

**Part Number:** SP3239E

**Date:** June4, 2006

**Question:**

Does Sipex have a part similar to the Intersil ICL3237?

**Answer:**

That would be our SP3239E. <http://www.sipex.com/products/pdf/sp3239e.pdf>

Both devices are very similar. They are 5Tx/3Rx, 3V, RS-232, high ESD. They have the same package type and core pinout. Some minor differences (or not) explained below.

The intersil device copies a feature found on some Maxim devices where pin#15 is the “megabaud” feature. Pin#15 low is default mode, the part runs at 250kbps. Pin#15 high removes slew control, the rise and fall times get sharper, allowing the device to toggle outputs much faster. This allows the device to run as fast as 1Mbps.

But in order to run that fast you need to violate the RS-232 specified maximum slew rate. RS-232 uses very wide voltage swings by today’s standards: 10V minimum swing from -5V to +5V and back again. So in order to limit crosstalk and current, the slew rates are limited to 30V/us. But that slew control also limits data rates to under 300kbps. To get to “megabaud” type speeds you slew the signal faster, higher dV/dt. That makes the device more susceptible to EMI and cross talk.

Current is  $C * dV/dt$ . So current goes up with freq and power goes up squared. Cables have a given capacitance per unit length, longer cables = more capacitance. So instead of being able to drive a 30 foot long cable at 250kbps you may only be able to drive one 18 inches or two feet or so. You can’t drive that fast anyhow using commonplace UARTs, you need a more advanced UART with bigger internal buffers.

So bottom line, most people are probably not able to take advantage of “megabaud” speeds. It looks nice, but RS-232 is not really designed to run that fast. If you need speed there are other interfaces (RS-485) that are better choices.

The Intersil megabaud pin is a No Connect on our SP3239E, so no issues there, assuming customers do not use that feature; you can run either device at up to 250kbps.

Intersil also has a Receiver ENABLE\_bar pin on pin#13. On SP3239E pin#13 is no-connect. With the SP3239E if you put the device into manual shutdown it turns off the charge pumps, turns off the drivers and turns off the receivers. There is an extra non-inverting output to receiver 1 that stays active in shutdown which can be used to “snoop” the cable, detect if a device on the other side is requesting attention, wake up your system, etc. Intersil also has this same non-inverting receiver. But their shutdown does not turn off all their other receivers. In order to turn off receivers (other than the inverted one which cannot be turned off) they use that EN\_b pin.

So if the customer is using their EN\_b pin to turn off receivers in shutdown, they can continue to do so with the SP3239E but our part ignores that signal and turns them off automatically. If the customer does not use manual shutdown then they will see no difference between the Sipex and the Intersil parts.

Only if they need to keep all receivers active while in shutdown would a customer see a difference, but that defeats the whole purpose of having that extra non-inverting output. If that is important, customers could upgrade to SP3238E with Auto-online which wakes itself up as needed.