

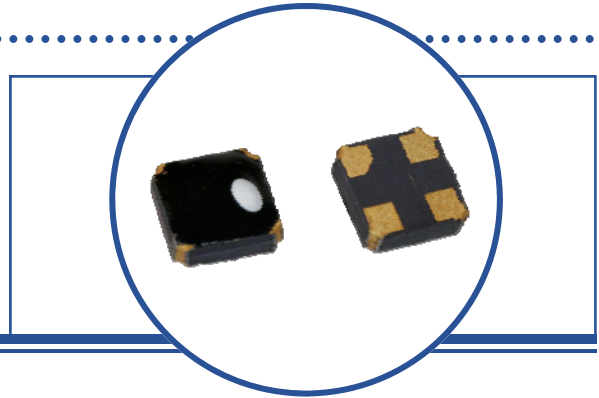
# Surface Mount Optically Coupled Isolator

## 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.

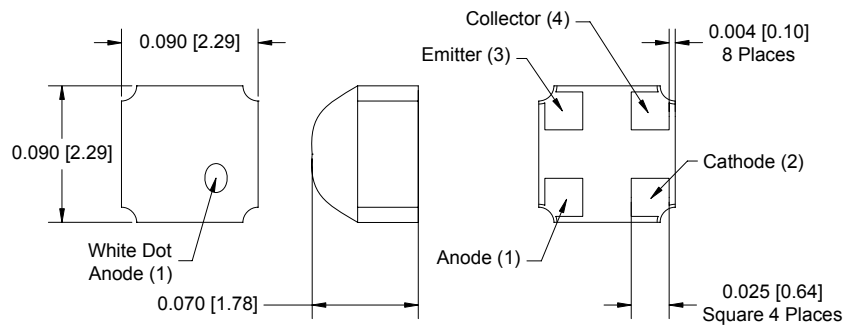
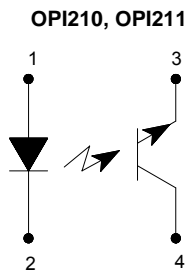
This series is designed for transmission of information between one power supply voltage to another where the potentials during surge conditions are not greater than the guaranteed isolation voltage.

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

Ordering Information						
Part Number	LED Peak Wavelength	Sensor	Isolation Voltage (,000)	CTR Typical	I <sub>F</sub> (mA) Typ / Max	V <sub>CE</sub> (Volts) Max
OPI210	890 nm	Transistor	1	200	10 / 50	35
OPI211				350		



Pin #	LED	Pin #	Transistor
1	Anode	4	Collector
2	Cathode	3	Emitter

DIMENSIONS ARE IN: [MILLIMETERS]  
INCHES



RoHS

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

**Absolute Maximum Ratings** ( $T_A = 25^\circ\text{C}$  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** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
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**Input Diode** (See OP265 for additional information - for reference only)

$V_F$	Forward Voltage	-	-	1.6	V	$I_F = 10\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}$

**Output Photosensor** (See OP505 for additional information - for reference only)

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	35	80	-	V	$I_C = 100\ \mu\text{A}, I_F = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	7	10	-	V	$I_E = 100\ \mu\text{A}, I_F = 0$
$I_{CEO}$	Collector-Emitter Dark Current	-	20	100	nA	$V_{CE} = 20\text{ V}, I_F = 0$

**Coupled**

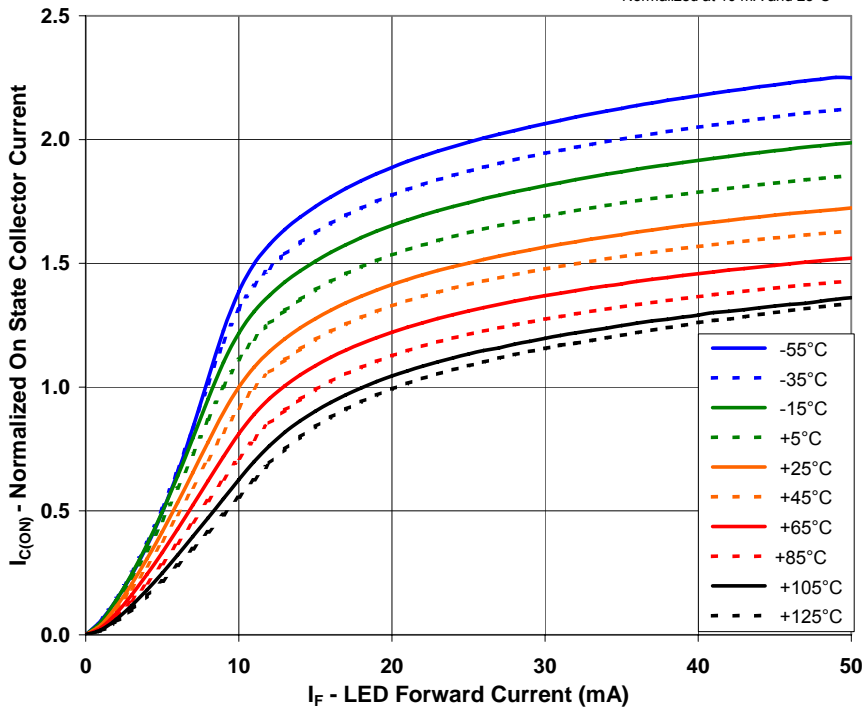
$I_C/I_F$	DC Current Transfer Ratio OPI210 OPI211	50 200	200 350	- -	%	$I_F = 10\text{ mA}, V_{CE} = 5\text{ V}$
$V_{CE(SAT)}$	Collector Saturation Voltage	-	0.2	0.3	V	$I_F = 20\text{ mA}, I_C = 2\text{ mA}$
$T_r \ \& \ t_f$	Rise Time	-	3.0	10	$\mu\text{s}$	$V_{CC} = 10\text{ V}, R_L = 100\ \Omega,$ Pulse width = 100 ms, duty cycle = 1%

Notes:

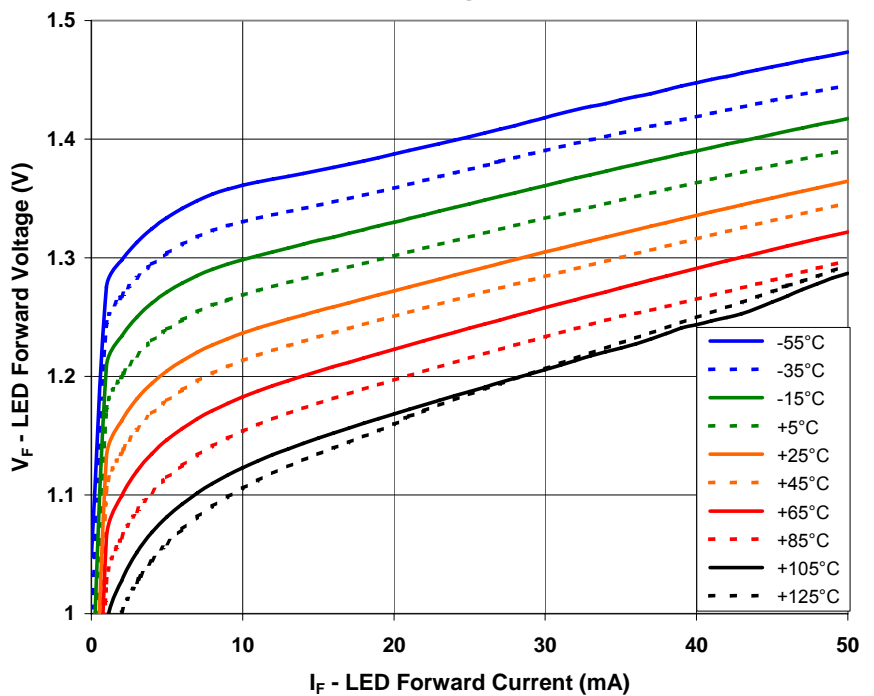
- (1) Measured with input and output leads shorted. Typical input/output capacitance is 0.06 pF.
- (2) UL recognition is for 3500 VAC for one minute.
- (3) RMA flux is recommended. The duration can be extended to 10 seconds maximum when flow soldering.
- (4) Derate linearly 0.67 mA/°C above 25°C.
- (5)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

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On State Collector Current Vs Temperature Vs  
 Forward Current



Forward Voltage Vs Forward Current Vs  
 Ambient Temperature



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