



**Features**

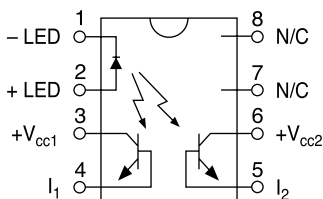
- 8 Pin Flatpack or DIP Package (PCMCIA Compatible)
- Couples Analog and Digital Signals
- Wide Bandwidth (>200kHz)
- High Gain Stability
- Low Input/Output Capacitance
- Low Power Consumption
- 0.01% Servo Linearity
- THD 87dB Typical
- Machine Insertable, Wave Solderable
- Surface Mount and Tape Reel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

**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

**Pin Configuration**

**LOC110 Pinout**



**Description**

The LOC110 Single Linear Optocoupler features an infrared LED optically coupled with two phototransistors. One feedback (input) phototransistor is used to generate a control signal that provides a servomechanism to the LED drive current, thus compensating for the LEDs nonlinear time and temperature characteristics. The other (output) phototransistor provides an output signal that is linear with respect to the servo LED current. The product features wide bandwidth, high input to output isolation and excellent servo linearity.

**Approvals**

- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- Certified to:
  - EN 60950
  - EN 41003

**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 DIP (1000/Reel)

**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 is 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, and G we offer part numbers LOC111 or LOC112.

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

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150 <sup>1</sup>	mW
Input Control Current	-	-	100	mA
Input LED Reverse Voltage	-	-	5	V
Peak (10ms)	-	-	1	A
Total Package Dissipation	-	-	500 <sup>2</sup>	mW
Isolation Voltage Input to Output	3750	-	-	V <sub>RMS</sub>
Operational Temperature	-40		+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature (10 seconds)				
DIP	-	-	+260	°C
Flatpack Package	-	-	+220	°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.*

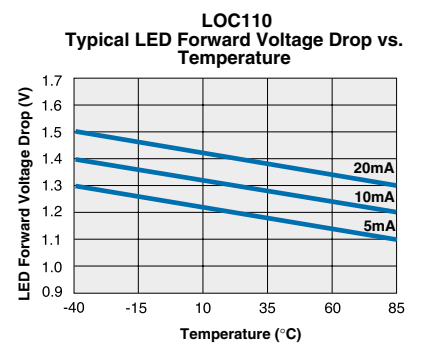
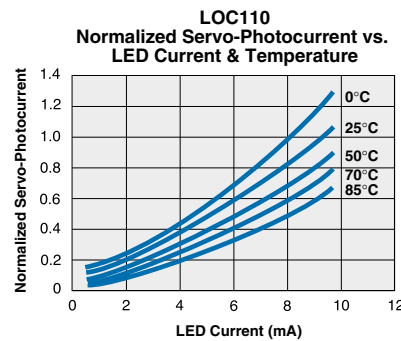
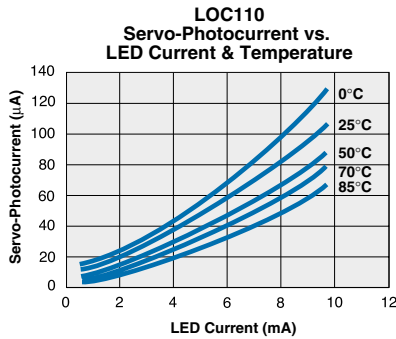
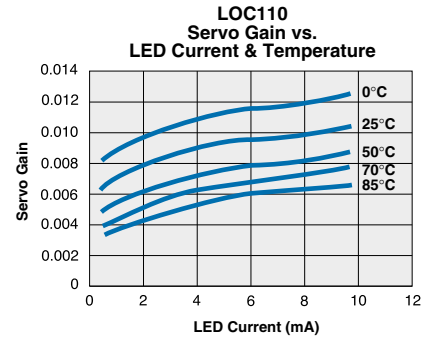
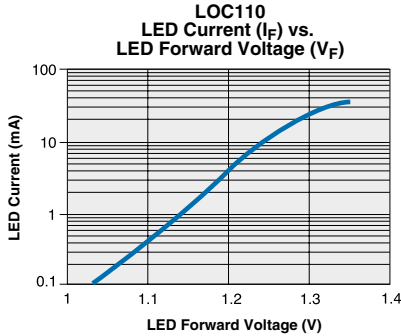
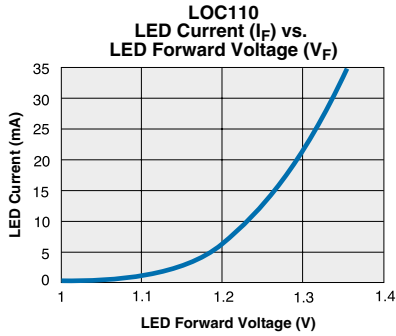
<sup>1</sup> Derate Linearly 1.33 mW/°C

<sup>2</sup> Derate Linearly 6.67 mW/°C

**Electrical Characteristics**

Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Input Characteristics @ 25°C</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
<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> )	I <sub>F</sub> =2-10mA, V <sub>CC</sub> =15V	K3	0.550	1.0	1.426	-
ΔK3, Transfer Gain Linearity (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 (-3dB)	-	200	-	kHz
	Photovoltaic Operation	BW (-3dB)	-	40	-	kHz
Input/Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

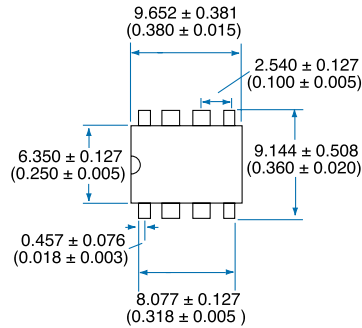
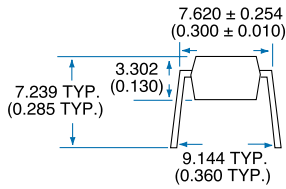
**PERFORMANCE DATA\***



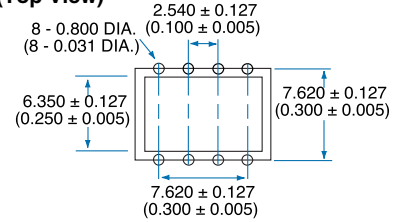
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

MECHANICAL DIMENSIONS

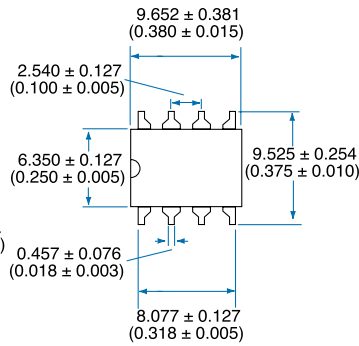
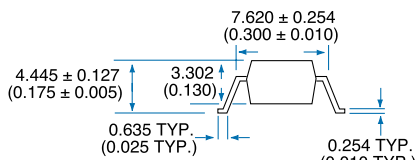
8 Pin DIP Through Hole (Standard)



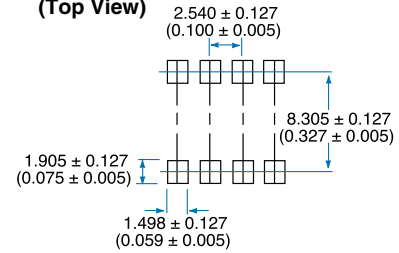
PC Board Pattern (Top View)



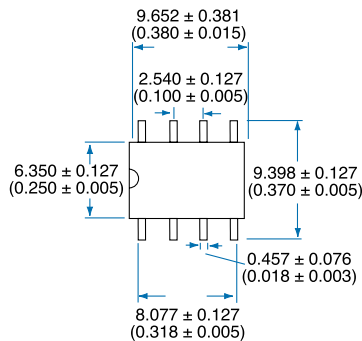
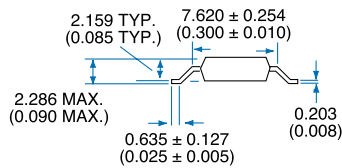
8 Pin DIP Surface Mount ("S" Suffix)



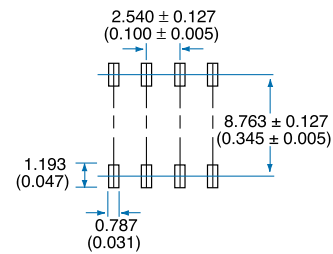
PC Board Pattern (Top View)



8 Pin Flatpack ("P" Suffix)



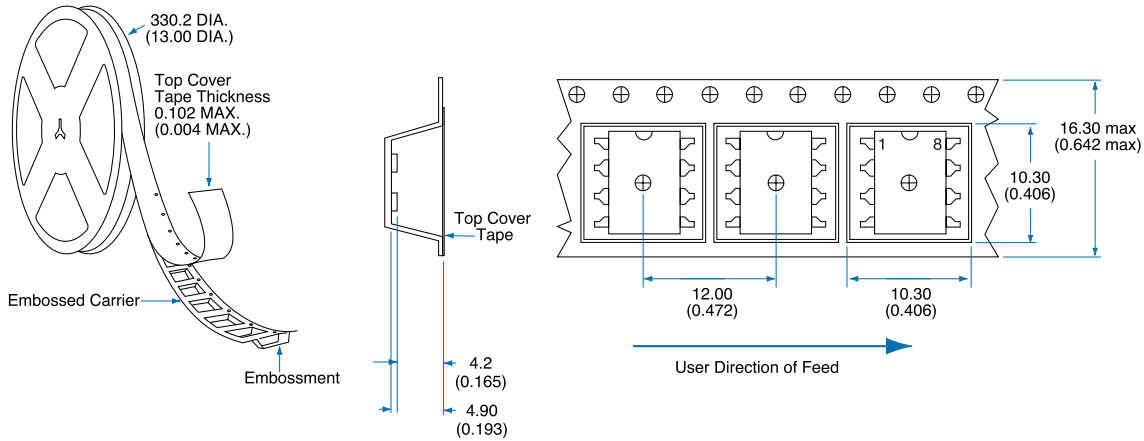
PC Board Pattern (Top View)



Dimensions  
mm  
(inches)

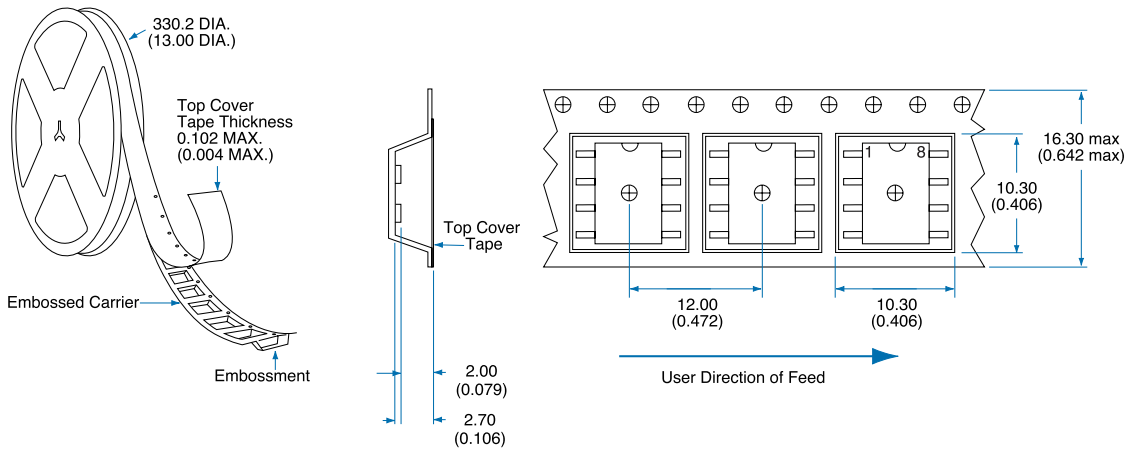
**MECHANICAL DIMENSIONS**

**Tape and Reel Packaging for 8 Pin Surface Mount Package**



**NOTE:** Tape dimensions not shown, comply with JEDEC Standard EIA-481-2

**Tape and Reel Packaging for 8 Pin Flatpack Package**



**NOTE:** Tape dimensions not shown, comply with JEDEC Standard EIA-481-2

Dimensions  
mm  
(inches)

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