



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



Features

- Low distortion transformer signal coupling (0.01% max)
- Complete ring detector circuit
- Low power hookswitch
- Electronic inductor/gyrator circuit
- Surge protection
- Transient protection zeners
- Half- (20X0) or Full- (20X1) Wave Detection
- V.32 bis /V.34 compatible
- FCC Compatible
- Compatible with U.S. and Canadian dial up phone lines
- Supports leased-line operation
- PC board mountable

Applications

- Modems
- Fax machines
- Remote data acquisition
- Security systems
- Voice mail systems
- PC motherboard
- Computer telephony
- Process control
- Medical
- PBX
- Direct broadcast satellite

Description

The CYG2000/2001/2010/2011/2020/2021/2030/2031 are Data Access Arrangement (DAA) modules featuring a 350V, 120mA, 15Ω relay used for hookswitch, optocoupler with minimum CTR of 33% for ring detection, and a low distortion transformer with 28.8kbps capabilities.

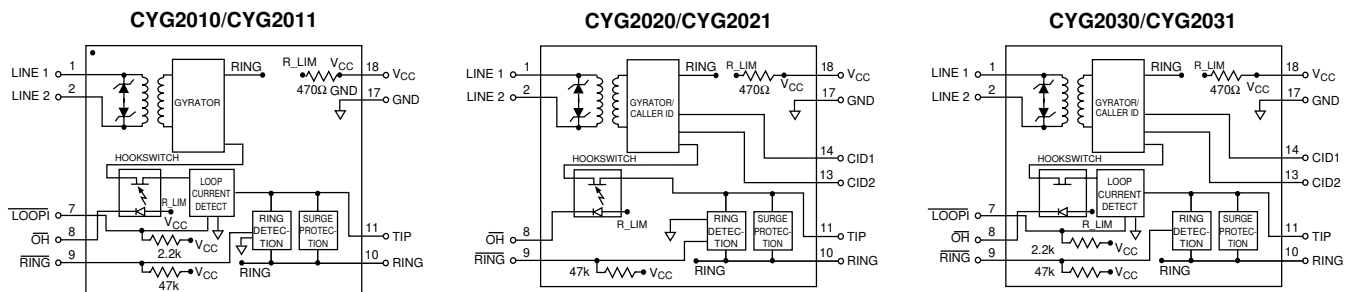
Approvals

- UL recognized file #: E174201

Ordering Information

| Part # | Description |
|---------|--|
| CYG2000 | DAA Module, Half Wave Ring Detection |
| CYG2001 | DAA Module, Full Wave Ring Detection |
| CYG2010 | DAA Module, Half Wave Ring Detection, Loop Current Detection |
| CYG2011 | DAA Module, Full Wave Ring Detection, Loop Current Detection |
| CYG2020 | DAA Module, Half Wave Ring Detection, CID |
| CYG2021 | DAA Module, Full Wave Ring Detection, CID |
| CYG2030 | DAA Module, Half Wave Ring Detection, CID and Loop Current Detection |
| CYG2031 | DAA Module, Full Wave Ring Detection, CID and Loop Current Detection |

Block Diagrams



Handling and Assembly Recommendations

The CYG20XX products are not hermetically sealed and should not be exposed to any liquid-based rinsing processes. Clare recommends two (2) approaches. The modem should either use a no clean soldering flux that would mostly evaporate during the normal wave soldering processes, or be soldered in by hand after the rest of the card is wave soldered.

Absolute Maximum Ratings (@ 25° C)

| Parameter | Min | Typ | Max | Units |
|--|-----|-----|------|------------------|
| Isolation Voltage | - | - | 1000 | V _{RMS} |
| Operational Temperature | 0 | - | 70 | °C |
| Storage Temperature | 0 | - | 70 | °C |
| Relative Humidity (Non-Condensing) | 10 | - | 85 | % |
| Soldering Temperature | - | - | 260 | °C |
| Tip/Ring (5, 6) Load current (continuous) | - | - | 120 | mA |
| Hookswitch LED Drive Current | - | - | 50 | mA |
| Hookswitch LED Reverse Voltage | - | - | 5 | V |
| Ring Detect Phototransistor Voltage V _{CC} | - | - | 20 | V |

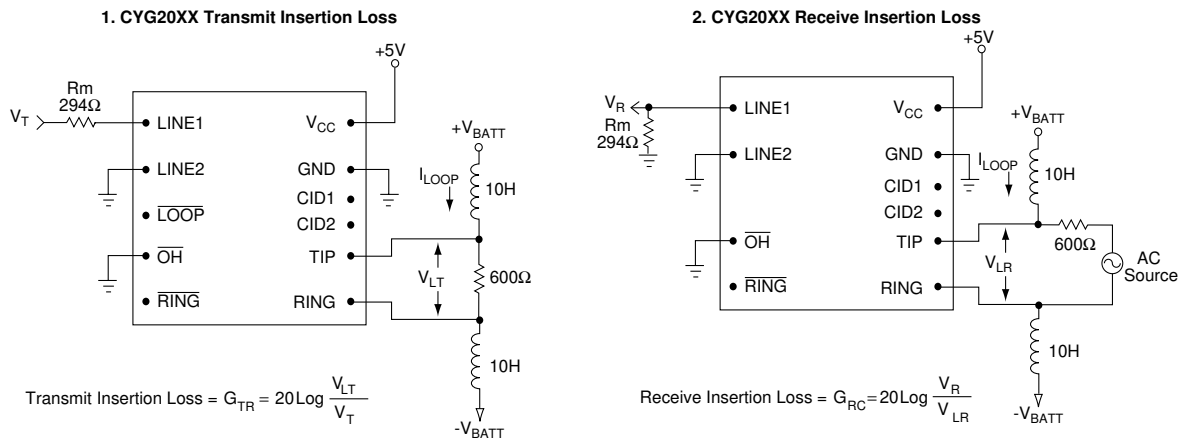
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.

Electrical Characteristics

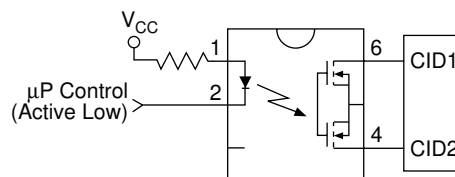
| Parameter | Conditions | Min | Typ | Max | Unit |
|--|--|-------|------|-----------------|------------------|
| DC Electrical Characteristics | | | | | |
| On-Hook Impedance | @100VDC across pins 10,11 (R,T), per FCC 68.312 | 10 | - | - | MΩ |
| Off-Hook Line Leakage Current | @100VDC across pins 10,11 (R,T), per FCC 68.312 | - | - | 10 | μA |
| Hookswitch Resistance | - | - | - | 15 | Ω |
| Off-Hook Supply Current | @+5V, V _{CC} | 7 | 8 | 9 | mA |
| Hookswitch Power Source, Pin 8 | - | 4.75 | 5.0 | 20 | V |
| DC Loop Current | - | 20 | - | 120 | mA |
| AC Signal Path Electrical Characteristics | | | | | |
| Return Loss | 300-3500Hz | 18 | 25 | - | dB |
| Insertion Loss | 300-3500Hz | | | | |
| Transmit | Test Circuit 1 | - | - | 7 | dB |
| Receive | Test Circuit 2 | - | - | 7 | dB |
| Frequency Response | 300-3500Hz | -0.25 | - | +0.25 | dB |
| Longitudinal Balance | | | | | |
| On-Hook | Per FCC 68.310 | 60 | - | - | dB |
| Off-Hook | Per FCC 68.310 | 40 | - | - | dB |
| DC Loop Current | - | 20 | - | 120 | mA |
| Total Harmonic Distortion | @600Hz and -10dBm | - | - | 0.01 | % |
| Secondary Load Impedance | Line 1 and Line 2 | - | 294 | - | Ω |
| Primary Source Impedance | Tip and Ring | - | 600 | - | Ω |
| Ring Detection Circuit Characteristics | | | | | |
| Ring Voltage Detection Range | - | 20 | - | 150 | V _{rms} |
| Ring Frequency Detection Range | - | 15 | - | 70 | Hz |
| Ringer Equivalence Number | - | - | 0.8B | - | |
| RING (Pin 9) Output Voltage (Pulsed) | V _{CC} @+5V | | | | |
| Logic '0', Ring present | | - | - | 0.8 | V |
| Logic '1', Ring not present | | - | - | V _{CC} | V |

Electrical Characteristics (Continued)

| Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|-----|-----|------|------------------|
| Surge, Transient, and Isolation Characteristics | | | | | |
| Surge Protection Voltage Tip and Ring (Pins 11,10) | - | - | - | 300 | V |
| Transient Voltage Protection on Line 1 and Line 2 (Pins 1,2) | - | -5 | - | +5 | V |
| Isolation Voltage (Pins 1,2,7,8,9,17,18 to10,11,13,14) | Per FCC 68.302 | - | - | 1000 | V _{RMS} |
| Loop Detection Characteristics (CYG2010/CYG2011/CYG2030/CYG2031) | | | | | |
| Loop Current Detection Threshold | Internal optocoupler with 2.2K Pull-up resistor | 9 | 10 | 11 | mA |

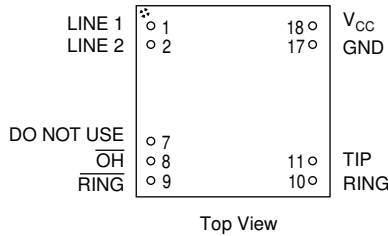
Test Circuits

CYG2020/2021/2030/2031
Caller ID Connections

Pins 13 & 14 should be connected to a 1-Form-A solid state relay (Clare LCA110), as follows:

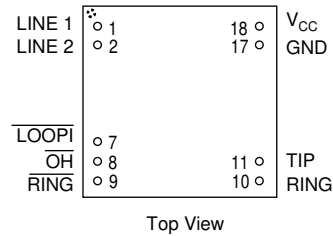


Package Pinouts

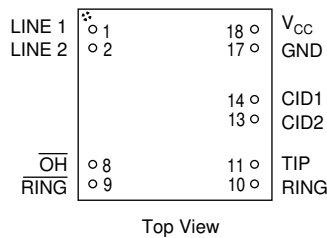
CYG2000/CYG2001



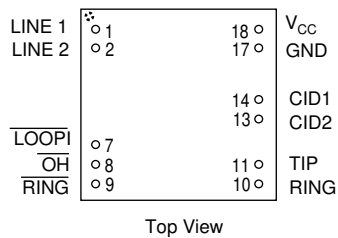
CYG2010/CYG2011



CYG2020/CYG2021



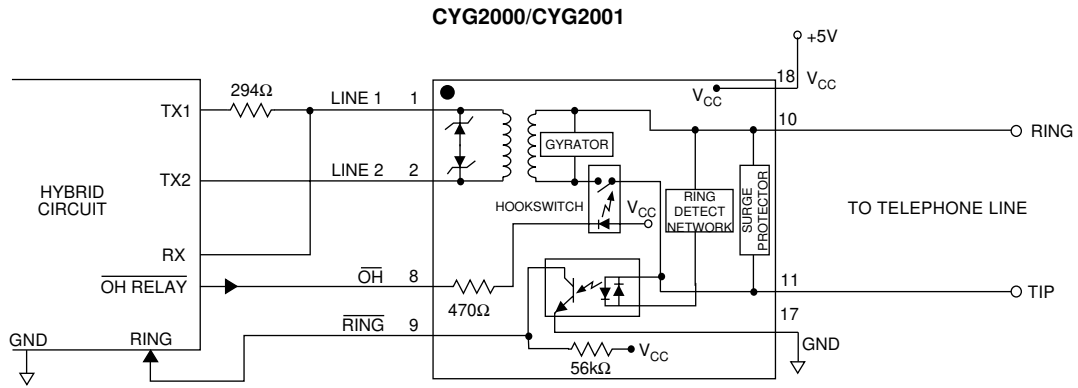
CYG2030/CYG2031



CYG20XX Pinouts & Definitions

| PIN# | I/O | Name | Function |
|------|-----|-----------------|---|
| 1 | I/O | LINE1 | Transformer isolated audio signal coupling path for the telephone line. |
| 2 | I/O | LINE2 | Transformer isolated audio signal coupling path for the telephone line. |
| 7 | I | LOOPI | When system is off-hook (OH driven LOW) LOOPI is driven LOW continuously on CYG2010/2011/2030/2031 devices. |
| | | N/C | Keying pin for CYG2000/CYG2001, do not use. |
| 8 | I | OH | Driving this pin LOW asserts the off-hook condition. The hookswitch LED is current limited by an internal 470Ω resistor. |
| 9 | O | RING | Active LOW indicates an incoming ring signal. This is pulsed LOW by the AC ring signal at the ring frequency from 15-40Hz. |
| 10 | I/O | RING | Connection to telephone line Ring conductor. |
| 11 | I/O | TIP | Connection to telephone line Tip conductor. |
| 13 | O | CID2 | Caller ID connection on CYG2020/2021/2030/2031. CID1/CID2 connect to an external 1-Form-A solid state relay (CP Clare LCA110). When the SSR is closed (connecting CID1 to CID2) Caller ID information is presented to LINE1/LINE2 after the first telephone ring burst. |
| 14 | O | CID1 | Caller ID connection. See CID2 above. |
| 17 | I | GND | Connected to host system ground. |
| 18 | I | V _{CC} | Provides power to the hookswitch LED. Typically +5V for ≈ 8mA LED current. LED is current limited by an internal 470Ω resistor. V _{CC} should not exceed 20V. |

Typical Application





CLARE

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

Clare, Inc. makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in Clare's Standard Terms and Conditions of Sale, Clare, Inc. assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of Clare's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. Clare, Inc. reserves the right to discontinue or make changes to its products at any time without notice.

Specification: DS-CYG20XX-R1.0
©Copyright 2002, Clare, Inc.
All rights reserved. Printed in USA.
6/25/02