



SP485 FAQ

Sipex Part: SP485

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Question:

in the feature section of SP3072E, there is a sentence: "Hot Swap glitch protection RE and DE". Does the SP485EEN or other 5V RS485 IC have this feature?

Answer:

Only the SP3070 family and recently released SP3080 family have this feature. No other sipex interface products have this feature.

Question:

We use the SP485EEN RS-485 Transceiver in some of our products. I'm looking for a protection circuit that will protect the driver/receiver from excessive DC voltages. Here's why: We use a 5-wire cable to carry RS-485 and power (24 VDC) between products. Sometimes our customers accidentally sever the cable. This applies 24 VDC to the drivers/receivers and damages them. I'm hoping you can suggest a circuit that will prevent any damage.

Answer:

In order to protect the part under a 25V short circuit you would need a tranzsorb / TVS array at each I/O that offers clamp voltage rating between 5 to 7V. 7V is within the common mode range and will not harm the part. Protek Devices can help you with this type of external protection device – <http://www.protekdevices.com/>

Question:

Due to delivery problems with the SP485CN, a Sipex representative recommended SP485ECN instead of SP485CN to the customer. And the customer replaced SP485EN to SP485ECN using the existing PC board. It is the same circuit.

When /RE (pin2) and DE(pin3) are level High, New SP485ECN 's RO(pin1) sends an unexpected Signal to the UART a few minutes after. RO is connected to the UART directly. A and B have 100Ohm load resistor and A is pull-up to Vcc, B is pull-down to GND. The SP485EN has no problems.

Could you please explain this phenomena and mechanism between SP485EN and SP485ECN, and advise on solutions?

Answer:

The SP485ECN offers enhanced ESD protection on RS-485 I/O lines (Driver output / Receiver input) up to +/-15KV. The SP485CN part does not offer this enhanced ESD protection level. All other electrical parameters are the same between each part.

The SP485E should behave in the same way as the SP485 part in any application. The Receivers offer a failsafe feature that when the inputs are floating the receiver output will be a logic high. If a termination resistor is used with this part, then a biasing network is needed to maintain the failsafe feature. The biasing network is the pull-up and pull-down resistors at RX input. When properly used, the biasing network will provide a differential voltage of >200mV at Receiver input when the data cable is disconnected thus resulting in a logic high output. If this input has noise that is not common or if the input voltage to Receiver is between +/-200mV then its output will not respond correctly and can oscillate. Please ensure that during this problem the receiver input is >200mV for correct output state.

Followup Question:

We understand RS-485 operation at active state. We want to know the non-active state mechanism, such as /RE and DE high level.

RO(pin1) will go to Z state both SP485ECN and SP485CN device. However, RO of the SP485ECN appears to have very high noise sensibility because the next circuit UART catches the signal as data.

We want to know the difference points between SP485ECN and SP485CN circuits.

Answer:

The operation of SP485ECN and SP485CN should be the same for each. Can you send waveforms comparing RO for SP485E and SP485 to SipexSupport@sipex.com Sipexsupport@sipex.com? Are you certain that a local bypass of 0.1uF is present at VCC? How does the RO look for SP485E when it is not connected to UART?