LOC112

Linear Optocouplers



Features

- 8 Pin Flatpack or DIP Package (PCMCIA Compatible)
- Couples Analog and Digital Signals
- Wide Bandwidth (>200kHz)
- High Gain Stability
- Low Input/Output Capacitance
- Low Power Consumption
- 0.01% Servo Linearity
- THD 87dB Typical
- Machine Insertable, Wave Solderable
- Surface Mount and Tape Reel Versions Available
- VDE Compatible

Applications

- Modem Transformer Replacement With No Insertion Loss
- Digital Telephone Isolation
- Power Supply Feedback Voltage/Current
- Medical Sensor Isolation
- Audio Signal Interfacing
- Isolation of Process Control Transducers

Description

LOC112 is a linear optocoupler for use in telecom, medical and power supply isolation circuits. They are available in 8 pin DIP, surface mount or flatpack packages.

Approvals

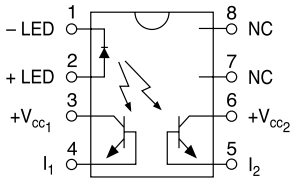
- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- BSI Certified:
  - BS EN 60950:1992 (BS7002:1992) Certificate #:7344
  - BS EN 41003:1993 Certificate #:7344

Ordering Information

Part #	Description
LOC112	8 Pin DIP (50/Tube)
LOC112P	8 Pin Flatpack (50/Tube)
LOC112PTR	8 Pin Flatpack (1000/Reel)
LOC112S	8 Pin Surface Mount (50/Tube)
LOC112STR	8 Pin Surface Mount (1000/Reel)

Pin Configuration

LOC112 Pinout



Absolute Maximum Ratings (@ 25º C)

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150[1]	mW
Input Control Current	-	-	100	mA
Peak (10ms)	-	-	1	A
Total Package Dissipation	-	-	800[2]	mW
Isolation Voltage Input to Output SOIC Package	3750	-	-	V_{RMS}
Operational Temperature	-40		+85	˚C
Storage Temperature	-40	-	+125	˚C
Soldering Temperature (10 Seconds Max) Flatpack Package	-	-	+220 +260	˚C ˚C

[1] Derate Linearly 1.33 mW/˚C
[2] Derate Linearly 6.67 mW/˚C

Absolute Maximum Ratings are stress ratings. 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	SYMBOL	MIN	TYP	MAX	UNITS
Input Characteristics @ 25°C1						
LED Voltage Drop	I_F=2-10mA	V_F	0.9	1.2	1.4	V
Reverse LED Current	V_R=5V	I_R	-	-	10	µA
Reverse LED Voltage	-	V_R	-	-	5	V
Forward LED Current	-	I_F	-	-	100	mA
Coupler/Detector Characteristics @ 25°C						
Dark Current	I_F=0mA, V_{CC}=15V	I_D	-	1	25	nA
K1, Servo Gain (I_1/I_F)	I_F=2-10mA, V_{CC}=15V	K1	0.004	0.007	0.030	-
K2, Forward Gain (I_2/I_F)	I_F=2-10mA, V_{CC}=15V	K2	0.004	0.007	0.030	
K3, Transfer Gain (K_2/K_1)[1]	I_F=2-10mA, V_{CC}=15V	K3	0.733	1.0	1.072	-
ΔK3, Transfer Gain Linearity[1] (non-servoed)	I_F=2-10mA	ΔK3	-	-	1.0	-%
K3 Temperature Coefficient	I_F=2-10mA, V_{det}=-5V	ΔK3/ΔT	-	0.005	-	%/˚C
Common Mode Rejection Ratio	V=20V_{P-P}, R_L=2KΩ, F=100Hz	CMRR	-	130	-	dB
Total Harmonic Distortion	F_O=350Hz, 0dBm	THD	-96	-87	-80	dB
Frequency Response	Photoconductive Operation	BW (-3dB)	-	200	-	kHz
	Photovoltaic Operation	BW (-3dB)		40	-	kHz
Input/Output Capacitance	-	$C_{I/O}$	-	3	-	pF
Input/Output Isolation		$V_{I/O}$	3750	-	-	V_{RMS}

[1] LOC111 and LOC112 Bins D,E,F,G.

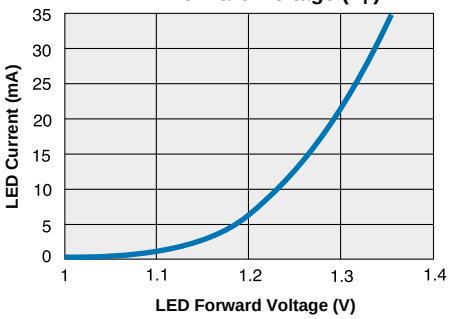
K3 Sorted Bins

Bin A = 0.550-0.605
Bin B = 0.606-0.667
Bin C = 0.668-0.732
Bin D = 0.733-0.805
Bin E = 0.806-0.886
Bin F = 0.887-0.974
Bin G = 0.975-1.072
Bin H = 1.073-1.179
Bin I = 1.180-1.297
Bin J = 1.298-1.426

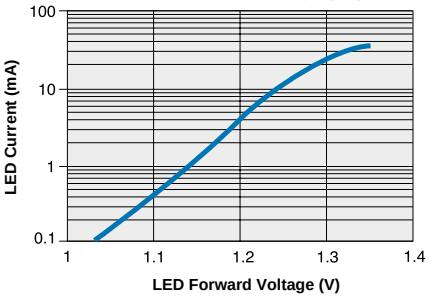
- The LOC110/LOC111/LOC112 are shipped in anti-static tubes of 50 pieces. Each tube will contain one K3 sorted bin.
- Bin designation marked on each device (A-J).
- Orders for the LOC110 product will be shipped using bins available at the date of the order. Any bin (A-J) can be shipped.
- For customers requiring selected bins D E F G we offer part numbers LOC111 or LOC112.

Performance Data

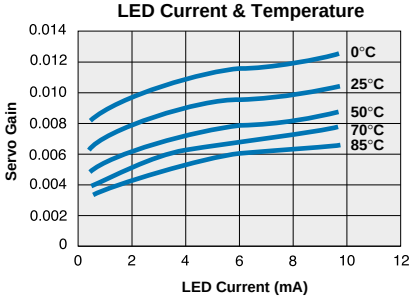
LOC112
LED Current (I_F) vs.
LED Forward Voltage (V_F)



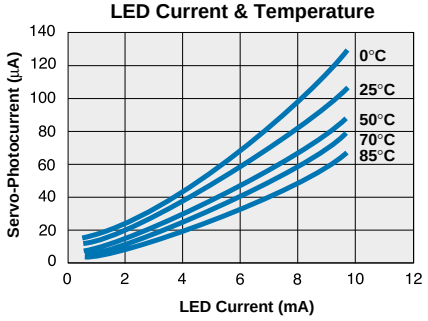
LOC112
LED Current (I_F) vs.
LED Forward Voltage (V_F)



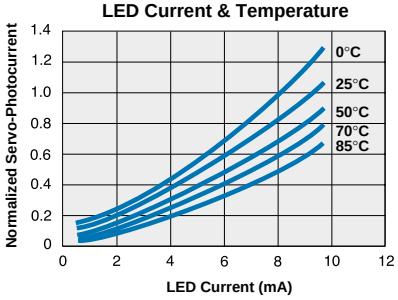
LOC112
Servo Gain vs.
LED Current & Temperature



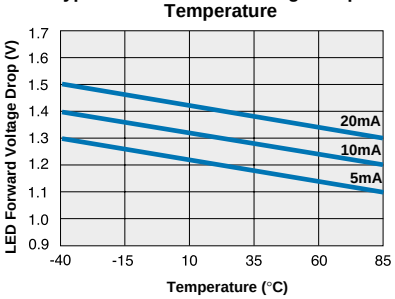
LOC112
Servo-Photocurrent vs.
LED Current & Temperature



LOC112
Normalized Servo-Photocurrent vs.
LED Current & Temperature



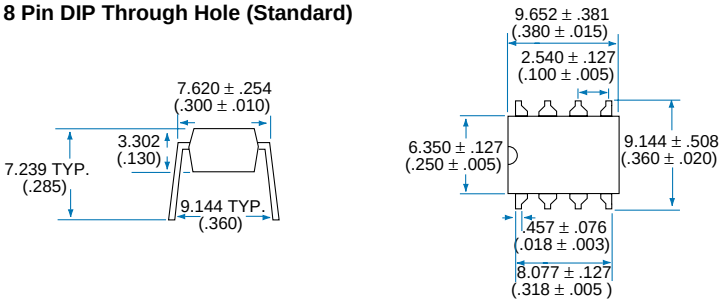
LOC112
Typical LED Forward Voltage Drop vs.
Temperature



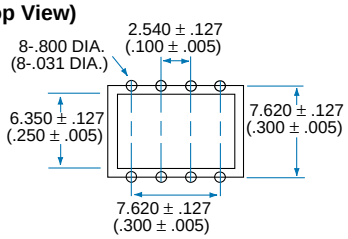
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

Mechanical Dimensions

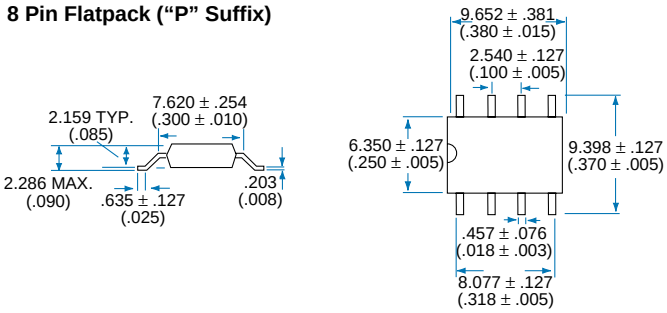
8 Pin DIP Through Hole (Standard)



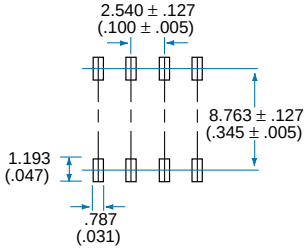
PC Board Pattern (Top View)



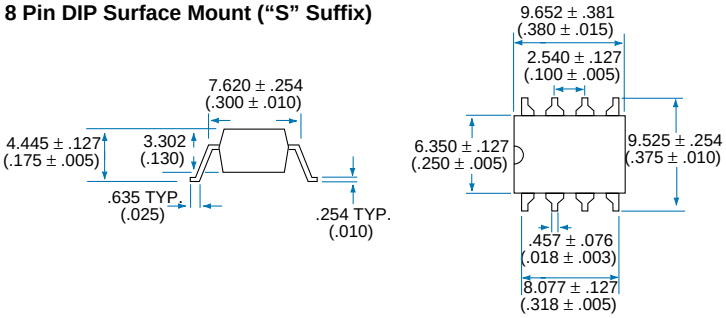
8 Pin Flatpack (“P” Suffix)



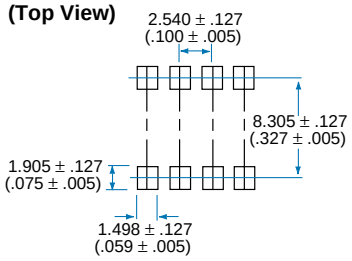
PC Board Pattern (Top View)



8 Pin DIP Surface Mount (“S” Suffix)



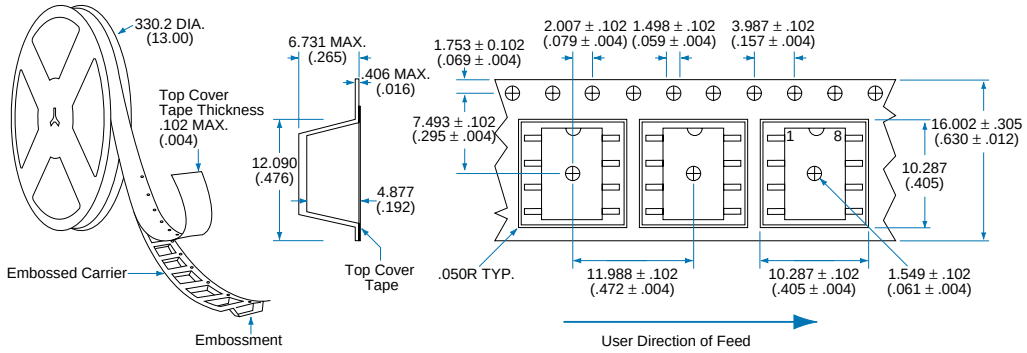
PC Board Pattern (Top View)



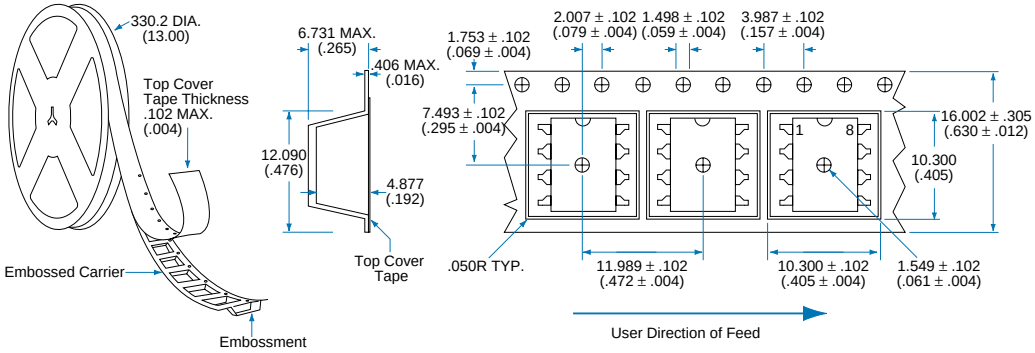
Dimensions
mm
(inches)

Mechanical Dimensions

Tape and Reel Packaging for 8 Pin Flatpack Package



Tape and Reel Packaging for 8 Pin Surface Mount Package



Dimensions
mm
(inches)

CLARE

Micro Chips.
Macro Solutions.

Worldwide Sales Offices

CLARE LOCATIONS

Clare Headquarters
78 Cherry Hill Drive
Beverly, MA 01915
Tel: 1-978-524-6700
Fax: 1-978-524-4900
Toll Free: 1-800-27-CLARE

Clare Micronix Division
145 Columbia
Aliso Viejo, CA 92656-1490
Tel: 1-949-831-4622
Fax: 1-949-831-4628

SALES OFFICES

AMERICAS

Americas Headquarters
Clare
78 Cherry Hill Drive
Beverly, MA 01915
Tel: 1-978-524-6700
Fax: 1-978-524-4900
Toll Free: 1-800-27-CLARE

Eastern Region
Clare
P.O. Box 856
Mahwah, NJ 07430
Tel: 1-201-236-0101
Fax: 1-201-236-8685
Toll Free: 1-800-27-CLARE

Central Region
Clare Canada Ltd.
3425 Harvester Road, Suite 202
Burlington, Ontario L7N 3N1
Tel: 1-905-333-9066
Fax: 1-905-333-1824

Western Region
Clare
1852 West 11th Street, #348
Tracy, CA 95376
Tel: 1-209-832-4367
Fax: 1-209-832-4732
Toll Free: 1-800-27-CLARE

Canada
Clare Canada Ltd.
3425 Harvester Road, Suite 202
Burlington, Ontario L7N 3N1
Tel: 1-905-333-9066
Fax: 1-905-333-1824

EUROPE

European Headquarters
CP Clare nv
Bampslaan 17
B-3500 Hasselt (Belgium)
Tel: 32-11-300868
Fax: 32-11-300890

France
Clare France Sales
Lead Rep
99 route de Versailles
91160 Champlan
France
Tel: 33 1 69 79 93 50
Fax: 33 1 69 79 93 59

Germany
Clare Germany Sales
ActiveComp Electronic GmbH
Mitterstrasse 12
85077 Manching
Germany
Tel: 49 8459 3214 10
Fax: 49 8459 3214 29

Italy
C.L.A.R.E.s.a.s.
Via C. Colombo 10/A
I-20066 Melzo (Milano)
Tel: 39-02-95737160
Fax: 39-02-95738829

Sweden
Clare Sales
Comptronic AB
Box 167
S-16329 Spånga
Tel: 46-862-10370
Fax: 46-862-10371

United Kingdom
Clare UK Sales
Marco Polo House
Cook Way
Bindon Road
Taunton
UK-Somerset TA2 6BG
Tel: 44-1-823 352541
Fax: 44-1-823 352797

ASIA PACIFIC

Asian Headquarters
Clare
Room N1016, Chia-Hsin, Bldg II,
10F, No. 96, Sec. 2
Chung Shan North Road
Taipei, Taiwan R.O.C.
Tel: 886-2-2523-6368
Fax: 886-2-2523-6369

http://www.clare.com

Clare cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in this Clare product. No circuit patent licenses nor indemnity are expressed or implied. Clare reserves the right to change the specification and circuitry, without notice at any time. The products described in this document are not intended for use in medical implantation or other direct life support applications where malfunction may result in direct physical harm, injury or death to a person.

Specification: DS-LOC112-R2
©Copyright 2001, Clare, Inc.
All rights reserved. Printed in USA.
02/23/01