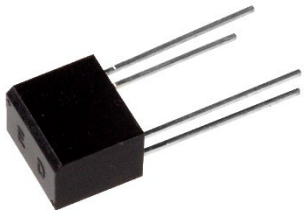
Optically Coupled Isolator

OPI7002, OPI7010



Features:

- ± 6 kVDC electrical isolation
- Inexpensive plastic housing
- Phototransistor output
- UL registered File No. E58730

Description:

Each **OPI7002** and **OPI7010** consists of an infrared emitting diode coupled to a NPN silicon phototransistor. The LED and sensor are encased in a black low-cost plastic housing. Pin spacing is compatible with standard dual-in-line packages.

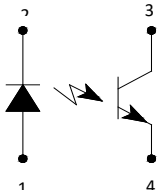
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

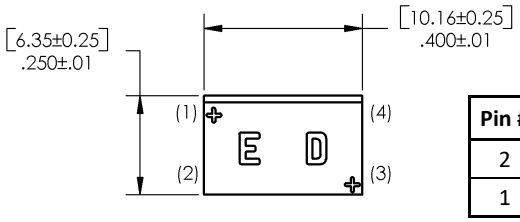
Applications:

- Requiring high voltage isolation between input and output
- Electrical isolation in dirty environments
- Industrial equipment
- Medical equipment
- Office equipment

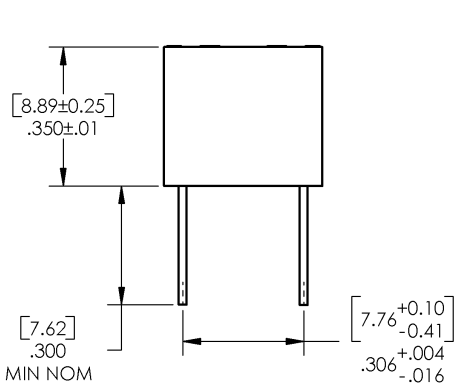
Ordering Information							
Part Number	LED Peak Wavelength	Sensor	Isolation Voltage (VDC)	CTR Min	I_F (mA) Typ / Max	V_{CE} (Volts) Max	Lead Length / Spacing
OPI7002	935 nm	Transistor	6 k	20	10 / 50	30	0.30" / 0.30"
OPI7010				100			

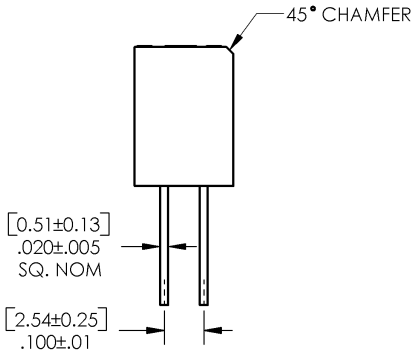
OPI7002, OPI7010





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





RoHS

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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Electrical Specifications

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

Operating Temperature Range	-40° C to +85° C
Storage Temperature Range	-40° C to +85° C
Input-to-Output Isolation Voltage (1)(4)	±6 kVDC
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 seconds with soldering iron] (2)	260° C
Input Diode	
Forward DC Current	50 mA
Peak Forward current (1 µs pulse width, 300 pps)	3 A
Reverse Voltage	2 V
Power Dissipation (3)	100 mW
Output Phototransistor	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5.0 V
Power Dissipation (3)	100 mW

Notes:
(1) Measured with input leads and output leads shorted.
(2) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(3) Derate linearly 1.33 mW/° C above 25° C.
(4) UL recognition is for 6 kVDC for one minute.

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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	1.2	1.70	V	I_F = 10 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2.0 V
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	I_C = 100 µA, I_F = 0
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	I_E = 100 µA, I_F = 0
I_{CEO}	Collector-Emitter Dark Current	-	-	100	nA	V_{CE} = 10 V, I_F = 0
Coupled						
I_C / I_F	DC Current Transfer Ratio OPI7002 OPI7010	 20 100	-	-	%	I_F = 10 mA, V_{CE} = 5 V
$V_{(SAT)}$	Collector-Emitter Saturation Voltage	-	-	0.4	V	I_F = 10 mA, I_C = 0.50 mA
V_{ISO} (1)	Isolation Voltage	6	-	-	kVDC	-
$T_{(ON)}$	Turn-On Time	-	4	-	µs	V_{CE} = 10 V, I_C = 10 mA, R_L = 100 Ω
$T_{(OFF)}$	Turn-Off Time	-	3	-		
C_{IO} (1)	Capacitance Input-to-Output	-	0.2	-	pF	V_{IO} = 0, F = 1 MHz

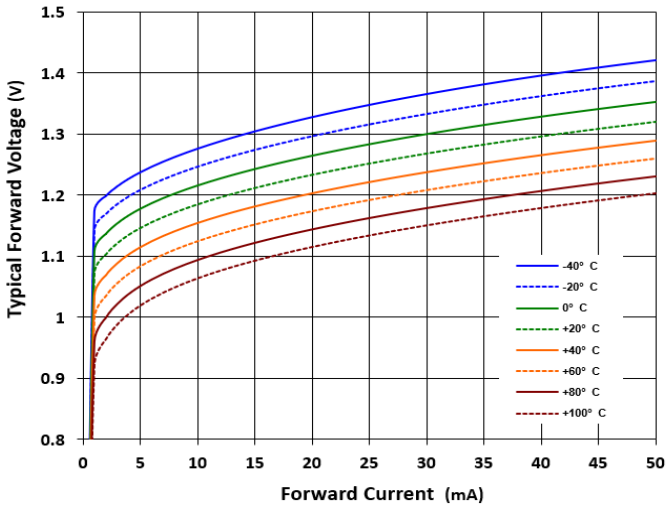
Notes:
(1) Measured with input leads and output leads shorted.

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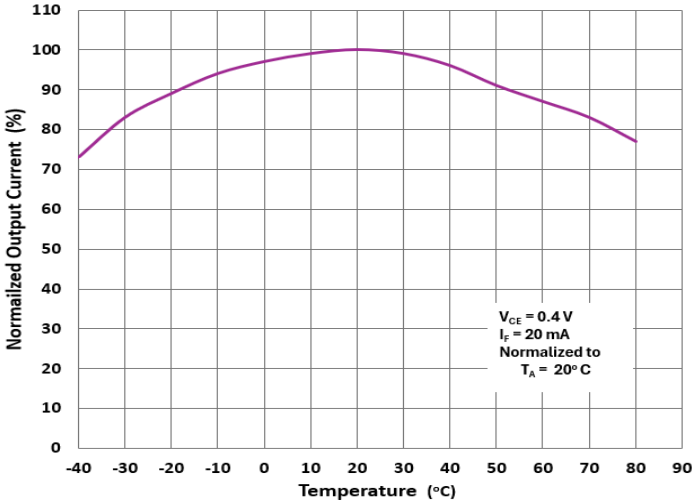
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Typical Performance

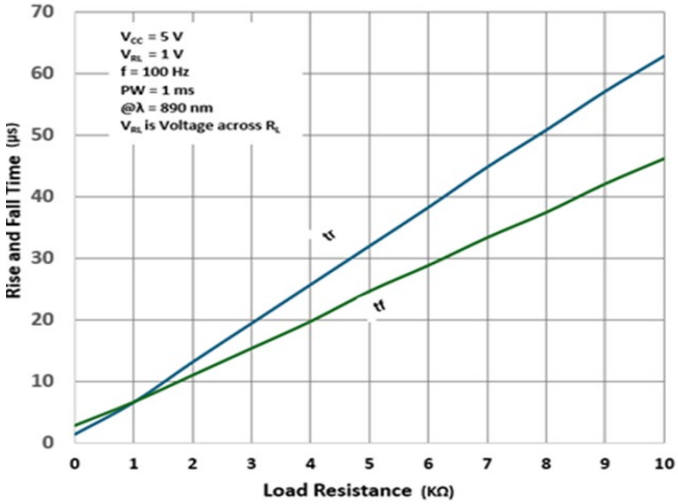
Forward Voltage vs Current vs Temp



Output Current vs Temperature



Rise and Fall Times vs Load Resistance



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