

Optoelectronics Division  
TRW Electronic Components Group

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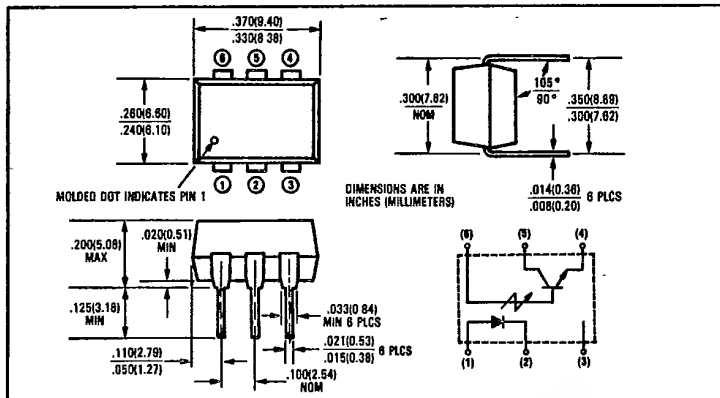


Product Bulletin 5206  
January 1985

T-41-83

# Optically Coupled Isolators

## Types OPI2153, OPI2253



### Features

- 1500 or 2500 volt isolation
- High current transfer ratio
- Low cost 6 pin dual-in-line package
- UL recognized File No. E58730

### Description

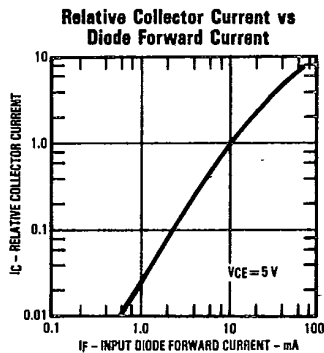
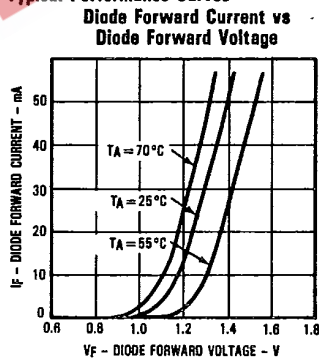
The OPI2153 and OPI2253 each consist of a gallium arsenide infrared light emitting diode coupled to an NPN silicon phototransistor mounted in a six pin dual-in-line package. The OPI2153 and OPI2253 are identical except for input-to-output isolation voltage.

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

Input-to-Output Isolation Voltage OPI2153	±1500 VDC <sup>(1)</sup>
OPI2253	±2500 VDC <sup>(1)</sup>
Storage Temperature Range	-55°C to +150°C
Operating Temperature Range	-55°C to +100°C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) <sup>(2)</sup>	260°C
<b>Input Diode</b>	
Forward DC Current	.60 mA
Peak Forward Current (1 μs pulse width, 300 pps)	3.0 A
Reverse Voltage	3.0 V
Power Dissipation (25°C)	100 mW <sup>(3)</sup>
<b>Output Transistor</b>	
Power Dissipation	150 mW <sup>(4)</sup>
BI(BR)CEO	30 V
V(BR)CBO	50 V
V(BR)ECO	5.0 V

Notes: (1) Measured with input diode leads shorted together and output leads shorted together. (2) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. (3) Derate linearly 1.33 mW/°C above 25°C. (4) Derate linearly 2.0 mW/°C above 25°C.

### Typical Performance Curves



Types OPI2153, OPI2253

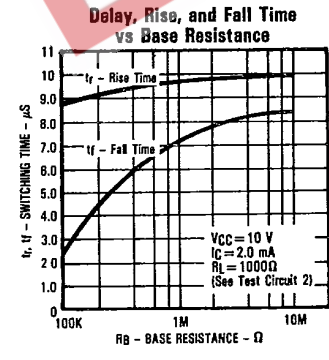
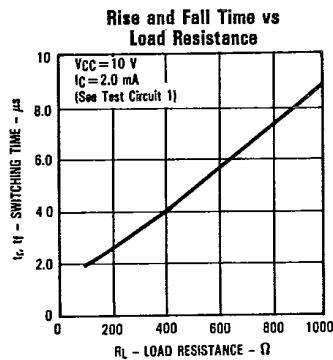
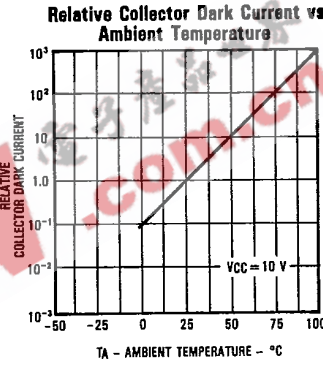
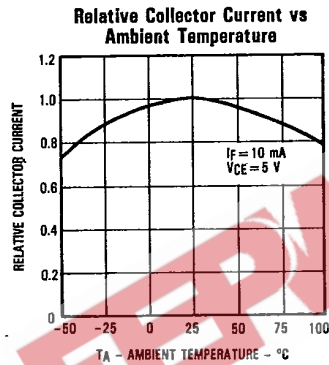
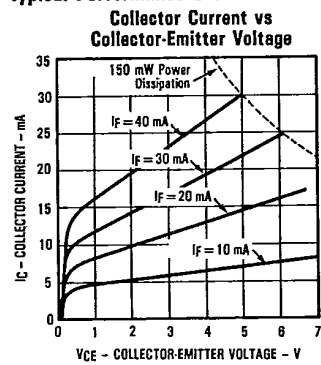
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Electrical Characteristics (TA = 25°C unless otherwise noted)

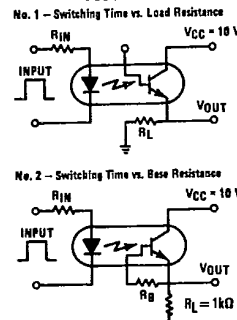
Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
<b>Input Diode</b>						
VF	Forward Voltage			1.40	V	IF = 18.0 mA
V(BR)R	Reverse Breakdown Voltage	3.0			V	IR = 10.0 μA
IR	Reverse Leakage Current			10.0	μA	VR = 3.0 V
<b>Output Phototransistor</b>						
V(BR)CEO	Collector-to-Emitter Breakdown Voltage	30			V	IC = 1.00 mA
V(BR)ECO	Emitter-to-Collector Breakdown Voltage	5.0			V	IE = 100 μA
V(BR)CBO	Collector-to-Base Breakdown Voltage	50			V	IC = 100 μA
ICEO	Collector-Emitter Dark Current		5.0	50	nA	VCE = 10.0 V
ICBO	Collector-Base Dark Current			20	nA	VCB = 10.0 V
CCE	Capacitance Collector-to-Emitter		8.0		pF	VCE = 0
hFE	DC Current Gain		350			VCE = 5.0 V, IC = 100 μA
<b>Coupled</b>						
IC/IF	DC Current Transfer Ratio	50	80		%	IF = 10.0 mA, VCE = 5.0 V
VCE(SAT)	Collector-to-Emitter Saturation Voltage			0.40	V	IF = 10.0 mA, IC = 2.0 mA
VISO	Isolation Voltage OPI2153 OPI2253	1500 2500			VDC VDC	See Note 1
RIO	Input-to-Output Resistance	10 <sup>11</sup>			Ω	VIO = 600 V, See Note 1
CIO	Input-to-Output Capacitance		2.0		pF	f = 1.00 MHz, See Note 1
tr	Output Rise Time		2.0		μs	VCC = 10.0 V, IC = 2.0 mA
tf	Output Fall Time		2.0		μs	RL = 100Ω, See Test Circuit 1



Typical Performance Curves



Switching Time Test Circuits



TRW reserves the right to make changes at any time in order to improve design and to supply the best product possible. Plastic color may vary.  
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