

Features

- Low Distortion Transformer Signal Coupling (0.01% max)
- Complete Ring Detector Circuit
- Low Power Hook Switch
- Electronic Inductor/Gyrator Circuit
- Solid State Surge Protection
- Transient Protection Zener Diodes
- Complete Hybrid Circuit (2-4 Wire Converter) Included
- Compatible with All Modem Chip Sets
- V.32 bis/V.34 Compatible

Applications

- Modems
- Fax Machines
- Remote Data Acquisition
- Security Systems
- Voice Mail Systems
- PC Motherboard
- Computer Telephony
- Process Control
- Medical
- PBX
- Direct Broadcast Satellite

Description

IXYS Integrated Circuits Division's Cybergate™ CYG2217 DAA module provides a complete telephone line interface circuit including a 2-4 wire converter for transmit and receive signal separation in a small 1.07" x 1.07" x 0.4" package. The module provides a fast and cost effective solution for designs that require an interface to the telephone line. The module is designed to meet FCC part 68 requirements, thus providing a low risk design solution.

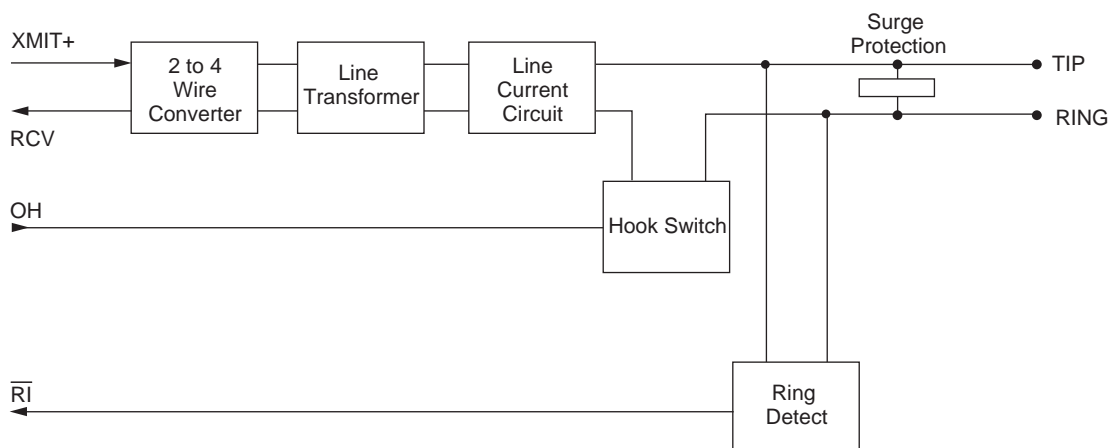
Approvals

- UL Recognized Component: File E174201

Ordering Information

| Part | Description |
|---------|----------------------|
| CYG2217 | DAA Module (18/Tube) |

Block Diagram



1 Specifications

1.1 Absolute Maximum Ratings @ 25°C

| Symbol | Ratings | Units |
|---|---------|------------------|
| Isolation Voltage | 1000 | V _{rms} |
| Tip/Ring Load Current (Continuous) | 120 | mA |
| Hook Switch LED Drive Current | 50 | mA |
| Hook Switch LED Reverse Voltage | 5 | V |
| Ring Detect Phototransistor Voltage V _{CC} | 20 | V |
| Relative Humidity (non-condensing) | 10-85 | % |
| Operational Temperature | 0-70 | °C |
| Storage Temperature | 0-100 | °C |

Absolute maximum ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

1.2 DC Electrical Characteristics @ 25°C (Unless Otherwise Noted)

| Parameter | Conditions | Minimum | Typical | Maximum | Units |
|---|--------------------------------------|---------|---------|---------|-------|
| On-Hook Impedance 2, 1 (R, T) per FCC 68.312 | @100V _{DC} Across Pins 1, 2 | 10 | - | - | MΩ |
| Off-Hook Line Leakage Current 2, 1 (R, T) per FCC 68.312 | @100V _{DC} Across Pins 1, 2 | - | - | 10 | μA |
| Power Supply Current @V _{CC} | V _{CC} = 5V | 4 | 5 | 6 | mA |
| Hook Switch Control Current @ OH | V _{OH} = 2.4V | 3.5 | 4.1 | 5 | mA |
| | V _{OH} = 5V | 11.8 | 12.4 | 13 | |
| Hook Switch Control Voltage | Off-Hook | 2 | 3 | 20 | V |
| | On-Hook | - | 0.2 | 0.5 | |

1.3 AC Signal Path Electrical Characteristics @ 25°C (Unless Otherwise Noted)

| Parameter | Conditions | Minimum | Typical | Maximum | Units | |
|---------------------------|------------------------------|----------|---------|---------|-------|----|
| Return Loss | 600Ω, 1800Hz | 39 | 40 | - | dB | |
| Insertion Loss | 600Ω, 1800Hz, Test Circuit 1 | 6 | 6.5 | 7 | dB | |
| | 600Ω, 1800Hz, Test Circuit 2 | -1 | 0 | +1 | | |
| Frequency Response | 300Hz - 3500Hz | -0.25 | - | +0.25 | dB | |
| Longitudinal Balance | Per FCC 68.310 | On-Hook | 60 | - | - | dB |
| | | Off-Hook | 40 | - | - | |
| Transhybrid Loss | 600Ω, 1800Hz | - | -32 | -10 | dB | |
| Total Harmonic Distortion | 600Ω, 1800Hz | - | -80 | - | dB | |
| DC Loop Current | - | 20 | - | 120 | mA | |

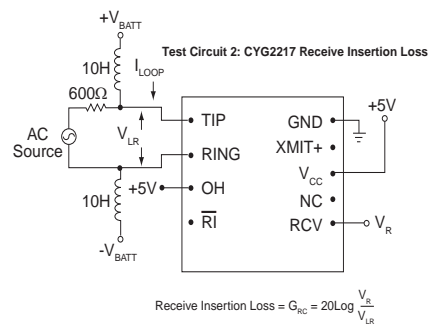
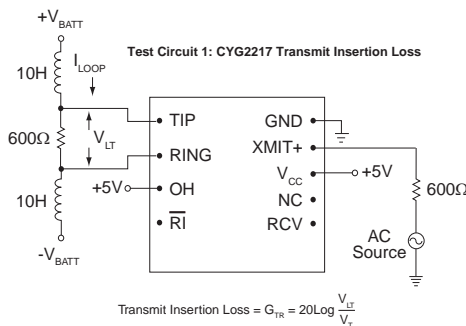
1.4 Ring Detection Circuit Electrical Characteristics @ 25°C (Unless Otherwise Noted)

| Parameter | Conditions | Minimum | Typical | Maximum | Units |
|--------------------------------------|-------------------------|---------|---------|-----------------|------------------|
| Ringing Voltage Detection Range | - | 20 | - | 150 | V _{rms} |
| Ringing Frequency Detection Range | - | 15 | - | 70 | Hz |
| Ringer Equivalence Number | - | - | 0.8B | - | - |
| RING (Pin 5) Output Voltage (Pulsed) | @ V _{CC} = +5V | - | - | 0.8 | V |
| Logic "0", Ring Present | | - | - | V _{CC} | |
| Logic "1", Ring Not Present | | | | | |

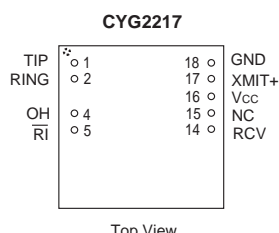
1.5 Surge and Isolation Electrical Characteristics @ 25°C (Unless Otherwise Noted)

| Parameter | Conditions | Minimum | Typical | Maximum | Units |
|--|----------------|---------|---------|---------|------------------|
| Surge Protection Voltage Tip & Ring (Pins 1, 2) | - | - | - | 300 | V |
| Isolation Voltage, Pins (18, 17, 16, 15, 14, 5, 4) to (1, 2) | Per FCC 68.302 | 1000 | - | - | V _{rms} |

1.6 Test Circuits



1.7 CYG2217 Pinouts and Definitions

| Pinouts | Pin | Name | Function |
|---|-----|-----------------|---|
|  <p>Top View</p> | 1 | TIP | Connection to telephone line Tip connected through an external fuse. |
| | 2 | RING | Connection to telephone line Ring conductor. |
| | 4 | OH | Driving this pin high asserts the off-hook condition. The hook switch LED is current limited by an internal 300Ω resistor |
| | 5 | RI | Active LOW indicates an incoming ring signal. This is pulsed LOW by the AC ring signal, and is not a steady state LOW during ringing. |
| | 14 | RCV | Provides the analog output signal from the 2-4 wire converter of the CYG2217. RCV uses a 2.5 volt reference signal, and therefore must be capacitively coupled to host equipment that uses a ground reference. |
| | 15 | NC | No Connection |
| | 16 | V _{CC} | Provides power to the CYG2217. Typically +5V, V _{CC} should not exceed 20V. |
| | 17 | XMIT+ | Provides the analog input signal from the 2-4 wire converter of the CYG2217. XMIT+ uses a 2.5 volt reference signal, and therefore must be capacitively coupled to host equipment that uses a ground reference. |
| | 18 | GND | Connection to host system ground. |

2 Manufacturing Information

2.1 Handling and Assembly Recommendations

The CYG2217 is not hermetically sealed, and should not be exposed to any liquid-based rinsing processes. IXYS Integrated Circuits Division recommends two (2) approaches: (1) the modem should be installed in a wave-soldering process that uses a no-clean soldering flux that will mostly evaporate during the normal wave-soldering processes, (2) the modem should be soldered in by hand after the rest of the card is wave-soldered.

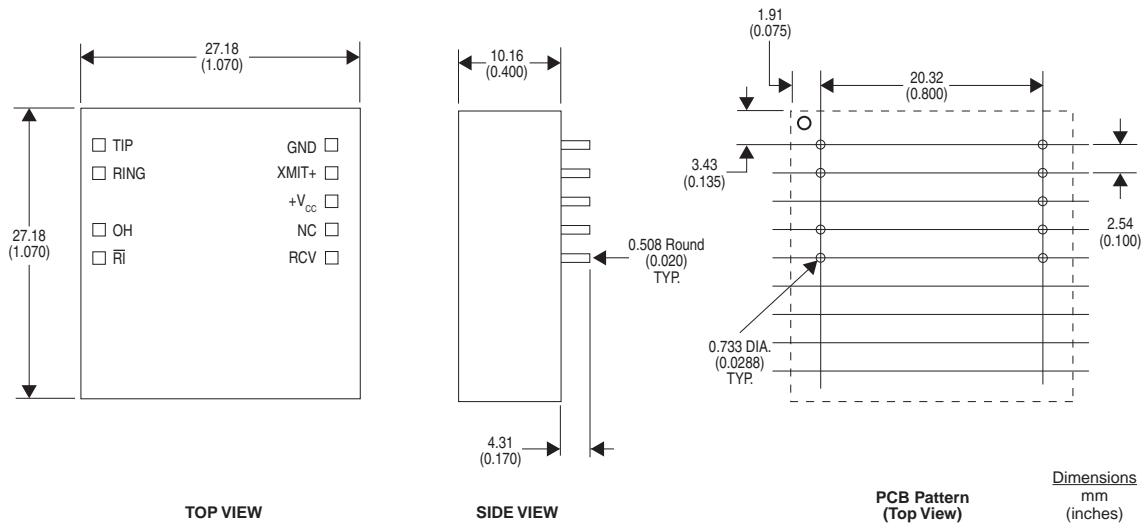
2.2 Reflow Profile

This product has a maximum solder temperature as shown below.

| Device | Maximum Temperature |
|---------|---------------------|
| CYG2217 | 260°C |

2.3 Mechanical Dimensions

2.3.1 CYG2217



For additional information please visit our website at: www.ixysic.com

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