

Minature V.34 Telephone Line Interface**Description**

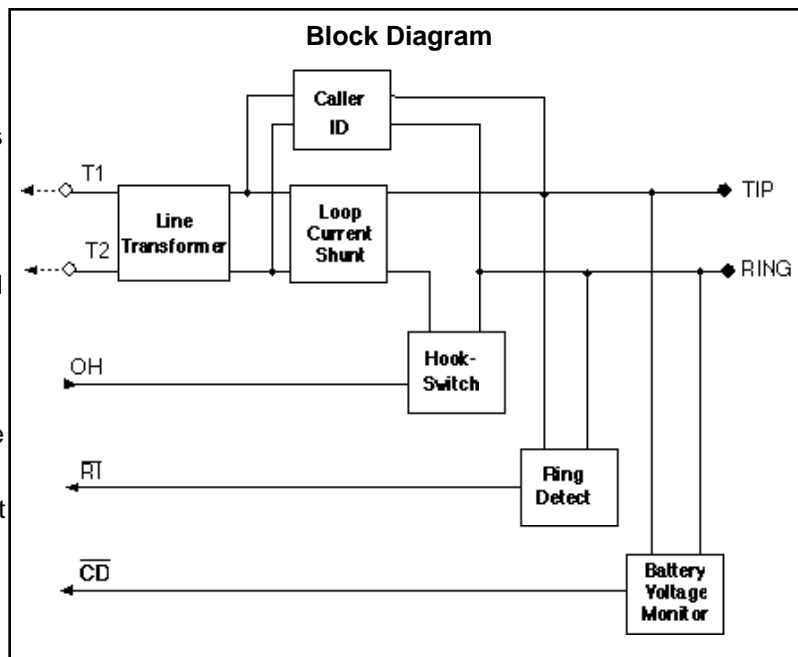
The XE0055CS2 is an extremely compact, high-performance, FCC Part 68 compliant telephone interface module. XE0055CS2 meets the technical requirements for V.34 operation yet fills less than one quarter cubic inch of space.

The XE0055CS2 operates from a single +5 or +3 volt power supply. As with all Xecom telephone interface modules, internal ring indication and switch hook are provided.

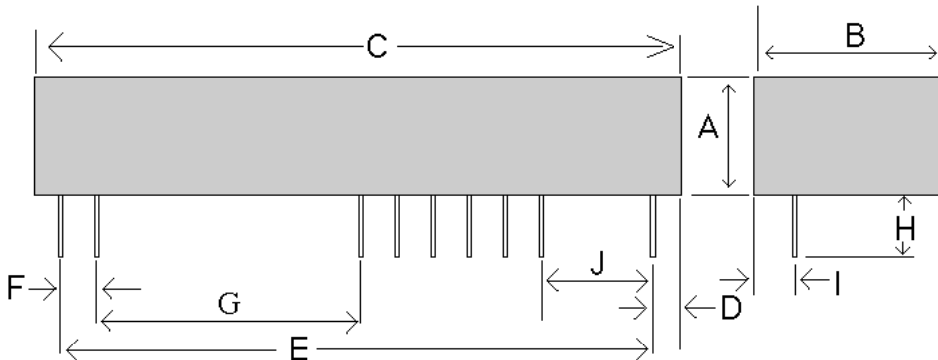
The XE0055CS2 includes advanced features for computer telephone integrateion applications. The XE0055CS2 incorporates Caller ID access and continuous connect detect monitor. The Caller ID signal is passed through to T1 and T2 when the XE0055CS2 is on-hook. Connect detect continuously monitors the battery voltage on the telephone line so the host knows the availability of the telephone line.

Features

- * Small Size: 2.0" by 0.5" by 0.27" thick;
- * V.34 compatible for data transfer at 28,800 bps;
- * FCC Part 68 Compliant;
- * Ring Detection;
- * Caller ID Passthrough;
- * Continuous Connect Detect Monitor;
- * Single Power Supply: 3.3 or 5 Volts;
- * Hookswitch Control



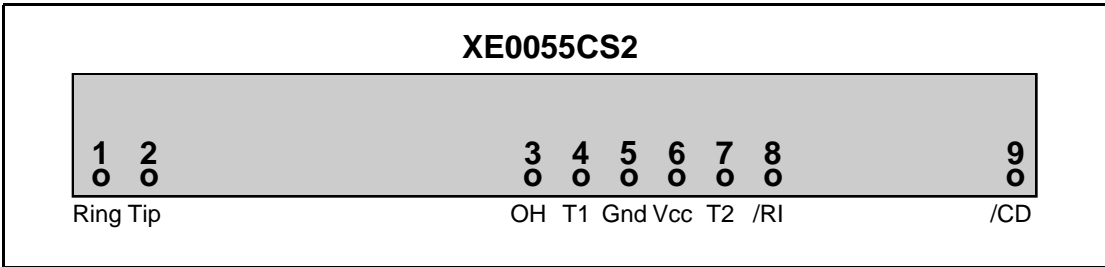
Mechanical Specifications



XE0055CS2				
Dim	Inches		Millimeters	
	Min	Max	Min	Max
A	-	0.270	-	6.86
B	-	0.520	-	13.21
C	-	2.020	-	51.05
D	0.040	0.060	1.02	1.52
E	1.890	1.910	48.00	48.51
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
I	0.040	0.060	1.02	1.52
J	0.490	0.510	12.45	12.95

Pin Size: 0.025" by 0.025"
 Recommended hole size: 0.056"
 All pins tin-plated.

Pin Configuration



Pin Descriptions

Pin	Name	Description
1	Ring	Ring is one of two signals which form the telephone network connection (RJ11 Pin 4). This device is not sensitive to the polarity of the battery voltage on the telephone line. Ring has 1500 volts isolation from the rest of the circuitry. This isolation must be preserved throughout the system.
2	Tip	Tip provides the second connection to the telephone network (RJ11 Pin 3). Tip has 1500 volts isolation from the rest of the circuitry. This isolation must be preserved throughout the system.
3	OH	Hook-switch relay control. A high on OH closes the internal relay and connects the equipment to the telephone line.
4	T1	T1 connects directly to the secondary side of the XE0055CS2 telephone line transformer.
5	GND	This signal is used as common reference for all of the control signals in the XE0055CS2. Signals on T1 and T2 are not referenced to ground.
6	VCC	VCC provides the power source for the hook-switch control. The XE0055CS2 will operate with VCC equal to either 3.3 or 5 volts
7	T2	T2 connects directly to the secondary side of the telephone line transformer of the XE0055CS2
8	/RI	Ring Indicate, output, active low, TTL. RI provides a half-wave representation of the Ring appearing on the telephone line. An external pull-up resistor is required to correctly bias the ring indicate output.
9	/CD	Connect Detect, output, active low, TTL. CD indicates that the XE0055CS2 is connected to the telephone line in the on-hook state.

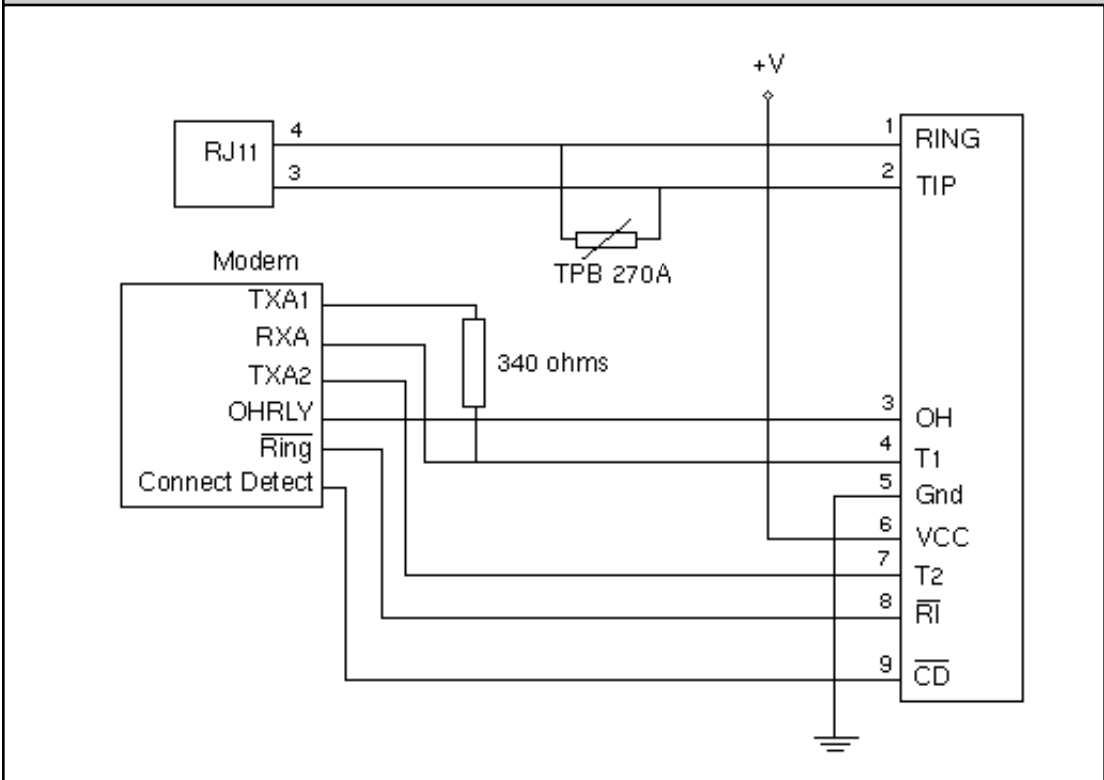
Electrical Specification ($V_{cc}=+3v \pm 10\%$, $T_a=0$ to 70 deg C)

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Off Hook, 5.0 Volts		10	15	mA
Transmit Insertion loss	600 Ohm Impedance, 1000 Hz	1.7	2.7	3.7	dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz	1.7	2.7	3.7	dB
Line Impedance	At 1000 Hz, Rm 340 ohms	540	600	660	Ohms
Coupler Match input impedance	Input impedance to T1 & T2	386	390	394	Ohms
Ring Detect Sensitivity (on-hook)	Min. AC voltage between Tip & Ring Type B ringer	38		150	Vrms
Ring Detect Peak Current	Ring voltage of 40 Vrms applied between Tip & Ring	100			uA
Ring Detect Idle Current	No Ringing Voltage present			10	uA
Ring Indicate Output Voltage	Ring Voltage present on Tip & Ring		0.2	0.5	Volts
Loop Current Switch Control Voltage	ON: (off-hook) OFF: (on-hook)	2.0	3.0 0.2	0.5	Volts Volts
Loop Current Switch Control Current			15	25	mA
Loop Current	Off-Hook current draw from Telephone Line	20		100	mA
Total Harmonic Distortion	At 1800 Hz, -9 dBm signal level	-72	-76		dBm
Connect Detect Threshold Voltage		15		20	Volts

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-25°C to +85°C
Operating Temperature Range	0°C to +70°C
Maximum Lead Temperature (soldering 2 seconds per wave)	260°C

XE0055CS2 Typical Connection Diagram



Note: TPB270A is an SGS Thompson surge suppressor

Telephone Line Connection Information

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 XE0055CS2 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 transmit meet basic FCC requirements for maximum transmission levels of 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 XE0055CS2 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 XE0055CS2 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 isolation provided by the XE0055CS2. This is generally accomplished through an independent testing lab which test the System and submits the proper paperwork to the FCC for approval. Since the XE0055CS2 already complies with FCC Part 68 rules, this is a relatively simple process.

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