Optically Coupled Isolator

OPI110, OPI1264 Series



Features:

- 15 kVDC electrical isolation
- Phototransistor output
- 4 CTR ranges available
- Low-cost plastic housing
- UL recognized File No. E58730

Description:

The **OPI110** and **OPI1264** devices contain an 890 nm Light Emitting Diode (LED) and NPN phototransistor sensor. The devices are sealed in a black plastic molded housing with an optically transmissive path between the LED and the photosensor.

The Optoisolators in this data sheet are UL recognized under E58730.

This series is designed for transmission of information between one power supply voltage and another where the potential during surge conditions is not greater than the rated isolation voltage.

Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

Applications:

- 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 (VDC)**	**CTR Min / Max**	**I_F (mA) Typ / Max**	**V_{CE} (Volts) Max**	**Lead Length / Spacing**
OPI110	890 nm	Transistor	15 k	12.5 / NA	10 / 40	30	0.50" / 0.55"
OPI110A				25 / NA			
OPI110B				50 / 125			
OPI110C				100 / NA			
OPI1264				12.5 / NA			
OPI1264A				25 / NA			
OPI1264B				50 / 125			
OPI1264C				100 / NA			

General Note
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Electrical Specifications

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage Temperature	-40° C to +100° C
Operating Temperature	-40° C to +85° C
Input-to-Output Isolation Voltage (1)(2)	± 15 kVDC
Lead Soldering Temperature [1/16" (1.6 mm) from case for 5 seconds with soldering iron] (3)	260° C
Input Diode	
Forward DC Current	40 mA
Reverse DC Voltage	2 V
Power Dissipation (4)	75 mW
Output Photosensor	
Collector-Emitter Voltage OPI110, OPI1264	30 V
Emitter-Collector Voltage	5 V
Power Dissipation (5)	100 mW

Notes:

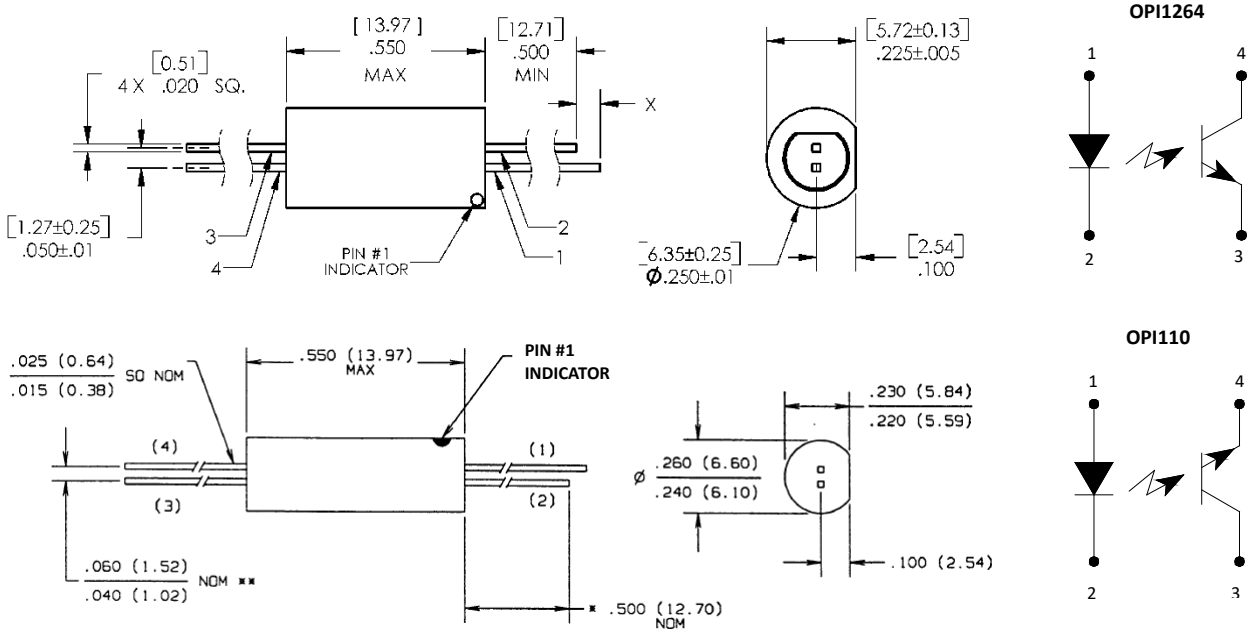
(1) Measured with input and output leads shorted. Typical input/output capacitance is 0.06 pF.

(2) UL recognition is for 15 kVDC for one minute.

(3) RMA flux is recommended. The duration can be extended to 10 seconds maximum when flow soldering.

(4) Derate linearly 0.83 mW/° C above 25° C.

(5) Derate linearly 1.33 mW/° C above 25° C.



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Electrical Specifications

Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage	1.0	-	1.6	V	I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2 V
Output Photosensor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage OPI110, OPI1264	30	-	-	V	I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage OPI110 OPI1264	5	-	-	V	I_E = 100 µA, I_F = 0 I_E = 100 µA
I_{CEO}	Collector-Emitter Dark Current OPI110, OPI1264	-	-	100	nA	V_{CE} = 15 V, E_E = 0
Coupled						
$I_{C(ON)}$	Coupled "ON" Current OPI110, OPI1264	1.25	-	44	mA	I_F = 10 mA, V_{CE} = 5 V
I_C/I_F	DC Current Transfer Ratio OPI110, OPI1264 OPI110A, OPI1264A OPI110B, OPI1264B OPI110C, OPI1264C	12.5 25.0 50.0 100.0	-	- - 125 -	%	I_F = 10 mA, V_{CE} = 5 V
$V_{CE(SAT)}$	Collector Saturation Voltage OPI110, OPI1264	-	-	0.4	V	I_F = 10 mA, I_C = 1.6 mA
I_{CEO}	Collector-Emitter Dark Current OPI110, OPI1264	-	-	200	nA	V_{CE} = 20 V, I_F = 0
V_{ISO} (1)	Isolation Voltage	15	-	-	kVDC	

Notes:
(1) Measured with input and output leads shorted. Typical input/output capacitance is 0.06 pF.

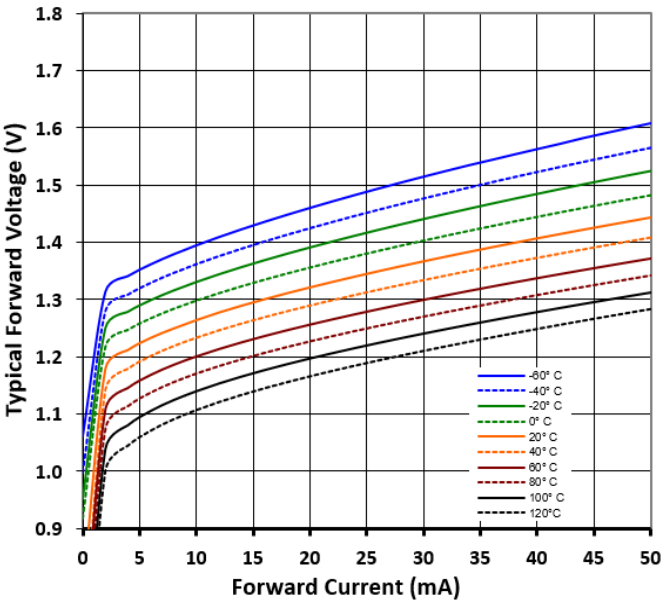
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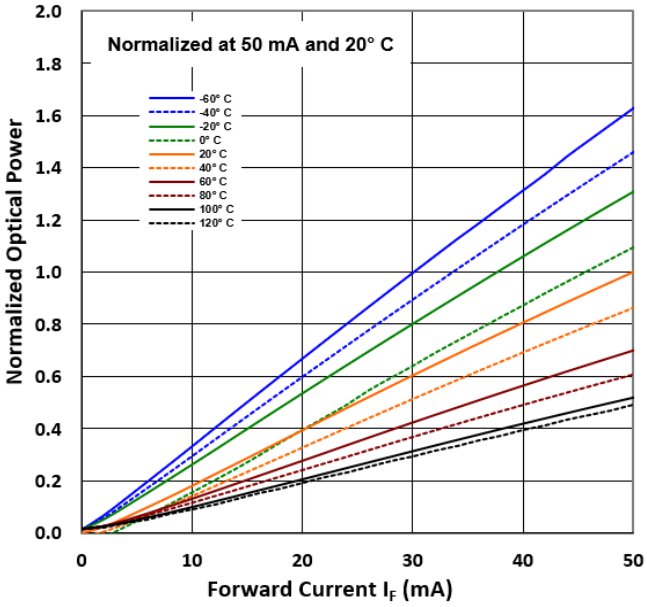
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Typical Isolator LED Performance

LED Forward Voltage vs I_F vs Temp

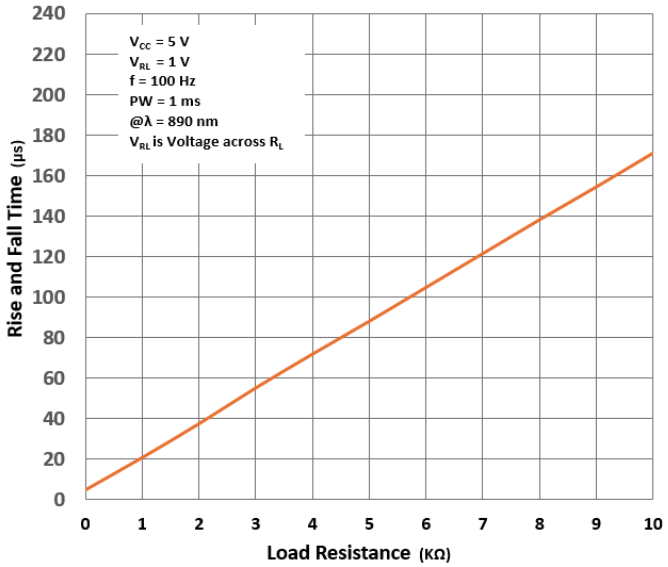


Optical Power vs I_F vs Temperature



Typical Isolator Output Transistor Performance

Rise and Fall Times vs Load Resistance



General Note

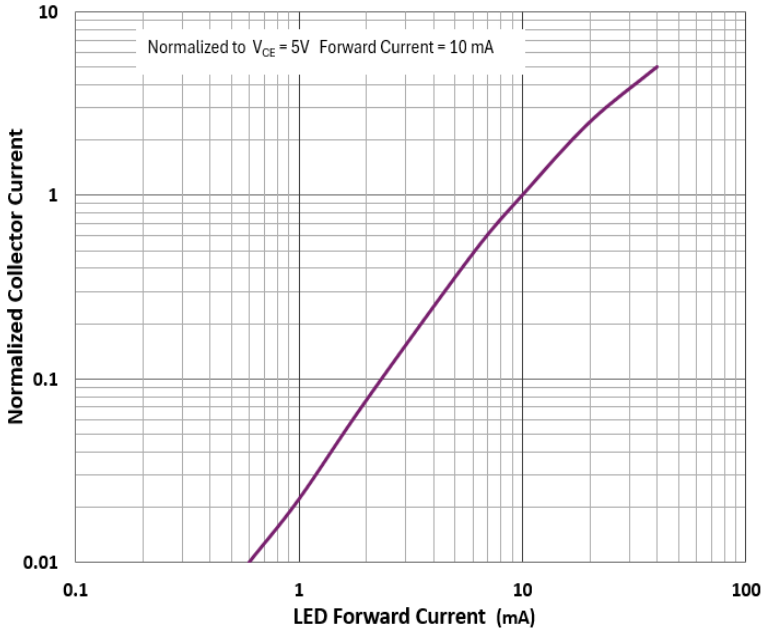
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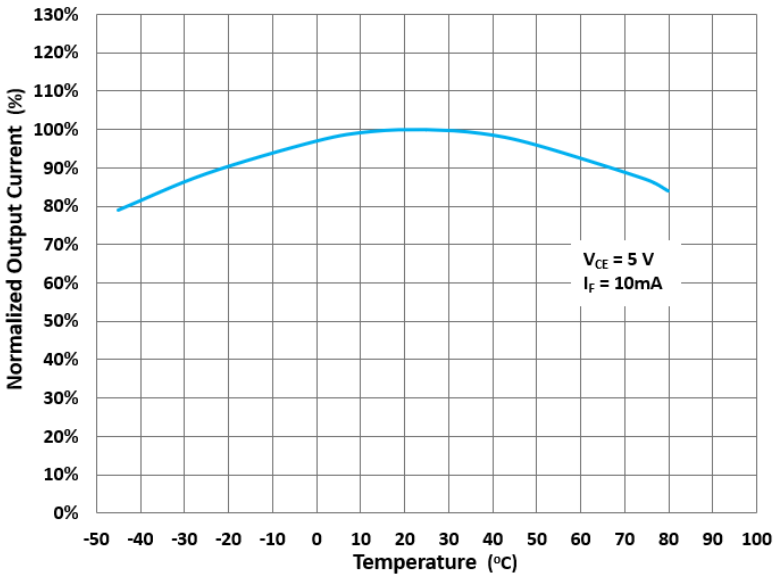
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Typical Isolator Output Performance

Collector Current vs Forward Current



Collector Current vs Temperature



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