8. Acknowledge on the I²C-bus

Ejemplo de transferencia en el bus

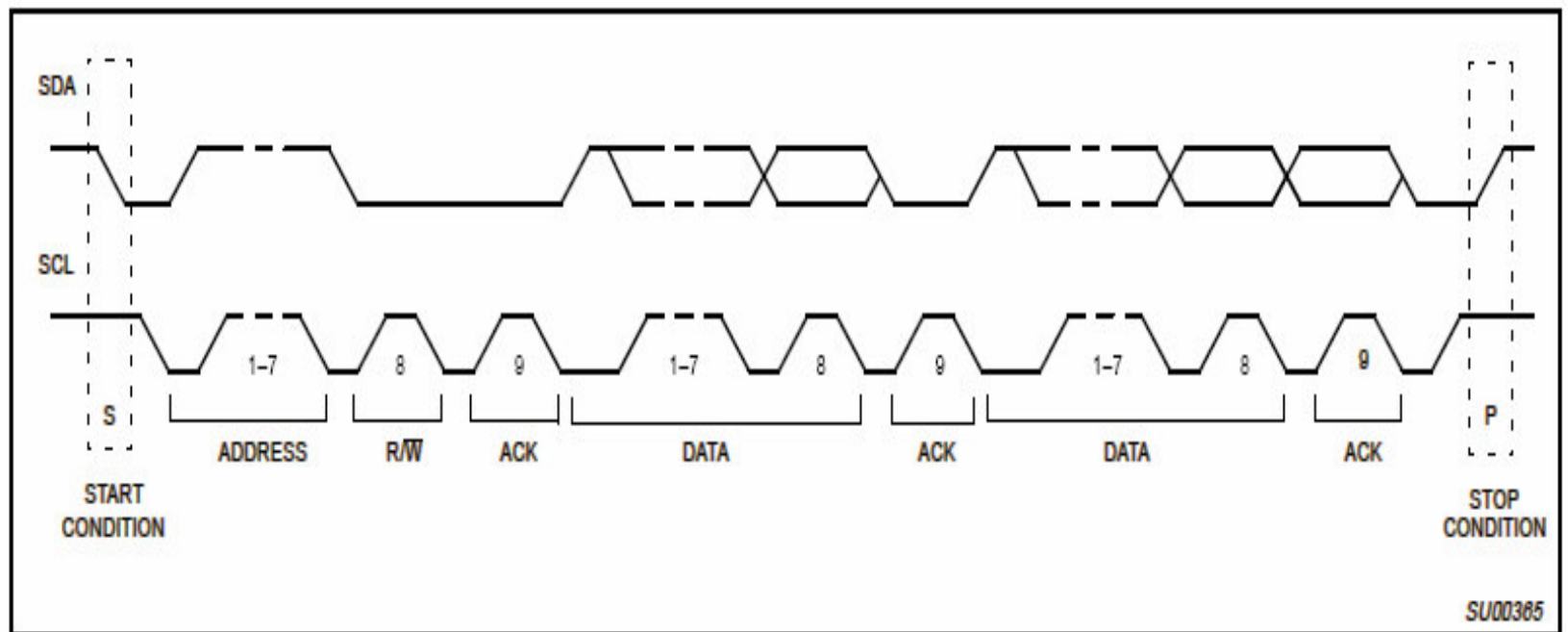


Figure 11. A complete data transfer

Ejemplo de transferencia en el bus

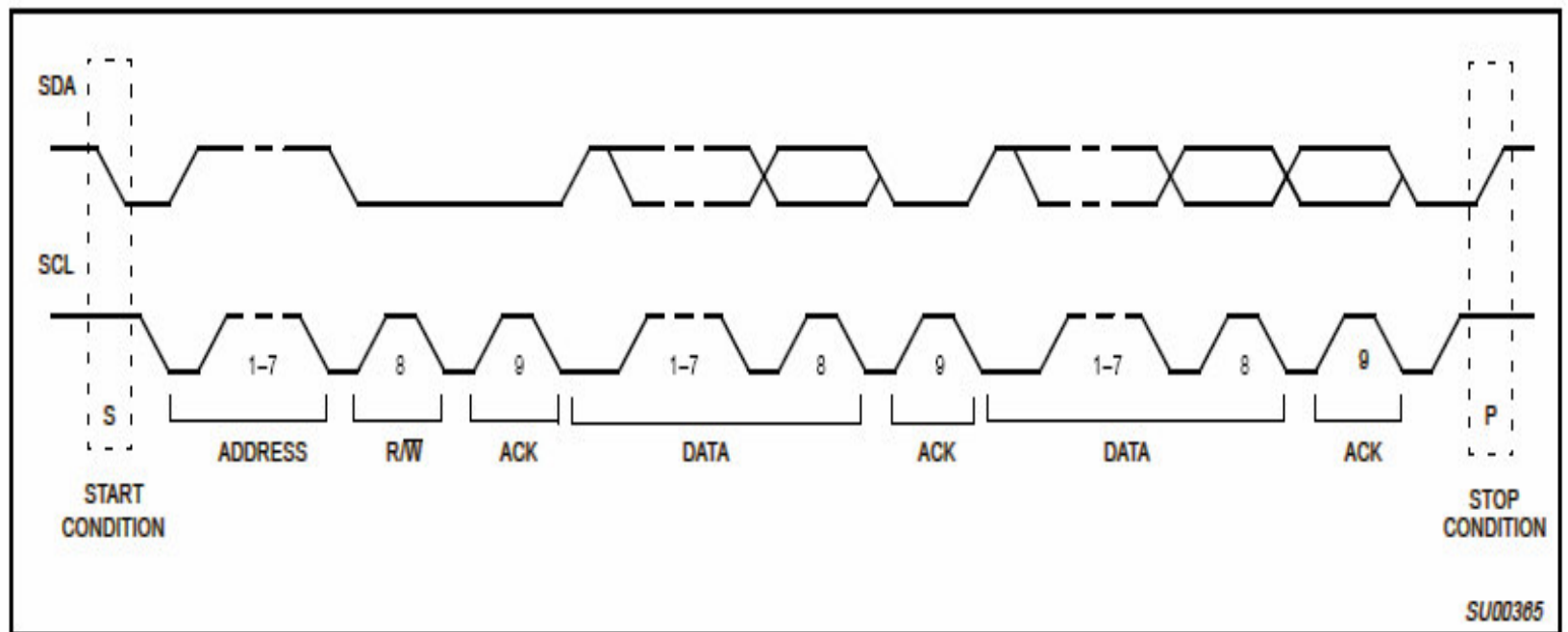


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