



### 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

LOC110 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

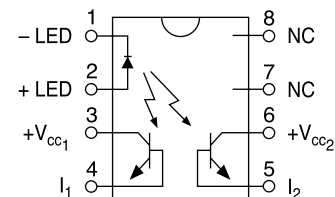
- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- BSI Certified:
  - BS EN 60950:1992 (BS7002:1992) Certificate #:7344
  - BS EN 41003:1993 Certificate #:7344

### Ordering Information

Part #	Description
LOC110	8 Pin DIP (50/Tube)
LOC110P	8 Pin Flatpack (50/Tube)
LOC110PTR	8 Pin Flatpack (1000/Reel)
LOC110S	8 Pin Surface Mount (50/Tube)
LOC110STR	8 Pin Surface Mount (1000/Reel)

### Pin Configuration

#### LOC110 Pinout



**Absolute Maximum Ratings (@ 25° C)**

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150 <sup>1</sup>	mW
Input Control Current	-	-	100	mA
Peak (10ms)	-	-	1	A
Total Package Dissipation	-	-	800 <sup>2</sup>	mW
Isolation Voltage Input to Output SOIC Package	3750	-	-	V <sub>RMS</sub>
Operational Temperature	-40	-	+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature (10 Seconds Max)	-	-	+220	°C
Flatpack Package	-	-	+260	°C

<sup>1</sup> Derate Linearly 1.33 mW/°C

<sup>2</sup> 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
<b>Input Characteristics @ 25°C<sup>1</sup></b>						
LED Voltage Drop	I <sub>F</sub> =2-10mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse LED Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	µA
Reverse LED Voltage	-	V <sub>R</sub>	-	-	5	V
Forward LED Current	-	I <sub>F</sub>	-	-	100	mA
<b>Coupler/Detector Characteristics @ 25°C</b>						
Dark Current	I <sub>F</sub> =0mA, V <sub>CC</sub> =15V	I <sub>D</sub>	-	1	25	nA
K1, Servo Gain (I <sub>1</sub> /I <sub>F</sub> )	I <sub>F</sub> =2-10mA, V <sub>CC</sub> =15V	K1	0.004	0.007	0.030	-
K2, Forward Gain (I <sub>2</sub> /I <sub>F</sub> )	I <sub>F</sub> =2-10mA, V <sub>CC</sub> =15V	K2	0.004	0.007	0.030	-
K3, Transfer Gain (K <sub>2</sub> /K <sub>1</sub> ) <sup>1</sup>	I <sub>F</sub> =2-10mA, V <sub>CC</sub> =15V	K3	0.550	1.0	1.430	-
ΔK3, Transfer Gain Linearity <sup>1</sup> (non-servoed)	I <sub>F</sub> =2-10mA	ΔK3	-	-	1.0	-%
K3 Temperature Coefficient	I <sub>F</sub> =2-10mA, V <sub>det</sub> =-5V	ΔK3/ΔT	-	0.005	-	%/°C
Common Mode Rejection Ratio	V=20V <sub>P-P</sub> , R <sub>L</sub> =2KΩ, F=100Hz	CMRR	-	130	-	dB
Total Harmonic Distortion	F <sub>0</sub> =350Hz, 0dBm	THD	-96	-87	-80	dB
Frequency Response	Photoconductive Operation	BW	-	200	-	kHz
		BW (-3dB)	-	-	-	-
Frequency Response	Photovoltaic Operation	BW	-	40	-	kHz
		BW (-3dB)	-	-	-	-
Input/Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF
Input/Output Isolation	-	V <sub>I/O</sub>	3750	-	-	V <sub>RMS</sub>

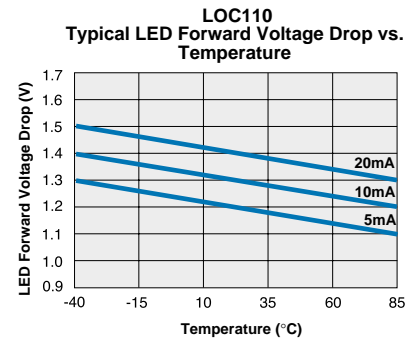
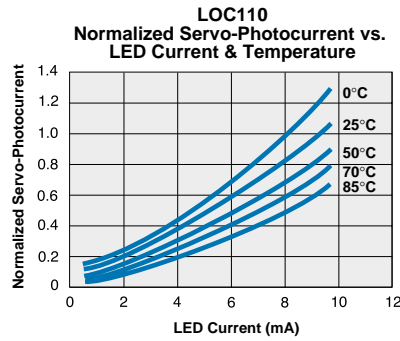
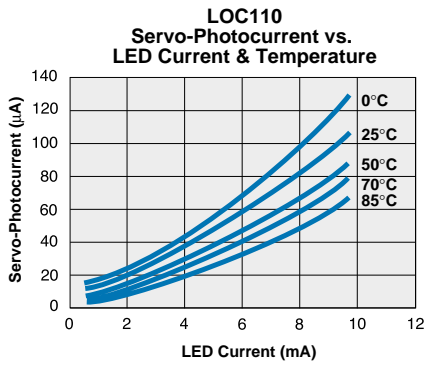
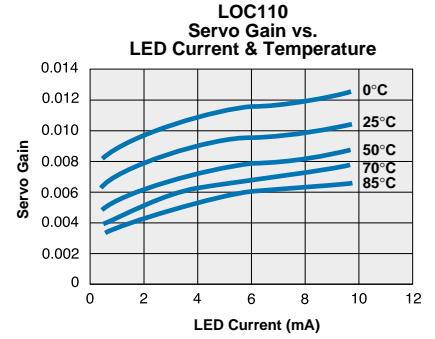
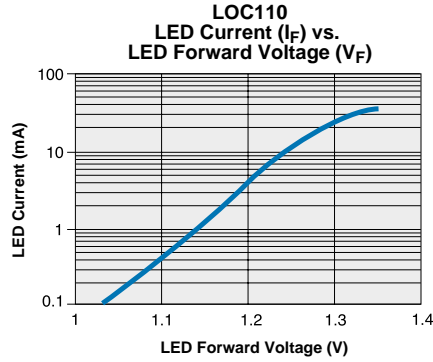
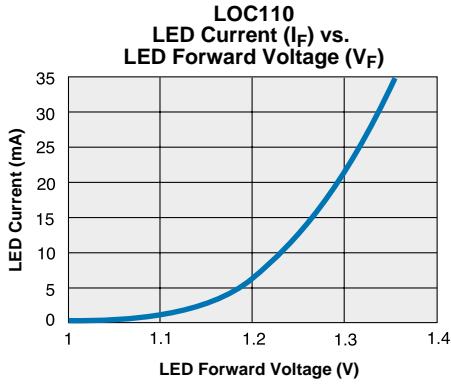
<sup>1</sup> LOC111 and LOC112 Bins D,E,F,G.

**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.

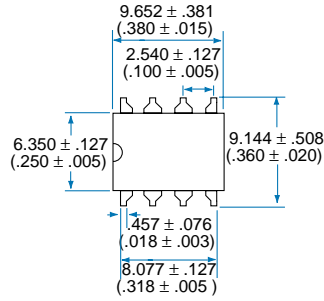
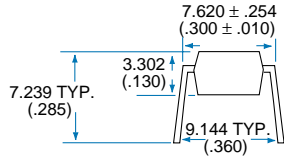
Performance Data



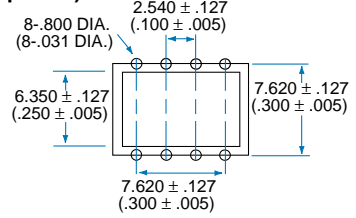
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

Mechanical Dimensions

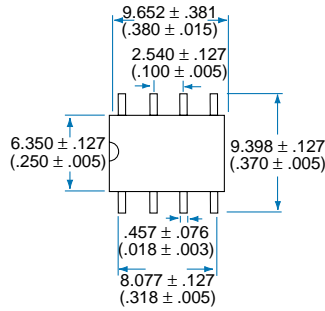
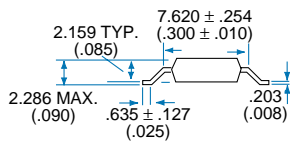
8 Pin DIP Through Hole (Standard)



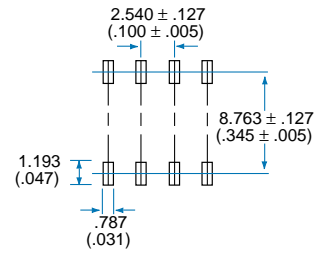
PC Board Pattern (Top View)



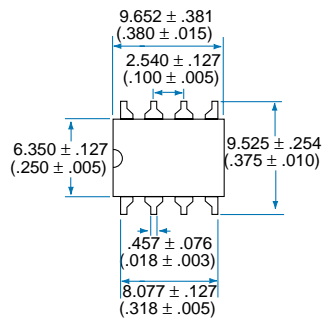
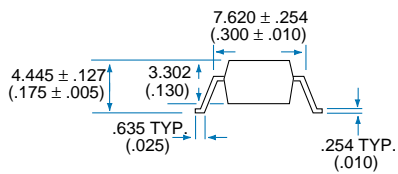
8 Pin Flatpack ("P" Suffix)



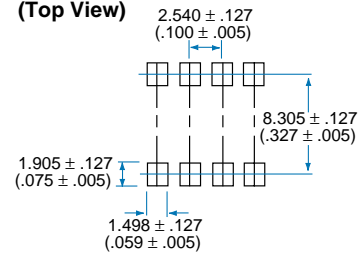
PC Board Pattern (Top View)



8 Pin DIP Surface Mount ("S" Suffix)



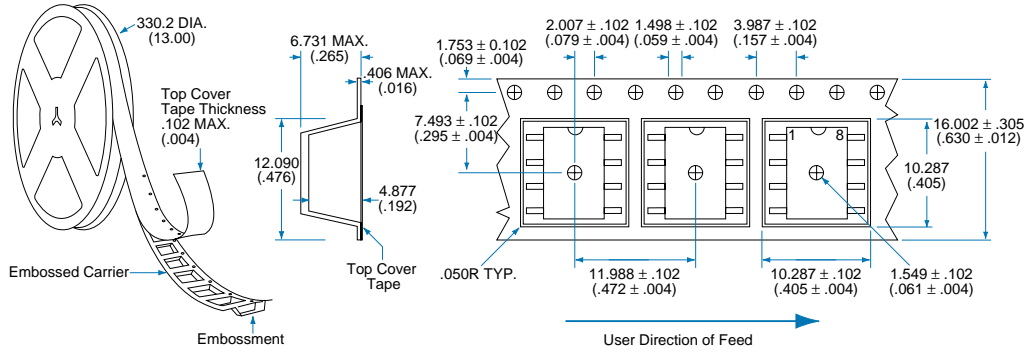
PC Board Pattern (Top View)



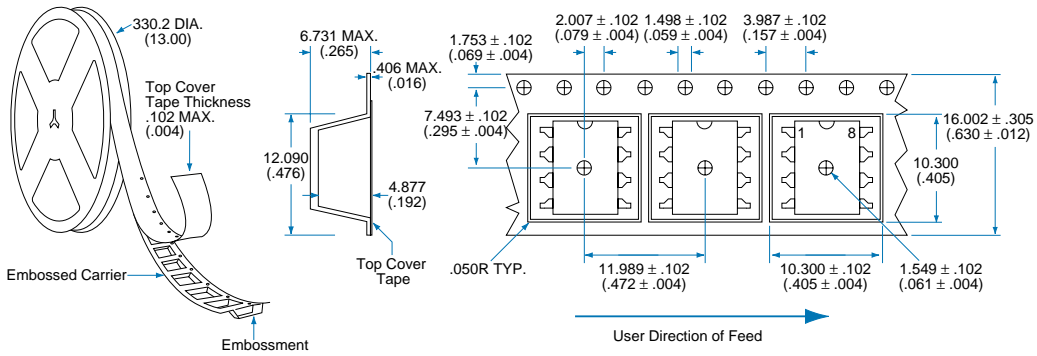
Dimensions  
mm  
(inches)

### Mechanical Dimensions

Tape and Reel Packaging for 8 Pin Flatpack Package



Tape and Reel Packaging for 8 Pin Surface Mount Package



Dimensions  
mm  
(inches)



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## 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

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