



Features

- Low-Distortion Transformer Signal Coupling (0.01% max)
- Complete Ringing Detector Circuit
- Low-Power Hook Switch
- Electronic Inductor/Gyrator Circuit
- Surge Protection
- V.32 bis / V.34 Compatible
- PTT and Safety Regulations in France
- PC Board Mountable
- FCC Compatible

Applications

- Home Medical Devices
- Plant Monitoring Equipment
- Security/Alarm Systems
- Utility Meters
- Modems
- Voicemail Systems
- Vending Machines
- Elevator Control Boxes
- Network Routers
- PBX Systems
- PC Mother Boards
- Telephony Applications
- Digital Telephone Answering Machines

Description

Clare's CYG2110 DAA Module, designed for use in France, provides a complete telephone line interface circuit 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 CYG2110 is designed to meet PTT and safety regulations in France. Select the CYG2100 for use in most other EU nations, except Spain, and select the CYG2120 for use in Spain.

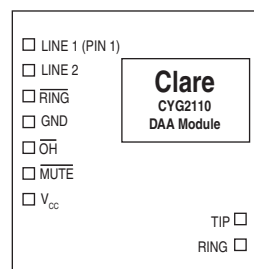
Approvals

- EN/IEC 60950 Compliant

Ordering Information

Part #	Description
CYG2110	CYBERGATE (France only) Module (18/Tube)

Pin Configuration



Top View

Absolute Maximum Ratings (@ 25°C)

Parameter	Ratings	Units
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_{CEO}	20	V
Isolation Voltage, Input to Output	1500	V_{rms}
Relative Humidity (non-condensing)	10 to 85	%
Operational Temperature	0 to +70	°C
Storage Temperature	0 to +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.

DC Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Units
On-Hook Impedance	100V _{DC} Across Pins 11, 10 (T, R)	10	-	-	MΩ
On-Hook Line Leakage Current	100V _{DC} Across Pins 11, 10 (T, R)	-	-	10	μA
Hook Switch Resistance	$\overline{OH} = GND, V_{CC} = +5V_{DC}$	-	-	35	Ω
Off-Hook Supply Current	$\overline{OH} = GND, V_{CC} = +5V_{DC}$	7	8	9	mA
Hook Switch Power Source, Pin 5 ¹	-	4.75	5	12	V
DC Loop Current	$\overline{OH} = GND, V_{CC} = +5V_{DC}$	5	-	120	mA

¹ For $V_{CC} > +12V$, select an external resistor (R) such that $((V_{CC} - 1.4) / R) \leq 50mA$

AC Signal Path Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Units
Return Loss	$\overline{OH} = GND, 300Hz \text{ to } 3500Hz (600\Omega)$	14	25	-	dB
Insertion Loss	$\overline{OH} = GND, 300Hz \text{ to } 3500Hz (600\Omega)$	-	-	7	dB
Transmit				7	
Receive	$\overline{OH} = GND, 300Hz \text{ to } 3500Hz$	-0.25	-	+0.25	dB
Frequency Response	$\overline{OH} = GND, 300Hz \text{ to } 3500Hz$	-0.25	-	+0.25	dB
Longitudinal Balance	$\overline{OH} = V_{CC}$ $\overline{OH} = GND$	60	-	--	dB
On-Hook		40	-	-	
Off-Hook	$\overline{OH} = GND$	-	-	0.01	%
Total Harmonic Distortion	$\overline{OH} = GND, -10dBm, f = 350Hz$	-	-	0.01	%
Secondary Load Impedance	Line 1 & Line 2	-	100	-	Ω
Primary Source Impedance	Tip & Ring	-	600	-	Ω

Ring Detection Circuit Characteristics, $\overline{OH} = V_{CC}$

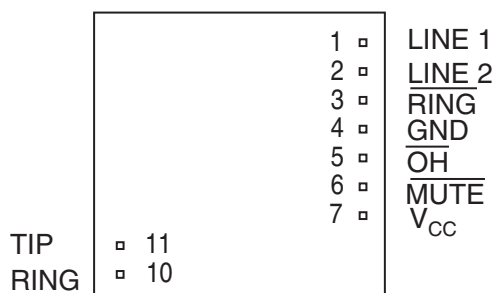
Parameter	Conditions	Min	Typ	Max	Units
Ringing Voltage Detection Range	-	29	-	150	V_{rms}
Ringing Frequency Detection Range	-	15	-	70	Hz
Ringing Impedance	$f = 25Hz$	-	18	-	kΩ
RING (Pin 9) Output Voltage (Pulsed)	-	-	-	0.8	V
Logic '0' (Ring Present)				V_{CC}	
Logic '1' (Ring Not Present)				V_{CC}	

Surge, Transient, and Isolation Characteristics

Parameter	Conditions	Min	Typ	Max	Units
Surge Protection Voltage, Tip & Ring (Pins 11, 10)	-	-	-	300	V
Isolation Voltage (Pins 1-7 to 10-11)	-	-	-	1500	V _{rms}

Pin Descriptions

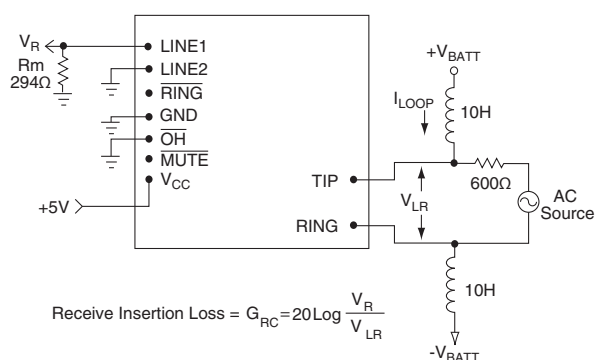
CYG2110



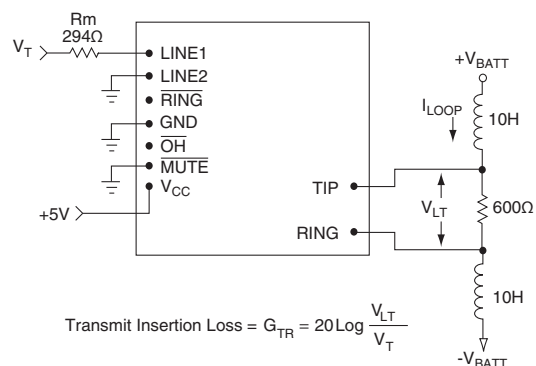
Pin #	I/O	Name	Function
1	I/O	LINE 1	Transformer isolated winding connection 1.
2	I/O	LINE 2	Transformer isolated winding connection 2.
3	O	$\overline{\text{RING}}$	Active low indicates incoming ring signal. This is pulsed low by the AC ring signal, and is not a steady-state low during ringing.
4	I	GND	Return path for V _{CC} .
5	I	$\overline{\text{OH}}$	Driving this pin low asserts the off-hook condition. The hook switch LED is current limited by an internal 470 Ω resistor.
6	I	MUTE	Not used.
7	I	V _{CC}	Provides power to the hook switch LED. Voltage is usually +5V (for 8mA LED current), but can be higher if an external resistor is placed in series with the internal 470 Ω resistor.
10	I/O	Ring	Connection to telephone line Ring conductor.
11	I/O	Tip	Connection to telephone line Tip conductor.

Test Circuits

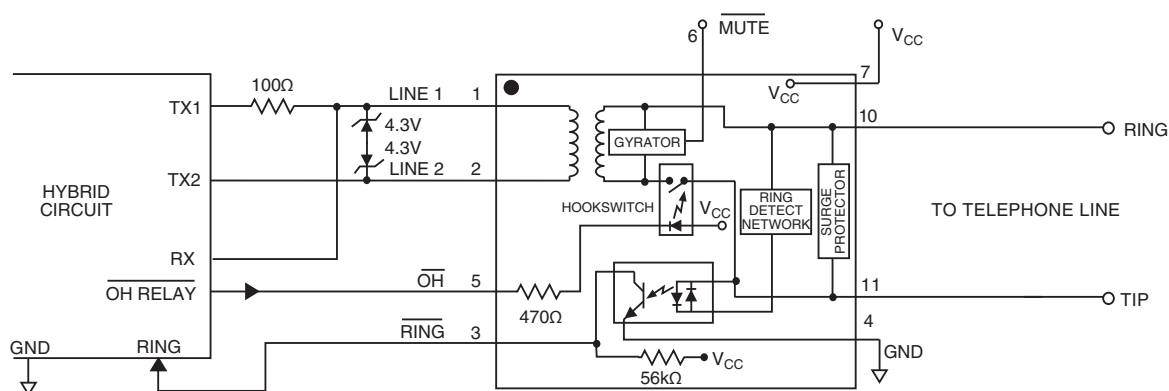
CYG2110 Receive Insertion Loss



CYG2110 Transmit Insertion Loss



Typical Application



MANUFACTURING INFORMATION

Soldering

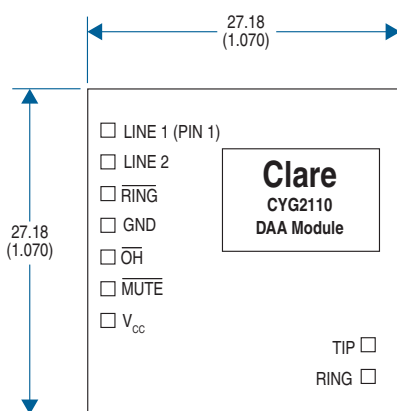
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

Washing

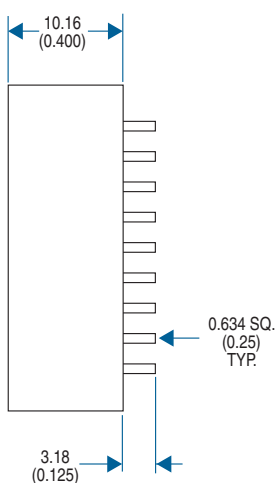
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

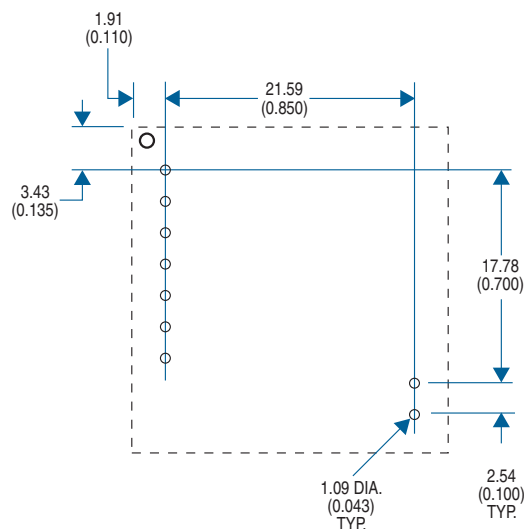
CYBERGATE Package



TOP VIEW



SIDE VIEW



**PCB Pattern
(Top View)**

Dimensions
mm
(inches)

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-CYG2110-R01
©Copyright 2008, Clare, Inc.
OptoMOS® is a registered trademark of Clare, Inc.
All rights reserved. Printed in USA.
12/8/08