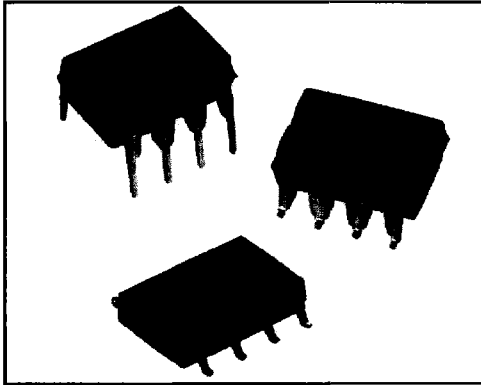


LOC110/LOC111/LOC112

Linear Optocouplers



DESCRIPTION

CP Clare's LOC110/LOC111/LOC112 Linear Optocouplers feature an infra-red LED optically coupled with two phototransistors. One feedback phototransistor is used to generate a control signal that provides a servomechanism to the LED drive current thus compensating for the LED's nonlinear time and temperature characteristics. The other (output) phototransistor provides an output signal that is linear with respect to the servo LED current.

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
- 5300 VAC peak input/output isolation available
- 0.01% servo linearity
- THD 87dB typical
- UL recognized file #: E76270
- CSA file #: LR43639-10
- BSI certified to
BS EN 60950: 1992 (BS7002:1992)
Certificate #: 7969 and 7694 (flatpack version)
BS EN 415: 1990
Certificate #: 7691 and 7693 (flatpack version)

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

RATINGS (@ 25 C)

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150 ¹	mW
Input Control Current	-	-	100	mA
Peak (10ms)	-	-	1	A
Total Package Dissipation	-	-	500 ²	mW
Isolation Voltage				
Input to Output	2500	-	-	V _{RMS}
"E" Suffix (optional)	3750	-	-	V _{RMS}
Operational Temperature	-40	-	+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature (10 Seconds Max)	-	-	+260	°C

¹ Derate Linearly 1.33 mW/°C

² Derate Linearly 1.67 mW/°C

CPCL5021

For additional information refer to LOC Series Application Note No. 1003.
For detailed information on CP Clare Semiconductor Group Products visit our Website "ESP15"

Input Characteristics @ 25°C

PARAMETERS	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
LED Voltage Drop	$I_F = 2-10\text{mA}$	V_F	0.9	1.2	1.4	V
Input/Output Capacitance		C_{IO}	-	3	-	pF
Reverse LED Current	$V_R = 5\text{V}$	I_R	-	-	10	µA
Reverse LED Voltage		V_R	-	-	5	V
Forward LED Current		I_F	-	-	100	mA

Coupler/Detector Characteristics @ 25°C

PARAMETERS	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Dark Current	$I_F = 0\text{mA}, V_{CC} = 15\text{V}$	I_D	-	1	25	nA
K1, Servo Gain (I_F/I_D) LOC110, LOC112 LOC111	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K1	0.004	0.007	0.030	-
	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K1	0.008	-	0.030	-
K2, Forward Gain (I_F/I_D) LOC110, LOC112 LOC111	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K2	0.004	0.007	0.030	-
	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K2	0.006	-	0.030	-
K3, Transfer Gain (K_2/K_1)	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K3	0.55	-	1.43	-
$\Delta K3$, Transfer Gain Linearity (non-sorted)	$I_F = 2-10\text{mA}$	$\Delta K3$	-	-	1.0	%
K3 Temperature Coefficient	$I_F = 2-10\text{mA}, V_{det} = -5\text{V}$	$\Delta K3/\Delta T$	-	0.005	-	%/°C
Common Mode Rejection Ratio	$V = 20\text{V}_{p-p}, R_L = 2\text{K}\Omega, F = 100\text{Hz}$	CMRR	-	130	-	dB
Input/Output Isolation		I/O	2500	-	-	V_{CC}/V_{det}
"E" Suffix (optional)			3750			V_{CC}/V_{det}
Total Harmonic Distortion	$F_0 = 350\text{Hz}, 0\text{dBm}$	THD	-96	-87	-80	dB
Frequency Response	Photoconductive Operation	BW (-3dB)	-	200	-	kHz
	Photovoltaic Operation	BW (-3dB)	-	40	-	kHz

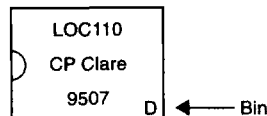
*LOC111 and LOC112 Bins D E E G.

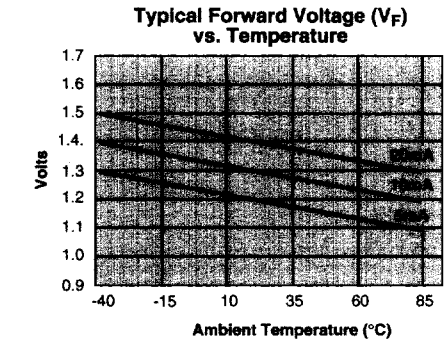
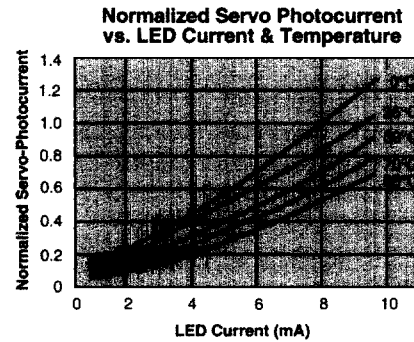
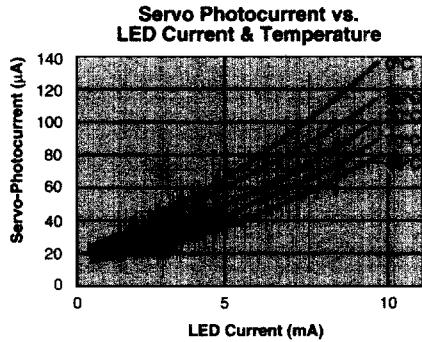
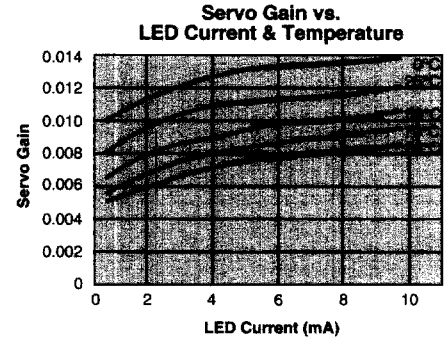
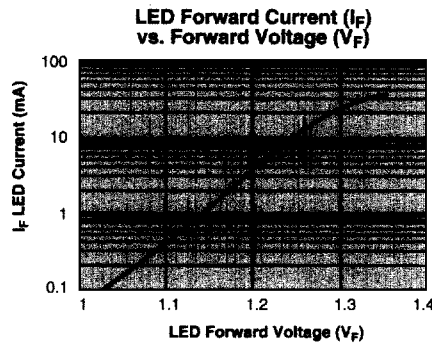
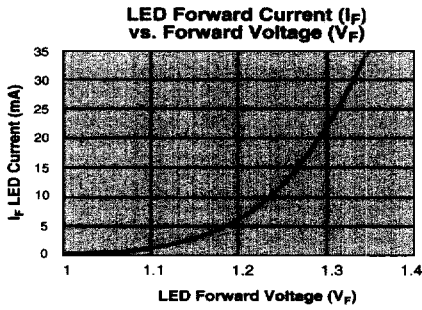
K3 Sorted Bins

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 E G we offer part number LOC111 or LOC112.

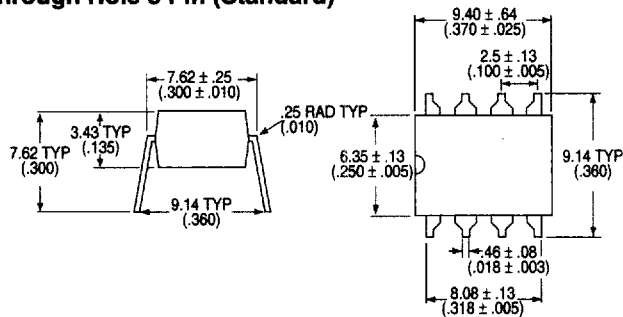
Example:



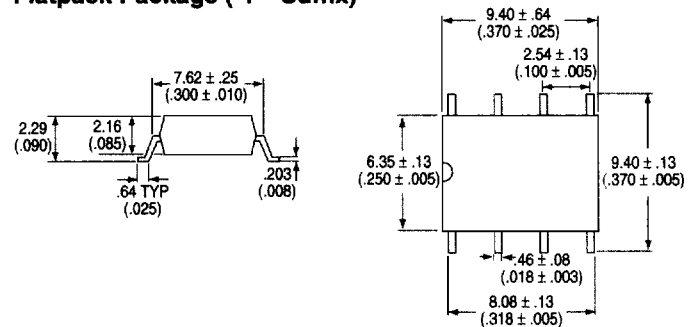


MECHANICAL DIMENSIONS

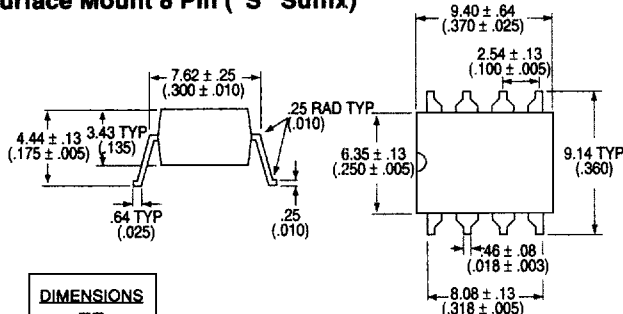
Through Hole 8 Pin (Standard)



Flatpack Package ("P" Suffix)

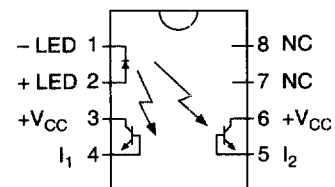


Surface Mount 8 Pin ("S" Suffix)



DIMENSIONS
mm
(Inches)

PACKAGE PINOUT



NORTH AMERICA

Illinois

CP Clare Corporation
North American Sales Office
601B Campus Drive
Arlington Heights, IL 60004
Tel: +1-847-797-7000
Fax: +1-847-797-7023
Toll Free: 1-800-CPCLARE

California

CP Clare Corporation
Western Regional Sales
10061 Talbert Avenue
Suite 210
Fountain Valley, CA 92708
Tel: +1-714-378-1212
Fax: +1-714-378-1210
Toll Free: 1-800-CPCLARE

Canada

CP Clare Canada Ltd.
**Northeastern Regional Sales
and Canada**
3425 Harvester Road
Suite 202
Burlington, Ontario L7N 3N1
Tel: +1-905-333-9066
Fax: +1-905-333-1824
Toll Free: 1-800-CPCLARE

North Carolina

CP Clare Corporation
Mid-Atlantic Regional Sales
901-B Paverstone Drive
Raleigh, NC 27615
Tel: +1-919-518-2077
Fax: +1-919-518-2079
Toll Free: 1-800-CPCLARE

EUROPE

**Benelux - Northern Europe and
Rep Area**

CP Clare International N.V.
European Sales Office
Overhaamlaan 40
B-3700 Tongeren (Belgium)
Tel: +32-12-390400
Fax: +32-12-390419
Telex: 39020

France

CP Clare France s.a.r.l.
9/11, Rue Georges Enesco
F-94008 Creteil Cedex
Tel: +33-1-43991522
Fax: +33-1-43991524

Germany

CP Clare Elektronik GmbH
Mühlstrasse 12
D-71640 Ludwigsburg
Tel: +49-7141-90089
+49-7141-926972
Fax: +49-7141-90080

Italy

Clare Sales
C.l.a.r.e. s.a.s.
Via C. Colombo 10/A
I-20066 Melzo (Milano)
Tel: +39-2-95737160
Fax: +39-2-95738829

Sweden

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

United Kingdom

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

ASIA PACIFIC

Taiwan

CP Clare Corporation
Asian Sales Office
Room N1016
Chia-Hsin Bldg. II
10/F., No. 96, Sec. 2
Chung Shan North Road
Taipei, Taiwan R.O.C.
Tel: +886-2-523-6368
Fax: +886-2-523-6369

Japan

CP Clare Corporation
Japanese Sales Office
Tosei Building 5F
2-23-1, Ikebukuro, Toshima-ku
Tokyo 171
Tel: +81-3-3980-2212
Fax: +81-3-3980-2213

CORPORATE

CP Clare Corporation
430 Bedford Street
Lexington, MA 02173-1548
Tel: +1-617-863-8700
Fax: +1-617-863-8707
Toll Free: 1-800-CPCLARE

BUSINESS UNIT

CP Clare Corporation
Semiconductor Group
107 Audubon Road
Wakefield, MA 01880
Tel: +1-617-246-4000
Fax: +1-617-245-3940

CP Clare Corporation makes no assertion or warranty that the circuitry and the uses thereof disclosed herein are non-infringing on any valid US or foreign patents. CP Clare Corporation assumes no liability as a result of the use of said specifications and reserves the right to make changes to specifications without notice. CP Clare Corporation does not authorize or warrant any CP Clare Corporation device for use in life support devices and/or systems. Contact your nearest CP Clare Corporation Sales Office for the latest specifications.

Specification No. LOC110/LOC111/LOC112
© Copyright 1996, CP Clare Corporation
All Rights Reserved. Printed in USA
OEMM5-7/96