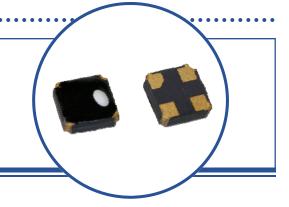
# **Surface Mount Optically Coupled Isolator** OPI210, OPI211



#### Features:

- 1kV electrical isolation
- Miniature package ideal for surface mount applications
- TTL, DTL compatible
- · High DC Current Transfer ratio



#### **Description:**

Each Optically coupled isolator in this data sheet contains an infrared Light Emitting Diode (LED) and a NPN silicon Photosensor. The **OPI210** and **OPI211** devices have 890 nm Light Emitting Diode (LED) and NPN phototransistor and coupled on an FR-4 substrate. The devices are made with a sealed internal optically transmissive path between the LED and the photosensor.

The OPI210 and OPI211 are identical except for the DC current transfer ratio. Both were designed with high reliability in mind and are ideally suited for use in MIL-STD-883 applications. The devices may be mounted using either silver or gold filled epoxies. The top of the device is covered with a silicone material and is very sensitive to acetone type cleaning material.

This series is designed for transmission of information between one power supply voltage to another where the potentials during surge conditions are not greater than the guaranteed isolation voltage.

**LED** 

**Peak** 

Wavelength

890 nm

**Part** 

Number

**OPI210** 

**OPI211** 

**Ordering Information** 

Sensor

Transistor

Isolation

Voltage

(,000,

1

**CTR** 

Typical

200

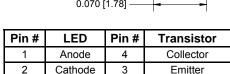
350

Contact your local representative or OPTEK for more information.

### **Applications:**

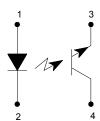
- · Military equipment
- High-Reliability environments
- High voltage isolation between input and output
- Electrical isolation in dirty environments
- Industrial equipment
- Medical equipment
- Office equipment

	Collector (4)
0.090 [2.29]	Emitter (3) _
0.090 [2.29]	
White Dot _/ Anode (1)	Anode (1)
0.070 [1.78] ——	



DIMENSIONS ARE IN: [MILLIMETERS] INCHES







OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

 $V_{CE}$ 

(Volts)

Max

35

I<sub>F</sub> (mA)

Typ / Max

10 / 50

0.004 [0.10]

8 Places

Cathode (2)

0.025 [0.64] Square 4 Places

# **Surface Mount Optically Coupled Isolator** OPI210, OPI211



## **Absolute Maximum Ratings** (T<sub>A</sub> = 25° C unless otherwise noted)

Storage Temperature	-65° C to +150° C
Operating Temperature	-55° C to +125° C
Input-to-Output Isolation Voltage <sup>(1)(2)</sup>	± 1 kVDC
Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron) <sup>(3)</sup>	260° C
Input Diode	
Forward DC Current <sup>(4)</sup>	50 mA
Reverse DC Voltage	3 V
Power Dissipation <sup>(5)</sup>	60 mW
Output Photosensor	
Collector-Emitter Voltage	35 V
Emitter-Collector Voltage	7.0 V
Power Dissipation <sup>(6)</sup>	100 mW

### **Electrical Characteristics** (T<sub>A</sub> = 25° C unless otherwise noted)

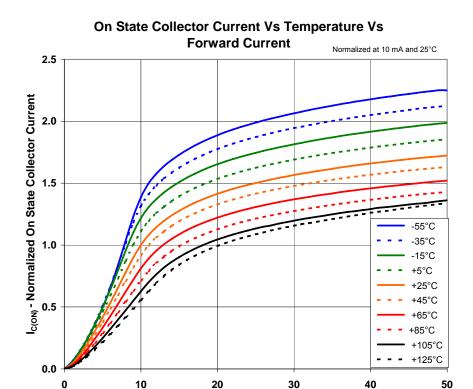
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode (See OP265 for additional information - for reference only)						
$V_{F}$	Forward Voltage	-	-	1.6	٧	I <sub>F</sub> = 10 mA
I <sub>R</sub>	Reverse Current	ı	-	100	μΑ	V <sub>R</sub> = 2 V
Output Photosensor (See OP505 for additional information - for reference only)						
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage	35	80	-	٧	$I_C = 100 \ \mu A, I_F = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	7	10	-	٧	$I_E = 100 \ \mu A, I_F = 0$
I <sub>CEO</sub>	Collector-Emitter Dark Current	ı	20	100	nA	$V_{CE} = 20 \text{ V}, I_F = 0$
Coupled						
I <sub>C/</sub> I <sub>F</sub>	DC Current Transfer Ratio OPI210 OPI211	50 200	200 350	-	%	I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 5 V
V <sub>CE(SAT)</sub>	Collector Saturation Voltage	-	0.2	0.3	٧	I <sub>F</sub> = 20 mA, I <sub>C</sub> = 2 mA
T <sub>r</sub> & t <sub>f</sub>	Rise Time	-	3.0	10	μs	$V_{CC}$ = 10 V, $R_L$ = 100 $\Omega$ , Pulse width = 100 ms, duty cycle = 1%

#### Notes:

- (1) Measured with input and output leads shorted. Typical input/output capacitance is 0.06 pF.
- (2) UL recognition is for 3500 VAC for one minute.
- (3) RMA flux is recommended. The duration can be extended to 10 seconds maximum when flow soldering.
- (4) Derate linearly 0.67 mA/°C above 25°C.
- (5) Derate linearly 0.83 mA/°C above 25°C.
- (6) Derate linearly 1.67 mA/°C above 25°C.

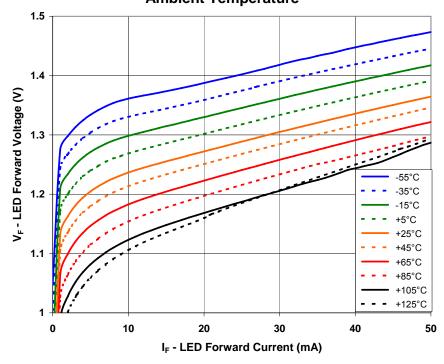
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I<sub>F</sub> - LED Forward Current (mA)

## Forward Voltage Vs Forward Current Vs Ambient Temperature



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