CLARE
MICRO CHIPS.
MACRO SOLUTIONS.

CYG20XX
Cybergate™

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.

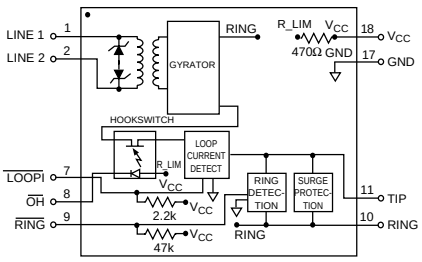
Approvals
- UL recognized file #: E174201

Ordering Information

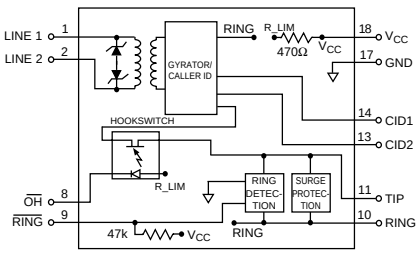
Part #	Description
CYG2000	DAA Module, Half Wave Ring Detection
CYG2001	DAA Module, Full Wave Ring Detection
CYG2010	DAA Module, Half Wave Ring Detection, Loop Current Detection
CYG2011	DAA Module, Full Wave Ring Detection Loop Current Detection
CYG2020	DAA Module, Half Wave Ring Detection, CID
CYG2021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

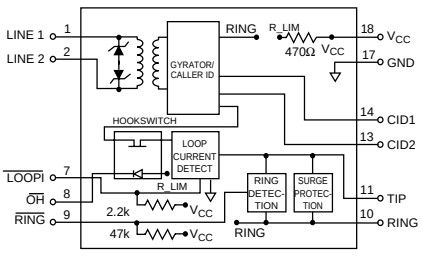
CYG2010/CYG2011



CYG2020/CYG2021



CYG2030/CYG2031



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

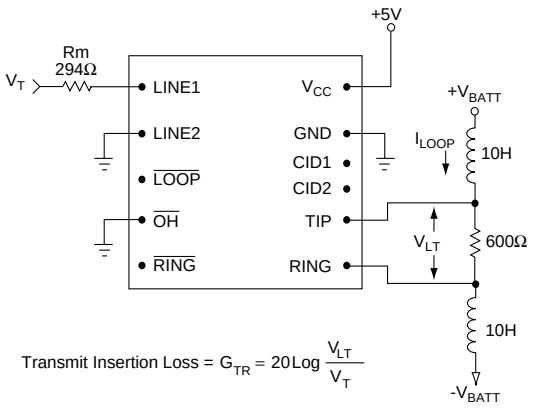
Parameter	Conditions	Min	Typ	Max	Unit
DC Electrical Characteristics					
On-Hook Impedance	@100VDC across pins 10,11 (R,T), per FCC 68.312	10	-	-	MΩ
Off-Hook Line Leakage Current	@100VDC across pins 10,11 (R,T), per FCC 68.312	-	-	10	µA
Hookswitch Resistance	-	-	-	15	Ω
Off-Hook Supply Current	@+5V, V_{CC}	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					
Ringing Voltage Detection Range	-	20	-	150	Vrms
Ringing 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		-	-	Vcc	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

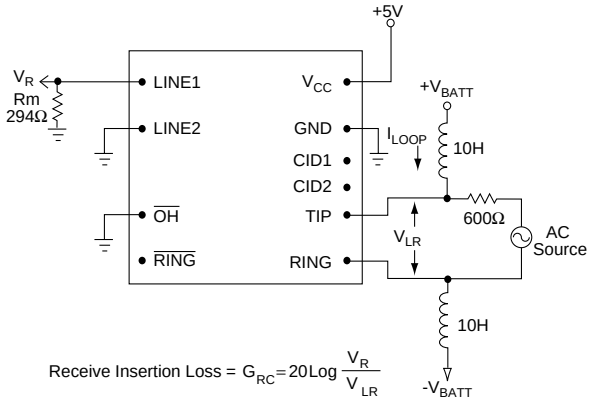
Test Circuits

1. CYG20XX Transmit Insertion Loss



$$\text{Transmit Insertion Loss} = G_{TR} = 20\text{Log}\frac{V_{LT}}{V_T}$$

2. CYG20XX Receive Insertion Loss

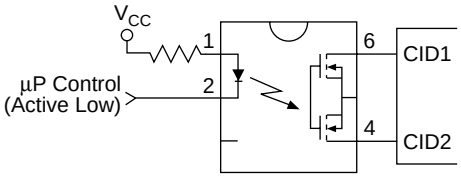


$$\text{Receive Insertion Loss} = G_{RC} = 20\text{Log}\frac{V_R}{V_{LR}}$$

CYG2020/2021/2030/2031

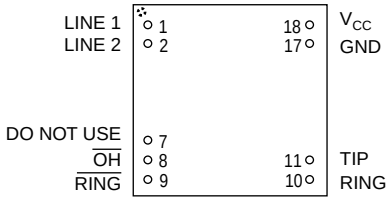
Caller ID Connections

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



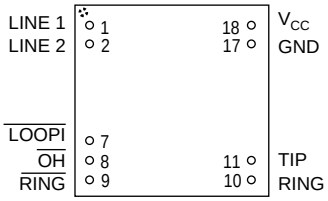
Package Pinouts

CYG2000/CYG2001



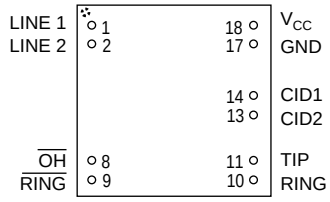
Top View

CYG2010/CYG2011



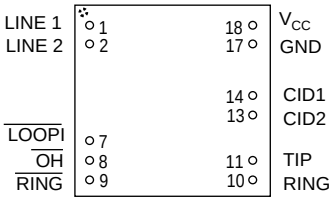
Top View

CYG2020/CYG2021



Top View

CYG2030/CYG2031



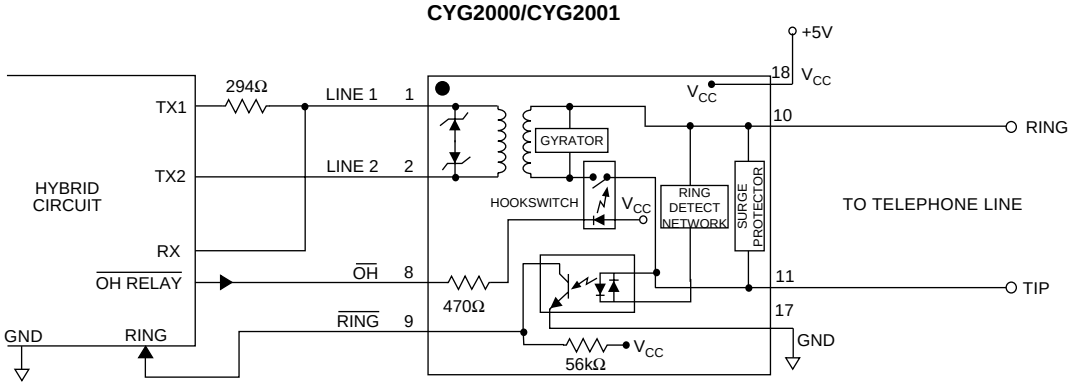
Top View

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	$\overline{\text{LOOPI}}$	When system is off-hook ($\overline{\text{OH}}$ driven LOW) $\overline{\text{LOOPI}}$ is driven LOW continuously on CYG2010/2011/2030/2031 devices.
		N/C	Keying pin for CYG2000/CYG2001, do not use.
8	I	$\overline{\text{OH}}$	Driving this pin LOW asserts the off-hook condition. The hookswitch LED is current limited by an internal 470Ω resistor.
9	O	$\overline{\text{RING}}$	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

CYG2000/CYG2001



CLARE

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

Specification: DS-CYG20XX-R1.0

6/25/02

AMEYA360
Components Supply Platform

Authorized Distribution Brand :

Website :

Welcome to visit www.ameya360.com

Contact Us :

- ### Address :

  401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
  Minhang District, Shanghai , China

- ### Sales :

  Direct +86 (21) 6401-6692

  Email amall@ameya360.com

  QQ 800077892

  Skype ameyasales1 ameyasales2

- ### Customer Service :

  Email service@ameya360.com

- ### Partnership :

  Tel +86 (21) 64016692-8333

  Email mkt@ameya360.com