Slim V.34 Telephone Line Interface with 2/4 Wire Hybrid

Description

The XE0052S1 is a compact telephone interface module which supports V.34 communications at data rates to 33,600 bps yet is just 0.31 inches thick. The XE0052S1complies with FCC Part 68 Rules for connection to the public telephone network.

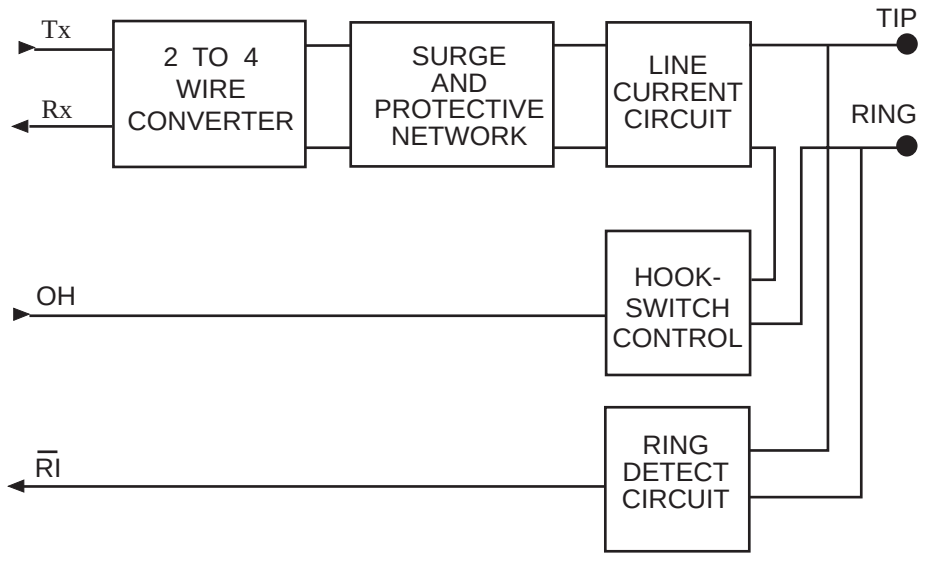
The XE0052S1 is a complete DAA. It includes the 2-4 wire convertor to separate the transmit and receive signals, ring detection, and the switch hook to control line access. The XE0052S1 integrated RI output remains low for the duration of the ring signal.

Xecom provides the XE0052S1 in a compact SIP package. The XE0052S1 mounts vertically on the printed circuit board to minimize the consumption of board space.

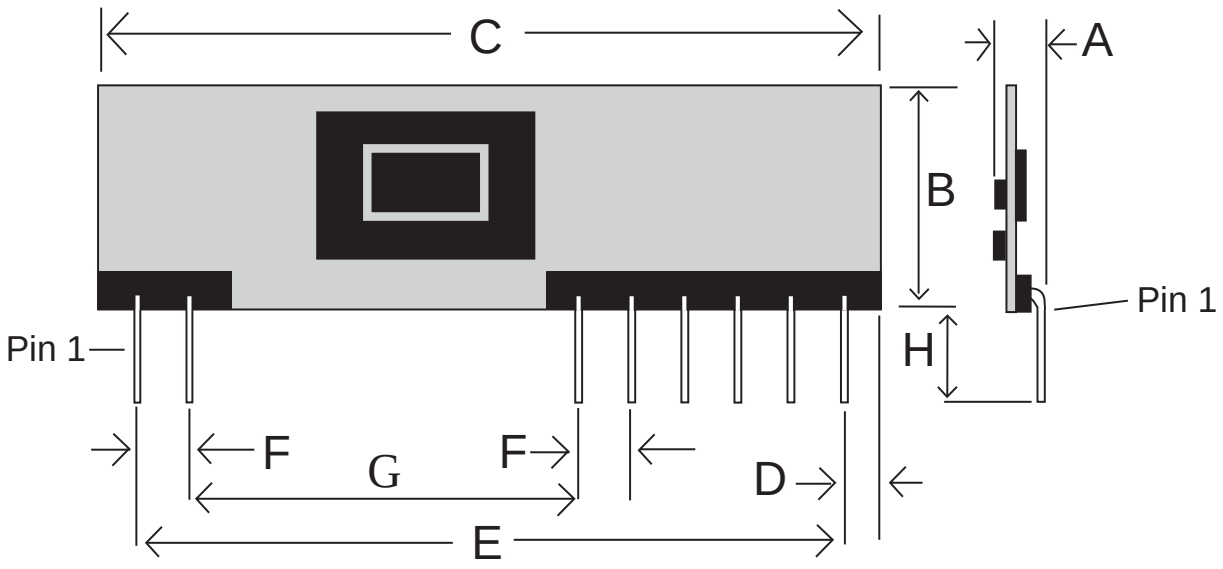
Features

* Small Size: just 1.5" by 0.5" by 0.31";
* FCC Part 68 Compliant;
* Ul 1459 Recognized Part
* Internal 2-4 wire convertor separates transmit and receive signals
* Integral Ring Detector
* Single +5V Operation;
* Hookswitch Control
* Compatible with V.34 data transfer

XE0052S1 Block Diagram

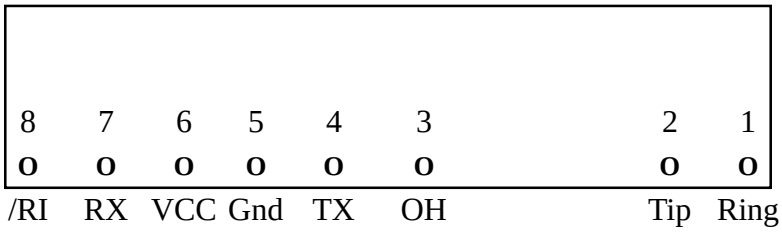


XE0052S1 Mechanical Specifications



	Inches		Millimeters	
Dim	**Min**	**Max**	**Min**	**Max**
A	0.300	0.320	7.62	8.13
B	0.490	0.510	12.45	12.95
C	1.490	1.510	37.85	38.35
D	0.040	0.060	1.02	1.52
E	1.390	1.410	35.31	35.81
F	0.090	0.110	2.29	2.79
G	0.790	0.810	20.07	20.57
H	0.125	0.200	3.18	5.08

XE0052S1 Pin Configuration (Top view)



XE0052S1 Pin Descriptions

Pin	Name	Description
1	Ring	Ring connection to the phone line (RJ11 Pin 4). The Ring pin has 1500 volts isolation from the rest of the circuitry. This isolation must be preserved throughout the system.
2	Tip	Tip Connection to the phone line (RJ11 Pin 3). The Tip pin has 1500 volts isolation from the rest of the circuitry. This isolation must be preserved throughout the system.
3	OH	Hookswitch relay control. A high on OH closes the internal relay and connects the equipment to the telephone line.
4	TX	TX provides the analog input signal to the 2-4 wire convertor of the XE0052S1. TX uses a 2.5 volt reference signal and therefore must be capacitively coupled to the host equipment.
5	GND	Ground
6	VCC	+5 Volts supply power
7	RX	RX provides the analog output signal from the 2-4 wire converter of the XE0052S. RX uses a 2.5 volt reference signal and therefore must be capacitively coupled to the host equipment.
8	/RI	Ring Indicate, output, active low, TTL. A low on /RI indicates the modem is receiving a ring signal.

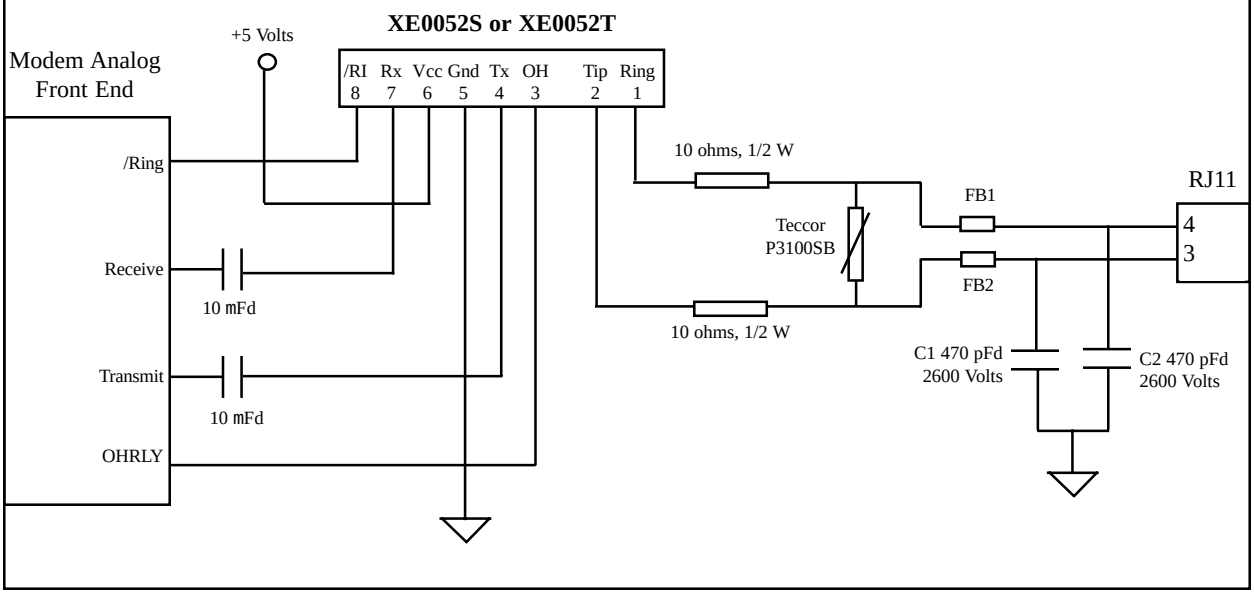
XE0052S1 Electrical Specifications *(VCC = 5V + 10%, Ta = 0 to 70C)*

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Ring Indicate Active		10	15	mA
Transmit Insertion loss	600 Ohm Impedence, 1000 Hz		0		dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz		0		dB
Line Impedance	At 1000 Hz	540	600	660	Ohms
Transhybrid Loss	Attenuation between transmiter input and receiver output at 1KHz with 600 ohm line termination	10	18		dB
Ring Detect Sensitivity	Min. AC voltage between Tip & Ring Type B ringer	38			Vrms
Ring Detect Peak Current	Ringing voltage of 40 Vrms applied between Tip & Ring	100			uA
Ring Detect Idle Current	No Ringing Voltage present			10	uA
Ring Indicate Output	Ring Voltage present on Tip and Ring		0.2	0.5	Volts
Loop Current Switch Control Voltage	ON: (off-hook)	4.0			Volts
	OFF: (on-hook)			0.8	Volts
Loop Current Switch Control Current	Off-Hook	0.5			mA

XE0052 Absolute Maximum Ratings

Storage Temperature	-25^{O}C to $+85^{O}$C
Operating Temperature Range	0^{O}C to $+70^{O}$C
Maximum Lead Temperature (soldering 2 seconds per wave)	260^{O}C

XE0052 Typical Connection Diagram



Notes:

C1, C2, FB1, and FB2 provide filtering to meet EMI restrictions. These components may be omitted if your equipment meets the appropriate EMI standards without them. For Capacitors C1 and C2 Xecom recommends Panasonic part Number ECKDRS471. For Ferrite Beads FB1 and FB2 Xecom recommends TDK Part Number ACB2012L-120.

XE0052S1 FCC Instructions

When developing a product to be connected to the telephone line, it is necessary to use a circuit described as a Data Access Arrangement (DAA) which is approved by the appropriate governmental agency. In the US, for example, this agency is the Federal Communications Commission (FCC), while in Canada it is the Department of Communications (DOC). These agencies test and approve the product to ensure that it meets their specifications, thereby protecting the telephone system from damage and protecting the user from high voltage transients (such as lightning strikes) which may come down the telephone line.

The XE0052S1 has been designed to meet all FCC Part 68 requirements for hazardous voltage, surge protection and leakage current. If the system developed transmits data, or DTMF tones on the telephone line, the user must certify that the signals transmitted meet basic FCC requirements for maximum transmission levels, out of band energy and billing delay. Full details may be obtained from the FCC under Part 68 of the FCC Rules and Regulations, or in Title 47 of the Code of Federal Regulations, however the basic requirements are as follows:

1. Maximum Transmit Level

For the normal "permissive" (standard) telephone line, equipment which transmits data (such as a modem) must not exceed a transmission level of -9 dBm.

2. Out of Band Energy

Data equipment must not transmit "out of band" energy on the telephone line which exceeds the following limits:

Frequency		**Range**	**Max. Power**
200Hz	to	3990Hz	-9 dBm
3990Hz	to	4005Hz	-27 dBm
4005Hz	to	16kHz	-16 dBm
8kHz	to	94kHz	-47 dBm
86kHz	to	270kHz	-46 dBm
270kHz	to	6MHz	-6 dBm

3. DTMF Transmission Level

If the system is capable of DTMF dialing, the maximum DTMF transmission level must be less than 0 dBm averaged over a 3 second interval.

4. Billing Delay

A delay of 2 seconds or greater is required after the time the XE0052S1 is taken "off hook" and before any information is transmitted. This is required to ensure that billing information may be exchanged between telephone company central offices without interference.

The user of the XE0052S1 must certify to the FCC that the final system meets the requirements of Part 68 which include the criteria above as well as the high voltage protection provided by the XE0052S1. This is generally accomplished through an independent testing lab which tesst the System and submits the proper paperwork to the FCC for approval. Since the XE0052S1 already complies with FCC Part 68 rules, this is a relatively simple process.

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